



COUNTY OF UNION

DEPARTMENT OF ENGINEERING, PUBLIC WORKS & FACILITIES MANAGEMENT

Joseph A. Graziano Sr., Director

MEMORANDUM

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THOMAS O. MINEO, P.E.
*County Engineer,
Director, Division of Engineering*

TO: All Potential Bidders

FROM: Thomas O. Mineo, P.E.
County Engineer

DATE: September 21, 2021

RE: **CLARIFICATION - NUMBER 1**
**County Clerk Office Renovation,
City of Elizabeth, County of Union, New Jersey
BA# 44-2021; UNION COUNTY ENGINEERING
PROJECT #2017-009**

This is a response to questions received for the above referenced project.

Q1. Drawing A601 indicates (3) Doors are scheduled to have “electric hold open devices”, installed for them. On Drawing E200 the symbol for this device is “DA”, which according to the symbol legend says “provide power”. (only). Specification Section 087100 19 & 20 talk about this device disengaging upon loss of power and / or fire alarm activation (paraphrasing). The E Drawings do not indicate any fire alarm wiring or equipment to accomplish this. If these devices must in fact disengage upon activation of Fire alarm please clearly indicate how this is to be accomplished & advise all Fire alarm equipment required to achieve the same.

A1. No additional equipment is needed. Specification section 087100, paragraphs 1.03E2 & 3 note that the contractor is to submit wiring diagrams depicting the interface between the door hardware, fire alarm and building control systems. Paragraph 1.03E4 notes that

DIVISION OF ENGINEERING



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*County Engineer,
Director, Division of Engineering*

the contractor is to provide junction boxes, relays and terminal blocks as needed for proper door operations and connections. The contractor is to coordinate with the County Fire Alarm Vendor and Security vendors regarding the operation to produce an operating system.

The County's fire alarm vendor is:

DavEd Fire Systems, Inc.
307 West Pleasantview Ave.
Hackensack, NJ 07006
201-342-7800
sales@davedfire.com

The County's Security vendor is:

Maffey's Security Group
1172-80 E. Grand St.
Elizabeth, NJ 07201
908-351-1172
sales@maffeys.com

- Q2.** Please provide Manufacture, model number for Aluminum Pamphlet drawings A402.
- A2.** Regarding the aluminum pamphlet holders, the pamphlet holders are to be fabricated per the dimensions and specifications as detailed on drawing A402.

DIVISION OF ENGINEERING

2325 South Avenue

Scotch Plains, NJ 07076

(908)789-3675

fax(908)789-3674

www.ucnj.org

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**SPECIFICATIONS
FOR
County Clerk Office Renovation,
City of Elizabeth, Count of Union,
New Jersey**

BA# 44 -2021; UNION COUNTY ENGINEERING PROJECT #2017-009

September 2021

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**DEPARTMENT OF ENGINEERING, PUBLIC WORKS AND
FACILITIES MANAGEMENT**

Joseph A. Graziano, Sr., CPWM
Director, Department of Engineering, Public Works and
Facilities Management

**COUNTY ENGINEER
DIVISION OF ENGINEERING**

Thomas O. Mineo, P.E.

Prepared by:
The Musial Group

**COUNTY OF UNION
NOTICE TO BIDDERS**

Sealed bids will be received by the assistant director of the Division of Purchasing, or her designee, at the County of Union, New Jersey on **September 23, 2021 at 11:30 a.m.**, prevailing time, in the **3rd Floor Conference Room**, U.C. Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey for:

**County Clerk Office Renovation,
City of Elizabeth, Count of Union, New Jersey
BA# 44 -2021; UNION COUNTY ENGINEERING PROJECT #2017-009**

Bid Packages may be obtained at no charge by registering and downloading at <http://ucnj.org/bid-specs>. Bid Packages may also be obtained in person from the Division of Engineering at 2325 South Avenue, Scotch Plains, New Jersey 07076 between 8:30 a.m. and 4:00 p.m. weekdays upon payment of a non-refundable money order or bank check in the amount of \$275.00 made payable to the County of Union. No Personal / Company checks will be accepted. Requests for mailing of specifications will not be honored. For further information please call 908-789-3675.

The County reserves the right to reject any and all bids and to waive any and all informalities in the bid in accordance with the New Jersey Local Public Contracts Law.

***Public access to the County of Union Administration Building is currently restricted during the statewide public health emergency. Accordingly there will not be an in-person public opening but instead will be conducted live and streamed via the County of Union live streaming platform which will feature both audio and video capabilities. A link will be provided on the day of the opening at <https://ucnj.org/>.

Bidders on this project are required to be pre-classified by the State of NJ, Division of Property Management and Construction (DPMC) under classifications #C009 (General Construction/Alterations & Additions), #C029 (Structural Steel & Ornamental Iron) #C030 (Plumbing), #C032 (HVAC/R), #C045 (Sprinkler Systems), #C047 (Electrical), as well as other documentary requirements in the INSTRUCTION TO BIDDERS found in the bid specification. If the Bidder himself does not have the required classification(s) as stated above, the Bidder must include and identify a subcontractor(s), of any tier, who has the required classification(s) in the List of Subcontractors.

Bids shall be submitted in a sealed envelope and clearly marked with the subject of the bid, name and address of the bidder, phone & fax number, and date of the bid opening. Each bid must be delivered to reach the Division of Purchasing prior to the stated time of the opening of the bids. The County will not be responsible for late delivery by the U.S. Mail or any other carrier. Hand delivery of proposals are strongly discouraged due to public restrictions. If delivered by hand, you will not receive confirmation of delivery. **No** late bids will be accepted.

Bidders are required to comply with the requirements of N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27.

***Entire bid packages received will be scanned and available for public inspection on the portal, <http://ucnj.org/itb>, as they would be available for public inspection after an in-person bid opening. Bidders are reminded to review their submissions for any information they consider to be confidential. The County will not be responsible for the release of any information contained in the bid package which may be subject to confidentiality.

MICHELLE HAGOPIAN, ASSISTANT DIRECTOR OF PURCHASING

Union County Board of County Commissioners

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NB-1

**County Clerk Office Renovation,
City of Elizabeth, Count of Union,
New Jersey
BA# 44 -2021; UNION COUNTY ENGINEERING PROJECT #2017-009**

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- Bid Document Submission Checklist
- Bidding Documents
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- Contractor Business Registration Certificate
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- Collection of Use Tax on Sales to Local Governments Statement
- Time of Completion
- Disclosure of Investment Activities in Iran

STANDARD SPECIFICATION FORM - SS-1

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR AIA DOCUMENT A-101/2017
(Draft form until contract is awarded)

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION AIA DOCUMENT A-201/2017
(Draft form until contract is awarded)

NEW JERSEY PREVAILING WAGE DETERMINATION DOCUMENTS

PROJECT TECHNICAL SPECIFICATIONS

**UNION COUNTY BOARD OF COUNTY COMMISSIONERS
INSTRUCTIONS TO BIDDERS AND FORMS**

DEFINITIONS

Wherever reference is made to the County, Title of Project, Bidder, or Vendor/Contractor they shall be as follows:

OWNER/COUNTY:

Union County Board of County Commissioners
UC Administration Building, 6th Floor
10 Elizabethtown Plaza
Elizabeth, New Jersey 07207

ADDRESS INQUIRIES TO:

Union County Division of Purchasing
UC Administration Building, 3rd Floor
10 Elizabethtown Plaza
Elizabeth, NJ 07207
Attn: Michelle Hagopian, Assistant Director, Division of Purchasing
Telephone: 908-527-4130
Facsimile: 908-558-2548
ucbids@ucnj.org

ADDRESS BIDS AND SUBMIT TO:

Union County Division of Purchasing
UC Administration Building, 3rd Floor
10 Elizabethtown Plaza
Elizabeth, NJ 07207
Attn: Michele Hagopian, Assistant Director, Division of Purchasing
Telephone: 908-527-4130
Facsimile: 908-558-2548

**TITLE OF PROJECT: County Clerk Office Renovation,
City of Elizabeth, Count of Union, New Jersey
BA# 44-2021; UNION COUNTY ENGINEERING PROJECT #2017-009**

BIDDER: Bidder shall be a single overall contract bidder

ARCHITECT: The Musial Group

COUNTY ENGINEER AND/OR CONSTRUCTION MANAGER (as applicable):

COUNTY ENGINEER:

Thomas O. Mineo, P.E.
Union County
Division of Engineering
2325 South Avenue
Scotch Plains, NJ 07076
Office: (908) 789-3675
Facsimile: (908) 789-3674
Email: tmineo@ucnj.org

GENERAL SPECIFICATIONS

1. BID FORM

Bids for this Work will be enclosed in a sealed envelope addressed to the Purchasing Division, County of Union, New Jersey, Union County Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey 07207, with the full name of the Project clearly marked on the outside. Refer to the sheet marked "Notice of Bid (Advertisement)" for the correct name of the Project. Bidders must submit their bids on the attached pricing sheet (Bid Form), in a sealed envelope addressed to the County and bearing on the outside: the name of the Bidder, Bidder's business address, and the title of the Project.

The Division of Purchasing will receive the bids for this Work at the Union County Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey on the date and time noted on the sheet marked "**Notice of Bid (Advertisement)**".

The County will not assume responsibility for bids forwarded by mail. It is the individual's responsibility to see that the bids are presented to the Purchasing Division at the time and at the place designated.

Bids will be accepted only on the Bid Form supplied. Bids on forms other than the original supplied herein will be rejected. The "complete" Bid Documents includes the Bid Bond, Bid Form, Bidder's Checklist, Consent of Surety, Ownership Disclosure Certification, Non-Collusion Affidavit, and any other documents noted in these Instructions to Bidders or Contract Document to be submitted with this Bid.

The bidder will state in the bidding sheet the price per unit of measure for each scheduled Item of Work for which he will agree to carry out the Work, and the Total Bid Price for the construction of the Project.

The prices in the Bid Form shall be typed or written in pen and ink. Erasures or alterations must be initialed by the bidder in ink.

The bidding sheet for this Project may include a fixed amount as a Bid Allowance. If applicable, all bidders are required to add this fixed amount to their base bid and to include this additional amount in their Bid Bond. This sum will be included in the Contract as well as the performance, labor and materials bond. Payment by the County will be made to the Contractor from these funds only upon the completion of extra Work pursuant to a written Change Order(s) signed by the County's Engineer or his designee and the Contractor, prior to the commencement of such Work. Work commenced prior to written approval by the County shall be done at Contactor's risk.

Such payment will only be in the amount agreed to by the parties, in writing in the Change Order(s). See Section 37, Change Orders, of these general specifications for further details.

Refer to Bid Document Submission Checklist for all required documents.

In the event there is a discrepancy between the unit price given and the extended total, the unit price will govern. Any discrepancies will be mathematically adjusted.

Insert applicable alternates, if any have been specified, applicable to the Bidder's Work. All alternates MUST be bid upon. Any Bidder's failure to do so will be deemed a material, non-waivable defect and shall render the bid nonresponsive. The Bidder shall clearly designate whether the change in price is an addition or subtraction, by using either a "+" sign or the word "addition", or in the alternative, a "-" sign or the word "minus". If there is no other change in price, the Bidder shall insert "NC" or "No Charge".

When two or more low bids are equal in all respects, awards will be made according to the provisions of N.J.S.A. 40A:11-6.1(d).

Where unit prices have already been established by the Contract Documents, the Bidder agrees that such unit prices shall prevail. All unit prices, whether filled in by the Bidder or established by the Contract Documents, shall become part of the Contract. No bid will be considered or award made, unless applicable unit prices, as required, are filled in.

The County reserves the right to reject any or all bids and also reserves the right to waive any minor informalities or non-material exceptions in the bids.

The County of Union has the right to reject any and all bids from any bidder that is in, or contemplates bankruptcy of any chapter of nature. Said bidder shall notify the County, in writing, of any condition or knowledge of the same.

Conditional bids will not be accepted. Bids may be withdrawn prior to the advertised time for the opening of bids or authorized postponement thereof or in accordance with the provisions of N.J.S.A. 40A:11-23.3 discussed below. Bids received after the advertised time shall not be considered. Bidders shall be solely responsible for premature opening or late delivery of bids not properly marked, addressed, or directed.

2. WITHDRAWAL OF BID DUE TO MISTAKE

N.J.S.A. 40A:11-23.3 authorizes a bidder to request withdrawal of a public works bid due to a mistake on the part of the bidder. A mistake is defined by N.J.S.A. 40A:11-2(42) as a clerical error that is an **unintentional and substantial computational error or an unintentional omission of a substantial quantity of labor, material, or both, from the final bid computation.**

A bidder claiming a mistake under N.J.S.A. 40A:11-23.3 must submit a request for withdrawal, **in writing**, by certified or registered mail to Michele Hagopian, Assistant Director, Division of Purchasing, County of Union, New Jersey, Union County Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey 07207. The bidder must request withdrawal of a bid due to a mistake, as defined by the law, within five business days after the receipt and opening of the bids. Since the bid withdrawal request shall be effective as of the postmark of the certified or registered mailing, Michele Hagopian, Assistant Director of the Division of Purchasing or his designee may contact all bidders, after bids are opened, to ascertain if any bidders wish to, or already have exercised a request to withdraw their bid pursuant to N.J.S.A. 40A:11-23.3.

A bidder's request to withdraw the bid **shall** contain evidence, including any pertinent documents, demonstrating that a mistake was made. Such documents and relevant written information shall be reviewed and evaluated by the County's designated staff pursuant to the statutory criteria of N.J.S.A. 40A:11-23.3.

The County will not consider any written request for a bid withdrawal for a mistake, as defined by N.J.S.A. 40A:11-2(42), by a bidder in the preparation of a bid proposal unless the postmark of the certified or registered mailing is within the five business days following the opening of bids.

3. QUALIFICATIONS OF BIDDERS AND REQUIRED SUBMISSIONS

The County may make such investigation as it deems necessary to determine the ability of the Bidders to perform the Work, which includes investigation of any and all subcontractors listed with the bid. The Bidder shall furnish any information and data for this purpose as the County may request.

4. INTERPRETATIONS AND ADDENDA

Any explanation desired by a bidder regarding the meaning or interpretation of the Contract Documents must be requested in writing to the County Engineer or Design Professional as the case may be and with reasonable time allowed for a reply to reach bidders before submission of their bids. Any interpretation or instruction made by the County Engineer will be in the form of an addendum to the Contract Documents or clarification and will be furnished to all prospective bidders. Oral explanations or instructions given before the award of the Contract will not be binding. Bidders are required to bring to the attention of the County Engineer, the discovery of any apparent ambiguity, inconsistency, error, discrepancy, omission in the Contract Documents for interpretation and correction at least ten (10) working days before opening of bids with the exception of Saturdays, Sundays and holidays.

All Addenda issued through the Offices of the County Engineer are amendments to the Contract Documents and shall be considered in preparing bids. Same shall become part of the Contract Documents.

Addenda take precedence over all earlier documents and over each other according to the latest date. Addenda unless themselves interpretive remain subject to interpretation the same as any other document incorporated in the Contract.

Addenda may be issued by the County Engineer up to seven (7) working days prior to the opening of bids. Failure of any bidder to receive an addendum shall not relieve such bidder from the obligation imposed by such addendum. Bidders are to keep themselves currently acquainted with the Contract Documents during the entire bidding period and make inquiry on their own initiative as to issuance of any Addenda. Receipts of all Addenda shall be acknowledged on the “*Acknowledgement of Receipt of Changes*” included in the bid package and must be submitted with the bid.

5. OBLIGATION OF BIDDER TO INSPECT SITE AND CONTRACT DOCUMENTS

At the time of the opening of bids, each Bidder will be presumed to have inspected the site(s) and to have read, and be thoroughly familiar with the Contract Documents. The failure or neglect of any Bidder to receive or examine any form, instrument, or document shall in no way relieve any Bidder from any obligation in respect to its bid.

The Bidder shall examine the contents of the Project Manual and the set of Drawings and assure itself that all pages of the Specifications, Drawings, and other Contract Documents are included in the documents obtained for bidding purposes. Should the Specifications, Drawings, and other Contract Documents be incomplete, the Bidder shall notify the County Engineer in writing, who will supply the Bidder with any missing pages of Specifications, Drawings, or other Contract Documents. The lack of such written notification by the Bidder will be construed as evidence that the Specifications, Drawings, or other Contract Documents supplied it for bidding purposes are full and complete and as a waiver of any subsequent claim to the contrary.

6. BID AND PERFORMANCE GUARANTEE

Each bidder must furnish a Bid Bond, Certified Check or Bank Cashier’s Check in the amount of ten percent (10%) of the Bid. Checks shall be drawn to the order of the County of Union, New Jersey, not to exceed \$20,000.

Each bidder must furnish with the bid a certificate from a Surety Company, i.e. Consent of Surety, stating that in the event of the contract being awarded to said bidder, such Surety Company will provide the Contractor with bonds guaranteeing the faithful performance of the Work in accordance with the plans and specifications, and the payment for labor, materials, and all other indebtedness which may accrue on the account of this Work. A Performance, Labor and Materials Bond will be furnished by the Contractor upon an award of Contract, and will be in the amount of 100% of the contract price.

A one-year Maintenance Bond will be required upon acceptance of the Project by the County in the amount as stated in Section 15 of the General Specifications. Bonds will be written by a firm authorized to issue the bonds under the laws of the State of New Jersey and be in a form acceptable to the County Counsel.

N.J.S.A. 40A:11-1 et seq. allows the prime Contractor to furnish the Performance Security for his Subcontractors. The County of Union requires Performance Security to be furnished by the prime contractor for the entire job in the total amount of the contract.

The County will return all certified checks or cashier's checks after the proposals have been opened, tabulated and reviewed except those of the three (3) bidders lowest responsible bidders. The County will return the checks of these bidders when a contract is awarded to the successful bidder within ten (10) days after the award of the contract.

If the successful bidder refuses or neglects to sign an agreement and furnish the required bonds, the Bid Bond will be held and used by the County to offset any damages for such refusal or neglect.

7. COMMENCEMENT AND COMPLETION

Work will not commence until a Notice to Proceed is received from the County Engineer.

Upon substantial completion of the Project, the Contractor must request a joint inspection with the County Engineer. Upon completion of this inspection, the County Engineer will prepare a list of incomplete or incorrect items (punch list) and have Contractor initial and date same. The Contractor shall rectify all deficiencies noted on the punch list within 30 calendar days of receipt of the list. The County Engineer may approve extensions for extenuating circumstances.

8. BIDDER AFFIDAVIT

All Bidders are required to complete, sign, and submit with their Bid, the attached "Affidavit Regarding List of Debarred, Suspended or Disqualified Bidders". (See form enclosed)

9. . LABOR AND MATERIALS

The prices will cover all costs of any nature incident to and growing out of the Work, including all labor, material, equipment, transportation, loss by damage or destruction of the Project, settlement of damages, and for replacement of defective work or materials. N.J.S.A. 54:32B-1 et seq. exempts all materials sold to the County of Union from sales or use taxes and should not be included in the prices provided on the Bidding Sheet.

11. INSURANCE REQUIREMENTS

The County of Union requires all contractors to be able to comply with the following insurance requirements. In the event a bid is accepted by the County, the contractor must accept the applicable insurance requirements, as set forth below, as part of any contract awarded to it by the County.

Contractor shall carry and maintain at all times while the contract is in full force and effect, the following insurance coverage with an insurance company or companies acceptable to the County, with limits not less than those shown below. A Certificate of Insurance shall be filed with the County prior to commencement of any Work indicating the following:

- a) Commercial General Liability (CGL): Coverage for all operations including, but not limited to, contractual, products and completed operations, and personal injury with limits no less than \$5,000,000 per occurrence/\$10,000,000 aggregate. The County of Union, its Board of County Commissioners, officers, employees, agents and servants shall be included as an additional insured. Coverage is provided on a primary and non-contributory basis to the County of Union, et al.
- b) Automobile Liability: Coverage for all owned, non-owned and hired vehicles with limits not less than \$5,000,000 per occurrence, combined single limits (CSL) or its equivalent.
- c) Workers Compensation: As required by the State of New Jersey and Employers Liability with limits not less than \$1,000,000 per accident for bodily injury or disease.
- d) Professional Liability (if design/build): Coverage with limits not less than \$1,000,000 per occurrence or claim, \$2,000,000 aggregate
- e) Contractor's Pollution Legal Liability and/or Asbestos Legal Liability and/or Errors & Omissions (if project involves environmental hazards): Coverage with limits no less than \$1,000,000 per occurrence or claim/\$2,000,000 aggregate.

- f) Builders Risk (for major renovations): During the course of construction utilizing an “All Risk” coverage form with limits equal to the completed value of the project and no coinsurance penalty provisions.

Where applicable, a waiver of subrogation in favor of the County of Union, its Board of County Commissioners, officers, employees, agents, servants and the State of New Jersey is to be included in those policies of insurance where permitted by law.

Notice of Cancellation: Each insurance policy required above shall provide that coverage shall not be canceled, except with notice to the Entity.

Special Risks or Circumstances: The County reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

12. INDEMNIFICATION REQUIREMENTS

The County of Union requires all bidders to accept the following indemnification requirements in the event the County accepts their bid. The Contract awarded by the County to the successful bidder will contain the following provision:

“To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the owner and the owner’s consultants, agents, representatives, and employees from and against any and all claims, damages, losses, costs, and expenses, including, but not limited to attorneys’ fees, legal costs and legal expenses arising out of or resulting from the performance of the Contractor’s work under this contract, provided that such claim, damage, loss, cost, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) caused or alleged to be caused by the negligent acts, negligent omissions, and/or fault of the Contractor, anyone directly or indirectly employed or retained by the Contractor, or anyone for whose acts the Contractor may be liable regardless of whether caused in part by the negligent act or omission of a party indemnified hereunder provided it is not caused by the sole negligence of a party indemnified hereunder. Contractor shall further indemnify and hold harmless the County and the County’s consultants, agents, representative, and employees from and against any and all claims, damages, losses, costs, and expenses, including, but not limited to attorneys’ fees, legal costs and legal expenses, arising out of or resulting from performance of the work, provided that such claim, damage, loss, cost, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) caused or alleged to be caused by the negligent acts, negligent omissions, and/or fault of the County or the County’s consultants, agents, representatives, or employees and arises out of this project and provided such claim, damage, loss, cost, or expense is not caused by the sole negligence of a party indemnified hereunder.”

13. ROYALTIES AND PATENTS

The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall hold the County harmless from loss on account thereof.

14. PLANS AND SPECIFICATIONS

In carrying out the Work, the plan(s) and the specifications will be followed by the Contractor. Minor alterations in the plan may be made or permitted by the County Engineer from time to time and, if no additional Work is necessary, there will be no additional charge for carrying out such minor alterations.

The Contractor shall provide the County Engineer a set of reproducible as-built drawings upon completion of the Project. The Contractor shall maintain an updated construction progress plan in the Project field office at all times.

When applicable, The New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, as amended, and Supplemental Specifications for State Aid Projects, herein after referred to as the "Standard Specifications", are made a part of these specifications and contract for the improvements, and will govern the construction of this Project, the material used and the execution of this Project, except as revised and modified herein. The references to these specifications are given herein for the purpose of aiding in the rapid location of the description of the various items herein specified. The entire Work must be carried on and completed to the satisfaction of the County. The Standard Specifications are amended as follows:

"Any reference to the Commissioner, Department, Department Laboratory, Engineer or Inspector should be redefined to be the County of Union".

15. GUARANTEE AGAINST DEFECTIVE WORK

Prior to final payment being made or before the release of the performance security required by Section 3 above, the Contractor and Surety shall execute and deliver to the County an original Maintenance Bond with an original signature and seal having a penal sum equal to:

- A) One hundred percent (100%) of the final adjusted Contract amount, if such amount is \$50,000.00 or less;
- B) Fifty percent (50%) of the final adjusted Contract amount, if such amount be greater than \$50,000.00 but less than \$250,000.00; and,
- C) Twenty-five percent (25%) of the final adjusted contract amount, if such amount is \$250,000.00 or more.

The Bond and Surety shall be satisfactory to the Union County Counsel. The Surety shall hold a Certificate of Authorization to do business in the State of New Jersey and shall conform to P.L. 1995 c.384, codified as N.J.S.A. 2A:44-143, 144. The Surety Disclosure Statement and Certification required by N.J.S.A. 2A: 44-143, 144, shall be attached to the Bond. Such Maintenance Bond shall remain in full force and effect for a period of one (1) year from the date of Final Completion. Such Maintenance Bond shall also provide that the Contractor and the Surety guarantee to replace for the said period of one (1) year from the date of Final Completion, all Work performed and/or all materials furnished that were not performed or were not furnished in accordance to the terms and performance requirements of the Contract Documents, and will make good any defects thereof which become apparent before the expiration of one (1) year. If, during that period, any part of the Project, in the judgment of the Engineer, is found defective, the Contractor will repair or replace same within five (5) days of receipt of notice from the County Engineer. If the Contractor refuses or neglects to do such Work in the time specified, the County Engineer may have the Work done by others and the Contractor or his Surety thereof will pay the cost.

The Contractor will furnish the County a Maintenance Bond for a percentage of the final adjusted contract price, as stated above. The one (1) year period will start the day of Final Completion of Project by the County. Final payment is conditional on the receipt of a maintenance bond in a form acceptable to County Counsel.

16. TRAFFIC AND STREET MAINTENANCE

The Work must be started and performed by the Contractor in such a manner as to minimize delays to the traveling public. It must be completed in a timely fashion, with little or no inconvenience to traffic and pedestrians, where such inconvenience may be avoided.

All municipal, county, and state roadways shall remain open to traffic unless otherwise provided for in the technical specifications.

If modified traffic patterns are authorized in order to provide a safe working or traveling environment, the Contractor is responsible for providing all equipment, barrels, cones, signs, and barricades to implement the work zone and detours, unless otherwise specified in the technical specifications. All work zones and detours shall be established in accordance with the technical plans and specifications if provided or in strict compliance with the current version of the Manual for Uniform Traffic Control Devices (MUTCD). The Contractor shall obtain approval for these work zones and detour plans from the Municipal Police or applicable police agency and the Union County Bureau of Traffic Maintenance prior to implementation.

All traffic control plans shall provide for safe movement of vehicular, bicycle, and pedestrian traffic. Particular attention shall be given to requirements of the Americans with Disabilities Act.

No portion of any street or alleyway may be used for the storage of any materials or equipment without the approval of the Municipal Police or other applicable police agency. Sidewalks, gutters, drains, fire hydrants and private drives shall be maintained for their intended use unless specifically approved by the County Engineer.

Upon suspension of Work, at the end of the day or for protracted periods, the Contractor shall remove all rubbish and materials from the Work site to the approved storage/staging location. All road cuts, saw cuts, and trenches that may pose hazard to vehicular, pedestrian, or bicycle traffic, to include handicapped users, shall be filled to the surface of the roadway or sidewalk. At no time will steel plates or settled trenches be allowed at the daily suspension of Work, unless specifically approved by the County Engineer.

Use of Traffic Control Officers shall be determined by the County in accordance with the provisions of N.J.S.A. 40A:11-23.1(c). If applicable to the Project, the County shall have provided an allowance for same as set forth in the Bid Form.

With respect to pedestrian traffic, the Contractor shall install signs restricting access of the general public and, as necessary, Union County employees to the area of construction. The Contractor shall provide safe access to required areas and place physical barriers to restricted areas. These barriers may range from caution tape to actual barriers, at the direction of the County Engineer.

17. CONTRACTOR'S EMPLOYEES

The Contractor must employ only suitable and competent labor in the Work, and must remove from the Work any incompetent, unsuitable, or disorderly person upon complaint from the County Engineer.

The parties to any contract resulting from this proposal do hereby agree that the provisions of N.J.S.A. 10:2-1 through 10:2-4 (discrimination in employment on public works contracts); 34:11-56.25 et seq. (payment of prevailing rate of wages determined pursuant to N.J.S.A. 34:11-56.30 by the Commissioner), and the Rules and Regulations promulgated pursuant thereto, are hereby made a part of any contract and are binding upon them.

There will be no discrimination against any employee who is employed in the Work to be covered by any contract resulting from this bid because of age, race, creed, color, national origin, ancestry, marital status or sex.

Any person, firm, or corporation violating the provisions of this Section will be deemed and judged a disorderly person.

18. OWNERSHIP DISCLOSURES REQUIRED

Pursuant to P.L. 2016, c. 43, codified as N.J.S.A. 52:25-24.2, no corporation, partnership, or limited liability company shall be awarded any contract nor shall any agreement be entered into for the performance of any work or the furnishing of any materials or supplies the County unless prior to the receipt of the bid or accompanying the bid, of said corporation, said partnership, or said limited liability company there is submitted a statement setting forth the names and addresses of all stockholders in the corporation who own ten percent (10%) or more of its stock, of any class, or of all individual partners in the partnership who own a ten percent (10%) or greater interest therein, or of all members in the limited liability company who own a ten percent (10%) or greater interest therein, as the case may be. If one or more such stockholder or partner or member is itself a corporation or partnership or limited liability company, the stockholders holding ten percent (10%) or more of that corporation's stock, or the individual partners owning ten percent (10%) or greater interest in that partnership, or the members owning ten percent (10%) or greater interest in that limited liability company, as the case may be, shall also be listed. The disclosure shall be continued until names and addresses of every non corporate stockholder, and individual partner, and member, exceeding the ten percent (10%) ownership criteria has been listed.

To comply with this section, a bidder with any direct or indirect parent entity which is publicly traded may submit the name and address of each publicly traded entity and the name and address of each person that holds a ten percent (10%) or greater beneficial interest in the publicly traded entity as of the last annual filing with the federal Securities and Exchange Commission ("SEC") or the foreign equivalent, and, if there is any person that holds a ten percent (10%) or greater beneficial interest, also shall submit links to the websites containing the last annual filings with the federal SEC or the foreign equivalent and the relevant page numbers of the filings that contain the information on each person that holds a ten percent (10%) or greater beneficial interest.

(See forms attached)

19. NON-COLLUSION AFFIDAVIT

The Bidder shall submit with its bid either the attached completed "Non-Collusion Affidavit" or a statement of non-collusion with verbiage similar to same.

20. EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCES

The successful bidder shall be required to complete and submit an Initial Project Workforce Report, New Jersey Department of Treasury Form AA-201, upon notification

of award. Failure to submit this completed form may result in the Contract being terminated.

The successful bidder shall also be required to submit a copy of its Monthly Project Workforce Report, New Jersey Department of Treasury Form AA-202, to the New Jersey Department of Treasury's Division of Public Contracts Equal Employment Opportunity Compliance and to the Board.

21. COMPLIANCE WITH NEW JERSEY PREVAILING WAGE ACT

The County of Union, in order to fulfill the requirements of N.J.S.A. 34:11-56.25 et seq, requires that the following additional conditions be strictly followed. The bidders represent that he is not listed or is not on record in the Office of the Commissioner or the Department of Labor and Workforce Development as one who failed to pay prevailing wages in accordance with the provisions of this Act. The bidder agrees to the inclusion of a contract provision upon award which specifically requires said Contractor to fully comply with each and all of the requirements of the aforesaid Act as it relates to prevailing rates of wages on public contracts as set forth in the New Jersey Prevailing Wage Act, P.L. 1963, Chapter 150 and P.L. 1974, Chapter 64.

A Copy of the Prevailing Wage Rates is attached for your reference. Applicable rates are those wages and fringe benefit rates in effect on the date the contract is awarded. All predetermined rate increases listed at the time the contract award must also be paid, beginning on the dates specified. Rates may change between the time of issuance of this determination and the award of the public works contract. Therefore, prior to the award of the contract, verification must be made with the Public Contracts section, to insure that the rates contained in this determination are still prevailing.

The Contractor agrees to abide and be bound by each and all of the said statutory provisions with respect to the payment of prevailing rates of wages, and acknowledges that the County reserves the right to terminate the Contractor's (or his subcontractors') right to proceed with the scope of Work, or such portion thereof that relates to the failure to pay prevailing rates of wages. In such event or under the terms of N.J.S.A. 34:11-56.27, the Contractor and his surety will be liable to the County of Union for any excess costs occasioned by such a violation.

The Contractor or subcontractors for this Project will post the Prevailing Wage Rates for each craft and classification involved as determined by the Commissioner of Labor and Industry, including the effective date of any changes thereof, in prominent and easily accessible places at the site of the Work or at such place or places as are used by them to pay workmen their wages.

The County of Union requires a copy of payroll records from the Contractor and subcontractors. Payroll records shall be submitted with each voucher request for

payment. Prevailing wage rates may be obtained from the New Jersey Labor, Division of Workplace Standards, Public Contracts Section, (609-292-2259).

In addition to compliance with the New Jersey Prevailing Wage Act, the County requires compliance with procedures established by Resolution No. 2014-0408 adopted by the Union County Board of County Commissioners on May 8, 2014. The resolution is furnished in Section 51 of these General Specifications.

UNION LABOR IS PREFERRED ON ALL COUNTY WORK

The foregoing reference to specific laws will not be deemed to be a limitation of obligation of the Contractor to perform his obligations in full compliance with the provisions and requirements of all federal and state statutes and local ordinances applicable to the Work to be done under the contract.

It is agreed and understood that any contracts and/or orders placed as a result of this proposal will be governed and construed and the rights and obligations of the parties hereto will be determined in accordance with the laws of the State of New Jersey.

Upon completion of the Work, the Contractor will furnish a Certification of Compliance with the New Jersey Prevailing Wage Act. The certificate in a form acceptable to County Counsel is a condition of the final payment. (See form attached)

22. BRAND NAME OR EQUAL

When the Specifications, Forms, and other Contract Documents use “brand name or equivalent” or similar language, the listed brand name shall serve as a reference or point of comparison for the functional or operational characteristic desired for the goods or services being requested. Where a bidder attempts to submit an equivalent product for a brand name, it shall be the responsibility of the bidder to fully describe and document the product to be provided with the bid in order to establish the equivalence claim.

- A. If the Bidder proposes to offer substitute goods as an equal to those specified herein, the bidder shall so indicate with the Bid Proposal. For the purposes of this paragraph, a proposed item shall be considered equal to goods specified herein if:
 - 1. The County, in its sole discretion, determines that: (i) the goods conform substantially, even with deviations, to the brand name goods specified herein; (ii) the goods are equal to or greater than the brand name goods specified herein in terms of quality, durability, functionality,

appearance, strength and design; (iii) the goods are capable, at least as well as the brand name goods specified herein, or performing with existing equipment; and (iv) the goods do not cost the County more than the brand name goods specified herein costs the County.

- B. To offer substitute goods as an equal to those specified herein, it is necessary that:
1. The Bidder submits sufficient information with its bid to permit the County to determine that the goods are equivalent to the brand name goods specified herein, including, but not necessarily limited to the brand, catalog number and specifications/data sheets;
 2. The Bidder fully identifies and describes the variations of the goods from the brand name goods specified herein on a separate sheet that is to be submitted with the bid proposal. Bidder's literature WILL NOT suffice in explaining exceptions to these specifications.
 3. The Bidder certifies that the goods (i) are similar in substance to the brand name goods specified, and (ii) are suited to the same use as the item specified;
- C. The County shall be allowed a reasonable time within which to evaluate the Bidder's proposal to offer substitute goods as an equal to those specified herein. The County shall be the sole judge of acceptability. No "or-equal" goods shall be ordered, delivered, assembled, set-up or utilized until the County's evaluation is complete. The County's determination as to equivalency shall be deemed final and absolute.

In the event the Bidder does not provide sufficient supporting documentation with the bid, it will be presumed and required that the brand name goods and services as described in the specifications will be provided.

23. LINES AND GRADES

Normally, horizontal and vertical control points will be provided in the technical specifications. All other surveying will be the responsibility of the Contractor unless otherwise noted.

24. NUMBER OF WORKING DAYS

In accordance with N.J.S.A. 40A:11-17, the Work for the within Project shall be completed as specified on the Time of Completion Form. See form attached

There shall be taken a deduction from the contract price, or any wages paid by the County, to any inspector(s) necessarily employed by it on the Work, for any number of days in excess of the number allowed in the specifications.

25. PROMPT PAYMENT OF CONSTRUCTION CONTRACTS (NJ Prompt Payment Act)

Pursuant to N.J.S.A. 2A:30A-1 et seq., payment to the Contractor, other than for Work done pursuant to a contact allowance, where applicable, shall be processed and paid as follows:

1. All contractor bills shall be either approved for payment, or notice provided as to why the bill or any portion of it will not be approved by the representative(s) of the governing body no later than the public meeting following 20 calendar days of the billing date as defined in the statute.
2. If the billing is approved, said bill shall be paid in the payment cycle following the meeting.

26. STOPPING WORK ON ACCOUNT OF BAD WEATHER

Work must only be performed in weather suitable for the type of construction planned or underway. Extremes in temperature, humidity, precipitation, evaporation, etc. can detrimentally affect the constructed product. Refer to the Standard and Technical Specifications for specific items.

27. ACCESS FOR OTHER CONTRACTORS

The Contractor for this Work will give proper access to other contractors who may be employed upon the Project and must not hinder or delay unnecessarily any Work that may be progressing under other contracts.

28. CONDEMNED MATERIALS AND WORK

Any materials and or part of the Work that may be condemned by the County Engineer will be removed and replaced by the Contractor or otherwise rectified, as may be directed by the County Engineer. No payment will be made upon the Work until such faulty work has been made good as may be directed. In the event the Contractor

refuses or neglects to make good such faulty work, he will be deemed to have abandoned the contract and proceedings may be taken against him as provided herein.

29. STORAGE

In the event that it is necessary for the Contractor to stockpile or store materials or equipment on the job site, the Contractor shall inform the County of such necessity and the County may offer available space, if any, for storage of such materials or equipment. The Contractor shall use said space only for such purpose. Any and all materials which may be stored in such space or which may be brought onto the job site at any time by the Contractor will be at the Contractor's sole risk. The County will not be responsible for loss of or damage to said materials or equipment for any cause whatsoever. The Contractor shall take necessary measures to protect any such storage area and shall be responsible for any and all damages.

30. FINAL CLEAN UP

Upon completion of the Work, the Contractor will remove all equipment, unused materials, rubbish, etc., and will repair, or replace in an a manner acceptable to the County Engineer, all areas that may have been damaged in the prosecution of the Work. Same shall be a condition precedent to final payment. Should said Contractor fail to comply with this requirement, the County shall undertake the clean-up with its own forces and charge the cost of same against the Contractor's contract balance.

31. SUB-LETTING OF WORK

Except for the List of Subcontractors, pursuant to N.J.S.A. 40A:11-16 (See form attached), no portion of the Work will be sublet by the Contractor to any other entities, except with the consent of the County Engineer. A complete list of subcontractors must be submitted to the County Engineer at the preconstruction meeting. If the job does not warrant a preconstruction meeting, the Contractor must submit such list prior to the start of Work.

All Subcontractors will be subject to N.J.S.A. 34:11-56 et al.

N.J.S.A. 40A:11-16 requires the bidder to list in the bid sheets the name or names of all subcontractors involved in the following types of Work: plumbing and gas fitting and all kindred work, steam and hot water heating, ventilating apparatus, steam power plants and kindred work, electrical work, ornamental iron work, and structural steel. In addition, the County may require the identification of specific additional subcontractors. If these trades are expected to be part of the contract, such subcontractors should be listed on the "Subcontractor Identification Statement List of Subcontractors" and Bidder shall certify same on the accompanying sheet titled "Subcontractor Identification Certification". (See forms attached) **Bidder's failure to**

submit these two forms shall be considered a material defect and result in rejection of Bidder's bid. Substitutions of any listed subcontractors pursuant to N.J.S.A. 40A:11-16 will not be permitted except with the consent of the County Engineer.

32. SAFETY

The Contractor shall observe all rules and regulations of the Federal, State, and local health officials. Attention is directed to Federal, State, and local laws, rules, and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to the worker's health or safety.

The Contractor shall admit to the site, without delay and without the presentation of an inspection warrant, any inspector of OSHA or other legally responsible agency involved in safety and health administration upon presentation of proper credentials.

The Contractor shall make available to the Contractor's employees, subcontractors, the County Engineer, and the public, all information pursuant to OSHA 29 CFR Part 1926.59 of The Hazard Communication Standard 29 CFR 1910.1200, and shall also maintain a file on each job site containing all Material Safety Data Sheets (MSDS) for products in use at the Project. These Material Safety Data Sheets shall be made available to the Engineer upon request.

The Contractor shall at all times conduct the Work to provide for the safety and convenience of the general public and protection of persons and property. The safety provisions of applicable laws, OSHA regulations, building and construction codes, and the rules and regulations of the New Jersey Department of Labor and Workforce Development shall be observed.

33. QUALITY, SAFETY AND PERFORMANCE STANDARDS

All goods and services must be constructed and provided with the highest quality materials and workmanship. It is the intent of these specifications that only equipment equal to, or exceeding, the standard specified will be acceptable in order to protect the safety of the occupants of the Building.

34. MATTERS NOT MENTIONED IN CONTRACT DOCUMENTS

Any Work, material, or method, not specifically described in these specifications, but shown upon the plans of the Work, will be carried out as shown on said plan.

35. PERMITS

The Contractor will obtain all necessary permits required by law and provide the County with necessary approvals prior to commencement of permitted Work.

36. CONTRACTOR TO PROVIDE PROOF OF PAYMENT

Upon the completion of the Work, the Contractor will furnish a General Release as proof that all claims for labor, materials, etc., have been settled by the Contractor. The General Release, in a form acceptable to County Counsel, is a condition of final payment.

37. CHANGE ORDERS

The applicability of change orders and change order procedures shall comply with *N.J.S.A. 40A:11-16.7* and *N.J.A.C. 5:30-11.1 et seq.*, "Change Orders and Open End Contracts".

38. SUPPLEMENTAL WORK

In case any supplemental work is necessary, it will be performed by the Contractor at a price fixed by agreement between the Contractor and the County Engineer and approved by the County as specified in Section 36. The Contractor will do no supplemental work on any character, for which the Contractor will demand pay, except upon the written order of the County.

39. FORM OF CONTRACT

The Contract will be subject to all statutory provisions on the matter of Public Works, Public Contracts, The Law Against Discrimination, the Laws Governing Affirmative Action and Prevailing Rates of Wages under the laws of New Jersey.

The Agreements shall be executed by both parties not later than twenty-one (21) days from the date of the award by the County (Sundays and holidays excluded); however, such time frame may be extended by agreement of the parties.

40. PROGRESS PAYMENTS

Monthly progress payments will be made based on the value of labor and materials incorporated in the Work and of materials suitably stored at the site. An itemized schedule of values shall be submitted with each Application for Payment.

(Refer to the Owner/Contractor Agreement for Retainage and other conditions pertaining to payment and the application of *N.J.S.A. 2A:30A-1 et seq.*)

All Applications for Payment shall be accompanied by paid invoices for materials incorporated in the Work and for materials suitably stored at the site, and affidavit(s) by Subcontractors whose Work was included in the next to the last application to the effect such Work and such materials have been paid for.

No payment shall be made without Contractor having provided all submittals set forth in this Section, and the approval of same by the County.

For contracts exceeding \$100,000.00, monthly payments will be made on the Work to the extent of 98% of the value of the Work done which is considered to be retainage.

For contracts less than \$100,000.00, monthly payments will be on the Work to the extent of 90% of the value of the Work done. In lieu of the retainage, the Contractor will, at his option, deposit with the County Counsel negotiable bearer bonds of the State of New Jersey or any political subdivision thereof, equal to the amount otherwise withheld as retainage.

When the Project is completed, the final cost of the Project will be based on actual quantities of authorized Work done under each item scheduled in the bidding sheet and approved Change Orders, if any. The money due to the Contractor as determined by said final certificate after deduction of previous monthly payments on account, will be paid to the Contractor in accordance with the terms of the contract dealing with Prompt Payment, providing, however that before such final payment is made, all outstanding claims against the Contractor must be satisfied. Before final payment is released, the Contractor must furnish: **a)** Maintenance Bond (see Section 6 of these general specifications); **b)** Certification of Compliance, New Jersey Prevailing Wage Act (see Sections 21 and 51); and **c)** General Release (see Section 36) in a form satisfactory to County Counsel; **d)** complete set of as-built plans in the latest AutoCad on compact disc; and **e)** a complete set of in-progress photos in jpg, jpeg, or bmp digital format on a compact disc.

41. INSPECTION

The Work must be done in accordance with the plans and specifications, and will be inspected by the County Engineer. An inspector may be placed upon the Work at any time by the County Engineer to see that the plans, specifications, and instructions of the County Engineer are carried out. In connection herewith, bidders are referred to N.J.S.A. 40A:11-17.

42. DAMAGES

The Contractor will be held responsible for all damages that may occur to Work, or to persons or property by reason of the nature of the Work or from the elements, or by reason of inadequate protection of the Work, or from any carelessness or negligence on his part or on the part of his employees. The County will withhold payments on the Work until all suits or claims for damages sustained on, or by reason of, this Work will have been settled by the Contractor.

The construction and final completion of this Work will be guaranteed by the Contractor. Any damages that may be done to the Work or any part thereof, by the elements or otherwise, during its construction, will be made good by the Contractor.

43. LIQUIDATED DAMAGES

If the Project is not completed within the time specified herein or within such further time as may have been granted by the County Engineer, then the Contractor hereby agrees to pay to the County as liquidated damages, but not as a penalty, \$1,000.00 per day for each and every calendar day that he is in default on time to complete the Work. The said sum will be deducted from moneys due the Contractor and if the damages exceed this amount, then the Contractor or his Surety Company will pay the excess. These damages may be waived at the option of the County.

44. AFFIRMATIVE ACTION REQUIREMENTS

EXHIBIT B (Revised 4/10)

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE N.J.S.A. 10:5-31 et seq. (P.L. 1975, C. 127) N.J.A.C. 17:27

CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, up-grading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. 17:27-7.2; provided, however, that the Division may, in its discretion, exempt a contractor or subcontractor from

compliance with the good faith procedures prescribed by the following provisions, A, B and C, as long as the Division is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Division, that its percentage of active "card carrying" members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

(A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et. seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees to afford equal employment opportunities minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines that the union is not referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

(B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:

(1) To notify the public agency compliance officer, the Division, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;

(2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;

(3) Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;

(4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;

(5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;

(6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

(i) The contractor or subcontractor shall interview the referred minority or women worker.

(ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Division. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below.

(iii) The name of any interested women or minority individual shall be maintained on a waiting list, and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Division, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.

(iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Division.

(7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Division and submitted promptly to the Division upon request.

(C) The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall

not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Division an initial project workforce report (Form AA 201) electronically provided to the public agency by the Division, through its website, for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Division and to the public agency compliance officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and/or off-the-job programs for outreach and training of minorities and women.

(D) The contractor and its subcontractors shall furnish such reports or other documents to the Division of Public Contracts Equal Employment Opportunity Compliance as may be requested by the Division from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Public Contracts Equal Employment Opportunity Compliance for conducting a compliance investigation pursuant to **Subchapter 10 of the Administrative Code (NJAC 17:27)**.

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45. INVESTMENT ACTIVITIES IN IRAN

Pursuant to *N.J.S.A. 52:32-55 et seq.*, prohibits State and local public contracts with persons or entities engaging in certain investment activities in energy or finance sectors of Iran.

46. COMPLIANCE WITH THE PUBLIC WORKS CONTRACTOR REGISTRATION ACT - (N.J.S.A. 34:11-56.48 et. seq.)

Pursuant to the above-referenced law, Bidders are required to be registered with the New Jersey Department of Labor and Workforce Development and to possess a current certificate by said Department indicating compliance with the Act prior to the time and date that bids are received. Bidders are notified of this requirement of their compliance. Such certificates or applications shall also be provided for each Subcontractor furnishing plumbing and gas fitting, steam and hot water heating and ventilating apparatus, and all kindred work, steam power plants and kindred work, electrical work, structural steel and ornamental iron work, and such other subcontractors as the specifications require relative to prior identification.

47. UTILITIES

Attention of the bidder is directed to the fact that the approximate locations of known utility structures and facilities that may be encountered within and adjacent to the limits of the Work are shown on the plans and described herein. The accuracy and completeness of this information is not guaranteed by the County Engineer and the bidder is advised to ascertain for himself all the facts concerning the location of these and other utilities.

The Contractor will not proceed with his Work until he has made diligent inquiries of all public utility and municipal officials to determine the exact location of all underground structures and pipes within the site of the Project. The Contractor will notify utility owners not less than ten (10) days in advance of the time he proposes to perform any Work that will endanger or affect their facilities in compliance with **New Jersey One-Call**. In excavating in any part of the Work, care must be taken not to remove or damage any gas, water, sewer, or other pipe, conduit, or structure, - public or private - without the concurrence of the owner and the County Engineer. The Contractor will, at his own expense, shore up, secure and maintain a continuous flow in such structures, and will keep them in repair until final acceptance of the Work.

When pipes or other structures are encountered or when the removal, relocation or protection of these utilities are necessary in carrying out the Project as planned, the Contractor will cooperate with the owner of said utilities and will permit the owners or their agents access to the site of the Work in order to relocate or protect their facilities

and not hinder or delay unnecessarily the Work of the owners in moving same. No extra allowance of payment will be made to the Contractor for the use of any materials, equipment, etc., or for the performance of any Work in connection with the moving of said structures unless the Contractor is specifically ordered by the County Engineer to furnish such materials, equipment, or services. If directed by the County Engineer to do any Work or furnish any materials or equipment, payment will be allowed the Contractor in accordance with the unit prices bid for such Work, or, if such items are not scheduled in the proposal, such Work shall be allowed "Supplemental Work" as provided in Section 39 of these general specifications. The corporations, companies, agencies or municipalities owning or controlling the utilities, and the name, and telephone numbers are listed in the beginning of the Technical Specifications.

48. MATERIAL COMPLIANCE AND SHOP DRAWINGS

The Contractor will require the manufacturer or supplier to furnish three (3) copies of Certification of Compliance with each delivery of materials, components and manufactured items for the Project. Two (2) copies will be furnished to the County Engineer; one copy will be retained by the Contractor. Certificates of Compliance will contain the following information:

1. Project to which material is consigned;
2. Name of the Contractor to which the material is supplied;
3. Kind of material supplied;
4. Quantity of material represented by the Certificate;
5. Means of identifying the consignment, such as label marking, seal number, etc.;
6. Date and method of shipment;
7. That the material is in conformity with the pertinent specifications stated in the certificate; and
8. Signature of a person having legal authority to bind the supplier.

The Contractor will submit to the County Engineer for his approval five (5) copies of complete and fully detailed shop or working drawings for those items listed in the beginning of the technical specifications.

Each drawing will identify the name of the job, location and Contractor.

All drawings will be approved in accordance with the standard specifications. Refer to the Technical Specifications for specific items.

All materials or articles used in the Work will be of American manufacture, insofar as same are available, in conformance with N.J.S.A. 40A:11-18.

49. PRECONSTRUCTION

In order to provide full coordination of this Project among the parties concerned, the County Engineer will arrange for a preconstruction meeting between the Contractor, County Engineer and other interested parties as soon as possible after the contract is executed. At this meeting the Contractor will present his proposed schedule of Work which shall be subject to review and approval of the County through its designated representatives.

50. DISPUTES UNDER THE CONTRACT

A dispute arising under the Contract shall be submitted in writing to the County Engineer with all facts and supporting data. The County Engineer will review the dispute and issue his decision or request additional facts or documentation after which he will render his decision.

In the event the dispute is not then resolved, the matter shall, pursuant to law, be submitted to mediation before being submitted to a court of competent jurisdiction venued in Union County.

The County Engineer will notify the County Counsel when a matter is to be submitted to mediation. The County Counsel will communicate with the parties and inform them of the procedures to be followed in making such a submission.

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51. **CONTRACTOR BUSINESS REGISTRATION CERTIFICATE**

Pursuant to N.J.S.A. 52:32-44, the County of Union is prohibited from entering into a contract with an entity unless the bidder/proposer/contractor, and each subcontractor that is required by law to be named in a bid/proposal/contract has a valid Business Registration Certificate on file with the Division of Revenue and Enterprise Services within the Department of the Treasury.

Prior to contract award or authorization, the contractor shall provide the County of Union with its proof of business registration and that of any named subcontractor(s).

Subcontractors named in a bid or other proposal shall provide proof of business registration to the bidder, who in turn, shall provide it to the County of Union prior to the time a contract, purchase order, or other contracting document is awarded or authorized.

During the course of contract performance:

- 1) the contractor shall not enter into a contract with a subcontractor unless the subcontractor first provides the contractor with a valid proof of business registration.
- 2) the contractor shall maintain and submit to the County of Union a list of subcontractors and their addresses that may be updated from time to time.
- 3) the contractor and any subcontractor providing goods or performing services under the contract, and each of their affiliates, shall collect and remit to the Director of the Division of Taxation in the Department of the Treasury, the use tax due pursuant to the Sales and Use Tax Act, (N.J.S.A. 54:32B-1 et seq.) on all sales of tangible personal property delivered into the State. Any questions in this regard can be directed to the Division of Taxation at (609)292-6400. Form NJ-REG can be filed online at <http://www.state.nj.us/treasury/revenue/busregcert.shtml>.

Before final payment is made under the contract, the contractor shall submit to the County of Union a complete and accurate list of all subcontractors used and their addresses.

Pursuant to N.J.S.A. 54:49-4.1, a business organization that fails to provide a copy of a business registration as required, or that provides false business registration information, shall be liable for a penalty of \$25 for each day of violation, not to exceed \$50,000, for each proof of business registration not properly provided under a contract with a contracting agency.

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52. BID PROTEST – LEGAL FEES AND COSTS

In the event a Bidder unsuccessfully challenges a Bid Submission by filing an action in a court of law concerning same, said Bidder shall be responsible for payment of reasonable legal costs and fees incurred by the County relating to said protest.

53. AMERICAN GOODS AND PRODUCTS WHERE POSSIBLE

Bidder shall comply with the requirements of N.J.S.A. 40A:11-18 and use only manufactured and farm products of the United States, wherever available, for the Project.

54. NEW JERSEY PAY-TO-PLAY REQUIREMENTS

This Contract is required by law to be publicly advertised for bids. As such, lists of political contributions pursuant to N.J.S.A. 19:44A-1 et seq. are NOT REQUIRED to be provided with the bids.

55. STATEMENT OF EQUIPMENT TO BE USED IN CONSTRUCTION

Pursuant to N.J.S.A. 40A:11-20 entitled Certificate of Bidder Showing Ability to Perform Contract, the County requires a Certification from all bidders submitting a bid showing that the Bidder owns, leases, or controls all necessary equipment required by the Project Plans and Specifications. All bidders shall provide this information at the time of the bid opening using the attached form entitled, "CERTIFICATE OF BIDDER SHOWING ABILITY TO PERFORM CONTRACT".

If the Bidder is not the actual owner of the equipment, it shall state the source from which the equipment will be obtained and shall attach a certificate from the owner or person in control of the equipment demonstrating that the equipment owner has granted the Bidder control of the requisite equipment during such time as may be necessary for completion of the portion of the contract for which the equipment is necessary.

56. NEW JERSEY SALES AND USE TAX REQUIREMENTS,

Contractors are required to comply with the following:

New Jersey Sales and Use Tax Requirements: All contractors with subcontractors, or any of their affiliates, who enter into contracts for the provision of goods or services with or for New Jersey local government entities, are required to collect and remit to the New Jersey Director of Taxation in the Department of the Treasury the use tax due on all of their sales of tangible personal property delivered into the State of New Jersey pursuant to the "Sales and Use Tax Act," (N.J.S.A. 54:32B-1 et seq.),

regardless of whether the tangible personal property is intended for a contract with the contracting agency. This tax shall be remitted for the term of the Contract.

For purposes herein "affiliate" shall mean any entity that: (a) directly, indirectly, or constructively controls another entity, (b) is directly, indirectly, or constructively controlled by another entity, or (c) is subject to the control of a common entity. For purposes of the immediately preceding sentence, an entity controls another entity if it owns, directly or indirectly, more than fifty percent (50%) of the ownership interest in that entity. NJSA 52:32-44(g)(3).

BIDDER'S NAME: _____

EDWARD T. OATMAN
COUNTY MANAGER

MICHELE HAGOPIAN, ASSISTANT DIRECTOR
DIVISION OF PURCHASING

BID DOCUMENT SUBMISSION CHECKLIST

**ALL SIGNATURES AND SEALS SHALL BE ORIGINALS UNLESS OTHERWISE SPECIFIED
BID SHEETS SHOULD NOT BE SUBMITTED DOUBLE SIDED PAGES, (SINGLE SIDE ONLY)**

EACH BIDDER SHOULD COMPLETE THIS FORM AND INITIAL EACH ENTRY.

DATE COMPLETED: _____

**PLEASE SUBMIT BID DOCUMENTS ON SINGLE SIDED PAPER ONLY, WITH THE EXCEPTION OF
THE SURETY AND BID BOND DOCUMENTS.**

**IN ACCORDANCE WITH THE BID SPECIFICATIONS I HAVE REVIEWED, COMPLETED/EXECUTED
AND INCLUDED THE FOLLOWING FORMS:**

_____ Bid Form Page (**Signed, Dated and Bid on all alternatives applicable to the Work**).

_____ Security in the form of:

_____ Bid bond in an amount equal to 10% of the total amount of this bid not to exceed \$20,000.00; or

_____ Certified check or cashier's check in the amount of 10% of this bid not to exceed \$20,000.00

_____ Consent of Surety form signed by a Surety Company if the total amount of your Bid is over \$36,000.00. If your bid is accepted, the Surety Company that provided the Consent shall be required to furnish a Performance, Labor and Materials Bond in the amount of 100% of the award of the contract.

The County of Union has provided its Consent of Surety form for your use. The use of this form by your Surety Company will expedite the bid review process and eliminate the possibility of having your bid rejected. If, however, you should need to use another form, please use language similar to that used on the Union County form and avoid making any additions or deletions to the Union County form language. In lieu of the Consent of Surety you may submit a Certified Check in the full amount of the bid.

_____ STATEMENT OF BIDDER OWNERSHIP. Pursuant to N.J.S.A. 52:25-24.2, which includes **BOTH** of the following documents:

- Bidder Signature Page
- Bidder Disclosure Statement (**Fill out 2 pages completely**)

_____ SUBCONTRACTOR IDENTIFICATION. Pursuant to N.J.S.A. 40A:11-16, which includes **BOTH** of the following documents:

- Subcontractor Identification Statement: List of Subcontractors (**only for certain types of work**)
- Subcontractor Identification Certification

_____ Acknowledgement of Addendum form: (**This form is to be used only when an addendum has been added to the specifications**).

_____ A copy of the State of New Jersey Department of the Treasury, Division of Revenue, **Business Registration Certificate ("BRC")** should be included with the bids as it must be received by the County prior to the award of the contract. The BRC provided must show that the Bidder was registered at the time of receipt of bids or the bid will be rejected.

BIDDER'S NAME: _____

_____ A copy of the State of New Jersey Department of the Treasury, Division of Revenue, **Business Registration Certificate ("BRC")** of all named or listed subcontractors (List of Subcontractors) in a Construction bid should be included with the bid as the BRC(s) must be received by the County prior to the award of the contract. Each subcontractor's certificate provided must show that the subcontractor was registered at the time of the receipt of bids or the bid will be rejected.

_____ Affirmative Action Requirement

_____ Experience Statement

_____ Certificate of Bidder showing ability to perform Contract

_____ Non-Collusion Affidavit – Fill out completely and notarize

_____ Certificates from New Jersey Department of Labor and Workforce and Workforce Development – Public Works Contractor Registration Act. **(Only for certaintypes of work)**

_____ Federal Attachments **(If applicable)**

_____ NJDPMC Certificate / Notice of Classification **(If applicable)**

_____ Americans with Disabilities Act

_____ Statement of Bidder's Qualifications

_____ Contractor Performance Record

_____ Affidavit Regarding List of Debarred, Suspended or Disqualified Bidders

_____ Prior Negative Experience Questionnaire

_____ Contractor's Certification of Compliance – New Jersey Prevailing Wage Act

_____ Uncompleted Contracts Affidavit **(For Bidder, if applicable) MUST ALSO PROVIDE DPMC FORM 701**

_____ Certificate of Insurance Statement

_____ Collection of Use Tax on Sales to Local Government Statement

_____ Time of Completion

_____ Disclosure of Investment Activities in Iran Certification Form

I HAVE TAKEN THE FOLLOWING ACTIONS:

_____ Visited the site and attended the Pre-Bid Meeting **(Where applicable)**

_____ Reviewed the Contract Documents (including any permits the County or its professionals may have obtained), Work, Site, Locality, and Local Conditions and Laws and Regulations that in any manner may affect Cost, Progress, Performance or Furnishing of Work.

_____ Reviewed Bond Requirements

_____ Provided Proof of Compliance with New Jersey Prevailing Wage Act

_____ Reviewed Form of Owner/Contractor Agreement and General Conditions to the Contract

NOTE: QUESTIONS PERTAINING TO THIS BID ARE TO BE DIRECTED TO DIVISION OF ENGINEERING AT 908-789-3675

BIDDER'S NAME: _____

BIDDING DOCUMENTS

The Bidding Documents consist of the following items:

- **ADDENDA, if issued**
- **CLARIFICATIONS, if issued**
- **INSTRUCTION TO BIDDERS**
- **BID FORM**
- **OWNER-CONTRACTOR AGREEMENT (AIA 101) AND GENERAL CONDITIONS (AIA 201)**
- **SPECIFICATIONS:** As outlined in the Table of Contents and included in the Project Manual.
- **DRAWINGS:** As per List of Drawings, indicated on the Project Title Sheet.

BIDDER'S NAME: _____

BID FORM

I/We have carefully examined the plans, specifications, and advertisement for bid for the

**County Clerk Office Renovation,
City of Elizabeth, Count of Union,
New Jersey**

BA#44-2021; UNION COUNTY ENGINEERING PROJECT #2017-009

that is on file in the Union County Division of Engineering. I/We have inspected the site of the work and will contract to do all the work and furnish all materials mentioned in said plans and specifications. Work will be accomplished in the manner prescribed therein.

LUMP SUM BID:

Written

Figures

BID CONTINGENCY: (To be used if and when directed by the County)

Three Hundred Fifty Thousand dollars and not cents
Written

\$ 350,000.00
Figures

TOTAL LUMP SUM PLUS BID CONTINGENCY AMOUNT:

Written

Figures

NOTE: Bid Contingency may include one-half of one percent of contract amount set aside for local training if and when directed by the County.

UNIT PRICES (SHALL BE FILLED IN AT TIME OF BID)

The Bid is a lump sum basis of award bid for all work. The following units prices are for changing quantities of work items from those indicated by the Contract Documents (Drawings and/or Specifications) and upon written instructions from the Architect, the following unit prices shall prevail. The unit prices may be used by the Owner and shall include all labor, installation, materials, bailing, shoring, removal, overhead, profit, insurance bond, and all incidental items required for similar work under the Specifications, and all other applicable provisions of the Contract to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the provisions set forth in the General Conditions. It is further agreed that the

BIDDER'S NAME: _____

Owner may accept or reject any or all of the submitted Unit Prices at the time the Contract is awarded, or may substitute for them prices negotiated with the Contractor as part of the contract award process or as part of future Change Orders.

ALL SPACES ARE TO BE FILLED IN WITH A DOLLAR AMOUNT. ADD-DEDUCT AMOUNT CANNOT NOT FLUCTUATE BY MORE THAN 10%.

A.	Fire Dampers:			
	1. Up to 1.5 sq. ft.	_____	_____	per unit
	2. 1.6 sq. ft to 3 sq. ft.	_____	_____	per unit
	3. Over 3 sq. ft.	_____	_____	per unit
B.	Duct Mounted Smoke detector	_____	_____	each
C.	Duplex wall receptacle (w/ 75' of wire)	_____	_____	each
D.	Junction box (w/conduit to above clg w/ pull line)	_____	_____	each
E.	Quad Data Receptacle (inst. w/ 75' cable)	_____	_____	each
F.	Single Pole Switch(inst. with 75' of wire)	_____	_____	each
G.	Low Voltage Light Switch (inst. w/ 50' of wire)	_____	_____	each
H.	Occupancy sensor (inst. w/ 75' of cable)	_____	_____	each
I.	Data Outlet (inst. with 75' of wire)	_____	_____	each
J.	Camera Location (inst. conduit & pull string only from camera location to above ceiling)	_____	_____	each
K.	Speaker (inst. with 75' of wire)	_____	_____	each
L.	Smoke Detector (inst. w/ 75' of cable)	_____	_____	each
M.	Heat Detector (inst. w/ 75' of cable)	_____	_____	each
N.	Audio Visual Alarm Device (inst. w/ 75' of cable)	_____	_____	each
O.	Fire Alarm Pull Station (inst. w/ 75' of cable)	_____	_____	each
P.	Light Fixture (All as Specified w/35' of wire)			
	Type A1	_____	_____	per unit
	Type A2	_____	_____	per unit
	Type B	_____	_____	per unit
	Type C	_____	_____	per unit
	Type D1	_____	_____	per unit
	Type D2	_____	_____	per unit
	Type E2	_____	_____	per unit
	Type F1	_____	_____	per unit
	Type G	_____	_____	per unit
	Type H	_____	_____	per unit

BIDDER'S NAME: _____

Type I	_____	_____	per unit
Type J	_____	_____	per unit
Type K	_____	_____	per unit
Type L	_____	_____	per unit
Type EM1	_____	_____	per unit
Type EX	_____	_____	per unit
P. Sprinkler Head Relocation	_____	_____	per unit
Q. New Sprinkler Head	_____	_____	per unit

BIDDER'S NAME: _____

CONSENT OF SURETY
TO ACCOMPANY PROPOSAL (BID)

_____ (hereinafter called Surety), organized and existing under the laws of the State of _____ duly authorized and qualified to transact business in the State of New Jersey, in consideration of the sum of One Dollar (\$1.00), lawful money of the United States of America, to it in hand paid, receipt whereof is hereby acknowledged, and in consideration, hereby certifies and agrees that if the contract for which the attached proposal is made be awarded to _____ (hereinafter called Contractor) for the performance of certain work and labor or the supplying of certain materials, or both, as more particularly set forth in said proposal and described for purposes of this instrument as a proposal for _____ to the COUNTY OF UNION and if Contractor shall enter into the contract, Surety will become bound as surety for its faithful performance, labor and material payment and will provide the Contractor with a performance, labor and material payment bond in the full amount of the contract price.

NOTE:
Expiration date
Needed if Annual
Surety

NAME OF INSURANCE COMPANY
ADDRESS: _____

ORIGINAL SIGNATURE
ATTORNEY-IN-FACT FOR INSURANCE CO.

NOTE: PROOF OF AUTHORITY OF OFFICERS OF SURETY COMPANY TO EXECUTE THIS DOCUMENT MUST BE SUBMITTED.

BIDDER'S NAME: _____

BIDDER SIGNATURE PAGE

THE BIDDER MUST READ THE FOLLOWING INSTRUCTIONS TO COMPLETE THIS PAGE:

1. If doing business under a **trade name, partnership or a sole proprietorship**, you must submit the bid under exact title of the trade name, partnership, or proprietorship, and the bid must be signed by either the **owner**, or a **partner** and **witnessed** by a **notary public**.
2. If a **Corporation**, the bid must be signed by the **President** or **Vice President** and **witnessed** by a **Corporate Secretary** (corporate title must be exact) and **affix corporate seal**. If a Corporate Secretary does not exist, President or Vice President's signature shall be witnessed by a Notary Public.
3. Other persons **authorized** by **corporate resolution** to execute agreements in its behalf may also sign the bid documents (pages). **Copy of a resolution must accompany the bid**.
4. The person who signs this bid form **must also** sign the **Non-Collusion Affidavit**.
5. You **cannot** witness your own signature.

NAME OF BIDDER

ADDRESS OF BIDDER

**ORIGINAL SIGNATURE
CORPORATE SECRETARY**

**PRINT NAME AND TITLE
CORPORATE SECRETARY**

TEL: _____
FAX: _____
E-Mail: _____

BY: _____
ORIGINAL SIGNATURE

Corporate Seal

PRINT OR TYPE NAME AND TITLE

WARNING: IF YOU FAIL TO FULLY, ACCURATELY, AND COMPLETELY SUPPLY THE INFORMATION REQUESTED ON THIS PAGE, YOUR BID MAY BE REJECTED.

BIDDER'S NAME: _____

STATEMENT OF OWNERSHIP DISCLOSURE

N.J.S.A. 52:25-24.2 (P.L. 1977, c.33, as amended by P.L. 2016, c.43)

This statement shall be completed, certified to, and included with all bid and proposal submissions. Failure to submit the required information is cause for automatic rejection of the bid or proposal.

Name of Organization: _____

Organization Address: _____

Part I Check the box that represents the type of business organization:

- Sole Proprietorship (skip Parts II and III, execute certification in Part IV)
- Non-Profit Corporation (skip Parts II and III, execute certification in Part IV)
- For-Profit Corporation (any type) Limited Liability Company (LLC)
- Partnership Limited Partnership Limited Liability Partnership (LLP)
- Other (be specific): _____

Part II

The list below contains the names and addresses of all stockholders in the corporation who own 10 percent or more of its stock, of any class, or of all individual partners in the partnership who own a 10 percent or greater interest therein, or of all members in the limited liability company who own a 10 percent or greater interest therein, as the case may be. **(COMPLETE THE LIST BELOW IN THIS SECTION)**

OR

No one stockholder in the corporation owns 10 percent or more of its stock, of any class, or no individual partner in the partnership owns a 10 percent or greater interest therein, or no member in the limited liability company owns a 10 percent or greater interest therein, as the case may be. **(SKIP TO PART IV)**

(Please attach additional sheets if more space is needed):

BIDDER'S NAME: _____

Name of Individual or Business Entity	Home Address (for Individuals) or Business Address

Part III DISCLOSURE OF 10% OR GREATER OWNERSHIP IN THE STOCKHOLDERS, PARTNERS OR LLC MEMBERS LISTED IN PART II

If a bidder has a direct or indirect parent entity which is publicly traded, and any person holds a 10 percent or greater beneficial interest in the publicly traded parent entity as of the last annual federal Security and Exchange Commission (SEC) or foreign equivalent filing, ownership disclosure can be met by providing links to the website(s) containing the last annual filing(s) with the federal Securities and Exchange Commission (or foreign equivalent) that contain the name and address of each person holding a 10% or greater beneficial interest in the publicly traded parent entity, along with the relevant page numbers of the filing(s) that contain the information on each such person. **Attach additional sheets if more space is needed.**

Website (URL) containing the last annual SEC (or foreign equivalent) filing	Page #'s

Please list the names and addresses of each stockholder, partner or member owning a 10 percent or greater interest in any corresponding corporation, partnership and/or limited liability company (LLC) listed in Part II **other than for any publicly traded parent entities referenced above.** The disclosure shall be continued until names and addresses of every noncorporate stockholder, and individual partner, and member exceeding the 10 percent ownership criteria established pursuant to N.J.S.A. 52:25-24.2 has been listed. **Attach additional sheets if more space is needed.**

BIDDER'S NAME: _____

Stockholder/Partner/Member and Corresponding Entity Listed in Part II	Home Address (for Individuals) or Business Address

Part IV Certification

I, being duly sworn upon my oath, hereby represent that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I acknowledge: that I am authorized to execute this certification on behalf of the bidder/proposer; that the **County of Union** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the completion of any contracts with **County of Union** to notify the **County of Union** in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the, permitting the **County of Union** to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

BIDDER'S NAME: _____

SUBCONTRACTOR IDENTIFICATION STATEMENT

LIST OF SUBCONTRACTORS

This form is ONLY required for plumbing and gas fitting, steam and hot water heating and ventilating apparatus, steam power plants, electrical work, structural steel, ornamental iron work, and any other trades required to be identified by the specifications (including, but not limited, to satisfying any DPMC Classification requirements).

CHECK THIS BOX IF NONE OF THE ABOVE LISTED TRADES OR THOSE REQUIRED TO BE IDENTIFIED IN THE SPECIFICATIONS ARE TO BE USED TO PERFORM THE WORK

In compliance with N.J.S.A. 40A:11-16 and the bid specifications, the undersigned hereby lists the name or names of the following subcontractors:

Company Name: _____

Address: _____

Telephone: _____ Subcontract Amount: \$ _____

Specific Scope of Work Subcontracted: _____

License No. _____

Company Name: _____

Address: _____

Telephone: _____ Subcontract Amount: \$ _____

Specific Scope of Work Subcontracted: _____

License No. _____

Company Name: _____

Address: _____

Telephone: _____ Subcontract Amount: \$ _____

Specific Scope of Work Subcontracted: _____

License No. _____

IF MORE THAN THREE SUBCONTRACTORS, PLEASE COPY THIS SHEET AS NECESSARY AND ATTACH TO THE BID PACKAGE.

(Continued on following page)

BIDDER'S NAME: _____

SUBCONTRACTOR IDENTIFICATION CERTIFICATION

Note the law does not permit the listing of alternate subcontractors. However, multiple subcontractors for the same trade are permitted to be named provided the bidder meets the following requirements:

- Bidder identifies each subcontractor named for that category;
- Bidder states the scope of work, goods and services (the portion of the work) to be performed by each subcontractor; and
- Bidder provides the price quote provided by each subcontractor.

The bidder is advised that any change of subcontractor(s) from ones listed herein is subject to the County's approval. Change of subcontractor(s) will be approved only if made for good cause and not as a result of an arbitrary purpose.

The undersigned Bidder certifies and declares that the subcontractors listed above shall be used as subcontractors to complete certain portions of the work in this project as set forth in N.J.S.A. 40A: 11-16.

Witness

Date _____

NAME OF BIDDER

ADDRESS

By: _____
ORIGINAL SIGNATURE ONLY

PRINT NAME AND TITLE

BIDDER'S NAME: _____

ACKNOWLEDGMENT OF ADDENDUM

COUNTY OF UNION

(Name of Construction /Public Works Project)

(Project or Bid Number)

Pursuant to N.J.S.A. 40A:11-23.1a., the undersigned bidder, hereby acknowledges receipt of the following notices, revisions, or addenda to the bid advertisement, specifications or bid documents. By indicating date of receipt, bidder acknowledges the submitted bid takes into account the provisions of the notice, revision or addendum. Note that the County of Union's record of notice to bidders shall take precedence and that failure to include provisions of changes in a bid proposal may be subject for rejection of the bid.

Local Unit Reference Number or Title of Addendum/Revision	How Received (mail, fax, pick-up, etc.)	Date Received

ACKNOWLEDGMENT BY BIDDER:

NAME OF BIDDER: _____

ORIGINAL SIGNATURE: _____

PRINTED NAME AND TITLE: _____

DATE: _____

BIDDER'S NAME: _____

CONTRACTOR BUSINESS REGISTRATION CERTIFICATE

New Mandatory Requirement - Effective 1/18/2010

The recently enacted **P.L. 2009, c.315**, requires that effective January 18, 2010; a contracting agency must receive proof of the bidder's business registration prior to the award of a contract. However, the proof must show that the bidder was in fact registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

If subcontractors are named on the bid, proof of the business registration for each subcontractor must be provided prior to the award of bid. Similarly to the bidder, the proof must show that each subcontractor was registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

Proof of business registration shall be

A copy of a Business Registration Certificate issued by the Department of the Treasury, Division of Revenue; or

A copy of the web version provided by the NJ Division of Revenue, or

Register online at www.nj.gov/treasury/revenue/taxreg.htm. Click the "online" link and then select "Register for Tax and Employer Purposes or call the Division at 609-292-1730.

Note: A NJ Certificate of Authority is not acceptable.

FAILURE to submit proof of registration of the bidder or any subcontractor named on the bid prior to the award of a contract shall be cause to reject the bids.

FAILURE of the bidder or any subcontractor named on the bid to be registered prior to the receipt of bids is cause for a **MANDATORY REJECTION** of bids. (A NON-WAIVABLE DEFECT). This covers construction work as well as non-construction bids.

IN ADDITION:

The contractor shall provide written notice to all **subcontractors and suppliers** not specifically named on the bid of the responsibility to register and submit proof of business registration to the contractor. The requirement of proof of business registration extends down through all levels (tiers) of the project.

Before final payment on the contract is made by the contracting agency, the contractor shall submit an accurate list and the proof of business registration of each subcontractor or supplier used in the fulfillment of the contract, or shall attest that no subcontractors were used.

For the term of the contract, the contractor and each of its affiliates and a subcontractor and each of its affiliates [N.J.S.A. 52:32-44(g)(3)] shall collect and remit to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act on all sales of tangible personal property delivered into this State, regardless of whether the tangible personal property is intended for a contract with a contracting agency.

A business organization that fails to provide a copy of a business registration as required pursuant to section 1 of P.L.2001,c.134 (C.52:32-44 et al.) or subsection e. or f. of section 92 of P.L.1977,c.110 (C.5:12-92), or that provides false business registration information under the requirements of either of those sections, shall be liable for a penalty of \$25 for each day of violation, not to exceed \$50,000 for each business registration copy not properly provided under a contract with a contracting agency.

BIDDER'S NAME: _____

BUSINESS REGISTRATION
Mandatory Requirement

P.L. 2009, c.315, requires that effective January 18, 2010; a contracting agency must receive proof of the bidder's business registration prior to the award of a contract. However, the proof must show that the bidder was in fact registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

If subcontractors are named on the bid, proof of the business registration for each must be provided prior to the award of a contract. Similarly to the bidder, the proof must show that each subcontractor was registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

Proof of business registration shall be:

- A copy of a Business Registration Certificate issued by the Department of Treasury, Division of Revenue; or
- A copy of the web printed version provided by the NJ Division of Revenue

STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE
FOR STATE AGENCY AND CASINO SERVICE CONTRACTORS

DEPARTMENT OF TREASURY
DIVISION OF REVENUE
PO BOX 382
TRENTON, NJ 08646

TAXPAYER NAME: TAX REGISTRATION TEST ACCOUNT
TRADE NAME: CLIENT REGISTRATION
TAXPAYER IDENTIFICATION#: 070-007-382/000
SEQUENCE NUMBER: 0107200
ADDRESS: 847 ROEBLING AVE
TRENTON NJ 08611
ISSUANCE DATE: 07/14/04
EFFECTIVE DATE: 01/01/01

For Office Use Only:
20041014112823533

ATTACH BRC HERE

BIDDER'S NAME: _____

AFFIRMATIVE ACTION REQUIREMENT

REQUIRED AFFIRMATIVE ACTION EVIDENCE

General Requirements of P.L. 1975, c. 127: You are hereby put on notice that:

CONSTRUCTION CONTRACTS: The successful contractor must submit within three (3) days of the notice of intent to award or the signing of the contract the initial project manning report (A.A.201). This report should be submitted at the time the signed contract is returned to the County of Union. Attention: *Affirmative Action Officer*.

If the successful contract does not submit the initial project manning report (A.A.201) within the three (3) days from the time the signed contract is returned to the County of Union, the County of Union WILL declare the contractor non-responsive and award the contract to the next lowest responsible bidder.

NAME OF BIDDER

ORIGINAL SIGNATURE

PRINT OR TYPE NAME AND TITLE

DATE THIS FORM IS COMPLETED

BIDDER'S NAME: _____

EXPERIENCE STATEMENT

I hereby certify that my company has performed the following private or public work, which is relevant to this bid. I further certify that my company has never defaulted under any contract. Should you not sign this form due to prior defaults, please provide details on an attached sheet.

Witness

Date

NAME OF BIDDER

ADDRESS

By: _____
ORIGINAL SIGNATURE ONLY

PRINT NAME AND TITLE

YOU MAY ATTACH ADDITIONAL SHEETS, BUT YOU MUST SIGN AND WITNESS THIS SHEET.

BIDDER'S NAME: _____

NON-COLLUSION AFFIDAVIT

(N.J.S.A. 52:34-15)

STATE OF _____)
) SS: _____
COUNTY OF _____)

I _____, of the City of _____, in the County of _____, and the State of _____, of full age, being duly sworn according to law, on my oath depose and say that: I am _____ of the firm of _____, the bidder making the proposal for the above named project, and that I executed the said proposal for the above named project, and that I executed the said proposal with full authority to do so; that said bidder has not, directly or indirectly, entered into any agreement, participation in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said proposal and in this Affidavit are true and correct, and made with full knowledge that the COUNTY OF UNION, NEW JERSEY relies upon the truth of the statements contained in said proposal and in the statements contained in the affidavit in awarding the contract for the said project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide employees or bonafide established commercial or selling agencies maintained by _____ (N.J.S.A. 52:34-15).

NAME OF BIDDER

ORIGINAL SIGNATURE ONLY

NOTE: The person who signed the bidder signature page for the bidder should sign this form also.

Subscribed and sworn before me
this _____ day of _____, 20____.

Notary Public of the State of _____
My commission expires: _____

WARNING: IF YOU FAIL TO FULLY, ACCURATELY, AND COMPLETELY FILL OUT THIS AFFIDAVIT OF NON-COLLUSION, YOUR BID MAY BE REJECTED.

BIDDER'S NAME: _____

Contractor Registration Advisement
For Public Works Projects

A new law, known as "The Public Works Contractor Registration Act" (P.L. 1999, c.238), became effective April 11, 2000. Under the Act, no contractor/subcontractor will be permitted to bid on or engage in any contract for public work, as defined in Section 2 of P.L. 1963, c.150 (C:34:11-56.26), unless that contractor/subcontractor is registered with the New Jersey Department of Labor and Workforce and Workforce Development. The Act provides that upon registration with the Department, a public works contractor/subcontractor will be issued a certificate by the Department indicating compliance with the Act's requirements. The registration fee has been set at \$300.00 per year. Upon the effective date of the Act, public bodies will be expected to request production of such a certificate from those bidding on or engaging in public works projects.

It is important to note that the term "contractor," is defined in the, Act as, "a person, partnership, association, joint stock company, trust, corporation or other legal business entity or successor thereof who enters into a contract which is subject to the provision of the "New Jersey Prevailing Wage Act," P.L. 1963, c.150 (C.34:11-56.25, et seq.) for the construction, reconstruction, demolition, alteration, repair or maintenance of a public building regularly open to and used by the general public or a public institution, and includes any subcontractor or lower tier subcontractor as defined herein: except that, for the purposes of the act, no pumping station, treatment plant or other facility associated with utility and environmental construction, reconstruction, demolition, alteration, repair or maintenance shall be regarded as a public building regularly open to and used by the general public or a public institution."

Registration forms, copies of the Act, and other relevant information can be obtained by contacting:

Contractor Registration Unit
New Jersey Department of Labor and Workforce and Workforce Development
Division of Wage & Hour Compliance
PO Box 389
Trenton, New Jersey 08625-0389
Telephone: 609-292-9464
Fax: 609-633-8591
E-mail: contreg@dol.state.nj.us

BIDDER'S NAME: _____

AMERICANS WITH DISABILITIES ACT
EQUAL OPPORTUNITY FOR INDIVIDUALS WITH DISABILITIES

The contractor and the County of Union (hereafter "Owner") do hereby agree that the provisions of Title II of the Americans With Disabilities Act of 1990 (the "Act") (42 U.S.C. S12101 et seq.), which prohibits discrimination on the basis of disability by public entities in all services, programs and activities provided or made available by public entities, and the rules and regulations promulgated pursuant thereto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the Owner pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the Owner in any action or administrative proceeding commenced pursuant to this Act. The contractor shall indemnify, protect, and save harmless the Owner, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the Owner's grievance procedure, the contractor agrees to abide by any decision of the Owner which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the Owner, or if the Owner incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

The Owner shall, as soon as practicable after a claim has been made against it, give written notice thereof to the contractor along with full and complete particulars of the claim. If any action or administrative proceeding is brought against the Owner or any of its agents, servants, and employees, the Owner shall expeditiously forward or have forwarded to the contractor every demand, complaint, notice, summons, pleading, or process received by the Owner or its representatives.

It is expressly agreed and understood that any approval by the Owner of the services provided by the contractor pursuant to this contract will not relieve the contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the Owner pursuant to this paragraph.

It is further agreed and understood that the Owner assumes no obligation to indemnify or save harmless the contractor, its agents, servants, employees and subcontractors for any claim which may arise out of their performance of this Agreement. Furthermore, the contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the contractor's obligations assumed in this Agreement, nor shall they be construed to relieve the contractor from any liability, nor preclude the Owner from taking any other actions available to it under any other provisions of this Agreement or otherwise at law.

Name _____
(Please print or type)

Signature _____ **Date** _____

BIDDER'S NAME: _____

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. Questions may be answered on separate attached sheets. The Bidder may submit any additional information it desires.

1. _____
(Name of Bidder)

2. _____
(Permanent Main Office Address)

3. _____
(When Organized)

4. _____
(If a Corporation, where incorporated)

5. Number of years your organization has been engaged in construction or contracting business under present firm or trade name? _____

6. How many years of experience in construction work has your organization had (a) as a general contractor? And/or (b) As a subcontractor? _____

7. Contracts on hand: (Attach a list or table showing gross amounts of each Contract and the appropriate dates of completion) _____

8. General character of work performed by you. _____

9. Have you ever failed to complete any work awarded to you? _____

10. Have you ever defaulted on a Contract? _____ If so, complete details, including where and why?

BIDDER'S NAME: _____

STATEMENT OF BIDDER'S QUALIFICATIONS - (continued)

11. Has any officer or partner of your organization ever failed to complete a construction contract handled in its own name? If so, state name of individual, name of owner, location and type of project, and reason for the failure to complete. _____

12. List your major equipment available for this Contract.

13. Experience in the construction work similar in importance to this Project.

14. Have you had any material adverse changes from the trades as listed in NJ Notice of Classification within last five (5) years? _____. If so, list prior classification.

15. Background and experience of the principal members of your organization, including the officers.

Individual's Name	Present Position or Office	Yrs. of Construction Experience	Magnitude & Type of Work	In What Capacity

BIDDER'S NAME: _____

16. Bank Reference. (Name, Address, Phone, Representative) _____

17. Will you, upon request, fill out a detailed financial Statement? _____

18. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the proper agency in verification of the responses comprising this Statement of Bidder's Qualifications.

19. Bidder's telephone number, fax number and e-mail address (if applicable).

Phone _____

Fax _____

E-mail _____

Mobile _____

Dated at _____ this _____ day of _____, 20__.

BIDDER (Signature)

BIDDER (Print Name)

Subscribed and sworn to before me
this _____ day of _____, 20__.

(Seal) Notary Public of New Jersey/
Specify Other State
My Commission Expires _____, 20__.

**NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL
MAY RESULT IN A REJECTION OF YOUR BID.**

BIDDER'S NAME: _____

CONTRACTOR PERFORMANCE RECORD

List all contracts completed by you below or provide separate form.

Name of Owner	Name & Location of Project: Type Of Work	Prime or Sub-Cont.	Engineer or Architect in Charge for Owner	Contract Price (Omit Cost)	Date Completed	Was Time* Extension Necessary	Were Any Penalties Imposed	Were Liens* Claims or Stop Notice Filed

* If answer is YES, provide explanation of details in connection with non-completion of contracts, time extensions, penalties imposed, labor troubles, liens, claims and notices filed against contracts listed in preceding item "Performance Record" on an attached sheet.

NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.

BIDDER'S NAME: _____

CERTIFICATION

The information above is true and complete to the best of my knowledge and belief.

(Name of Organization)

(Signature)

(Title)

Subscribed and sworn to before me
This _____ day of _____, 20____.

(Seal) Notary Public of New Jersey/
Specify Other State
My Commission Expires _____, 20____.

BIDDER'S NAME: _____

PRIOR NEGATIVE EXPERIENCE QUESTIONNAIRE

(N.J.S.A. 40A:11-4)

1. Within the past ten (10) years, have you been found, through either court adjudication, arbitration, mediation, or other contractually stipulated alternate dispute resolution mechanism, to have: failed to provide or perform goods or services; or failed to complete a contract in a timely manner; or otherwise performed unsatisfactorily under a prior contract with a public entity?

_____ yes _____ no If yes, please provide full, detailed explanation.

2. Within the past ten (10) years, have you defaulted on a contract, thereby requiring a public entity to utilize the services of another contractor to provide the goods or perform the services or to correct or complete the contract?

_____ yes _____ no If yes, please provide full, detailed explanation.

3. Within the past ten (10) years, have you defaulted on a contract, thereby requiring a public entity to look to your surety for completion of the contract or tender of the costs of completion?

_____ yes _____ no If yes, please provide full, detailed explanation.

4. Within the past ten (10) years, have you been debarred or suspended from contracting with any of the agencies or department of the executive branch of the State of New Jersey at the time of the contract award, where the action was based on failure to perform a contact for goods or services with a public entity?

_____ yes _____ no If yes, please provide full, detailed explanation.

BIDDER'S NAME: _____

PRIOR NEGATIVE EXPERIENCE CERTIFICATION

I hereby certify that the above statements are true and accurate as of this _____ day
of _____, 20__.

Name of Contractor

By _____
(Signature of Authorized Representative)

Subscribed and sworn to before me
This _____ day of _____, 20__.

(Seal) Notary Public of New Jersey/
Specify Other State
My Commission Expires _____, 20__.

**NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR
PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.**

BIDDER'S NAME: _____

TO BE COMPLETED ONLY WHEN FINAL PAYMENT IS REQUESTED

CONTRACTOR'S CERTIFICATION OF COMPLIANCE -NEW JERSEY PREVAILING WAGE ACT

TO: County of Union
Division of Engineering
2325 South Avenue
Scotch Plains, New Jersey 07076

CONTRACT:

PROJECT:

In accordance with the requirements of the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56 et al *, the undersigned contractor on the public work being performed for:

COUNTY OF UNION

hereby certifies that he/she has complied with the contract requirements regarding the payment of the minimum prevailing wages established under "The New Jersey Prevailing Wage Act" N.J.S.A. 34:11-56 et al.

CONTRACTOR: _____
ADDRESS: _____

BY: _____
ORIGINAL SIGNATURE ONLY

STATE OF NEW JERSEY
COUNTY OF _____

Being by me duly sworn according to law, on his oath deposes and says that _____ is _____ of _____ the above named contractor, and that the facts set forth in the above statement are true.

Subscribed and sworn before me
this ____ day of _____, 20____.

Notary Public: _____
My Commission Expires: _____

* N.J.S.A. 34:11-56.33 requires the contractor and subcontractor to file written statements with the public body in form satisfactory to the Commissioner certifying to the amounts then due and owing from such contractor and subcontractor filing such statement to any and all workmen for wages due on account of the public work, setting forth therein the names of the persons whose wages are unpaid and the amount due to each respectively. Union County will withhold the amount so deducted for the benefit of the workmen whose wages are unpaid as shown by the verified statement filed, and will pay directly to any workman the amount shown by such statement to be due to him for such wages. Such payment shall thereby discharge the obligation of the contractor to the person receiving such payment to the extent of the amount thereof.

BIDDER'S NAME: _____

UNCOMPLETED CONTRACTS AFFIDAVIT
(To be submitted with DPMC Form 701)

PURSUANT TO N.J.A.C. 17:19-2.13, BIDDER DECLARES THE FOLLOWING WITH RESPECT TO ITS UNCOMPLETED CONTRACTS, ON ALL WORK, FROM WHATEVER SOURCE (PUBLIC AND PRIVATE), BOTH IN NEW JERSEY AND FROM OTHER GOVERNMENTAL JURISDICTIONS

ENTITY	PROJECT TITLE	ORIGINAL CONTRACT AMOUNT	UNCOMPLETED AMOUNT AS OF BID OPENING DATE	NAME AND TELEPHONE NUMBER OF PARTY TO BE CONTACTED FROM ENTITY FOR VERIFICATION

TOTAL AMOUNT OF UNCOMPLETED CONTRACTS \$ _____

Sworn and Subscribed to Before me

This _____ day of _____ 20____

Notary Public

BIDDER:

(Signature)

(Print Name)

NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.

BIDDER'S NAME: _____

CERTIFICATE OF INSURANCE STATEMENT

The Bidder fully understands the County of Union insurance requirements as stated in the Instructions to Bidders as well as the Owner/Contractor Agreement and agrees to provide all insurance required by these documents prior to the issuance of the Notice to Proceed.

BIDDER (Signature)

BIDDER (Print Name)

NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.

BIDDER'S NAME: _____

COLLECTION OF USE TAX ON SALES TO LOCAL GOVERNMENTS STATEMENT

The Bidder fully understands the requirements of the use tax on sales to local governments as stated in the General Conditions to the Contract for Construction and the Instructions to Bidders, and agrees at all times to comply with the "Contractor Use Tax Collection Legislation", as defined therein, and the terms relating thereto contained in the Contract Documents.

BIDDER (Signature)

BIDDER (Print Name)

NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.

BIDDER'S NAME: _____

TIME OF COMPLETION

The undersigned proposed that if awarded the Contract, the scope of work will be started within ten (10) calendar days and will be substantially completed within **Six hundred and sixty eight (668) calendar days** from the date of the notice to proceed.

I, _____ of _____
NAME (Print or type) COMPANY

Agree to complete work in the time frame specified _____
SIGNATURE

SITE VISIT – GENERAL CONTRACTOR

I, _____ of _____
NAME (Print or type) COMPANY

Visited the site of the work on _____
SIGNATURE

BIDDER'S NAME: _____

**COUNTY OF UNION NEW JERSEY
Division of Purchasing
DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN FORM**

Solicitation Number: _____

Vendor/Bidder: _____

PART 1

CERTIFICATION

VENDOR/BIDDER MUST COMPLETE PART 1 BY CHECKING ONE OF THE BOXES
FAILURE TO CHECK ONE OF THE BOXES WILL RENDER THE PROPOSAL NON-RESPONSIVE

Pursuant to Public Law 2012, c. 25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that neither the person nor entity, nor any of its parents, subsidiaries, or affiliates, is identified on the State of New Jersey, Department of the Treasury's Chapter 25 list as a person or entity engaged in investment activities in Iran. The Chapter 25 list is found on the Department's website at <http://www.state.nj.us/treasury/pdf/Chapter25List.pdf>. Vendors/Bidders **must** review this list prior to completing the below certification. **Failure to complete the certification will render a Vendor's/Bidder's proposal non-responsive.** If the Director of the Division of Purchase and Property finds a person or entity to be in violation of the law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.

CHECK THE APPROPRIATE BOX

A. I certify, pursuant to Public Law 2012, c.25, that neither the Vendor/Bidder listed above nor any of its parents, subsidiaries, or affiliates is listed on the N.J. Department of Treasury's list of entities determined to be engaged in prohibited activities in Iran pursuant to P.L. 2012, c. 25 ("Chapter 25 List"). Disregard Part 2 and complete and sign the Certification below.

OR

B. I am unable to certify as above because the Vendor/Bidder and/or one or more of its parents, subsidiaries, or affiliates is listed on the Department's Chapter 25 list. I will provide a detailed, accurate and precise description of the activities in Part 2 below and sign and complete the Certification below. Failure to provide such information will result in the proposal being rendered as non-responsive and appropriate penalties, fines and/or sanctions will be assessed as provided by law.

PART 2

PLEASE PROVIDE ADDITIONAL INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN

If you checked Box "B" above, provide a detailed, accurate and precise description of the activities of the Vendor/Bidder, or one of its parents, subsidiaries or affiliates, engaged in investment activities in Iran by completing the information below.

ENTITY NAME: _____
RELATIONSHIP TO VENDOR/BIDDER: _____
DESCRIPTION OF ACTIVITIES: _____
DURATION OF ENGAGEMENT: _____
ANTICIPATED CESSATION DATE: _____
VENDOR/BIDDER CONTACT NAME: _____
VENDOR/BIDDER CONTACT PHONE#: _____

Attach Additional Sheets If Necessary

CERTIFICATION

I, the undersigned, certify that I am authorized to execute this certification on behalf of the Vendor/Bidder, that the foregoing information and any attachments hereto, to the best of my knowledge are true and complete. I acknowledge that the County of Union, New Jersey is relying on the information contained herein, and that the Vendor/Bidder is under a continuing obligation from the date of this certification through the completion of any contract(s) with the County of Union to notify the County of Union in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification. If I do so, I will be subject to criminal prosecution under the law, and it will constitute a material breach of my agreement(s) with the County of Union, permitting the County of Union to declare any contract(s) resulting from this certification void and unenforceable.

Signature

Date

Print Name and Title

Revised 10/19/17

STANDARD SPECIFICATIONS

The Standard Specifications for Road and Bridge Construction of New Jersey Department of Transportation, 2019 Edition; is added to and/or amended elsewhere herein by the Notice to Contractors (Advertisement), Proposal, Information for Bidders, General Conditions, Supplemental Conditions, Project Plans, and Supplementary Specifications; shall, insofar as technical requirements are involved, govern in the execution of this project.

Such Standard Specifications are made a part of these Specifications by this reference and will not be repeated herein. It is the responsibility of prospective bidders to familiarize themselves with these Standard Specifications, copies of which may be examined at the office of the Engineer and may be obtained, upon payment of the cost thereof, from:

Department of Transportation
State of New Jersey
1035 Parkway Avenue
Trenton, New Jersey 08625

The Notice to Contractors (Advertisement), Proposal, General Conditions, Special Provisions, Project Plans and/or Supplementary Specifications shall govern and prevail in the case of conflict between them and the Standard Specifications.

In these Standard Specifications the words "COMMISSIONER" or "DEPARTMENT" shall refer to and mean the person, persons, body, board or agent legally empowered to enter into contracts and otherwise legally act for the Owner. The word "STATE" shall refer to and mean the professional engineering representative of the Owner as hereinbefore defined and the word "ENGINEER" shall refer to and mean the professional engineering representative of the Owner as hereinbefore defined and the word "INSPECTOR" shall mean the authorized project representative of the Engineer with the authority as hereinbefore defined. The word "LABORATORY" shall mean and refer to the Engineer who may, at his discretion, and with the consent of the Owner, employ qualified technical personnel or testing laboratories to assist him in fulfilling the duties normally assigned to the "LABORATORY" in these Standard Specifications.

When reference is made herein to the bulletins, standards, specifications, publications or requirements of the American Association of State Highway Official (AASHO), the American Concrete Institute (ACI), the American Society of Civil Engineers (ASCE) or similar national or regional societies, associations, institutes or organizations; the requirements of the bulletins, specifications, publications or requirements referred to shall be considered a part of these Specifications by such reference and shall not be repeated herein but shall have the same import and be as binding as if herein set forth in full.



AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the _____ day of _____ in the year _____
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

The Architect:
(Name, legal status, address and other information)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement.

AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

The Owner and Contractor agree as follows.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- The date of this Agreement.
- A date set forth in a notice to proceed issued by the Owner.
- Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

- Not later than () calendar days from the date of commencement of the Work.

By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
------	-------

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
------	-------	---------------------------

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price
------	-------

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
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§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™-2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201-2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201-2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201-2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201-2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

_____ %

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201-2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

- Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- Litigation in a court of competent jurisdiction
- Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™-2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201-2017, may be given in accordance with AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203-2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™-2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™-2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

.5 Drawings

Number	Title	Date
--------	-------	------

.6 Specifications

Section	Title	Date	Pages
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.7 Addenda, if any:

Number	Date	Pages
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Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

- AIA Document E204™-2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

The Sustainability Plan:

Title	Date	Pages
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Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)



AIA Document A101® – 2017 Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the _____ day of _____ in the year _____
(In words, indicate day, month and year.)

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE CONTRACTOR:
(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201®–2017, General Conditions of the Contract for Construction. Article 11 of A201®–2017 contains additional insurance provisions.

TABLE OF ARTICLES

- A.1 GENERAL
- A.2 OWNER'S INSURANCE
- A.3 CONTRACTOR'S INSURANCE AND BONDS
- A.4 SPECIAL TERMS AND CONDITIONS

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

§ A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's

property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

Cause of Loss	Sub-Limit
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§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit
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§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

- § A.2.4.1 **Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.
- § A.2.4.2 **Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.
- § A.2.4.3 **Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.
- § A.2.4.4 **Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.
- § A.2.4.5 **Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.
- § A.2.4.6 **Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.
- § A.2.4.7 **Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

- § A.2.5.1 **Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. *(Indicate applicable limits of coverage or other conditions in the fill point below.)*

- § A.2.5.2 Other Insurance
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 **Certificates of Insurance.** The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

§ A.3.1.2 **Deductibles and Self-Insured Retentions.** The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 **Additional Insured Obligations.** To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:
(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than _____ (\$ __) each occurrence, _____ (\$ __) general aggregate, and _____ (\$ __) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to, or destruction of, tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the work involves such hazards.
- .11 Claims related to explosion, collapse, and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than _____ (\$) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than _____ (\$) each accident, _____ (\$) each employee, and _____ (\$) policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

- § A.3.3.2.1** Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below.

(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

- § A.3.3.2.2 Railroad Protective Liability Insurance**, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate, for Work within fifty (50) feet of railroad property.
- § A.3.3.2.3 Asbestos Abatement Liability Insurance**, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.
- § A.3.3.2.4 Insurance** for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.
- § A.3.3.2.5 Property insurance** on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.
- § A.3.3.2.6 Other Insurance**
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage

Limits

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:
(Specify type and penal sum of bonds.)

Type	Penal Sum (\$0.00)
Payment Bond	
Performance Bond	

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

Sample



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining

provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™-2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building

information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the

site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's

capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes

remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the

time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under

Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the

Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate

Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The

Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable

by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The

foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers

to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not

constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the

endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 **Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 **Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 **Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The

Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the

Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section

15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly

consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Sample



STATE OF NEW JERSEY
Department of Labor and Workforce Development
Division of Wage and Hour Compliance - Public Contracts Section
PO Box 389
Trenton, NJ 08625-0389

PREVAILING WAGE RATE DETERMINATION

The New Jersey Prevailing Wage Act (N.J.S.A. 34:11-56.25 et seq.) requires that the Department of Labor and Workforce Development establish and enforce a prevailing wage level for workers engaged in public works in order to safeguard their efficiency and general well being and to protect them as well as their employers from the effects of serious and unfair competition.

Prevailing wage rates are wage and fringe benefit rates based on the collective bargaining agreements established for a particular craft or trade in the locality in which the public work is performed. In New Jersey, these rates vary by county and by the type of work performed.

Applicable prevailing wage rates are those wages and fringe benefits in effect on the date the contract is awarded. All pre-determined rate increases listed at the time the contract is awarded must also be paid, beginning on the dates specified. Rates that have expired will remain in effect until new rates are posted.

Prevailing Wage Rate

The prevailing wage rate for each craft will list the effective date of the rate and the following information:

W = Wage Rate per Hour **B** = Fringe Benefit Rate per Hour* **T** = Total Rate per Hour

* Fringe benefits are an integral part of the prevailing wage rate. Employers not providing such benefits must pay the fringe benefit amount directly to the employee each payday. Employers providing benefits worth less than the fringe benefit amount must pay the balance directly to the employee each payday.

Unless otherwise stated in the Prevailing Wage Rate Determination, the fringe benefit rate for overtime hours remains at the straight time rate.

When the Overtime Notes in the Prevailing Wage Rate Determination state that the overtime rates are "inclusive of benefits," the benefit rate is increased by the same factor as the wage rate (i.e. multiplied by 1.5 for time and one-half, multiplied by 2 for double time, etc.).

Apprentice Rate Schedule

An "apprentice" is an individual who is registered with the United States Department of Labor - Office of Apprenticeship and enrolled in a certified apprenticeship program during the period in which they are working on the public works project.

The apprentice wage rate is a percentage of the journeyman wage rate, unless otherwise indicated. The apprentice benefit rate is the full journeyman benefit rate, unless otherwise indicated.

If there is no apprentice rate schedule listed, the individual must be paid at least the journeyman rate even if that individual is in a certified apprentice program for that trade.

If there is no ratio of apprentices to journeymen listed for a particular craft, then the ratio shall be one (1) apprentice to every four (4) journeymen.

Comments/Notes

For each craft listed there will be comments/notes that cover the definition of the regular workday, shift differentials, overtime, recognized holidays, and any other relevant information.

Public Works Contractor Registration

The Public Works Contractor Registration Act (N.J.S.A. 34:11-56.48, et seq.) requires that **all** contractors, subcontractors, or lower tier subcontractors who are working on or who bid on public works projects register with the Department of Labor and Workforce Development. Applications are available at www.nj.gov/labor (click on Wage & Hour and then go to Registration & Permits).

Pursuant to N.J.S.A. 34:11-56.51:

No contractor shall bid on any contract for public work as defined in section 2 of P.L.1963, c. 150 (C.34:11-56.26) unless the contractor is registered pursuant to this act. No contractor shall list a subcontractor in a bid proposal for the contract unless the subcontractor is registered pursuant to P.L.1999, c.238 (C.34:11-56.48 et seq.) at the time the bid is made. No contractor or subcontractor, including a subcontractor not listed in the bid proposal, shall engage in the performance of any public work subject to the contract, unless the contractor or subcontractor is registered pursuant to that act.

Snow Plowing

Snow plowing contracts are not subject to the New Jersey Prevailing Wage Act or the Public Works Contractor Registration Act.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Air Conditioning & Refrigeration - Service and Repair

PREVAILING WAGE RATE

	03/03/21
Journeyman (Mechanic)	W41.48 B26.57 T68.05

Craft: Air Conditioning & Refrigeration - Service and Repair

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
As Shown	1st Year	2nd Year	3rd Year	4th Year	5th Year	Wage = %	of Jnymn	Wage		
Wage and Bene	40%	50%	60%	70%	80%	Bene = %	of Jnymn	Bene		

Ratio of Apprentices to Journeymen - 1:4

Craft: Air Conditioning & Refrigeration - Service and Repair

COMMENTS/NOTES

THESE RATES MAY BE USED FOR THE FOLLOWING:

- Service/Repair/Maintenance Work to EXISTING facilities.
- Replacement or Installation of air conditioning and refrigeration equipment when the combined tonnage does not exceed 15 tons for refrigeration, or 25 tons for air conditioning.
- Replacement or Installation of "packaged" or "unitary" rooftop-type units when the combined tonnage of the units does not exceed 75 tons.

NOTE: These rates may NOT be used for any work in new construction (including work on new additions).

The regular workday shall consist of 8 hours, starting between 6:00 AM and 10:00 AM, Monday through Friday.

SHIFT DIFFERENTIALS:

- The second and third shifts shall be paid an additional 15% of the hourly rate.
- All shifts must run for a minimum of 5 consecutive days.

OVERTIME:

Hours worked in excess of 8 per day or before or after the regular workday, that are not shift work, and all hours on Saturday shall be paid at time and one-half the hourly rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the hourly rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Boilermaker PREVAILING WAGE RATE

	01/01/21
Foreman	W52.51 B45.60 T98.11
General Foreman	W54.51 B46.63 T101.14
Journeyman	W47.51 B43.91 T91.42

Craft: Boilermaker APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	65%	70%	75%	80%	85%	90%	95%			
1000 Hours										
Benefit =	37.08	37.99	39.49	39.84	40.78	41.70	42.61			

Ratio of Apprentices to Journeymen - *

* 1 apprentice will be allowed for the first 5 journeymen, 1 apprentice for the next 10 journeymen and 1 apprentice for each succeeding 20 journeymen up to a maximum of 5 apprentices per contractor on any one job.

Craft: Boilermaker COMMENTS/NOTES

APPRENTICE RATE SCHEDULE AS OF 1-1-21:

INTERVAL	PERIOD AND RATES									
1000 Hours	65%	70%	75%	80%	85%	90%	95%			
Benefits	37.72	38.20	39.20	40.14	41.09	42.03	42.96			

HIGH WORK: All apprentices working on the erection, repair, or dismantling of smoke stacks, standpipes, or water towers shall be paid the Journeyman rate.

The regular workday shall consist of 8 hours, between 8:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- The second shift shall work 7½ hours and receive 8 hours pay, at a rate equal to the regular hourly rate plus 10%.
- The third shift shall work 7 hours and receive 8 hours pay, at a rate equal to the regular hourly rate plus 20%.
- For "Municipal Water Works" projects only, the following shall apply: Two, four day, 10 hour shifts may be worked at straight time Monday through Thursday. The day shift shall work four days, at 10 hours, for 10 hours pay. The second shift shall work four days, at nine and a half hours, for 10 hours pay, plus 10% the hourly rate for new work and .25 cents on repair work. Friday may be used as a make-up day at straight time, due to weather conditions, holiday or any other circumstances beyond the employer's control.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays (except Labor Day) shall be paid at double the hourly rate. All hours on Labor Day shall be paid at four times the hourly rate.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

- If any other craft employed by the same contractor, or a subcontractor thereof, receives double time in lieu of time and one-half, then the Boilermaker shall receive double time in lieu of time and one-half.
- For "Municipal Water Works" projects only, the following shall apply: Four 10 hour days may be worked Monday through Thursday at straight time. Friday may be used as a make-up day for a day lost to inclement weather, holiday or other conditions beyond the control of the employer. Overtime shall be paid for any hours that exceed 10 hours per day or 40 hours per week.

RECOGNIZED HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Boilermaker - Minor Repairs

PREVAILING WAGE RATE

	01/01/21
Foreman	W34.62 B17.57 T52.19
General Foreman	W35.25 B17.57 T52.82
Mechanic	W33.25 B17.57 T50.82

Craft: Boilermaker - Minor Repairs

COMMENTS/NOTES

NOTE: These rates apply to MINOR REPAIR WORK ONLY (repair work in the field for which the contract amount does not exceed \$125,000.00), for boilers that do not produce electric or are not used in the heating of petroleum products.

OVERTIME:

Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays (except Labor Day) shall be paid at double the hourly rate. All hours on Labor Day shall be paid at four times the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Washington's Birthday, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Thanksgiving Day, day after Thanksgiving, Christmas Day. Saturday holidays observed the preceding Friday, Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Bricklayer, Stone Mason

PREVAILING WAGE RATE

	05/01/21
Deputy Foreman	W48.20 B33.73 T81.93
Foreman	W51.20 B33.73 T84.93
Journeyman	W45.20 B33.73 T78.93

Craft: Bricklayer, Stone Mason

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	40%	50%	55%	60%	65%	70%	75%	80%		
6 Months										
Benefits	4.00	5.00	5.50	6.00	22.17	23.66	25.14	26.62		

Ratio of Apprentices to Journeymen - 1:5

Craft: Bricklayer, Stone Mason

COMMENTS/NOTES

The regular workday shall consist of 8 hours, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- When a 2 shift schedule (including a day shift) is established, the first, or day shift, shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis, and receive the regular rate plus 10%, inclusive of benefits.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular hourly rate, the second shift shall receive the regular rate plus 10%, inclusive of benefits, and the third shift shall receive the regular rate plus 15%, inclusive of benefits.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis. The second shift shall receive the regular rate plus 10%, inclusive of benefits, and the third shift shall receive the regular rate plus 15%, inclusive of benefits.
- When an irregular shift must be established, this shift shall receive the regular rate plus 10%, inclusive of benefits.

OVERTIME:

- The first 2 hours in excess of 8 per day, or before or after the regular workday that are not shift work, Monday through Friday, shall be paid at time and one-half the regular rate, inclusive of benefits. Any additional overtime shall be paid at double the regular rate, inclusive of benefits. The first 10 hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. Any additional overtime shall be paid at double the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Saturday may be used as a make-up day for hours lost to inclement weather.
- When Bricklayers/Stone Masons work on Saturday with Laborers, and no other crafts are working on the project for the day, benefits may be paid at straight time. If other crafts are present, the applicable overtime rate for benefits shall be paid.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Carpenter PREVAILING WAGE RATE

	05/01/21
Foreman	W59.67 B34.56 T94.23
Journeyman	W51.89 B30.12 T82.01

Craft: Carpenter APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	40%	55%	65%	80%	90%					
Benefit	57% of	Appren	tice	Wage Rate	for all	intervals	+ \$0.55			

Ratio of Apprentices to Journeymen - 1:3

Craft: Carpenter COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- When there are 2 or more Carpenters on a job, 1 shall be designated as a Foreman.
- When there are 21 or more Carpenters on a job, 2 shall be designated as Foremen.

The regular workday shall consist of 8 hours, starting between 6:00 AM and 9:00 AM.

SHIFT DIFFERENTIALS:

- When a 2 shift schedule (including a day shift) is established, the day shift shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis, and receive the regular rate plus 10%, inclusive of benefits.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular hourly rate, the second shift shall receive the regular rate plus 10% and the third shift shall receive the regular rate plus 15%, inclusive of benefits.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis. The second shift shall receive the regular rate plus 10% and the third shift shall receive the regular rate plus 15%, inclusive of benefits.
- When an irregular shift must be established, this shift shall receive the regular rate plus 15%, inclusive of benefits.

OVERTIME:

- All hours in excess of 8 per day, or before or after an established shift that are not shift work, and all hours on Saturdays shall be paid at time and one-half the hourly rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the hourly rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for a day lost due to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans' Day may be substituted for the day after Thanksgiving.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Carpenter - Resilient Flooring

PREVAILING WAGE RATE

	05/01/21
Foreman	W59.67 B34.47 T94.14
Journeyman	W51.89 B30.03 T81.92

Craft: Carpenter - Resilient Flooring

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	40%	55%	65%	80%	90%					
Benefit	57%	of	Appren	tice	Wage	for all	intervals	+ \$0.46		

Ratio of Apprentices to Journeymen - *

* 1 apprentice shall be allowed to every 2 journeymen or major fraction thereof. No more than 3 apprentices on any one job or project.

Craft: Carpenter - Resilient Flooring

COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- On any job where there are 4 or more Carpenters of Resilient Flooring, 1 must be designated a Foreman.

FOR SYNTHETIC TURF INSTALLATION ONLY:

- The rate shall be 90% of the wage and benefit rate.

The regular workday consists of 8 hours, starting between 6:00 AM and 9:00 AM.

SHIFT DIFFERENTIALS:

- When a 2 shift schedule (including a day shift) is established, the day shift, shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis, and receive the regular wage rate plus 10%.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular wage rate, the second shift shall receive the regular wage rate plus 10% and the third shift shall receive the regular wage rate plus 15%.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis. The second shift shall receive the regular wage rate plus 10% and the third shift shall receive the regular wage rate plus 15%.
- When an irregular shift must be established, this shift shall receive the regular rate plus 15%, inclusive of benefits.

OVERTIME:

- Hours in excess of 8 per day or 40 per week, or before or after the regular workday, Monday through Friday, shall be paid at time and one-half the wage rate. Saturday may be used as a make-up day, at straight time, up to 8 hours, for hours lost to reasons beyond the control of the employer, up to a total of 40 hours per week; hours in excess of 8 on Saturday shall then be paid at time and one-half the wage rate. If Saturday is not a make-up day, all hours on Saturday shall be paid at time and one-half the wage rate. All hours on Sundays and holidays shall be paid at double the wage rate.
- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for hours lost to reasons beyond the control of the employer. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the wage rate.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday. Veterans' Day may be substituted for the day after Thanksgiving.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Cement Mason

PREVAILING WAGE RATE

See "Bricklayer, Stone Mason" Rates

Craft: Cement Mason

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									

Ratio of Apprentices to Journeymen - 1:4

Craft: Cement Mason

COMMENTS/NOTES

See "Bricklayer, Stone Mason" Rates

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Commercial Painter- New Construction

PREVAILING WAGE RATE

	05/01/21
Foreman	W46.37 B27.61 T73.98
General Foreman	W50.58 B28.10 T78.68
Journeyman	W42.15 B27.11 T69.26

Craft: Commercial Painter- New Construction

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
6 Months	40%	45%	55%	65%	70%	75%	80%	80%		
Benefits	8.40	8.40	10.40	10.40	11.40	11.40	14.15	14.15		

Ratio of Apprentices to Journeymen - 1:4

Craft: Commercial Painter- New Construction

COMMENTS/NOTES

* Commercial Painters perform work on all commercial structures such as offices, schools, hotels, shopping malls, restaurants, condominiums, etc.

Spraying, sandblasting, lead abatement work on commercial buildings, work performed above 3 stories or 30 feet in height, or using swing scaffolds requires an additional 10% of the wage rate.

FOREMEN REQUIREMENTS:

- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:

- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:

- Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, General Election Day,

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Veterans' Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Commercial Painter- Repainting

PREVAILING WAGE RATE

	05/01/21
Foreman	W33.11 B20.66 T53.77
General Foreman	W36.12 B20.66 T56.78
Journeyman	W30.10 B20.66 T50.76

Craft: Commercial Painter- Repainting

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	SEE	COMME	CIAL	PAINTER	NEW	CONSTR	TION			
		R				UC				

Ratio of Apprentices to Journeymen - 1:4

Craft: Commercial Painter- Repainting

COMMENTS/NOTES

* Commercial Painters perform work on all commercial structures such as offices, schools, hotels, shopping malls, restaurants, condominiums, etc.

NOTE: These rates may only be used on jobs where no major alterations (only doing painting and carpeting with nothing else being changed in the commercial building) occur, and where not more than 3 other trades are present on the job, but may NOT, under any circumstances, be used for work on bridges, stacks, tanks, or generating stations.

Spraying, sandblasting, lead abatement work on commercial buildings, work performed above 3 stories or 30 feet in height, or using swing scaffolds requires an additional 10% of the wage rate.

FOREMEN REQUIREMENTS:

- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

OVERTIME:

- Hours in excess of 8 per day and 40 per week shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.
- Four 10-hour days may be worked, at straight time, Monday through Sunday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, General Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Diver PREVAILING WAGE RATE

	05/07/21
Diver	W60.74 B48.97 T109.71
Tender	W49.00 B48.97 T97.97

Craft: Diver COMMENTS/NOTES

NOTE: All dive crews must consist of a Tender, a Diver, and a standby Diver (standby Diver is the same rate as a Diver).

DEPTH & PENETRATION RATES: Divers shall be paid the following depth and penetration rates, in addition to the regular hourly rate, when applicable:

AIR DIVES:

0-59 feet: No additional wage
60-74 feet: + \$0.25 per foot
75-125 feet: + \$0.78 per foot

MIXED GAS DIVES:

0-74 feet: No additional wage
75-125 feet: + \$1.00 per foot
126-200 feet: + \$2.00 per foot

PENETRATION DIVES:

126-200 feet: + \$1.50 per foot
201-275 feet: + \$1.75 per foot
276-350 feet: + \$2.00 per foot
351-425 feet: + \$2.50 per foot

SHIFT DIFFERENTIAL:

- When a 2 shift schedule (including a day shift) is established, the day shift shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis and receive an additional 113% of the wage rate.
- When a three shift schedule is established, all three shifts shall be established on an 8 hour basis, but the second and third shifts shall receive an additional 113% of the wage rate.
- Benefits on shift work shall be paid at the straight-time rate.

OVERTIME:

Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day, Christmas Day. Veterans' Day may be switched with the day after Thanksgiving.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Dockbuilder PREVAILING WAGE RATE

	05/07/21
Foreman	W56.35 B48.97 T105.32
Foreman (Concrete Form Work)	W55.26 B35.61 T90.87
Journeyman	W49.00 B48.97 T97.97
Journeyman (Concrete Form Work)	W48.05 B35.61 T83.66

Craft: Dockbuilder APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
Yearly	19.60	24.50	31.85	39.20						
Benefit	32.37	for all	intervals							

Ratio of Apprentices to Journeymen - *

* When there are 4 or fewer Dockbuilders on a job, no more than 1 may be an apprentice. When there are 5 or more Dockbuilders, there may be 1 apprentice for every 5 Dockbuilders.

Craft: Dockbuilder COMMENTS/NOTES

APPRENTICE RATE SCHEDULE FOR CONCRETE FORM WORK ONLY:

INTERVAL	PERIOD AND RATES			
Yearly	19.22	24.03	31.23	38.44
Benefits	24.34	for all	intervals	

CREOSOTE HANDLING:

When handling creosote products on land piledriving, floating marine construction, and construction of wharves, the worker shall receive an additional \$0.25 per hour.

HAZARDOUS WASTE WORK:

- Hazardous waste removal work on a state or federally designated hazardous waste site where Level A, B, or C personal protection is required: an additional 20% of the hourly rate, per hour.
- Hazardous waste removal work in Level D, or where personal protection is not required: an additional \$1.00 per hour.

CERTIFIED WELDER: When required on the job by the project owner, a Certified Welder shall receive an additional \$1.00 per hour.

FOREMAN REQUIREMENTS:

The first Dockbuilder on the job shall be designated a Foreman.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

SHIFT DIFFERENTIAL:

- When a 2 shift schedule (including a day shift) is established, the day shift shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis and receive an additional 113% of the wage rate.
- When a three shift schedule is established, all three shifts shall be established on an 8 hour basis, but the second and third shifts shall receive an additional 113% of the wage rate.
- Benefits on shift work shall be paid at the straight-time rate.

OVERTIME:

Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day, Christmas Day. Veterans' Day may be switched with the day after Thanksgiving.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Drywall Finisher

PREVAILING WAGE RATE

	05/01/21
Foreman	W44.43 B27.68 T72.11
General Foreman	W46.45 B27.68 T74.13
Journeyman	W40.39 B27.68 T68.07

Craft: Drywall Finisher

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	40%	50%		60%	70%		80%	90%		
6 Months										
Benefits	Intervals	1 to 2 =	10.75	Intervals	3 to 4 =	13.52	Intervals	5 to 6 =	17.13	

Ratio of Apprentices to Journeymen - 1:4

Craft: Drywall Finisher

COMMENTS/NOTES

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:

- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, and the third shift shall receive 8 hours pay for 7 hours of work.
- Shift work must run for a minimum of 5 consecutive workdays.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician

PREVAILING WAGE RATE

	05/31/21
Cable Splicer	W64.51 B39.68 T104.19
Foreman (11-20 Journeymen)	W68.62 B42.21 T110.83
Foreman (1-3 Journeymen)	W64.51 B39.68 T104.19
Foreman (4-10 Journeymen)	W67.45 B41.49 T108.94
General Foreman (21-30 Journeymen)	W70.38 B43.29 T113.67
General Foreman (31-60 Journeymen)	W76.24 B46.90 T123.14
General Foreman (61+ Journeymen)	W77.41 B47.62 T125.03
Journeyman	W58.65 B36.08 T94.73
Sub-Foreman	W66.86 B41.13 T107.99

Craft: Electrician

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
	Yearly	40%	49%	58%	68%	80%		of Jour	neyman	Wage
Benefit	40%	49%	58%	68%	80%		of Jour	neyman	Benefit	Rate

Ratio of Apprentices to Journeymen - 2:3

Craft: Electrician

COMMENTS/NOTES

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

THESE RATES ALSO APPLY TO THE FOLLOWING:

- All burglar and fire alarm work.
- All fiber optic work.
- Teledata work in new construction.
- Teledata work involving 16 Voice/Data Lines or more.

The regular workday shall be 8 hours, between 8:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:

- 1 to 3 Journeymen- 1 must be a Foreman (Foreman/1-3 Journeymen rate).
- 4 to 10 Journeymen- 1 must be a Foreman (Foreman/4-10 Journeymen rate).
- 11 to 20 Journeymen- 1 must be Foreman (Foreman/11-20 Journeymen rate) and 1 must be a Sub-Foreman.
- 21 to 30 Journeymen- 1 must be a General Foreman (General Foreman/21-30 Journeymen rate) and 2 must be a Sub-Foreman.
- 31 to 40 Journeymen- 1 must be a General Foreman (General Foreman/31-40 Journeymen rate) and 3 must be a Sub-Foreman.
- 41 to 50 Journeymen- 1 must be a General Foreman (General Foreman/31-60 Journeymen rate) and 4 must be a Sub-Foreman.
- 51 to 60 Journeymen- 1 must be a General Foreman (General Foreman/31-60 Journeymen rate) and 5 must be a Sub-Foreman.
- 61+ Journeymen- 1 must be a General Foreman (General Foreman/61+ Journeymen rate) and 6 must be a Sub-Foreman.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.
- 2nd Shift (4:30 PM to 12:30 AM) shall receive 8 hours pay for 7.5 hours work + an additional 10% of the regular rate, per hour, inclusive of benefits.
- 3rd Shift (12:30 AM to 8:00 AM) shall receive 8 hours pay for 7 hours work + an additional 15% of the regular rate, per hour, inclusive of benefits.

OVERTIME:

Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, and all hours on Saturdays, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician - Teledata (15 Voice/Data Lines & Less)

PREVAILING WAGE RATE

	11/02/20
Master Technician/General Foreman	W57.42 B31.58 T89.00
Senior Technician/Lead Foreman (21-30 Workers on Job)	W52.56 B28.91 T81.47
Technician A/Foreman (11-20 Workers on Job)	W50.35 B27.69 T78.04
Technician B/Working Foreman (4-10 Workers on Job)	W48.15 B26.47 T74.62
Technician C/Journeyman (1-3 Workers on Job)	W44.17 B24.29 T68.46

Craft: Electrician - Teledata (15 Voice/Data Lines & Less)

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>										
6 Months						66%	72%	79%	86%		
Benefits						11.81	12.89	14.14	15.40		

Ratio of Apprentices to Journeymen - 2:3

Craft: Electrician - Teledata (15 Voice/Data Lines & Less)

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 10-31-14:

INTERVAL	PERIOD AND RATES										
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%	
Benefits	6.76	6.76	7.16	7.70	8.59	9.66	10.82	11.99	13.25	14.51	

NOTES:

- These rates are for service, maintenance, moves, and/or changes affecting 15 Voice/Data (teledata) lines or less. These rates may NOT be used for any teledata work in new construction (including additions) or any fiber optic work.
- The number of Teledata workers on the jobsite is the determining factor for which Foreman category applies .

The regular workday shall be 8 hours, between 8:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

- 2nd Shift (4:30 PM to 12:30 AM) shall receive 8 hours pay for 7.5 hours work + an additional 10% of the regular rate, per hour, inclusive of benefits.
- 3rd Shift (12:30 AM to 8:00 AM) shall receive 8 hours pay for 7 hours work + an additional 15% of the regular rate, per hour, inclusive of benefits.

OVERTIME:

Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, and all hours on Saturdays, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician - Teledata (16 Instruments & More)

PREVAILING WAGE RATE

See "Electrician" Rates

Craft: Electrician - Teledata (16 Instruments & More)

COMMENTS/NOTES

See ELECTRICIAN Rates

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician- Outside Commercial

PREVAILING WAGE RATE

	05/31/21
Cable Splicer	W64.81 B39.38 T104.19
Certified Welder	W61.87 B37.60 T99.47
Equipment Operator	W58.92 B35.80 T94.72
Foreman (1-3 Journeymen workers on job)	W64.81 B39.38 T104.19
Foreman (4-10 Journeymen workers on job)	W67.76 B41.17 T108.93
General Foreman (11-20 Journeymen workers on job)	W68.94 B41.89 T110.83
General Foreman (21-30 Journeymen workers on job)	W70.71 B42.97 T113.68
General Foreman (31-60 Journeymen workers on job)	W76.60 B46.54 T123.14
General Foreman (61+ Journeymen workers on job)	W77.78 B47.26 T125.04
Groundman	W35.35 B21.49 T56.84
Journeyman Lineman/Technician	W58.92 B35.80 T94.72
Sub-Foreman	W67.17 B40.83 T108.00

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician- Outside Commercial

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
1000 Hours	60%	65%	70%	75%	80%	85%	90%			
Benefits	60.75% of	Journey	man	wage	+	\$.01				

Craft: Electrician- Outside Commercial

COMMENTS/NOTES

* FOR UTILITY WORK PLEASE SEE STATEWIDE RATES

The regular worday shall be 8 hours, between 8:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:

- 1 to 3 Journeymen- 1 must be a Foreman (Foreman/1-3 Journeymen rate).
- 4 to 10 Journeymen- 1 must be a Foreman (Foreman/4-10 Journeymen rate).
- 11 to 20 Journeymen- 1 must be Foreman (Foreman/11-20 Journeymen rate) and 1 must be a Sub-Foreman.
- 21 to 30 Journeymen- 1 must be a General Foreman (General Foreman/21-30 Journeymen rate) and 2 must be a Sub-Foreman.
- 31 to 40 Journeymen- 1 must be a General Foreman (General Foreman/31-40 Journeymen rate) and 3 must be a Sub-Foreman.
- 41 to 50 Journeymen- 1 must be a General Foreman (General Foreman/31-60 Journeymen rate) and 4 must be a Sub-Foreman.
- 51 to 60 Journeymen- 1 must be a General Foreman (General Foreman/31-60 Journeymen rate) and 5 must be a Sub-Foreman.
- 61+ Journeymen- 1 must be a General Foreman (General Foreman/61+ Journeymen rate) and 6 must be a Sub-Foreman.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.
- 2nd Shift (4:30 PM to 12:30 AM): 8 hrs. pay for 7.5 hrs. work + an additional 10% of the regular rate, inclusive of benefits.
- 3rd Shift (12:30 AM to 8:00 AM): 8 hrs. pay for 7 hrs. work + an additional 15% of the regular rate per hour, inclusive benefits.

OVERTIME:

Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, and all hours on Saturdays, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS:

New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day and Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician-Utility Work (North)

PREVAILING WAGE RATE

Rates are located in the "Statewide" rate package

Craft: Electrician-Utility Work (North)

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
* 6 Months	60%	65%	70%	75%	80%	85%	90%			
Benefits	69% of	Appren	tice	Wage	Rate	for all	intervals			

Craft: Electrician-Utility Work (North)

COMMENTS/NOTES

Electrician-Utility Work (North) rates are located in the "Statewide" rate package.

* The apprentice wage rate is paid at the percentage of the Journeyman Lineman wage rate located in the "Statewide" rate package.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician-Utility Work (South)

PREVAILING WAGE RATE

Rates are located in the "Statewide" rate package

Craft: Electrician-Utility Work (South)

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
6 Months	29.70	32.18	34.65	37.13	39.60	42.08	44.55			
Benefits	26.19	27.65	29.10	30.58	32.04	33.51	34.95			

Craft: Electrician-Utility Work (South)

COMMENTS/NOTES

Electrician-Utility Work (South) rates are located in the "Statewide" rate package.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Saturday holidays shall be observed on the previous Friday and Sunday holidays shall be observed on the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Elevator Modernization & Service

PREVAILING WAGE RATE

	03/17/21	03/17/22	03/17/23
Journeyman	W56.77	W59.09	W60.89
	B41.82	B42.79	B44.41
	T98.59	T101.88	T105.30

Craft: Elevator Modernization & Service

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	29.85	28.84	34.09	39.33						
Benefits	32.66	33.13	34.36	35.58						

Ratio of Apprentices to Journeymen - 1:1

Craft: Elevator Modernization & Service

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE AS OF 3-17-20:

INTERVAL	PERIOD AND RATES			
Yearly	31.03	30.01	35.46	40.92
Benefits	33.33	33.82	35.09	36.36

APPRENTICE RATE SCHEDULE AS OF 3-17-21:

INTERVAL	PERIOD AND RATES			
Yearly	32.27	31.22	36.90	42.58
Benefits	34.00	34.50	35.83	37.15

APPRENTICE RATE SCHEDULE AS OF 3-17-22:

INTERVAL	PERIOD AND RATES			
Yearly	33.56	32.50	38.41	44.32
Benefits	34.67	34.20	35.20	37.94

APPRENTICE RATE SCHEDULE AS OF 3-17-23:

INTERVAL	PERIOD AND RATES			
Yearly	34.60	33.49	39.58	45.67
Benefits	35.97	36.53	37.95	39.38

MODERNIZATION (addition, replacement, refurbishing, relocation, or changes in design or appearance, of elevator equipment in existing buildings):

- The regular workday consists of 8 hours, between 7:00 AM and 4:30 PM.

- Overtime:

Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturday and Sunday shall be paid at time and one-half the hourly rate. Holiday pay is one days wages (8 hours) plus time and one-half the hourly rate for all hours worked.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

SERVICE (repair or replacement of parts for the purpose of maintaining elevator equipment in good operating condition):

- The regular workday consists of 8 hours, between 6:00 AM and 6:00 PM.

- Overtime:

Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturday shall be paid at time and one-half the hourly rate. All hours on Sunday and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS (Modernization and Service): New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Saturday holidays shall be observed on the previous Friday and Sunday holidays shall be observed on the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Glazier PREVAILING WAGE RATE

	05/07/21
* Leadman	W50.50 B27.86 T78.36
Foreman	W52.50 B28.10 T80.60
General Foreman	W54.50 B28.34 T82.84
Journeyman	W48.50 B27.62 T76.12

Craft: Glazier APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
	50%	55%	60%	65%	70%	75%	80%	90%		
6 Months										
Benefits	9.75	9.75	12.36	12.36	13.60	13.60	17.02	17.02		

Ratio of Apprentices to Journeymen - 1:4

Craft: Glazier COMMENTS/NOTES

Hazard/Height Pay: +\$1.00 per hour

* When there are three (3) men working on a jobsite for three (3) days or longer, 1 Journeyman may be designated as a Leadman for the duration of the job, provided he has his OSHA certification.

FOREMAN REQUIREMENTS:

- When there are 4 or more Glaziers on a job, 1 must be designated a Foreman.
- When there are 15 or more Glaziers on a job, 1 must be designated a General Foreman.

The regular workday shall consist of 8 hours, between 7:00 AM and 5:30 PM, Monday to Friday.

SHIFT DIFFERENTIALS:

- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, and the third shift shall receive 8 hours pay for 7 hours of work.

OVERTIME:

Hours in excess of 8 per day, or before or after the regular workday Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, General Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Heat & Frost Insulator

PREVAILING WAGE RATE

	09/21/20
Foreman	W58.52 B33.42 T91.94
General Foreman	W60.86 B34.53 T95.39
Journeyman	W56.74 B32.86 T89.60

Craft: Heat & Frost Insulator

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	26.55	31.49	37.95	44.36						
Benefits	19.44	23.03	25.44	27.76						

Ratio of Apprentices to Journeymen - 1:3

Craft: Heat & Frost Insulator

COMMENTS/NOTES

NOTE: These rates apply to the installing of insulation on hot and cold mechanical systems.

The regular workday shall be 8 hours between 7:00 AM and 3:30 PM. In addition, the regular workday may also be 8 hours between 6:00 AM and 2:30 PM.

SHIFT DIFFERENTIAL:

- Shift work must run for a minimum of 5 consecutive workdays.
- Second Shift shall work 7.5 hours and receive 8 hours pay, at the regular rate, plus 25% per hour.
- Third Shift shall work 7 hours and receive 8 hours pay, at the regular rate, plus 30% per hour.

OVERTIME:

The first 2 hours in excess of 8 per day, hours outside of the regular workday Monday through Friday that are not shift work, and the first 10 hours on Saturday, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours in excess of 10 per day, and all hours on Sunday and holidays (except Labor Day) shall be paid at double the regular rate, inclusive of benefits. All hours on Labor Day shall be paid at triple the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day and Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Heat & Frost Insulator - Asbestos Worker

PREVAILING WAGE RATE

	09/24/19
Asbestos Helper	W36.89
Abatement	B24.92 T61.81

Craft: Heat & Frost Insulator - Asbestos Worker

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	SEE	HEAT &	FROST	INSULAT OR						

Ratio of Apprentices to Journeymen - 1:3

Craft: Heat & Frost Insulator - Asbestos Worker

COMMENTS/NOTES

NOTE: These rates apply only to the removal of insulation materials/asbestos from mechanical systems, including containment erection and demolition, and placing material in appropriate containers.

The regular workday shall be 8 hours between 7:00 AM and 3:30 PM. In addition, the regular workday may also be 8 hours between 6:00 AM and 2:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.
- The second shift shall work 7.5 hours and receive 8 hours pay at the regular rate, plus 25% per hour.
- The third shift shall work 7 hours and receive 8 hours pay at the regular rate, plus 30% per hour.

OVERTIME: The first 2 hours in excess of 8 per day, hours outside of the regular workday Monday through Friday that are not shift work, and the first 10 hours on Saturday, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours in excess of 10 per day, and all hours on Sunday and holidays (except Labor Day) shall be paid at double the regular rate, inclusive of benefits. All hours on Labor Day shall be paid at triple the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day and Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Industrial Painter- Bridges

PREVAILING WAGE RATE

	02/11/21
Foreman	W62.18 B31.62 T93.80
General Foreman	W64.18 B31.62 T95.80
Journeyman	W57.18 B31.62 T88.80

Craft: Industrial Painter- Bridges

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	60%	70%	80%	90%						
6 Months										
Benefits	14.27	14.50	17.73	17.96						

Ratio of Apprentices to Journeymen - 1:4

Craft: Industrial Painter- Bridges

COMMENTS/NOTES

* Industrial Painters perform work on all industrial structures, such as bridges, water tanks, waste water facilities, refineries, any structural steel work, etc.

These rates apply to: All bridges that span waterways, roadways, railways and canyons. All tunnels, overpasses, viaducts and all appurtenances.

FOREMEN REQUIREMENTS:

- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:

- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Industrial Painter- Structural Steel

PREVAILING WAGE RATE

	02/11/21
Foreman	W50.92 B29.27 T80.19
General Foreman	W52.92 B29.27 T82.19
Journeyman	W45.92 B29.27 T75.19

Craft: Industrial Painter- Structural Steel

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	SEE	INDUST	RIAL	PAINTER	BRIDGES					

Ratio of Apprentices to Journeymen - 1:4

Craft: Industrial Painter- Structural Steel

COMMENTS/NOTES

* Industrial Painters perform work on all industrial structures, such as bridges, water tanks, waste water facilities, refineries, any structural steel work, etc.

These rates apply to: All work in power plants (any aspect). On steeples, on dams, on hangers, transformers, substations, on all open steel, in refineries, tank farms, water/sewerage treatment facilities and on pipelines.

FOREMEN REQUIREMENTS:

- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:

- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Industrial Painter- Water Tanks

PREVAILING WAGE RATE

	02/11/21
Foreman	W51.97 B28.92 T80.89
General Foreman	W53.97 B28.92 T82.89
Journeyman	W46.97 B28.92 T75.89

Craft: Industrial Painter- Water Tanks

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
6 Months	50%	70%	90%							
Benefits	11.77	14.50	17.96							

Ratio of Apprentices to Journeymen - 1:4

Craft: Industrial Painter- Water Tanks

COMMENTS/NOTES

* Industrial Painters perform work on all industrial structures, such as bridges, water tanks, waste water facilities, refineries, any structural steel work, etc.

These rates apply to: All new and repaint water tanks (interior and exterior).

FOREMEN REQUIREMENTS:

- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:

- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Industrial Painter-Containment

PREVAILING WAGE RATE

	02/11/21
Journeyman	W38.23 B28.67 T66.90

Craft: Industrial Painter-Containment

COMMENTS/NOTES

Note: These rates shall require no painting, but used in a supporting capacity only, such as wrapping, boxing, fencing, etc. on tanks.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:

- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, and the third shift shall receive 8 hours pay for 7 hours of work.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Ironworker PREVAILING WAGE RATE

	07/08/21
Rod /Fence Foreman	W47.14 B48.17 T95.31
Rod/Fence Journeyman	W44.14 B48.17 T92.31
Structural Foreman	W49.44 B48.17 T97.61
Structural Journeyman	W46.44 B48.17 T94.61

Craft: Ironworker APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	50%	60%		Yearly	70%	80%	90%			

Ratio of Apprentices to Journeymen - 1:4

Craft: Ironworker COMMENTS/NOTES

HAZARDOUS WASTE WORK: On hazardous waste removal work on a state or federally designated hazardous waste site where the Ironworker is required to wear Level A,B, or C personal protection: + \$3.00 per hour

The regular workday consists of 8 hours between 6:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:

When there are 2 or more Ironworkers on a job, 1 shall be designated a Foreman.

SHIFT DIFFERENTIALS:

- When a 2 shift schedule is established, the first, or day shift , shall be established on an 8 hour basis .The second shift shall be established on an 8 hour basis, and receive the regular rate plus 15%.

- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular hourly rate, the second shift shall receive the regular rate plus 15%, and the third shift shall receive the regular rate plus 20%.

- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis.

- When an irregular shift is established for the Ironworker (Structural) classification, the rate shall be paid at time and one-half the regular rate, inclusive of benefits. When an irregular shift is established for the Rod/Fence classification, the shift shall be established on an 8 hour basis and receive the regular rate, plus 20%.

OVERTIME:

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

- All hours in excess of 8 per day, or before or after an established shift that are not shift work, and all hours on Saturday, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the hourly rate, inclusive of benefits. Saturday may be used as a make-up day for a day lost to inclement weather. If Saturday is not a make-up day, all hours on Saturday shall be paid at time and one-half the hourly rate, inclusive of benefits.

- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Laborer - Asbestos & Hazardous Waste Removal

PREVAILING WAGE RATE

	10/20/20
Journeyman (Handler)	W32.98 B23.66 T56.64

Craft: Laborer - Asbestos & Hazardous Waste Removal

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	19.79	23.09	26.38	29.68						
Benefits	21.51	for	all	intervals						

Ratio of Apprentices to Journeymen - *

* Ratio of apprentices to journeymen shall not be more than one apprentice for the first journeyman and no more than (1) apprentice for each additional three (3) journeymen.

Craft: Laborer - Asbestos & Hazardous Waste Removal

COMMENTS/NOTES

NOTE: These rates apply to work in connection with Asbestos, Radiation, Hazardous Waste, Lead, Chemical, Biological, Mold Remediation and Abatement.

The regular workday shall be 8 hours.

OVERTIME:

- Hours in excess of 8 per day, Monday through Saturday, and all hours on Sunday and holidays shall be paid at time and one-half the regular rate.
- Benefits on ALL overtime hours shall be paid at straight time.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Easter, Memorial Day, July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. (Holidays start at 12:00 am).

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Laborer - Building

PREVAILING WAGE RATE

	05/07/21
Class A Journeyman	W35.25 B30.62 T65.87
Class B Journeyman	W34.50 B30.62 T65.12
Class C Journeyman	W29.33 B30.62 T59.95
Foreman	W39.66 B30.62 T70.28
General Foreman	W44.06 B30.62 T74.68

Craft: Laborer - Building

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
	60%	70%	80%	90%						
6 Months										
Benefit	27.37	27.37	27.37	27.37						

Ratio of Apprentices to Journeymen - *

* Ratio of apprentices to journeymen shall not be more than one apprentice for the first journeyman and no more than (1) apprentice for each additional three (3) journeymen.

Craft: Laborer - Building

COMMENTS/NOTES

CLASS A: Specialist laborer including mason tender or concrete pour crew; scaffold builder (scaffolds up to 14 feet in height); operator of forklifts, Bobcats (or equivalent machinery), jack hammers, tampers, motorized tampers and compactors, vibrators, street cleaning machines, hydro demolition equipment, riding motor buggies, conveyors, burners; and nozzle men on gunite work.

CLASS B: Basic laborer - includes all laborer work not listed in Class A or Class C.

CLASS C: Janitorial-type light clean-up work associated with the TURNOVER of a project, or part of a project, to the owner. All other clean-up work is Class B.

The regular workday shall be 8 hours between 6:00 AM and 6:00 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.
- When a 2-shift schedule is worked, including a day shift, both shifts shall be established on the basis of 8 hours pay for 8 hours worked. The second shift shall receive the regular rate plus an additional 10%.
- When a 3-shift schedule is worked, the day shift shall be established on the basis of 8 hours pay for 8 hours worked, the second shift shall be established on the basis of 8 hours pay for 7.5 hours worked, and the third shift shall be established

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

on the basis of 8 hours pay for 7 hours worked. The day shift shall receive the regular rate, the second shift shall receive the regular rate plus an additional 10%, and the third shift shall receive the regular rate plus an additional 15%.

- When a second or third shift is worked with no day shift, the second or third shift shall be established on the basis of 8 hours pay for 8 hours worked. The second shift shall receive the regular rate plus an additional 10%, and the third shift shall receive the regular rate plus an additional 15%.

OVERTIME:

- Hours in excess of 8 per day, or outside the regular workday that are not shift work, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. Saturday may be used as a make-up day (paid at straight time) for a day lost to inclement weather, or for a holiday that is observed during the work week, Monday through Friday. All hours on Sundays and holidays shall be paid at double the regular rate.

- Four 10-hour days may be worked Monday to Thursday, at straight time, with Friday used a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the regular rate.

- Benefits on ALL overtime hours shall be paid at time and one-half.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Laborer - Heavy & General

PREVAILING WAGE RATE

Rates are located in the
"Statewide" rate package

Craft: Laborer - Heavy & General

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
1000 Hours	60%	70%	80%	90%						
Benefit	22.48	for	all	intervals						

Ratio of Apprentices to Journeymen - *

* No more than 1 apprentice for the first journeyman and no more than 1 apprentice for each additional 3 journeymen.

Craft: Laborer - Heavy & General

COMMENTS/NOTES

Heavy & General Laborer rates are located in the "Statewide" rate package.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Laborer-Residential and Modular Construction

PREVAILING WAGE RATE

	04/01/20
* Skilled Tradesman (only applies to Modular Construction)	W26.55 B5.45 T32.00
Foreman (person directing crew, regardless of his skill classification)	W30.55 B5.45 T36.00
Laborer	W22.55 B5.45 T28.00
Laborer (for single family and stand-alone duplex owned by single owner)	W17.05 B2.95 T20.00

Craft: Laborer-Residential and Modular Construction

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
	As shown	800 hours	600 hours	600 hours						
wage & benefits	70%	80%	90%							

Ratio of Apprentices to Journeymen-

One (1) apprentice shall be allowed for the first journeyman on site and no more than one (1) additional apprentice for each additional three (3) journeymen on site.

Craft: Laborer-Residential and Modular Construction

COMMENTS/NOTES

* SKILLED TRADESMAN- any worker doing work not typically done by a Building Laborer. Some examples are installing interior doors, sheet rock, hooking up appliances, installing light fixtures, installing railing systems, etc. Please note where local building codes require that certain work be performed under the supervision of a licensed tradesman (i.e. Plumber, Electrician, etc.) Laborers shall work under such supervision.

RESIDENTIAL CONSTRUCTION- All residential construction (not commercial), single-family, stand-alone duplex houses, townhouses and multi-family buildings of not more than four (4) floors. Each housing unit must be fully and independently functional; each housing unit must have its own kitchen and bathroom. The definition includes all incidental items such as site work, parking areas, utilities, streets and sidewalks. Please note the construction must be Residential in nature. A First Floor at or below grade may contain commercial space not to exceed 50% square footage of the floor; at least 50% of the First Floor must contain living accommodations or related nonresidential uses (e.g. laundry space, recreation/hobby rooms, and/or corridor space). Basement stories below grade used for storage, parking, mechanical systems/equipment, etc., are considered basement stories which are not used in determining the building's height. An attic is an unfinished space located immediately below the roof. Such space is not used in determining a building's height even if used for storage purposes. In addition, barracks and dormitories are not considered residential projects.

MODULAR RESIDENTIAL CONSTRUCTION- all aspects of modular residential construction (not commercial) at the site of installation of structures of no more than four (4) stories, including all excavation and site preparation, footings and

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

foundation systems whether poured on-site or prefabricated, all underground waterproofing, underground utilities, concrete slabs, sidewalks, driveways, paving, hardscape and landscaping. Please note the construction must be Residential as defined above. All work performed by the Set Crew (the crew of workers who set the modular boxes on the foundation), including the rigging, setting, attaching and assembly of all modules and structural members, preparation of the foundation to accept modules, such as sill plates, connection of all in-module and under-module connections including, but not limited to, plumbing, electrical, HVAC, fire suppression, CATS, telephone, television/internet, and fiber optic, the building or installation of any porches or decks regardless of material or method of construction, the on-site installation of, or completion of any roof system, doors, windows and fenestrations, including flashing, gutter and soffit systems, waterproofing, insulation and interior and exterior trim work, and painting. Please note that modular construction does not include on-site stick built construction, tip up construction or panel built construction.

The regular workday shall be 8 hours between 6:00 AM and 6:00 PM.

OVERTIME:

Hours worked in excess of 8 per day/40 per week, Monday through Saturday, and all hours worked on Sunday and holidays shall be paid at time and one-half the hourly rate.

RECOGNIZED HOILDAYS:

New Year's Day, Martin Luther King Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Operating Engineer - Field Engineer

PREVAILING WAGE RATE

Rates are located in the
"Statewide" rate package

Craft: Operating Engineer - Field Engineer

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	70%	75%	of Rod/	Chainman	Wage					
Yearly			80%	90%	Transit/	Instrument	man	Wage		

Ratio of Apprentices to Journeymen - *

* No more than 1 Field Engineer Apprentice per Survey Crew.

Craft: Operating Engineer - Field Engineer

COMMENTS/NOTES

Operating Engineer - Field Engineer rates are located in the "Statewide" rate package.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Painter - Line Striping

PREVAILING WAGE RATE

	12/10/20
Apprentice (1st year)	W27.50 B12.15 T39.65
Apprentice (2nd year)	W31.50 B23.10 T54.60
Foreman (Charge Person)	W40.15 B23.88 T64.03
Journeyman 1 (at least 1 year of working exp. as a journeyman)	W35.38 B23.88 T59.26
Journeyman 2 (at least 2 years of working exp. as a journeyman)	W39.15 B23.88 T63.03

Craft: Painter - Line Striping

COMMENTS/NOTES

OVERTIME:

Hours in excess of 8 per day, Monday through Saturday, and all hours on Sundays and holidays shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans Day, Thanksgiving Day and Christmas Day. Veterans Day may be substituted for the day after Thanksgiving.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Paperhanger PREVAILING WAGE RATE

	05/01/21
Foreman	W47.34 B27.22 T74.56
Journeyman	W43.04 B27.22 T70.26

Craft: Paperhanger APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	SEE	COMME	CIAL	PAINTER	NEW	CONSTR	UCTION			
		R								

Craft: Paperhanger COMMENTS/NOTES

FOREMEN REQUIREMENTS:

- When there are 4 or more Paperhangers on a job, 1 shall be designated a Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:

- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, General Election Day, Veterans' Day, Thanksgiving Day, Christmas Day

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

hours on Sundays and holidays shall be paid at double time, inclusive of benefits.

NOTE: Maintenance work is work to repair, restore, or improve the efficiency of existing facilities. This does NOT apply to ANY new construction.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays are observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Plasterer

PREVAILING WAGE RATE

See Bricklayer, Stone Mason Rates

Craft: Plasterer

COMMENTS/NOTES

See BRICKLAYER, STONE MASON Rates

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Plumber PREVAILING WAGE RATE

	05/05/21
Foreman	W61.77 B38.82 T100.59
General Foreman	W65.77 B38.82 T104.59
Journeyman	W57.19 B38.82 T96.01

Craft: Plumber APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	30%	45%	55%	65%	75%					
Benefits	16.17	22.06	23.99	25.95	27.87					

Ratio of Apprentices to Journeymen - *

* Employers may employ 1 apprentice on any job where 1 or 2 journeymen are employed. Thereafter, 1 apprentice may be employed for every 4 journeymen.

Craft: Plumber COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- On any job having 2 or more Plumbers, 1 must be designated a Foreman.
- On any job having 9 or more Plumbers, 2 shall be designated as Foremen.

The regular workday shall consist of 8 hours between 7:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must continue for a minimum of 5 consecutive workdays.
- When two shifts are worked, the second shift shall work 7.5 hours and receive 8 hours pay, at a rate equal to the hourly rate plus 10%, inclusive of benefits.
- When a third shift is worked, the third shift shall work 7 hours and receive 8 hours pay, at a rate equal to the hourly rate plus 15%, inclusive of benefits.

OVERTIME:

- All hours in excess of 8 per day, or before or after the regular workday that are not shift work, Monday through Friday, and all hours on Saturday, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays, shall be paid at double the hourly rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for a day lost due to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Roofer PREVAILING WAGE RATE

	06/29/21
Foreman	W44.27 B28.81 T73.08
Journeyman	W41.27 B28.81 T70.08

Craft: Roofer APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
6 Months	16.50	20.63	24.76	26.82	28.89	30.95	33.01	37.14		
Benefits	2.16	2.16	26.06	26.06	26.06	26.06	26.06	26.06		

Ratio of Apprentices to Journeymen - *

- * A) For roofing jobs that are of the 1 or single ply nature: 1:2 or fraction thereof
- B) For roofing jobs on new built up roofs: 1:3 or fraction thereof
- C) For roofing jobs that are of a tear-off nature: 1:2 or fraction thereof
- D) For roofing jobs {not requiring complete removal of existing systems, installation done over existing roof}: 1:3 or fraction thereof

Craft: Roofer COMMENTS/NOTES

Pitch: +.50 per hour

Mop Man: +.30 per hour

The regular workday consists of 8 hours between 8:00 AM and 4:30 PM.

OVERTIME:

Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturdays, Sundays, and holidays shall be paid at time and one-half the regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Sheet Metal Sign Installation

PREVAILING WAGE RATE

	04/05/21
Foreman	W39.79 B37.29 T77.08
Journeyman	W38.04 B37.29 T75.33

Craft: Sheet Metal Sign Installation

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
1000 hours	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%
Benefits	12.61	14.38	16.14	17.92	20.14	21.94	23.75	25.58	27.38	29.18

Ratio of Apprentices to Journeymen - 1:3

Craft: Sheet Metal Sign Installation

COMMENTS/NOTES

FOREMAN REQUIREMENT:

When there are 6 or more Sheet Metal Sign Installers on a job, 1 shall be designated a Foreman.

The regular workday consists of 8 hours, between 7:00 AM and 3:30 PM.

OVERTIME:

Hours before or after the regular workday, Monday through Friday, and all hours worked on Saturday shall be paid at time and one-half the hourly rate. All hours on Sunday and holidays shall be paid at double the hourly rate.

Four(4) 10 hour days may be worked, Monday through Friday, at straight time, for projects lasting at least one week in duration. The fifth day may be used as a make-up day at straight time for a day lost due to inclement weather. However, if the fifth day is not a make-up day, all hours worked will be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Saturday holidays observed the preceding Friday, Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Sheet Metal Worker

PREVAILING WAGE RATE

	06/29/21
Foreman	W54.85 B48.17 T103.02
General Foreman	W55.85 B48.17 T104.02
Journeyman	W51.35 B48.17 T99.52

Craft: Sheet Metal Worker

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	35%	45%	55%	65%	of	Journey	man	Wage	Rate	
Benefit	35%	45%	55%	65%	of	Journey	man	Benefit	Rate	

Ratio of Apprentices to Journeymen - 1:4

Craft: Sheet Metal Worker

COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- When there are 2 or more Sheet Metal Workers on a project, 1 must be designated a Foreman.
- When there are 17 or more Sheet Metal Workers on a project, 1 must be designated a General Foreman.
- When there is only 1 Sheet Metal Worker (1 Journeyman) on a project, he/she shall receive \$1.00 more than the regular Journeyman's rate.

The regular workday is 8 hours between 7:00 AM and 4:30 PM.

SHIFT DIFFERENTIAL:

- 2nd Shift (3:30 PM - 12:00 AM) : +17% of regular hourly rate
- Shift work must run for a minimum of 5 consecutive workdays.

OVERTIME:

- Hours in excess of 8 per day, or before or after the regular workday, that are not shift work, and the first 10 hours on Saturdays shall be paid at time and one-half of the regular rate, inclusive of benefits. Hours in excess of 10 per day on Saturday, and all hours on Sundays and holidays shall be at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Friday, at straight time, with hours in excess of 10 per day, and hours in excess of 40 per week paid at the overtime rates listed above.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Sprinkler Fitter

PREVAILING WAGE RATE

	06/29/21
Foreman	W68.17 B33.65 T101.82
General Foreman	W71.59 B33.65 T105.24
Journeyman	W63.92 B33.65 T97.57

Craft: Sprinkler Fitter

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
1000 Hours									80%	85%
Benefits							Intervals	9 to 10	Jourymn	Ben.

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES REGISTERED AS OF 7-1-13:

INTERVAL	PERIOD AND RATES									
1000 hours	25%	30%	40%	45%	55%	60%	70%	75%	85%	90%
Benefits	12.65	12.65	26.65	26.65	26.65	26.65	Intervals	7 to 10	receive	Journeyman Ben.

Craft: Sprinkler Fitter

COMMENTS/NOTES

The regular workday consists of 8 consecutive hours between 6:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:

- The first Sprinkler Fitter on the job must be designated a Foreman.
- On any job having 12 or more Sprinkler Fitters, one must be designated a General Foreman.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 2 consecutive workdays.
- 2nd and 3rd shift shall receive an additional 15% of the regular rate, per hour.
- Any "off hours" shift starting at 8:00 PM or later shall receive an additional 25% of the regular rate, per hour.

OVERTIME:

The first 2 hours in excess of 8 per day, after the regular workday that are not shift work, Monday through Friday, shall be paid at time and one-half the regular rate. Hours worked in excess of 10 per day, Monday through Friday, and all hours on Saturday, Sunday and holidays, shall be paid double the regular rate.

Four 10 hour days may be worked, Monday through Friday, at straight-time.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Tile Finisher-Marble

PREVAILING WAGE RATE

	07/05/21
Finisher	W48.87 B35.40 T84.27

Craft: Tile Finisher-Marble

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	40%	45%	50%	55%	60%	65%	70%	75%	85%	95%

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Finisher-Marble

COMMENTS/NOTES

OVERTIME:

Hours in excess of 7 per day, Monday through Friday, and the first 7 hours on Saturdays shall be paid at time and one half the regular rate, inclusive of benefits. Hours in excess of 7 on Saturdays and all hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Tile Setter - Ceramic

PREVAILING WAGE RATE

	07/01/21
Finisher	W46.89 B31.85 T78.74
Setter	W61.07 B35.02 T96.09

Craft: Tile Setter - Ceramic

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	35%	40%	50%	55%	60%	65%	70%	75%	80%	90%

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Setter - Ceramic

COMMENTS/NOTES

OVERTIME:

Hours in excess of 7 per day, and the first 10 hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Saturdays after 10 hours shall be paid double the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Tile Setter - Marble

PREVAILING WAGE RATE

	07/05/21
Tile Setter	W61.73 B37.91 T99.64

Craft: Tile Setter - Marble

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	40%	45%	50%	55%	60%	65%	70%	75%	85%	95%

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Setter - Marble

COMMENTS/NOTES

OVERTIME:

Hours in excess of 7 per day, Monday through Friday, and the first 7 hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. Hours in excess of 7 on Saturdays, and all hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Tile Setter - Mosaic & Terrazzo

PREVAILING WAGE RATE

	07/01/21
Grinder or Assistant	W56.86 B38.07 T94.93
Mechanic	W58.46 B38.09 T96.55
Terrazzo Resinous Worker	W48.95 B30.71 T79.66

Craft: Tile Setter - Mosaic & Terrazzo

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	50%	55%	60%	65%	70%	75%	85%	95%	100%	

Ratio of Apprentices to Journeymen - 1:5

Craft: Tile Setter - Mosaic & Terrazzo

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 7-1-17:

INTERVAL	PERIOD AND RATES						
1500 Hours	35%	45%	60%	70%	80%	90%	100%

The regular workday consists of 7 hours, between 8:00 AM and 3:30 PM.

OVERTIME:

- Hours in excess of 7 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Monday after Easter, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Truck Driver

PREVAILING WAGE RATE

	05/01/20
Bucket, Utility, Pick-up, Fuel Delivery trucks	W39.21 B38.05 T77.26
Dump truck, Asphalt Distributor, Tack Spreader	W39.21 B38.05 T77.26
Euclid-type vehicles (large, off-road equipment)	W39.31 B38.05 T77.36
Helper on Asphalt Distributor truck	W39.21 B38.05 T77.26
Slurry Seal, Seeding/Fertilizing/ Mulching truck	W39.21 B38.05 T77.26
Straight 3-axle truck	W39.21 B38.05 T77.26
Tractor Trailer (all types)	W39.31 B38.05 T77.36
Vacuum or Vac-All truck (entire unit)	W39.21 B38.05 T77.26
Winch Trailer	W39.41 B38.05 T77.46

Craft: Truck Driver

COMMENTS/NOTES

BLENDED RATE:

When a truck driver is performing work on the site and also serving as a material delivery driver, the driver shall be paid a "blended rate" which shall be 80% of the above-listed wage rates, plus the full benefit rate. This rate shall be used when the driver "round robins" for a minimum of 6 hours during the work day.

HAZARDOUS WASTE REMOVAL:

- On hazardous waste removal work on a State designated hazardous waste site where the driver is in direct contact with hazardous materials and when personal protective equipment is required for respiratory, skin, and eye protection, the driver shall receive an additional \$3.00 per hour (with or without protective gear).
- A hazardous waste related certified worker at a designated hazardous waste site who is not working in a zone requiring level A, B or C personal protection shall receive an additional \$1.00 per hour.

TRUCK FOREMAN: \$.75 cents per hour above regular rate. Overtime shall be increased accordingly.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

The regular workday shall be 8 hours, starting between 6:00 AM and 8:00 AM.

SHIFT DIFFERENTIAL:

- Shifts starting at 4:00 PM (2nd Shift): + \$3.00 per hour.
- Shifts starting at 12:00 AM (midnight/3rd Shift): time and one-half the hourly rate.
- Shifts starting at a time other than from 6:00 AM to 8:00 AM, when such hours are mandated by the project owner: + \$3.00 per hour.

OVERTIME:

- Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
 - Employees may work four 10-hour days at straight time, Monday through Thursday, with Friday used as a make-up day for a lost day. If Friday is not a make-up day, then all hours on Friday shall be paid at time and one-half the hourly rate.
 - Benefits on overtime shall be \$36.80.
- As of 5-1-20, benefits on overtime shall be \$37.80.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day (Decoration Day), July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday. The day after Thanksgiving may be substituted for Veteran's Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Truck Driver-Material Delivery Driver

PREVAILING WAGE RATE

	04/01/20
Driver	W25.60 B15.71 T41.31

Craft: Truck Driver-Material Delivery Driver

COMMENTS/NOTES

BLENDED RATE:

When a truck driver is performing work on the site and also serving as a material delivery driver, the driver shall be paid a "blended rate". See the "Truck Driver" craft for the blended rates.

Truck Foreman/Shop Steward: +\$0.25 per hour

SHIFT DIFFERENTIALS:

- 2nd Shift shall receive an additional \$0.50 per hour
- 3rd Shift shall receive time and one-half the hourly rate.

OVERTIME:

- Hours in excess of 8 per day, or before or after the regular workday that are not shift work, Monday through Friday, and all hours on Saturday shall be paid at time and one-half the hourly rate. All hours on Sunday and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day (Decoration Day), July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday. The day after Thanksgiving may be substituted for Veterans Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Welder

PREVAILING WAGE RATE

Welder

Craft: Welder

COMMENTS/NOTES

Welders rate is the same as the craft to which the welding is incidental .

STATEWIDE RATES

OPERATING ENGINEERS **Rates Expiration Date :**

{For apprentice rates refer to "Operating Engineers" apprentice rates in any county rate package}

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:

- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veteran's Day.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
54.43	35.60	90.03	92.28	

CLASSIFICATIONS:

A-Frame

Backhoe (combination)

Boom Attachment on loaders (Except pipehook)

Boring & Drilling Machine

Brush Chopper, Brush Shredder, Tree Shredder, Tree Shearer

Bulldozer, finish grade

Cableway

Carryall

Concrete Pump

Concrete Pumping System (Pumpcrete & similar types)

Conveyor, 125 feet or longer

Drill Doctor (Duties include dust collector and maintenance)

Front End Loader (2 cu. yds. but less than 5 cu. yds.)

Grader, finish

Groove Cutting Machine (ride-on type)

Heater Planer

Hoist: Outside Material Tower Hoist (all types including steam, gas, diesel, electric, air hydraulic, single and double drum, concrete, brick shaft caisson, snorkle roof, and other similar types, Except Chicago-boom type) * receives an additional \$1.00 per hour on 100 ft. up to 199 ft. total height, and an additional \$2.00 per hour on 200 ft. and over total height.

Hydraulic Crane (10 tons & under)

Hydraulic Dredge

Hydro-Axe

Hydro-Blaster

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
54.43	35.60	90.03	92.28	

CLASSIFICATIONS:

Jack (screw, air hydraulic, power-operated unit, or console type, Except hand jack or pile load test type)

Log Skidder

Pan

Paver, concrete

Plate & Frame Filter Press

Pumpcrete (unit type)

Pumpcrete, Squeezecrete, or Concrete Pumping machine (regardless of size)

Scraper

Side Boom

Straddle Carrier (Ross and similar types)

Whiphammer

Winch Truck (hoisting)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
52.52	35.60	88.12	90.37	

CLASSIFICATIONS:

- Asphalt Curbing Machine
- Asphalt Plant Engineer
- Asphalt Spreader
- Autograde Curb Trimmer & Sidewalk Shoulder Slipform (CMI & similar types)
- Autograde Curecrete Machine (CMI & similar types)
- Autograde Tube Finisher & Texturing Machine (CMI & similar types)
- Bar Bending Machines (Power)
- Batcher, Batching Plant, & Crusher [On Site]
- Belt Conveyor System
- Boom-Type Skimmer Machine
- Bridge Deck Finisher
- Bulldozer (all sizes)
- Captain (Power Boats)
- Car Dumper (railroad)
- Compressor & Blower unit for loading/unloading of concrete, cement, fly ash, or similar type materials (used independently or truck-mounted)
- Compressor (2 or 3 battery)
- Concrete Breaking Machine
- Concrete Cleaning/Decontamination Machine
- Concrete Finishing Machine
- Concrete Saw or Cutter (ride-on type)
- Concrete Spreader (Hetzl, Rexomatic & similar types)
- Concrete Vibrator

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022
Rate	Fringe	Total	Total
52.52	35.60	88.12	90.37

CLASSIFICATIONS:

- Conveyors - under 125 feet
- Crane Signalman
- Crushing Machine
- Directional Boring Machine
- Ditching Machine - Small (Ditchwitch, Vermeer or similar types)
- Dope Pot - Mechanical (with or without pump)
- Dumpster
- Elevator
- Fireman
- Fork Lift (Economobile, Lull & similar types)
- Front End Loader (1 cu. yd. and over but less than 2 cu. yds.)
- Generator (2 or 3 battery)
- Giraffe Grinder
- Goldhofer/Hydraulic Jacking Trailer
- Grader & Motor Patrols
- Grout Pump
- Gunnite Machine (Excluding nozzle)
- Hammer - Vibratory (in conjunction with generator)
- Heavy Equipment Robotics - Operator/Technician
- Hoist (roof, tugger, aerial platform hoist, house car)
- Hopper
- Hopper Doors (power operated)
- Ladder (motorized)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022
Rate	Fringe	Total	Total
52.52	35.60	88.12	90.37

CLASSIFICATIONS:

Laddervator

Locomotive (Dinky-type)

Maintenance Utility Man

Master Environmental Maintenance Technician

Mechanic

Mixer (Except paving mixers)

Pavement Breaker (truck-mounted or small self-propelled
ride-on type)

Pavement Breaker - maintenance of compressor or hydraulic unit

Pipe Bending Machine (power)

Pitch Pump

Plaster Pump (regardless of size)

Post Hole Digger (post pounder, auger)

Rod Bending Machines

Roller (black top)

Scale (power)

Seamen Pulverizing Mixer

Shoulder Widener

Silo

Skimmer Machine (boom type)

Steel Cutting Machine (service & maintenance)

Tamrock Drill

Tractor

Transfer Machines

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
52.52	35.60	88.12	90.37

CLASSIFICATIONS:

- Tug Captains
- Tug Master (Power Boats)
- Ultra High Pressure Waterjet Cutting Tool System - Operator/Maintenance Technician
- Vacuum Blasting Machine - Operator/Maintenance Technician
- Vibrating Plant (used with unloading)
- Welder & Repair Mechanic

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
49.18	35.60	84.78	87.03

CLASSIFICATIONS:

- Assistant Engineer/Oiler
- Driller's Helper
- Field Engineer - Transit man or Instrument man
- Maintenance Apprentice (Deckhand)
- Maintenance Apprentice (Oiler)
- Mechanic's Helper
- Off Road Back Dump
- Tire Repair & Maintenance

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
46.60	35.60	82.20	84.45

CLASSIFICATIONS:

- Field Engineer - Rodman or Chainman

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OPERATING ENGINEERS Rates Expiration Date :

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
56.76	35.60	92.36	94.61	

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (minimum)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022
Rate	Fringe	Total	Total
56.02	35.60	91.62	93.87

CLASSIFICATIONS:

Autograde Pavement Profiler (CMI & similar types)

Autograde Pavement Profiler - Recycle Type (CMI & similar types)

Autograde Placer/Trimmer/Spreader Combination (CMI & similar types)

Autograde Slipform Paver (CMI & similar types)

Backhoe (Excavator)

Central Power Plant

Concrete Paving Machine

Cranes, Derricks, Pile Drivers (all types), under 100 tons with a boom (including jib and/or leads) under 100 ft.

Draglines

Drill, Bauer, AMI and similar types

Drillmaster, Quarrymaster

Drillmaster/Quarrymaster (down-the-hole drill), rotary drill, self-propelled hydraulic drill, self-powered drill

Elevator Grader

Field Engineer-Chief of Party

Front End Loader (5 cu. yards or larger)

Gradall

Grader, Rago

Helicopter Co-Pilot

Helicopter Communications Engineer

Juntann Pile Driver

Locomotive (large)

Mucking Machine

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
56.02	35.60	91.62	93.87	

CLASSIFICATIONS:

Pavement & Concrete Breaker (Superhammer & Hoe Ram)

Pile Driver

Prentice Truck

Roadway Surface Grinder

Scooper (loader & shovel)

Shovel (Excavator)

Trackhoe (Excavator)

Tree Chopper with boom

Trenching Machine (cable plow)

Tunnel Boring Machine

Vacuum Truck

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022
Rate	Fringe	Total	Total
50.89	35.60	86.49	88.74

CLASSIFICATIONS:

- Chipper
- Compressor (single)
- Concrete Spreader (small type)
- Conveyor Loader (Except elevator graders)
- Engines, Large Diesel (1620 HP) & Staging Pump
- Farm Tractor
- Fertilizing Equipment (operation & maintenance)
- Fine Grade Machine (small type)
- Form Line Grader (small type)
- Front End Loader (under 1 cubic yard)
- Generator (single)
- Grease, Gas, Fuel, & Oil Supply Trucks
- Heaters (Nelson or other type)
- Lights - portable generating light plant
- Mixer, Concrete (small)
- Mulching Equipment (operation & maintenance)
- Power Broom or Sweeper
- Pump (diesel engine & hydraulic - regardless of power)
- Pump (larger than 2 inch suction, including submersible pumps)
- Road Finishing Machine (small type)
- Roller - grade, fill, or stone base
- Seeding Equipment (operation & maintenance)
- Sprinkler & Water Pump Trucks

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
50.89	35.60	86.49	88.74	

CLASSIFICATIONS:

Steam Generator or Boiler

Stone Spreader

Tamping Machine (vibrating ride-on type)

Temporary Heating Plant (Nelson or other type, including propane, natural gas, and flow-type units)

Water or Sprinkler Truck

Welding Machine (gas, diesel, or electric convertor, of any type)

Welding System - Multiple (rectifier transformer type)

Wellpoint Systems (including installation by bull gang and maintenance)

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
57.84	35.60	93.44	95.69	

CLASSIFICATIONS:

Helicopter Pilot/Engineer

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
62.52	35.60	98.12	100.37	

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), 100 tons and over and TOWER CRANE with boom (including jib and/or leads) 140 ft. and over

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
61.52	35.60	97.12	99.37	

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), 100 tons and over and TOWER CRANE with boom (including jib and/or leads) from 100 ft. to 139 ft.

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022	
	Rate	Fringe	Total	Total
	58.02	35.60	93.62	95.87

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types) , under 100 tons with a boom (including jib and/or leads) 140 ft. and over

Effective Dates:

	07/01/2021		07/01/2022	
	Rate	Fringe	Total	Total
	60.52	35.60	96.12	98.37

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), 100 tons and over and TOWER CRANE with a boom (including jib and/or leads) under 100 ft.

Effective Dates:

	07/01/2021		07/01/2022	
	Rate	Fringe	Total	Total
	57.02	35.60	92.62	94.87

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), under 100 tons with a boom (including jib and/or leads) from 100 ft. to 139 ft.

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

{For apprentice rates refer to "Operating Engineers" apprentice rates in any county rate package}

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:

- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veteran's Day.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
59.65	35.60	95.25	97.50

CLASSIFICATIONS:

Helicopter Co-Pilot & Communications Engineer

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022
Rate	Fringe	Total	Total
55.59	35.60	91.19	93.44

CLASSIFICATIONS:

A-Frame

Cherry Picker -10 tons or less (Over 10 tons use crane rate)

Hoist (all types Except Chicago-boom)

Jack (screw, air hydraulic, power-operated unit or console
type, Except hand jack or pile load test type)

Side Boom

Straddle Carrier

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

	07/01/2021		07/01/2022
Rate	Fringe	Total	Total
52.93	35.60	88.53	90.78

CLASSIFICATIONS:

- Aerial Platform Used On Hoists
- Apprentice Engineer/Oiler with Compressor or Welding Machine
- Captain (Power Boats)
- Compressor (2 or 3 in battery)
- Concrete Cleaning/Decontamination Machine Operator
- Conveyor or Tugger Hoist
- Directional Boring Machine
- Elevator or House Car
- Fireman
- Forklift
- Generator (2 or 3)
- Heavy Equipment Robotics, Operator/Technician
- Maintenance Utility Man
- Master Environmental Maintenance Technician
- Tug Master (Power Boats)
- Ultra High Pressure Waterjet Cutting Tool System Operator/Maintenance Technician
- Vacuum Blasting Machine Operator/Maintenance Technician
- Welding Machines, Gas or Electric Converters on any type-2 or 3 in battery including diesels

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

07/01/2021			07/01/2022	
Rate	Fringe	Total	Total	
51.40	35.60	87.00	89.25	

CLASSIFICATIONS:

Compressor (Single)

Generators

Welding Machines, Gas, Diesel, Or Electric Converters of any type-single

Welding System, Multiple (Rectifier Transformer Type)

Effective Dates:

07/01/2021			07/01/2022	
Rate	Fringe	Total	Total	
49.64	35.60	85.24	87.49	

CLASSIFICATIONS:

Assistant Engineer/Oiler

Drillers Helper

Field Engineer - Transit/Instrument Man

Maintenance Apprentice (Deckhand)

Maintenance Apprentice (Oiler)

Off Road Back Dump

Effective Dates:

07/01/2021			07/01/2022	
Rate	Fringe	Total	Total	
57.21	35.60	92.81	95.06	

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (Minimum)

Effective Dates:

07/01/2021			07/01/2022	
Rate	Fringe	Total	Total	
46.60	35.60	82.20	84.45	

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
56.35	35.60	91.95	94.20

CLASSIFICATIONS:

Field Engineer-Chief of Party

Vacuum Truck

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
64.54	35.60	100.14	102.39

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms, including jib, 140 ft. and over, above ground). Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, 140 ft. and over, above ground), and Pile Drivers (all types) 100 tons and over and Tower Cranes.

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
62.88	35.60	98.48	100.73

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, less than 140 ft. above ground), Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, less than 140 ft. above ground), Pile Drivers (all types), 100 tons and over and Tower Crane.

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
60.04	35.60	95.64	97.89

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, 140 ft. and over, above ground), Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, 140 ft. and over, above ground), Pile Drivers (all types), under 100 tons.

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
58.38	35.60	93.98	96.23

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, less than 140 ft. above ground), Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, less than 140 ft. above ground), Pile Drivers (all types), under 100 tons.

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STRUCTURAL STEEL ERECTION Rates Expiration Date :

Effective Dates:

07/01/2021			07/01/2022
Rate	Fringe	Total	Total
60.04	35.60	95.64	97.89

CLASSIFICATIONS:

Helicopter Pilot & Engineer

TEST BORING PRELIMINARY TO CONSTRUCTION-SOUTH/WEST **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Hunterdon, Mercer, Monmouth, Ocean, Salem, Sussex, Warren

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:

- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veteran's Day.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Rate	Total
56.02	35.60	91.62	56.02	93.87

CLASSIFICATIONS:

Driller

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Rate	Total
49.18	35.60	84.78	49.18	87.03

CLASSIFICATIONS:

Driller's Helper

FREE AIR TUNNEL JOBS **Rates Expiration Date :**

{For apprentice rates refer to "Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$3.00 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$3.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
46.25	33.23	79.48	80.78	83.53	86.03

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
45.95	33.23	79.18	80.48	83.23	85.73

CLASSIFICATIONS:

Heading Foreman, Shaft Foreman, Rod Foreman, Electrician Foreman, Rigging Foreman

FREE AIR TUNNEL JOBS **Rates Expiration Date :**

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
45.45	33.23	78.68	79.98	82.73	85.23

CLASSIFICATIONS:

Iron Foreman, Caulking Foreman, Form Foreman, Cement Finishing Foreman, Concrete Foreman, Track Foreman, Cleanup Foreman, Grout Foreman

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
47.95	33.23	81.18	82.48	85.23	87.73

CLASSIFICATIONS:

Blaster

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.90	33.23	78.13	79.43	82.18	84.68

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.55	33.23	77.78	79.08	81.83	84.33

CLASSIFICATIONS:

Skilled Men (including Caulker, Powder Carrier, all other skilled men)

Skilled Men (including Miner, Drill Runner, Iron Man, Conveyor Man, Manitenance Man, Safety Miner, Rigger, Block Layer, Cement Finisher, Tod Man)

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.40	33.23	77.63	78.93	81.68	84.18

CLASSIFICATIONS:

Semi-Skilled Men (including Bell or Signal Man Top or Bottom, Form Worker & Mover, Concrete Worker, Shaft Man, Tunnel Laborer, Caulker's Helper, all other semi-skilled)

Semi-Skilled Men (including Miner's Helper, Chuck Tender, Track Man, Nipper, Brake Man, Derail Man, Cable Man, Hose Man, Gravel Man, Form Man)

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FREE AIR TUNNEL JOBS Rates Expiration Date :

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.00	33.23	77.23	78.53	81.28	83.78

CLASSIFICATIONS:

All Others (including Powder Watchman, Change House Attendant, Top Laborer)

DRILL FOR GROUND WATER SUPPLY **Rates Expiration Date :**

The well driller and/or helper may perform all work relative to the construction, finishing, and servicing of wells, pumps and borings for ground water supply. The present methods of well drilling entailing as they do, many diverse job operations calling for drilling, pump discharge, piping, and the operation of various types of related power equipment, shall all be within the job duties and functions of the well driller and/or helper. In the event that an extension of work should occur beyond water well drilling functions, into the field of general construction work, such extension of work would come under the appropriate rates listed elsewhere in this wage determination.

- For Work Hours, Shift Differentials, Overtime Rates, and Recognized Holidays see the "Operating Engineers" section of this wage determination.

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
54.77	35.60	90.37	92.62	

CLASSIFICATIONS:

Driller

Effective Dates:

	07/01/2021		07/01/2022	
Rate	Fringe	Total	Total	
47.93	35.60	83.53	85.78	

CLASSIFICATIONS:

Driller's Helper

OPERATING ENGINEERS MARINE-DREDGING Rates Expiration Date :

NOTE: These wage rates only apply to dredging and other marine construction activities occurring in navigable waters and their tributaries.

Boat crews carrying explosive material (dynamite, pourfex, and other similar materials) shall be paid at 120% of the hourly wage rate for hours engaged in handling of said materials. Employees required to possess a Hazardous Material Certification as a condition of employment shall be compensated at 120% of the hourly wage rate.

OVERTIME:

Hours in excess of 40 per week, and all hours on Saturdays and Sundays, shall be paid at time and one-half the hourly rate. All hours on holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Martin Luther King Day, Good Friday, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

10/01/2020

Rate	Fringe	Total
41.42	15.29	56.71

CLASSIFICATIONS:

Lead Dredgerman, Operator, Leverman

Licensed Tug Operator (over 1000 HP)

Effective Dates:

10/01/2020

Rate	Fringe	Total
35.82	14.84	50.66

CLASSIFICATIONS:

Derrick Operator, Spider/Spill Barge Operator

Engineer, Electrician, Chief Welder, Chief Mate

Fill Placer, Operator II

Licensed Boat Operator

Maintenance Engineer

Effective Dates:

10/01/2020

Rate	Fringe	Total
33.72	14.67	48.39

CLASSIFICATIONS:

Certified Welder

OPERATING ENGINEERS MARINE-DREDGING **Rates Expiration Date :**

Effective Dates:

10/01/2020

Rate	Fringe	Total
32.80	14.30	47.10

CLASSIFICATIONS:

Mate, Drag Barge Operator, Steward, Assistant Fill Placer

Welder

Effective Dates:

10/01/2020

Rate	Fringe	Total
31.74	14.21	45.95

CLASSIFICATIONS:

Boat Operator

Effective Dates:

10/01/2020

Rate	Fringe	Total
26.37	13.48	39.85

CLASSIFICATIONS:

Shoreman, Deckhand, Rodman, Scowman

Effective Dates:

10/01/2020

Rate	Fringe	Total
36.91	14.93	51.84

CLASSIFICATIONS:

Crane Operator

MICROSURFACING/SLURRY SEAL Rates Expiration Date :

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem

IN ALL OTHER COUNTIES use the Heavy and General Laborers - North "Slurry Seal Laborer" rates.

SHIFT DIFFERENTIALS:

Any shift starting at 3:30 PM or later shall receive an additional \$0.35/hr

OVERTIME:

Hours in excess of 8 per day or 40 per week shall be paid at time and one-half the hourly rate. All hours on holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

Effective Dates:

03/01/2017

Rate	Fringe	Total
36.50	21.27	57.77

CLASSIFICATIONS:

Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
33.80	21.27	55.07

CLASSIFICATIONS:

Box man

Effective Dates:

03/01/2017

Rate	Fringe	Total
31.75	21.27	53.02

CLASSIFICATIONS:

Microsurface/Slurry Preparation

Effective Dates:

03/01/2017

Rate	Fringe	Total
31.75	21.27	53.02

CLASSIFICATIONS:

Squeegee man

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

MICROSURFACING/SLURRY SEAL Rates Expiration Date :

Effective Dates:

03/01/2017

Rate	Fringe	Total
30.30	21.27	51.57

CLASSIFICATIONS:

Cleaner, Taper

ASPHALT LABORERS - SOUTH **Rates Expiration Date :**

"THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY: Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$3.00 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$5.00/hr
- other Hazardous Waste site: + \$1.00/hr

FOR TIDE WORK (pertains to tidal water): A contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work) providing the eight (8) hour shift is completed between the hours of 5:00 AM and 6:30 PM.

Effective Dates:

03/19/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
45.75	33.23	78.98	80.28	84.03	87.53

CLASSIFICATIONS:

Paving Foreman

Effective Dates:

03/19/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.30	33.23	77.53	78.83	81.58	84.08

CLASSIFICATIONS:

Head Raker

Effective Dates:

03/19/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.45	33.23	77.68	78.98	81.73	84.23

CLASSIFICATIONS:

Screedman

ASPHALT LABORERS - SOUTH **Rates Expiration Date :**

Effective Dates:

03/19/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
43.90	33.23	77.13	78.43	81.18	83.68

CLASSIFICATIONS:

Tampers, Smoothers, Kettlemen,
Painters, Shovelers, Roller Boys

Effective Dates:

03/19/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.00	33.23	77.23	78.53	81.28	83.78

CLASSIFICATIONS:

Milling Controller

Effective Dates:

03/19/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.20	33.23	77.43	78.73	81.48	83.98

CLASSIFICATIONS:

Traffic Control Coordinator

Effective Dates:

03/19/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.15	33.23	77.38	78.68	81.43	83.93

CLASSIFICATIONS:

Raker, Luteman

TEST BORING PRELIMINARY TO CONSTRUCTION-NORTH **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Bergen, Essex, Hudson, Middlesex, Morris, Passaic, Somerset, Union

SHIFT DIFFERENTIAL:
Employees on a shift other than between the hours of 8:00 AM and 5:00 PM shall receive an additional \$2.00 per hour.

OVERTIME:
Hours in excess of 8 per day, Monday through Friday, and all hours on Saturday shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Hazardous Waste Pay (for Levels A, B, and C): an additional 15% of the hourly rate, per hour.

A newly hired Helper with no experience in the industry shall be paid as follows:
1st year on the job - 70% of Helper wage rate
2nd year on the job - 80% of Helper wage rate
3rd year on the job - 90% of Helper wage rate
All helpers receive full fringe benefit rate.

Effective Dates:

10/18/2020			10/18/2021	10/18/2022
Rate	Fringe	Total	Total	Total
32.92	29.50	62.42	64.17	65.92

CLASSIFICATIONS:

Helper (4th year helper)

Effective Dates:

10/18/2020			10/18/2021	10/18/2022
Rate	Fringe	Total	Total	Total
41.74	29.50	71.24	73.24	75.24

CLASSIFICATIONS:

Driller

Effective Dates:

10/18/2020			10/18/2021	10/18/2022
Rate	Fringe	Total	Total	Total
47.78	29.50	77.28	79.28	81.28

CLASSIFICATIONS:

Foreman

HEAVY & GENERAL LABORERS - NORTH **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, Warren

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$3.00 per hour.

FOR TIDE WORK (pertains to tidal water): A contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work) providing the eight (8) hour shift is completed between the hours of 5:00 AM and 6:30 PM.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$5.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
43.50	33.23	76.73	78.03	80.78	83.28

CLASSIFICATIONS:

"D" Rate:

basic, landscape, asphalt, slurry seal, or railroad track laborer; utility meter installer; flagman; salamander tender; pitman; dumpman; rakers or tampers on cold patch work; wrappers or coaters of pipe; waterproofer; timberman; wagon drill or drill master helper; powder carrier; magazine tender; signal man; power buggy operator; tree cutter; operator of basic power tools

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.20	33.23	77.43	78.73	81.48	83.98

CLASSIFICATIONS:

"C" Rate:

pipe layer; laser man; conduit or duct line layer; operator of jack hammer, chipping hammer, pavement breaker, concrete cutter, asphalt cutter, sheet hammer, or walk-behind saw cutter; sandblaster; acetylene cutting or burning; wagon drill, directional drill, or hydraulic drill operator; drill master; core driller; traffic control coordinator; asphalt raker or lute man

HEAVY & GENERAL LABORERS - NORTH **Rates Expiration Date :**

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.45	33.23	77.68	78.98	81.73	84.23

CLASSIFICATIONS:

"B" Rate:

concrete finisher; setter of brick or stone pavers; stone cutter; form setter; manhole, catch basin, or inlet builder; asphalt screedman; rammer; hardscaping; gunite nozzle man

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
48.00	33.23	81.23	82.53	85.28	87.78

CLASSIFICATIONS:

"A" Rate:

blaster

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
45.75	33.23	78.98	80.28	84.03	87.53

CLASSIFICATIONS:

"FOREMAN" Rate:

labor foreman, asphalt foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
46.75	33.23	79.98	81.28	85.03	88.53

CLASSIFICATIONS:

"GENERAL FOREMAN" Rate

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$3.00 per hour.

FOR TIDE WORK (pertains to tidal water): A contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work) providing the eight (8) hour shift is completed between the hours of 5:00 AM and 6:30 PM.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$5.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

	03/10/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
43.50	33.23	76.73	78.03	80.78	83.28

CLASSIFICATIONS:

basic, landscape, or railroad track laborer; utility meter installer; flagman; salamander tender; pitman; dumpman; rakers or tampers on cold patch work; wrappers or coaters of pipe; waterproofers; tree cutter, timberman

Effective Dates:

	03/10/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
43.50	33.23	76.73	78.03	80.78	83.28

CLASSIFICATIONS:

wagon drill or drill master helper; powder carrier; magazine tender; signal man

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date :**

Effective Dates:

03/10/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.20	33.23	77.43	78.73	81.48	83.98

CLASSIFICATIONS:

pipe layer; laser man; conduit or duct line layer; operator of jack hammer, chipping hammer, pavement breaker, concrete cutter, asphalt cutter, sheet hammer, or walk-behind saw cutter; sandblaster; acetylene cutting or burning

Effective Dates:

03/10/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.20	33.23	77.43	78.73	81.48	83.98

CLASSIFICATIONS:

wagon or directional drill operator; drill master

Effective Dates:

03/10/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
48.00	33.23	81.23	82.53	85.28	87.78

CLASSIFICATIONS:

blaster

Effective Dates:

03/10/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
45.75	33.23	78.98	80.28	84.03	87.53

CLASSIFICATIONS:

labor foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

03/10/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
46.75	33.23	79.98	81.28	85.03	88.53

CLASSIFICATIONS:

general foreman

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date :**

Effective Dates:

	03/10/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.45	33.23	77.68	78.98	81.73	84.23

CLASSIFICATIONS:

concrete finisher; setter of brick or stone pavers; stone cutter; form setter; manhole, catch basin, or inlet builder; rammer; gunite nozzle man

PIPELINE - MAINLINE TRANSMISSION Rates Expiration Date :

These rates apply to the following: welding on Transportation Mainline pipe lines (cross-country pipe lines, or any segments thereof, transporting coal, gas, oil, water or other transportable materials, vapors or liquids, including portions of such pipe lines within private property boundaries up to the final metering station or connection - the point where a valve, consumer connection, or town border station divides mainline transmission lines or higher pressure lateral and branch lines from lower pressure distribution systems).

PER DIEM PAYMENT:

In addition to the total wage rate paid for each craft, the following per diem (per day) amounts must also be paid - Pipeline Journeyman: \$80.50; Pipeline Journeyman Welder: \$140.50; and Pipeline Helper: \$64.50. Note: in order to receive the per diem payment an employee must work a minimum of 8 hours in a 24 hour period.

NOTES:

- Journeymen employed as "stringer bead" welders and journeymen who are regularly employed as "hot-pass" welders shall receive \$1.00 per hour more than other journeymen.
- Welders running "stringer bead" or "hot-pass" on "cutouts" or "tie-ins" on a production basis shall be paid \$1.00 per hour above the journeymen rate.
- Whenever a welder helper is employed using a power buffer or power grinder immediately behind the stringer bead and/or hot-pass welders, and the pipe gang is set on a production basis, the helper shall be paid \$2.00 per hour above the helper rate.
- If back welding is performed inside a pipe under either or both of the following conditions, the welder engaged in the welding will receive \$3.00 per hour above the regular rate for the job only for the days on which such back welding is performed:
 - The employer elects, as a regular procedure, to back weld each line-up. This condition is not intended to apply to occasional back welding performed by the pipe gang to repair a bead, to rectify a "high-lo" condition or wall thickness, etc.
 - A welder is required to back weld a completed weld behind the firing line.
- If the welder helper is required to go inside the pipe for the purpose of brushing, buffing and grinding the weld, they shall receive a wage rate \$1.00 per hour above the regular helper rate for the days involved.
- Welders working on "hot work" shall be paid \$2.00 per hour above the regular rate for each day engaged in such work. "Hot work" is defined as work on lines in service where there is the danger of fire or explosion.

The regular workday shall be 8 hours, between 8:00 AM and 4:30 PM.

OVERTIME:

Hours in excess of 8 per day, and all hours on Sundays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

06/15/2021

Rate	Fringe	Total
54.64	33.55	88.19

CLASSIFICATIONS:

Pipeline Journeyman Welder

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

PIPELINE - MAINLINE TRANSMISSION Rates Expiration Date :

Effective Dates:

06/15/2021

Rate	Fringe	Total
54.64	33.55	88.19

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

06/15/2021

Rate	Fringe	Total
33.84	23.17	57.01

CLASSIFICATIONS:

Pipeline Helper

PIPELINE - GAS DISTRIBUTION **Rates Expiration Date :**

These rates apply to the following: welding on gas line distribution systems (that portion of the gas distribution system placed in streets, roads, subways, tunnels, viaducts, highways and easements which serves the users of gas).

SHIFT DIFFERENTIALS:

An "irregular" shift may start any time from 5:00 PM to 12:00 AM, Monday through Friday, and shall receive an additional 15% of the regular rate per hour, inclusive of benefits.

OVERTIME:

Hours in excess of forty per week, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

	11/02/2020		11/01/2021	11/01/2022
Rate	Fringe	Total	Total	Total
61.50	27.23	88.73	91.23	93.73

CLASSIFICATIONS:

Pipeline Journeyman Welder

Effective Dates:

	11/02/2020		11/01/2021	11/01/2022
Rate	Fringe	Total	Total	Total
61.50	27.23	88.73	91.23	93.73

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

	11/02/2020		11/01/2021	11/01/2022
Rate	Fringe	Total	Total	Total
39.46	19.88	59.34	61.01	62.68

CLASSIFICATIONS:

Pipeline Helper

ASPHALT LABORERS- NORTH **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, Warren

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$3.00 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$5.00/hr
- other Hazardous Waste site: + \$1.00/hr

FOR TIDE WORK (pertains to tidal water): A contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work) providing the eight (8) hour shift is completed between the hours of 5:00 AM and 6:30 PM.

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
45.75	33.23	78.98	80.28	84.03	87.53

CLASSIFICATIONS:

Asphalt Foreman

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.45	33.23	77.68	78.98	81.73	84.23

CLASSIFICATIONS:

Asphalt Screedman

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
44.20	33.23	77.43	78.73	81.48	83.98

CLASSIFICATIONS:

Asphalt Raker or Lute Man

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

ASPHALT LABORERS- NORTH Rates Expiration Date :

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
43.50	33.23	76.73	78.03	80.78	83.28

CLASSIFICATIONS:

Asphalt Laborer

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Electrician-Utility Work (North)

(For apprentice rates refer to Electrician-Utility Work (North) in any county rate package).

These rates apply to work contracted for by the following utility companies:

Public Service Electric & Gas Co. of NJ, GPU Energy, Borough of Madison Electric Department, Sussex Rural Electric Cooperative, Rockland Utilities, and Butler Municipal Electric Co.

These rates do not apply to work on substations or switching stations.

For Utility work contracted for by a utility company other than those listed above or those listed under "Electrician-Utility Work (South)", see the "Outside Commercial Rates" for the county in which the jobsite is located.

* FOR OUTSIDE COMMERCIAL RATES PLEASE SEE COUNTY RATES

The regular workday is 8 hours, between 6:00 AM and 6:00 PM.

FOR EMERGENCY WORK ONLY: (emergency work is defined as work caused by storm, catastrophe, act of god, and circumstances beyond the control of the employer)-all hours of work shall be paid at double the hourly rate.

SHIFT DIFFERENTIALS:

Shift work must run for a minimum of 5 consecutive workdays.

2nd shift (between the hours of 4:30 PM and 1:00 AM): 8 hours of work + 17.3% of the regular rate, inclusive of benefits.

3rd shift (between the hours of 12:30 AM and 9:00 AM): 8 hours of work + 31.4% of the regular rate per hour, inclusive of benefits.

OVERTIME:

Hours in excess of 8 per day, or before or after the regular workday Monday through Friday, that is not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the hourly rate, inclusive of benefits.

Four 10-hour days may worked, at straight time, between 7:00 AM and 6:30 PM, Monday through Thursday.

RECOGNIZED HOLIDAYS:

New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day and Christmas Day, or day on which they are legally observed.

Effective Dates:

11/29/2020

Rate	Fringe	Total
57.30	39.54	96.84

CLASSIFICATIONS:

Chief Lineman

Effective Dates:

11/29/2020

Rate	Fringe	Total
54.06	37.30	91.36

CLASSIFICATIONS:

Journeyman Lineman

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Effective Dates:

11/29/2020

Rate	Fringe	Total
54.06	37.30	91.36

CLASSIFICATIONS:

Special License Operator

Effective Dates:

11/29/2020

Rate	Fringe	Total
53.52	36.92	90.44

CLASSIFICATIONS:

Transit Man

Effective Dates:

11/29/2020

Rate	Fringe	Total
51.90	35.80	87.70

CLASSIFICATIONS:

Line Equipment Operator

Effective Dates:

11/29/2020

Rate	Fringe	Total
45.41	31.32	76.73

CLASSIFICATIONS:

Dynamite Man

Effective Dates:

11/29/2020

Rate	Fringe	Total
67.57	46.62	114.19

CLASSIFICATIONS:

General Foreman

Effective Dates:

11/29/2020

Rate	Fringe	Total
62.17	42.88	105.05

CLASSIFICATIONS:

Assistant General Foreman

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Effective Dates:

11/29/2020

Rate	Fringe	Total
60.55	41.77	102.32

CLASSIFICATIONS:

Line Foreman

Effective Dates:

11/29/2020

Rate	Fringe	Total
43.79	30.20	73.99

CLASSIFICATIONS:

Street Light Mechanical Leader

Effective Dates:

11/29/2020

Rate	Fringe	Total
41.63	28.71	70.34

CLASSIFICATIONS:

Groundman Winch Operator

Effective Dates:

11/29/2020

Rate	Fringe	Total
41.63	28.71	70.34

CLASSIFICATIONS:

Groundman Truck Operator

Effective Dates:

11/29/2020

Rate	Fringe	Total
41.08	28.35	69.43

CLASSIFICATIONS:

Street Light Mechanic

Effective Dates:

11/29/2020

Rate	Fringe	Total
41.08	28.35	69.43

CLASSIFICATIONS:

Line Equipment Mechanic

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ELECTRICIAN- UTILITY WORK (NORTH) Rates Expiration Date :

Effective Dates:

11/29/2020

Rate	Fringe	Total
35.14	24.24	59.38

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

11/29/2020

Rate	Fringe	Total
32.44	22.36	54.80

CLASSIFICATIONS:

Groundman 1st Year

Effective Dates:

11/29/2020

Rate	Fringe	Total
53.52	36.92	90.44

CLASSIFICATIONS:

Line Equipment Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Electrician-Utility Work (South)

(For apprentice rates refer to Electrician-Utility Work (South) in any county rate package).

These rates apply to work contracted for by the following utility company:

Atlantic City Electric.

These rates do not apply to work on substations or switching stations.

For utility work contracted for by a utility company other than the one listed above or those listed under "Electrician-Utility Work (North)", see the "Outside Commercial Rates" for the county in which the jobsite is located.

* FOR OUTSIDE COMMERCIAL RATES PLEASE SEE COUNTY RATES

The regular workday is 8 hours, between 7:00 AM and 4:30 PM.

FOR EMERGENCY WORK ONLY: (emergency work is defined as work caused by storm, catastrophe, act of god, and circumstances beyond the control of the employer)- all hours of work shall be paid at double the hourly rate.

SHIFT DIFFERENTIALS:

Shift work must run for a minimum of 5 consecutive workdays.

When two (2) or three (3) shifts are worked the following shall apply:

1st shift (between the hours of 8:00 AM and 4:30 PM)

2nd shift (between the hours of 4:30 PM and 12:30 AM): 8 hours of work + 10% of the regular rate of pay for 7.5 hours worked.

3rd shift (between the hours of 12:30 AM and 8:00 AM): 8 hours of work + 15% of the regular rate of pay for 7 hours worked.

OVERTIME:

Hours in excess of 8 per day, or before or after the regular workday Monday through Friday, that is not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate. All hours on Sundays and Holidays shall be paid double the hourly rate.

Four 10-hour days may be worked, at straight time, between 6:00 AM and 6:00 PM, Monday through Thursday with Friday used as a make-up day.

RECOGNIZED HOLIDAYS:

New Year's Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day or on days celebrated.

WORKING RULES:

There shall be a Foreman in charge of each work crew. No crews are to exceed twelve (12) men, including Foremen.

There shall be a General Foreman designated for transmission work when three (3) or more crews are on the same job and for distribution work where there are more than twenty (20) employees on site.

A small job crew shall consist of five (5) or less employees, one (1) of the Journeyman Linemen in the crew shall be designated as a Small Job Foreman.

Work performed from ladders and/or mechanical lift equipment shall be the work of Linemen and/or Apprentices.

On new construction, fitting and framing poles, towers or structures may be done by Journeymen and/or Apprentices. Groundmen may assist, but may not perform any work which would be performed by Linemen if assembled in the air.

There shall be a Journeyman Lineman in each pole setting, erection, grounding, wire and cable-pulling crew of more than three (3) men.

Effective Dates:

12/02/2020

Rate	Fringe	Total
63.56	51.00	114.56

CLASSIFICATIONS:

General Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Effective Dates:

12/02/2020

Rate	Fringe	Total
56.43	46.88	103.31

CLASSIFICATIONS:

Foreman

Effective Dates:

12/02/2020

Rate	Fringe	Total
53.46	45.13	98.59

CLASSIFICATIONS:

Small Job Foreman

Effective Dates:

12/02/2020

Rate	Fringe	Total
49.50	42.79	92.29

CLASSIFICATIONS:

Heavy Equipment Operator

Effective Dates:

12/02/2020

Rate	Fringe	Total
49.50	42.79	92.29

CLASSIFICATIONS:

Cable Splicer

Effective Dates:

12/02/2020

Rate	Fringe	Total
49.50	42.79	92.29

CLASSIFICATIONS:

Journeyman Lineman

Effective Dates:

12/02/2020

Rate	Fringe	Total
49.50	42.79	92.29

CLASSIFICATIONS:

Journeyman Welder

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Effective Dates:

12/02/2020

Rate	Fringe	Total
49.50	42.79	92.29

CLASSIFICATIONS:

Journeyman Painter

Effective Dates:

12/02/2020

Rate	Fringe	Total
39.60	36.94	76.54

CLASSIFICATIONS:

Light Equipment Operator

Effective Dates:

12/02/2020

Rate	Fringe	Total
34.65	34.00	68.65

CLASSIFICATIONS:

Groundman Truck Driver

Effective Dates:

12/02/2020

Rate	Fringe	Total
32.18	32.55	64.73

CLASSIFICATIONS:

Groundman 3rd Year

Effective Dates:

12/02/2020

Rate	Fringe	Total
29.70	31.09	60.79

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

12/02/2020

Rate	Fringe	Total
27.23	29.62	56.85

CLASSIFICATIONS:

Groundman 1st Year

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ELECTRICIAN- UTILITY WORK (SOUTH) Rates Expiration Date :

Effective Dates:

12/02/2020

Rate	Fringe	Total
21.78	26.40	48.18

CLASSIFICATIONS:

Flagman

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS Rates Expiration Date :

****THESE RATES APPLY TO CONSTRUCTION ON NEW TRANS HUDSON TUNNELS ONLY****

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$3.00 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$3.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
69.38	33.23	102.61	104.31	107.86	111.19

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
68.93	33.23	102.16	103.86	107.41	110.74

CLASSIFICATIONS:

Heading Foreman, Shaft Foreman, Rod Foreman, Electrical Foreman, Rigging Foreman

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date :**

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
68.18	33.23	101.41	103.11	106.66	109.99

CLASSIFICATIONS:

Iron Foreman, Caulking Foreman, Form Foreman, Cement Finishing Foreman, Concrete Foreman, Track Foreman, Clean-up Foreman, Grout Foreman

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
71.93	33.23	105.16	106.86	110.41	113.74

CLASSIFICATIONS:

Blaster

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
67.35	33.23	100.58	102.28	105.83	109.16

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
66.83	33.23	100.06	101.76	105.31	108.64

CLASSIFICATIONS:

Skilled Men (including Caulker, Powder Carrier, all other skilled men)
Skilled Men (including Miner, Drill Runner, Iron Man, Conveyor Man, Maintenance Man, Safety Miner, Rigger, Block Layer, Cement Finisher, Rod Man)

Effective Dates:

03/03/2021			09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
66.60	33.23	99.83	101.53	105.08	108.41

CLASSIFICATIONS:

Semi-Skilled Men (including Bell or Signal Man top or bottom, Form Worker & Mover, Concrete Worker, Shaft Man, Tunnel Laborer, Caulker's Helper, all other semi-skilled)
Semi-Skilled Men (including Miner's Helper, Chuck Tender, Track Man, Nipper, Brake Man, Derail Man, Cable Man, Hose Man, Gravel Man, Form Man)

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HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date :**

Effective Dates:

	03/03/2021		09/01/2021	03/01/2022	03/01/2023
Rate	Fringe	Total	Total	Total	Total
66.00	33.23	99.23	100.93	104.48	107.81

CLASSIFICATIONS:

All others (including Powder Watchman, Change House Attendant, Top Laborer, Job Steward)

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Note: Technical specifications for Mechanical & Electrical trades are on the drawings.

UNION COUNTY CLERK OFFICE RENOVATION

ARCHITECT **THE MUSIAL GROUP, p.a. ARCHITECTURE**

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Mountainside, New Jersey 07092
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Kevin Burns, Supervising Environmental Scientist
kburns@tandmassociates.com

ARCHITECTS INSTRUCTIONS

PART 1 - DEFINITIONS

- 1.1 ITEMS: Wherever reference is made to the Owner, Title of Project, Architect or Engineer, they shall be as follows:
- A. OWNER: COUNTY OF UNION, DIVISION OF ENGINEERING, 2325 South Avenue, Scotch Plains, NJ 07076
 - B. ADDRESS BIDS AND SUBMIT IN PERSON TO:
Union County Division of Purchasing
UC Administration Building, 3rd Floor
10 Elizabethtown Plaza
Elizabeth, NJ 07207
 - C. TITLE OF PROJECT: UNION COUNTY CLERK OFFICE RENOVATIONS Elizabeth, NJ, together with all work incidental thereto.
 - D. ARCHITECT: THE MUSIAL GROUP, p.a., architecture, 191 Mill Lane, Mountainside, NJ 07092, Telephone: 908-232-2860, Facsimile: 908-232-2845
 - E. BIDDER: Bidder is a contractor submitting a Lump Sum Bid For All Work.
 - F. CONTRACTOR: The lowest responsible Bidder(s) as determined by Union County.

PART 2 - SCOPE

- 2.1 It is the intention that the Drawings, Specifications and other contract documents provided for the Project are complete in all their parts as is reasonably possible, as other professionals in the industry would prepare for similar work. Any work shown on the Drawings and not particularly described in the Specifications or vice versa, or any work evidently necessary to complete the Contract, shall be included in the bid.
- 2.2 During the course of the work, should any ambiguities or discrepancies be found in or between the Drawings and Specifications, the Architect will interpret the intent of the Drawings and Specifications. It is expressly stipulated that neither the Drawings, nor the Specifications shall take precedence one over the other, and that the Architect will interpret or construe the Drawings and Specifications so as to secure the most substantial and complete performance of the work as is most consistent with the needs and requirements of the work.

PART 3 - CONDITIONS OF THE WORK

- 3.1 Bidders shall submit bids subject to, and in accordance with, all the conditions stated herein, required by the Specifications, Drawings, and actual conditions.

- 3.2 Each bidder shall visit the site of the proposed Work and acquaint itself with existing conditions, fully understanding the facilities, difficulties and restrictions attending the Project Work, including any applicable State of New Jersey or local laws, regulations of public authorities or utilities having jurisdiction. Bidders shall likewise carefully examine the site(s), as well as the Drawings and Specifications and fully inform themselves as to the work of others coming in conjunction with their work, both labor and materials even though not especially shown or noted, but that are necessary to obtain a complete and finished condition.
- 3.3 The Bidders attention is directed to the fact that all applicable federal, state, and municipal laws, and ordinance rules, and regulations, including N.J.S.A. 10:5-31 et. seq. and N.J.A.C. 17:27 regarding Affirmative Action, of authorities having jurisdiction over construction work in the locality of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as if set forth therein at length including, but not limited to, those laws identified in the INSTRUCTIONS TO BIDDERS.
- 3.4 The Bidder's attention is directed to the fact that before submitting a bid, the bidder shall fully inform himself to all applicable federal, state, and municipal laws, ordinances, rules and regulations, of all authorities that have jurisdiction over the construction work, insurance, bonds, regulations, wage rates, underwriters approval and should include in his bid a sum to cover the cost of all items included in the specifications and pertinent documents.
- 3.5 Arrangements for site visits must be made by first calling:
- A. Mr. Charles Chirafesi III, Director, Division of Facilities Management, Phone: 908-527-4218 Fax: 908-558-2353 Email:cchirafesi@ucnj.org
- 3.6 EACH BIDDER AND SUBCONTRACTOR SHALL THOROUGHLY EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS.
- 3.7 The Bidders and their Subcontractors shall review all drawings for the Project prior to bidding and shall not limit their bids to only work that is shown on the drawings referenced for a trade. The drawings are prepared only for ease of reference, and are not intended to limit the work of the Contractor and its Subcontractors. If there is shown on one drawing work to be done that usually requires work of another contractor/subcontractor, or trade, and same is standard in the industry, then the Contractor whose trade it is shall include the work in its bid. It is assumed to be reasonable since the Contractor whose trade must do the work has reviewed and familiarized himself with the entire set of drawings and specifications, and therefore knew that it had to be furnished or hooked up and installed. Also, if equipment is shown on one drawing, but is not shown as being hooked-up on other drawings, the contractor/ subcontractor whose trade usually does the hook-up shall do so at no additional charge since he reviewed and familiarized himself with the entire set of drawings and therefore knew the equipment was there and it had to be hooked up. If steel work is shown on the architectural drawings, but not on the structural, it still shall be provided at no additional cost to the owner, since the steel subcontractor reviewed the entire set of drawings and therefore knew the material was required.
- 3.8 By submitting a Bid Proposal, the Bidder covenants that it has carefully examined the complete set of Contract Documents, Addenda, if any, and the site; and that from its investigation it has satisfied itself as to the nature and location of the work, the phasing required for the work, the

general and local conditions, and all matters that may in any way affect the work, or its performance, and that as a result of such examination, it fully understands the intent and purpose thereof, its obligation there under, and that it will not make any claim for, or have any right to damages, because of the lack of any information.

- 3.9 Bidders are advised that construction terms and conditions set forth in the Contract Documents will be rigidly enforced.

PART 4 - PREPARATION OF THE BID

- 4.1 Bidders shall leave their name, address, phone number and fax number at the office of the Architect if they wish to have information or Addenda delivered to them, if and when required, rather than picking same up in person. Bidders shall provide a street address and not a Post Office Box number. Bidders who provide a Post Office Box number will not receive any documents. The Architect and the Owner shall not be responsible for any missing or incorrect information.
- 4.2 Bids shall be submitted in TRIPLICATE and in the form described in "Form of Proposal" and shall be signed in ink. A proposal form has been provided separate from the booklet and may be reproduced. Erasures or other changes in a bid must be explained or noted over the signature of the Bidder. Bids containing any omissions, unexplained erasures, alterations, items not called for in the Proposal or irregularities of any kind may be rejected.
- A. The "complete" Bid Form includes the Bid Bond, Bidder's Checklist, Guarantee Certificate of Surety, Ownership Disclosure Certification, Non-Collusion Affidavit and any other documents noted in these Instructions to Bidders and as required by law to be submitted with this Bid.
- 4.3 Bid prices must be filled in, in ink, in both words and figures for the contract or work for which the bid is made.
- 4.4 Insert applicable alternates, if any have been specified applicable to the Bidder's work. All alternates must be bid upon. Any Bidder's failure to respond to, or complete, any alternate may be deemed a material, non-waivable defect and will render the bid non-responsible. The Bidder shall clearly designate whether the change in price is an addition or subtraction, by using either a "+" sign or the word "addition," or in the alternative, a "-" sign or the word "minus." If there is no change in price, the Bidder shall insert "NC" or "No Change." If it is left blank it will be assumed to mean no change in price.
- 4.5 Insert applicable unit prices, if any have been specified applicable to the Bidder's work. Where unit prices have already been established by the contract documents, the Bidder agrees that such unit prices shall prevail. All unit prices, whether filled in by the Bidder or established by the contract documents, shall become part of the Contract. No bid will be considered or award made, unless applicable unit prices, as required, are filled in.
- 4.6 Conditional bids will not be accepted. Bids may be withdrawn prior to the advertised time for the opening of bids or authorized postponement thereof. Bids received after the advertised time will

not be considered. Bidders shall be solely responsible for premature opening or late delivery of bids not properly marked or addressed.

4.7 Bidders must submit their bids in a sealed envelope addressed to the Owner and bearing on outside: the name of the Bidder, its address, the title of the project, and the contract number being bid.

4.8 BID SECURITY

- A. All bidders are required to submit a bid security with their bids.
- B. The Bid Security shall be in the amount of ten percent (10%) of the Bid, but not in excess of \$20,000 (twenty thousand dollars), and payable to the order of the County of Union. Bid Security, at the option of the Bidder, may be a certified or cashier's check drawn on an incorporated bank or trust company, or a bid bond equivalent in scope to the sample Bid Bond included with the Bid Form.
- C. All bid security, except the security of the three (3) apparent lowest responsible bidders, shall if requested, be returned after ten (10) days from the opening of bids, Sundays and holidays excluded, and the bids of such bidders shall be considered as withdrawn. Within three (3) days after the awarding of the contract and the approval of the Contractor's Performance Bond, the bid security of the remaining unsuccessful bidders shall be returned to them forthwith, Sundays and holidays excluded.
- D. If the successful Bidder fails to execute the contract and furnish the Performance Bond and Labor & Materials Payment Bond within eight (8) days from the date of "Notice of Acceptance," the award of the Contract may be rescinded and the bid security will become liable up to its full amount for any difference between the amount of the bid and the Contract, which the Owner may be obliged to award to another Bidder or Bidders.
- E. If the bid is not accepted within sixty (60) days after the date of opening of bids, or any length of time thereafter, if agreed to by the Owner and the Bidder, or if the Bidder executes the Contract and delivers the Performance Bond, the bid security will be returned to the Bidder.
- F. No interest will be allowed on the bid security deposits. If the bid security is in the form of a Bid Bond, the bonding company shall fulfill the obligation as herein stated.

4.9 GUARANTEE CERTIFICATE FROM SURETY COMPANY

- A. All bidders are required to submit with their bid, a guarantee certificate from a surety company authorized to do business in New Jersey and satisfactory to the Owner. Certificate shall state that it will provide the Contractor/Bidder and all Subcontractors, if successful, with a bond for the faithful performance of all provisions relating to the performance of the Agreement with the Owner during the course of construction.

4.10 BOND OF AN INDIVIDUAL

- A. If a Bidder desires to offer the bond of an individual instead of that of a surety company, it shall submit with its bid, a certificate signed by such individual similar to that required of a surety company.

- B. The Owner may reject any such bid if it is not satisfied with the sufficiency of the individual surety offered.

4.11 PERFORMANCE AND LABOR AND MATERIAL PAYMENT BOND

- A. A New Jersey Statutory Performance Bond and a Labor and Material Payment Bond from a surety company authorized to do business in New Jersey and satisfactory to the Owner (use the form AIA A312, attached hereto, as a guide and as an example of a satisfactory form of performance bond), in the amount of one hundred percent (100%) of the Contract Sum, shall be delivered simultaneously with the executed Contract. If, at any time, or for any reason, the bonds cease to be adequate security for the Owner, the successful Bidder shall, within five- (5) days after notice, substitute an acceptable bond with surety satisfactory to the Owner
- B. The premium on bonds shall be paid by the successful Bidder.

4.12 BONDING ATTORNEYS

- A. Attorneys in fact, who sign bonds, shall file with each bond, a certified and effectively dated copy of their power of attorney.

4.13 OWNERSHIP DISCLOSURES REQUIRED

- A. Pursuant to L. 1977 N.J.S.A. 52:25-24.2, the Bidder shall submit with its bid, or prior to receipt of bids, a statement setting forth the names and addresses of all stockholders in the corporation or partnership bidding who own ten percent (10%) or greater interest therein.
- B. If one or more such stockholder or partner is itself a corporation or partnership, the Bidder shall submit further disclosures pursuant to the law.

4.14 NON-COLLUSION AFFIDAVIT

- A. The Bidder shall submit with its bid, a statement of non-collusion with verbiage similar to that on the "Sample Non-Collusion Affidavit."

4.15 COMPLIANCE WITH THE PUBLIC WORKS CONTRACTOR REGISTRATION ACT P.L. 199 CHAPTER 238

- A. Pursuant to the above-referenced law, which became effective April 11, 2000, bidders and their subcontractors are required to be registered with the New Jersey Department of Labor and to possess a current certificate by said Department indicating compliance with the Act. Bidders are notified of this requirement of their compliance. If, at the time of the award of contract, the certificate from the Department has not yet been received by the Bidder, proof of application along with the canceled check for the application fee shall be provided to the Owner in lieu of said certificate. Once the certificate is received, a copy of same shall be delivered forthwith to the Owner. Such certificates or applications shall also be provided for each subcontractor furnishing plumbing and gas fitting, and all kindred work, heating and ventilating systems and equipment, electrical work or structural steel and ornamental iron work.

4.16 OBLIGATION OF BIDDER

- A. At the time of the opening bids, each Bidder will be presumed to have inspected the site(s) and to have read, and to be thoroughly familiar with the contract documents (including Addenda). The failure or neglect of any Bidder to receive or examine any form, instrument, or document shall in no way relieve any Bidder from any obligation in respect to its bid.
- B. The Bidder shall examine the contents of the Project Manual and the set of Drawings and assure itself that all pages of the Specifications, Drawings, and other Contract Documents are included in the documents obtained for bidding purposes. Should the Specifications, Drawings, and other contract documents be incomplete, the Bidder shall notify the Architect or Engineer in writing, who will supply the Bidder with any missing pages of Specifications, Drawings, or other Contract Documents. The lack of such written notification by the Bidder will be construed as evidence that the Specifications, Drawings, and other Contract Documents supplied it for bidding purposes are full and complete and as a waiver of any subsequent claim to the contrary.
- C. The bidder shall be certain that each of the subcontractors or sub-sub contractors submitting a bid to him shall have received or had access to a complete set of contract documents, (plans & specifications, etc.) and that they have reviewed same.

4.17 SUMMARY OF PROVISIONS

- A. The statute requires that all sureties on public works where the bond amount is over \$850,000 and below \$3.5 million shall be either "Circular 570" bonding companies, i.e. companies holding a current Certificate of Authority issued by the United States Secretary of the Treasury; or operational for at least five years and rated in one of the three highest categories by an independent rating company.
- B. Where the bond amount is in excess of \$3.5 million, the bonding company must either meet the Circular 570 requirement or certify to the contracting agency that it meets an equivalent set of standards to be developed by the Commissioner of Insurance and be operational for at least five years and be rated in one of the three highest categories by an independent rating company.
- C. No more than one payment and performance bond may be accepted to cover a single construction contract. A single bond executed by more than one surety may be accepted only if the combined underwriting limitations of all sureties, as set forth in the most current Circular 570, meet or exceed the amount of the contract.
- D. The Surety Disclosure Statement and Certification must accompany the bond when it is submitted after award of contract and is not a part of the required submission at the time of bidding. Bidders are cautioned, however, that the surety executing the Consent of the Surety is committing itself to provide the performance security after award and must therefore be cognizant of the requirements of both the statute and of the Surety Disclosure Statement and Certification.

PART 5 - QUALIFICATIONS OF BIDDERS

- 5.1 The Owner may make such investigation as it deems necessary to determine the ability of the bidders to perform the work, which includes investigation of the major subcontractors. The Bidder shall furnish any information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid, if the investigation fails to satisfy the Owner that the Bidder is properly qualified to carry out the work contemplated herein.
- 5.2 A Bidder on Public Work, where bids will exceed \$20,000 (twenty thousand dollars), the Bidder must be classified and pre-qualified by the New Jersey Department of the Treasury, Division of Property Management and Construction at the time and date that bids are received.

- 5.3 The Bidder shall submit a current Classification/Pre-qualification Certificate and accompanying form(s) indicating the dollar amount of uncompleted contracts, and a notarized and itemized list of these uncompleted contracts in the form provided, with their bid.
- 5.4 ALL BIDDERS ARE REQUIRED TO SUBMIT A SWORN STATEMENT INDICATING WHETHER THE BIDDER IS, AT THE TIME OF THE BID, INCLUDED ON THE NEW JERSEY STATE TREASURER'S, OR THE FEDERAL GOVERNMENT'S LIST OF DEBARRED, SUSPENDED OR DISQUALIFIED BIDDERS AS A RESULT OF ACTION TAKEN BY ANY STATE OR FEDERAL AGENCY. THE OWNER SHALL IMMEDIATELY NOTIFY THE STATE AND THE UNIT OF FISCAL INTEGRITY, IN WRITING, WHENEVER IT APPEARS THAT A BIDDER IS ON THE TREASURER'S, OR THE FEDERAL GOVERNMENT'S LIST OF DEBARRED, SUSPENDED OR DISQUALIFIED BIDDERS. THE STATE OF NEW JERSEY RESERVES THE RIGHT IN SUCH CIRCUMSTANCES TO IMMEDIATELY SUSPEND SUCH BIDDER FROM CONTRACTING AND TO TAKE SUCH OTHER ACTION AS IS DEEMED APPROPRIATE PURSUANT TO N.J.A.C. 17:19-3.1 ET SEQ.
- 5.5 AFFIRMATIVE ACTION DOCUMENT SUBMISSION
- A. Should the contract for the work provided for hereunder be equal to, or greater than, \$2,500,000 (two million, five hundred thousand dollars), the Owner shall allocate 0.5% (one half of one percent) of the value of the construction contract to the financing of minority and female worker outreach and training programs, pursuant to N.J.A.C. 17:27-7.5. Off-the-job training programs eligible for this funding include programs designed to increase the skills of trainees in a particular trade or craft, skills related to contracting work, as well as related academic or remedial education programs.
- B. If, prior to or at the time the public agency submits a contract for signing, a construction Contractor does not submit to the public agency evidence of an existing federally approved or sanctioned Affirmative Action Program; then, no later than three (3) days after the Contractor signs the construction contract, the Contractor shall complete and submit the Projected Manning Table Form AA20 I-A (Building Construction) or AA20 I-B (Heavy Construction) to the public agency and the Affirmative Action Office. The Contractor should retain the copy marked "Contractor," submit the copy marked "Public Agency" to the Owner, and the remaining copies shall be immediately forwarded to:

Affirmative Action Office
Department of the Treasury
State House, CN 209
Trenton, New Jersey 08625

NEW AFFIRMATIVE ACTION REQUIREMENTS – EXHIBIT B inserted revised 2008

**AFFIRMATIVE ACTION REQUIREMENTS
EXHIBIT B (Revised 1/05)**

**MANDATORY EQUAL OPPORTUNITY LANGUAGE
N.J.S.A. 10:5-31 et seq. (P.L. 1975, C.127)
N.J.A.C. 17: 27**

CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation or sex. Except with respect to affectional or sexual orientation, the contractor will take affirmative action to ensure that such applicants are recruited and employed, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation or sex. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the public agency compliance officer setting forth provisions of this non-discrimination clause;

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation or sex;

The contractor or subcontractor, where applicable, will send to each labor union or representative or workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the American with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the applicable employment goal prescribed by N.J.A.C. 17:27-7.3; provided, however, that the Division may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B, and C, as long as the Division is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with the standards prescribed by the Division, that its percentage of active "card carrying" members who are minority and women workers is equal to or greater than the applicable employment goal established in accordance with N.J.A.C. 17:27-7.3. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees directly to attempt to hire or schedule minority and women workers directly, consistent with the applicable employment goal. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with the applicable employment goal, the contractor or subcontractor agrees to be prepared to hire or schedule minority and women workers directly, consistent with the applicable employment goal, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines or is so notified by the Division that the union is not referring minority and women workers consistent with the applicable employment goal.

If the hiring or scheduling of a workforce consistent with the employment goal has not or cannot be achieved for each construction trade by adhering to the procedures of (a) above, or if the contractor or subcontractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions consistent with the applicable county employment goals:

To notify the public agency compliance officer, the Division, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;

To notify any minority and women workers who have been listed with it as awaiting available vacancies;

Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has referral agreement or arrangement with a union for the construction trade;

To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State training and employment service and the other approved referral sources in the area until such time as the workforce is consistent with the employment goal;

If it is necessary to lay off any of the workers in a given trade on the construction site, to assure, consistent with the applicable State and Federal statutes and court decisions, that sufficient minority and women employees remain on the site consistent with the employment goal; and to employ any minority and women workers laid off by the contractor or any other construction site on which its workforce composition is not consistent with an employment goal established pursuant to rules implementing N.J.S.A. 10:5-31 et seq.;

To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall determine the qualifications of such individuals and if the contractor's or subcontractor's workforce in each construction trade is not consistent with the applicable employment goal, it shall hire or schedule those individuals who satisfy appropriate qualification standards. However, a

contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience as recognized made by a union, apprentice program, or the referral agency, provided the referral agency is acceptable to the Division. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of these requirements, however, are limited by the provisions of (C) below.

If the contractor's or subcontractor's workforce is consistent with the applicable employment goal, the name of any interested women or minority individual shall be maintained on a waiting list for the first consideration, in the event of the contractor's or subcontractor's workforce is no longer consistent with the applicable employment goal.

If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Division.

To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Division and shall be submitted promptly to the Division upon request.

The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey workers ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Division an initial project workforce report (Form AA201) provided to the public agency by the Division for distribution to and completion by the contractor, in accordance with N.J.A.C 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Division and to the Public Agency Compliance Officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and off-the-job programs for outreach and training of minorities and women.

The contractor and its subcontractors shall furnish such reports or other documents to the Division of Contract Compliance & EEO as may be requested by the office from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Contract Compliance & EEO for conducting a compliance investigation pursuant to Subchapter 10 of the Administrative Code (NJAC 17:27).

PART 6 - ADDENDA, INTERPRETATIONS, AND EQUIVALENCY DETERMINATIONS

- 6.1 Should any error, omissions, inconsistencies or obscure wording appear or occur in the Drawings and Specifications, or should there be any discrepancies between Drawings and Specifications, the Bidder shall, before submitting its bid, apply to the Architect or Engineer in writing for an interpretation and determination of the intent of the Drawings and Specifications and equivalency, if applicable. Requests for such interpretations, to be given consideration, must be received at least ten (10) business days prior to the date fixed for the opening of bids (Saturday, Sunday, and Holidays excluded).
- 6.2 Interpretations and any supplemental instructions will be in the form of written Addenda to the Specifications, which if issued, will be mailed by certified or registered mail with return receipt requested, or sent by facsimile to all bidders of record, not later than seven (7) business days prior to the date fixed for the opening of bids (Saturdays, Sundays and holidays excluded). Each Bidder shall ascertain, prior to submitting its bid that it received all Addenda issued and it shall acknowledge their receipt in its bid. Failure to any Bidder to receive any Addenda or interpretation shall not relieve the Bidder from any obligation under its bid as submitted. In addition, a failure on the part of any Bidder to acknowledge receipt of said Addenda may result in disqualification of the entire bid submission. Addenda so issued, shall become part of the Contract Documents. With regard to equivalency determinations, the decision of the Architect or Engineer shall be binding.
- 6.3 The price bid for the work of any Contract shall NOT be based in any manner upon oral opinions, or real or alleged instructions of an oral nature, regardless or whether such opinions or instructions are expressed by the Owner, the Architect, the Engineer, or agents or representatives of any of them.

PART 7 - REJECTION OF BIDS:

- 7.1 The Owner requires that all bids shall comply with the bidding requirements specified as per the CONTRACT DOCUMENTS. The owner may, at its discretion, waive informalities in bids, but is not obligated to do so, nor does it represent that it will do so.
- 7.2 The Owner reserves the right to reject any or all bids and not award a contract for any portion of the Project if Owner has not obtained the requisite approval for the Project or any portion thereof from the appropriate agency. Any agreement entered into by the Owner of any portion of the Project is expressly conditioned upon the Owner obtaining the requisite approval for the Project or any portion thereof. The Owner reserves the right to terminate the agreement if the Owner has not obtained the requisite approval for the Project or any portion thereof from the appropriate state agency.

PART 8 - AWARD OF CONTRACT

- 8.1 A contract, if awarded, will be made to the lowest qualified responsible Bidder. Award of the contract shall be made in accordance with provisions of LAW, "Awarding Contracts." The Owner

reserves its rights to waive defects in bid submissions and to select the bids or particular alternates, or combination of alternates, as may be in the best interest of the Township.

8.2 FORM OF CONTRACT

- A. Contracts will be let on the Standard Form of Agreement Between Owner and Contractor, AIA Document A101-2007 edition, including A201-2007, General Conditions of the Contract of Construction and Supplementary General Conditions.
- B. The Contract will be subject to all statutory provisions on the matter of Public Works, Public Contracts and Prevailing Rate of Wages under the laws of New Jersey.

PART 9 - CONSTRUCTION

9.1 PROGRESS PAYMENTS

- A. Monthly progress payments will be made based on the value of labor and materials incorporated in the work and of materials suitably stored at the site. An itemized schedule for value shall be submitted with each application for payment. Contract shall breakdown itemized schedule of values into material and labor. If the contractor wishes to be paid for shop drawings, a separate line item shall be included for shop drawings for a particular item of work.
- B. All applications for payment shall be accompanied by paid invoices for materials incorporated in the work and for materials suitably stored at the site, and affidavit(s) by subcontractors whose work was included in the next to the last application to the effect such work and such materials have been paid for.

9.2 TIME AND METHOD OF PROCEDURE

- A. Time is of the essence of the Contract and work shall commence as of the date of the "Notice to Proceed" and shall be carried along so as to permit delivery of the completed Work within the allocated time.
- B. Refer to Supplementary General Conditions and any Additional Supplementary General Conditions for conditions pertaining to liquidated damages and reimbursement of any wages paid by the Owner for inspector(s) due to failure by the Contractor to complete the project within the Contract Time.
- C. The Owner shall not be liable to any Contractor or sub-contractor due to any performance, non-performance, or delay in performance, for any reason, of any Contractor or subcontractor.

9.3 INDEMNIFICATION

- A. The Contractor shall indemnify, and hold harmless, the Owner and the Architect from and against any and all claims, demands, lawsuits, damages, costs and expenses, including reasonable attorney's fees, arising out of, or in any way related to, a breach of the Contractor's agreement with the Owner, or any personal injury or property damage that may arise out of, or result from, the Contractor's acts or omissions in performing the work.

- B. The Contractor acknowledges and agrees that the Architect's obligations and duties, under the Architect's agreement with the Owner are solely for the benefit of the Owner, and notwithstanding any action of the Architect in connection with the Project, same shall not, in any respect, be deemed to have assumed any duties or obligations in favor of the Contractor, and the Architect is acting as agents, individually, of the Owner to the extent provided herein.

9.4 LIMITATIONS OF OPERATIONS & PROJECT COORDINATION

- A. The contractor shall at all times conduct the work in such manner and in such sequence as will insure the least practicable local interference. He shall not open up the work to the prejudice of work already started, and the Architect or Owner may require the Contractor to finish a section on which work is in progress before work is started on any additional section. The contractor shall take into consideration in his bid that the schools will be occupied during construction and therefore the proper safety measures and temporary protection shall be taken by the contractor.

9.5 PREVAILING WAGE RATE DETERMINATION

- A. The date of the wage rate determination for this Project will be set forth in the contract. This determination is conclusive for a period of two- (2) years from that date, unless superseded by a later determination. Contractor shall be responsible for complying with such determination.
- B. Refer to Supplementary General Conditions for other applicable requirements pertaining to the prevailing wage rates.

9.6 TAXES

- A. Municipal structures are exempt from New Jersey State Tax, however Contractors and Subcontractors are required to file with their suppliers, State Tax Form ST-13, listing Owner's name and location of project, to qualify for the exemption. Forms and additional information are available at the State Tax Department. No allowance will be made by the Owner for any such taxes paid by the Contractors due to their failure to file appropriate exemption forms.

END OF ARCHITECTS INSTRUCTIONS

If there is a discrepancy between Union County's Instructions to Bidders and the Architects Instructions, Union County's document shall apply.

SUPPLEMENTARY GENERAL CONDITIONS

ARTICLE 1 - GENERAL PROVISIONS

1.1 INTENT OF CONTRACT

- A. The contract includes, but is not necessarily limited to, General Construction work, Mechanical work, Plumbing work, Fire Protection work and Electrical work, including fire alarm upgrades. All labor and equipment shall be provided as necessary to satisfactorily complete all work within the project as specified within the contract documents. All new systems shall be made fully operational in a first class workmanship manner and guaranteed for one year from the date of the Certificate of Occupancy. The contractor shall be responsible for investigating existing conditions on the site and shall be responsible for doing what ever is required to keep the site fully operational without any adverse impact on the existing departments remaining on site.
- B. This is a lump sum contract for all work. Each contractor or subcontractor shall refer to ALL drawings to completely familiarize himself with the work.

1.2 PRECEDENCE OF LARGE SCALE DETAILS AND DOCUMENTS

- A. The general character of the detail work is shown on the drawings, but minor modifications may be made in large-scale details. Where the word "similar" occurs on the drawings, it shall be used in its general sense and not as meaning identical. All details shall be worked out in relation to their location and their connection to other parts of the work. On any drawings where a portion of the work is drawn out and the remainder is indicated in outline, the parts indicated in outline shall also apply to other like portions of the work. Where details are indicated by starting only, such details shall be continued throughout the courses or parts where it occurs and shall also apply to all other similar parts in the work unless otherwise noted. In case of differences between small and large-scale drawings, the larger scale drawings shall take precedence. Any discrepancies shall be referred to the Architect/Engineer before any work affected thereby has been performed.
- B. Work specified but not shown on the drawings, or shown on the drawings but not specified, shall be considered as if indicated in both. In the event of conflict between various parts of the contract documents, the document shall take precedence in the following order. For extent, sizes, quantity of work, and design intent, drawings shall govern over specifications. For quality of materials and workmanship, specifications shall govern over drawings. If there are conflicts between drawings, the Architect shall render a decision, which shall be final. The Contractor shall not increase the Contract price due to any interpretations made by the Architect.
- C. EACH BIDDER SHALL ALSO THOROUGHLY EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS.
- D. The Contractor shall review all drawings for the project and not limit his bid to only work that is shown on drawings referenced for a trade. The drawings are done so for ease of reference only and not intended to limit the work of the Contractor. If work is shown to be done on one drawing which usually requires work of another Contractor or trade and is standard in the industry as such, than the Contractor whose trade it is shall include the work in his bid. It is assumed to be reasonable since the Contractor whose trade must do the work has reviewed and familiarized himself with the entire set of drawings and specifications. Also if equipment is shown on one drawing but not shown as being hooked up on other drawings, the Contractor whose trade usually does the hook up shall do so at no additional charge since he reviewed and familiarized himself with the drawings and therefore knew the equipment was there and it had to be hooked up.

- E. By submitting a proposal, the Bidder covenants that he has carefully examined the complete set of Contract Documents, Addenda, if any, and the Site; and that from his investigation he has satisfied himself as to the nature and location of the work, the phasing required for the work, the general and local conditions and all matters which may in any way affect the work or its performance and that as a result of such examination, he fully understands the intent and purpose thereof, his obligation there under, and that he will not make any claim for, or have any right to damages, because of the lack of any information.

1.3 ERRORS, INCONSISTENCIES AND OMISSIONS

- A. If any errors, inconsistencies or omissions appear in the drawings, specifications or other Contract Documents, which should reasonably have been discovered and concerning interpretations that were not obtained from the Architect/Engineer during the bidding period, the Contractor shall within ten days after receiving written "Notice of Award", notify the Architect/Engineer in writing of such error, inconsistency or omission. In the event the Contractor fails to give such notice, he will be held responsible for the results of any such errors, inconsistencies or omissions and the cost of rectifying same. The Architect/Engineer will make interpretation of this procedure after the ten-day period and his decision will be final.
- B. The Contractor shall not take advantage of any apparent error or omissions which may be found in the plans of the Specifications, but the Architect shall be entitled to make such corrections therein and such interpretations thereof as he may deem necessary for the fulfillment of their intent.

ARTICLE 2 - OWNER- NO ENHANCEMENTS

ARTICLE 3 - CONTRACTOR

3.1 SITE VISIT

- A. Contractor shall visit the site to familiarize himself with job conditions.

3.2 TEMPORARY FIELD OFFICE

- A. The contractor shall set up a field office on site IN A LOCATION AS DIRECTED BY THE OWNER.

3.3 SITE AND BUILDING LIMITATIONS AND JOB CONDITIONS

- A. The contractor shall be aware that the entire Building will be occupied during the entire construction period. The Contractor shall also be aware that there are construction operations in an adjacent part of the building. Construction operations shall not impact in any way on the use of that building.
- B. The contractor shall schedule deliveries of materials with the owner so as not to cause undue hardship to the owner and cause any unsafe conditions on the site. He shall also coordinate with the owner for removal of demolition and construction debris, and a staging area for storage of materials. Construction debris shall be removed daily from construction areas within the building and site.
- C. The work will be done in an existing occupied building. The contractor shall cause the least amount of disruption to the public and the occupants.

- D. Any proposed phasing of the project must be coordinated with UNION COUNTY as well as the Architect. The architect and owner have shown a phasing plan that will be refined in detail by the contractor once a construction contract has been awarded.
- E. Proper security shall be coordinated with Union County Authorities having jurisdiction.

3.4 CONSTRUCTION SIGNS

- A. The contractor shall install signs restricting access of the general public to the area of construction. As a minimum, they should state "CONSTRUCTION AREA – NO ADMITTANCE". Restricted areas, however, shall not block public exit ways. Provide temporary signs as required where work is being phased. These signs should be posted on the floor where construction operations are taking place so no one exits the elevator to the construction area on that floor.
- B. Storage and staging space is limited on site and the Contractor shall properly protect material and equipment on site and coordinate storage areas with the Facilities Department of The County of Union.
- C. The contractor shall erect temporary walls around the area of the work to stop unauthorized access.

3.5 PUBLIC STREETS AND TRAFFIC

- A. Contractor shall coordinate the use of cranes or other hoisting equipment with owner and local authorities so as to minimize disruptions on site and adjoining streets. If use or blocking of streets is necessary, the contractor shall obtain and pay for any required permits or approvals required.
- B. No portion of any roadway or alley may be used for the storage of any materials or equipment.
- C. Sidewalks, gutters, drains, fire hydrants and private drives shall in-so-far as practicable, be kept in condition for their intended uses. While the work is actually going on at a location, as much as half the street width at such may be barricaded to exclude traffic entirely, if approved by local authorities, but street traffic shall not be obstructed needlessly.
- D. The General Contractor shall provide all of the materials, tools, equipment and labor for cleaning the public streets, public sidewalks, roadways, alleys, driveways, etc. which are affected and/or disturbed by this work.

3.6 PROJECT WORK HOURS AND DELIVERIES

- A. The Contractor(s) may work on weekends and those OWNER holidays when employees are not present. During these times, however the Contractors shall pay the OWNER to have a member of the maintenance staff present, if not scheduled to work during the requested hours. Cost is as per owner.
- B. If deliveries of supplies and materials must be made during the regular business day, the Contractor receiving that delivery shall notify THE OWNER and coordinate the delivery with THE OWNER, so as not to disrupt adjacent building operations. If THE OWNER feels that the delivery of the material or construction operations will be disruptive to the building then the Contractor shall make other arrangements to have the deliveries made before 9 and after 5 P.M. or on weekends and have the construction operations proceed after normal building hours. There will be no additional charge back to the Owner if work must be done, or materials delivered after normal hours because of disruption to the building.

3.7 UTILITY INTERRUPTION

- A. The contractors shall coordinate the change over of utility services (regardless of which utility) so as not to disrupt building operations. If it must be done after hours or on weekends it shall be done at no additional charge to the Owner. Should any utility work, connections, installation etc. intersect any areas that contain temporary exiting measures of any kind that utility work shall be done after hours so that there is no disruption in the accessibility of exits to the occupants of the building. Any costs, labor, and materials required for or associated with the removal and reinstallation of any temporary exiting measures shall be at no additional charge to the owner.

3.8 MATERIALS AND EQUIPMENT

- A. Reference in the technical provisions of the specifications to standard specifications and test methods, including those of the American Society for Testing and Materials, the American Iron and Steel Institute, the American National Standards Institute, the American Society of Mechanical Engineers, the American Society of Heating, Refrigeration and Air Conditioning Engineers, the Factory Mutual System, the National Fire Protection Association, Federal Specifications and other similar nationally recognized technical societies and agencies shall refer to the editions and revisions current with the date of the Contract Documents.
- B. The Architect/Engineer's decision on proposed substitutions of materials or equipment specified by trade name shall be final. The Architect/Engineer reserves the right to waive specifications and to accept a proposed substitution, which in his opinion, is superior to the material of product specified, or to limit the specification to the product specified.
- C. Where only one brand or name is specified, the Contractor may submit other brands for consideration; however, it shall be the Contractor's responsibility to prove equality. The Contractor shall use the "or equal submission" form when submitting an item for "or equal" consideration. It is the Contractor's responsibility to provide the Architect with sufficient information to make a decision.
- D. Approval of substitutions shall not relieve the Contractor of responsibility for adequate fulfillment of all the various parts of the work, nor from specified guarantees and maintenance. Modification of adjacent or connecting work required due to any substitution approval shall be provided as part of the substitution.
- E. Insofar as practicable except as otherwise specified or shown, the material or product of one manufacturer shall be used throughout the work for each specified purpose.
- F. Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in strict accordance with the manufacturer's direction. Should such directions conflict with the specifications, the Contractor shall request clarification from the Architect/Engineer before proceeding.

3.9 PROJECT COORDINATION

- A. Throughout the project, the contractor shall coordinate all activities with the Director of Facilities in an effort to cause the least amount of disturbance to the daily operations of the County. The contractor is made aware that the area of work is in close proximity to the Superior Courts of the State of New Jersey and every effort shall be made not to disrupt the operations of the Courts.

3.10 JOB SITE MEETINGS

- A. Regularly scheduled job meetings shall be held at a location and time convenient to the Architect/Engineer and the Contractor. Each Contractor shall attend such meetings, or be represented by a person in authority who can speak for and/or make decisions for the Contractor.

- B. Attendance by all contractors is mandatory, whether the meetings be weekly, bi-weekly or at whatever interval is determined by the Architect. Repeated non-attendance will be grounds for withholding of payments.

3.11 LOST OR STOLEN ITEMS

- A. The Contractor shall protect all materials and equipment for which he is responsible, which is stored at the project site for incorporation in the work, or which has already been incorporated into the work. He shall replace all such materials and equipment which may be lost, stolen or damaged at his expense, whether or not such materials or equipment have been entirely or partially paid for by the COUNTY.

3.12 ROYALTIES AND PATENTS

- A. Contractor shall pay all royalties and license fees for any process, material, equipment device of other things necessary to consummate the work specified. He shall defend all suits or claims for infringement of any patent rights and shall save the COUNTY AND ARCHITECT harmless from loss on account thereof.

3.13 LAYOUT OF WORK

- A. Each Contractor shall layout his own work and be responsible for all lines, elevations and measurements of the building and other work executed by him under the Contract. He shall not delay other contractors from doing their work. If layout is required by him before another contractor can perform his work, he shall do his layout so as not to delay the other contractor. He must exercise proper precaution to verify the figures shown on the drawings before laying out the work and will be held responsible for any errors resulting from his failure to exercise such precaution.

3.14 SUBMITTALS

- A. All fabricated work shall require shop drawings.
- B. Refer to Specification Section 01330 for procedures for shop drawing submission.
- C. The Architect/Engineer may request samples of any or all materials to be used in the work. When requested, samples shall be submitted promptly.
- D. An approved copy of the shop drawings shall always be on site. If work proceeds without an approved shop drawing on site, the Architect may stop the work from progressing.
- E. Submittals shall include all information necessary to permit the Architect/Engineer to make required evaluations. When supplementary information is so requested by the Architect/Engineer, it shall be submitted without delay. The Architect's request for additional information shall not be a basis for the Contractor to claim a delay.
- F. Submittals shall include all information necessary to permit the Architect/Engineer to make required evaluations. When supplementary information is so requested by the Architect/Engineer, it shall be submitted without delay. The Architect's request for additional information shall not be a basis for the Contractor to claim a delay.

3.15 REDESIGN

- A. If the Contractor makes a change due to approval of substitute equipment, or approval of "or equal" equipment, or otherwise, any substantial change in the form, type, system and details of construction from those shown on the drawings, he shall pay for all costs arising from such

changes. The Contractor shall pay all Architectural and Engineering fees required to check the adequacy of such changes. Any changes or departures from the construction and details shown shall be made only after written approval from the Architect/Engineer.

3.16 GUARANTEES AND WARRANTIES:

- A. **All guarantees and warranties shall start at the time a Certificate of Occupancy is issued, not at the time of start up of equipment. This applies to ALL equipment, systems and services of the building.**

3.17 ONE YEAR CONTRACTOR'S GUARANTEE

- A. Contractor shall guarantee his workmanship and material for a period of twelve (12) months. At the end of the eleventh month a meeting will be set to walk through the project to review guarantee issues. The contractor shall repair or replace any defective items.

ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

4.1 EXTENSION OF TIME

- A. Adjustment in the time for completion will be made for delays caused by the Owner, for extra time required because of alterations in the Work, or when delay occurs due to unforeseeable causes beyond the control and without fault and negligence of the Contractor. No extension of time will be granted for any delay or any suspension of the work due to the fault of the Contractor. Strikes and labor disputes beyond the Contractor's control shall be cause for an extension of time.
- B. The time provided for completion of the Project shall be extended (subject, however, to the provisions of this clause) only if, in the opinion of the Architect, the Contractor is necessarily delayed in completing by such time solely and directly by a cause that meets all of the following conditions:
1. Such cause is beyond the Contractor's Control and arises without his fault;
 2. Such cause into existence after the opening of proposals on this Contract, and neither was nor could it have been anticipated by investigation before such opening.
- C. In any event, even though a cause of delay meets all of the above conditions, an extension shall be granted only to the extent that: (1) the performance of the work is actually and necessarily delayed, and; (2) the effect of such cause cannot be anticipated, avoided or mitigated by the exercise of all reasonable precautions, efforts, and measures (including planning, scheduling, and rescheduling), whether before or after the occurrence of the cause of delay.
- D. An extension shall not be granted for a cause of delay, which would not have affected the performance of the Contract were it not for the fault of the Contractor or for other delay for which the Contractor is not entitled to an extension of time.
- E. Any reference to the Contractor shall be deemed to include subcontractors and material men, whether or not in privity of Contract with the Contractor, and employees and other performing any part of the Contract and all the foregoing shall be considered as agents of the Contract.
- F. The period of any extension of time shall be that necessary to make up the time actually lost, subject to the provisions of this clause, and shall be only for the portion of the contract actually delayed. The Architect may defer all or part of his decision on an extension and any extension may be rescinded or shortened if it is subsequently found that the delays can be overcome or reduced by the exercise of reasonable precautions, efforts, and measures.

- G. As a condition precedent to an extension of time, the Contractor shall give written notice to the Architect within 48 hours after the time when he knows or should know of any cause which might, under any circumstance, result in a delay for which he claims or may claim an extension of time (including those causes for which he claims or may claim an extension of time (including those causes for which the Owner is responsible or has knowledge of). The Contractor shall specifically state that an extension is or may be claimed, identifying such cause and describing, as fully as practicable at the time, the nature and expected duration of the delay and its effect on the various portions of the Contract. Since the Possible necessity for an extension of time may, materially, alter the scheduling, plans and other actions of the Owner, and since, with sufficient opportunity, the Owner might, if he so elects, attempt to mitigate the effect of a delay for which an extension of time might be claimed, and since merely oral notice may cause disputes as to the existence or substance thereof, the giving of written notice as above required shall be of the essence of the Contractor's obligations. Failure of the Contractor to give written notice as above required shall be conclusive waiver of an extension of time.
- H. It shall in all cases be presumed that no extension, or further extension of time is due unless the Contractor shall affirmatively demonstrate to the satisfaction of the Architect that it is. To this end, the Contract shall maintain adequate records supporting any claim for an extension of time, and in the absence of such records, the foregoing presumption shall be deemed conclusive.
- I. Variations in temperature and precipitation shall be conclusively deemed to have been anticipated before opening of such proposals on the Contract except to the extent that the actual monthly average temperature varies from a temperature which is 10% above or below the monthly normal temperature and except to the extent that the actual number of days of precipitation (0.1 inch or more) per month exceeds a number equal to the normal number of days of precipitation per month as shown below.
- J. In any case, the variations in temperature and precipitation described in the immediately preceding sentence will be cause for an extension of time only if occurring between the actual time of commencement of the work at the construction site and the time for completion stipulated in the clause hereof entitled "Time and Essence" or such time as extended and provided. In the case of portions of months, the number of days will be pro-rated by the Architect. Temperature and precipitation shall be as recorded by the Local U.S. Weather Bureau in its publications, including that entitled "Local Climatological Data with Comparative Date" which is applicable to the area in which the work is to be performed. In the case of precipitation, the normal number of days of precipitation (0.1 inch or more) per month as abstracted from the aforementioned publications are as follows:

Month	Normal number of days per month where precipitation exceeds 0.1 Inch.	Average monthly normal temperature.
January	5	29.6
February	4	32.9
March	9	40.6
April	8	50.8
May	6	59.8
June	7	69.3
July	7	71.6
August	8	72.9
September	5	63.4
October	5	52.6
November	5	42.7
December	6	31.0

- K. The Contractor shall notify the Owner within five days of any occurrence where, in the Contractor's opinion, entitles him to an extension of time for completion. Such notice shall be in writing. The Owner shall acknowledge in writing receipt of any such claim by the Contractor within five days of its receipt

ARTICLE 5 - SUBCONTRACTORS- NO ENHANCEMENTS

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS- NO ENHANCEMENTS

ARTICLE 7 - CHANGES IN THE WORK

7.1 ALLOWANCE FOR CHANGE ORDER OVERHEAD AND PROFIT

- A. The maximum allowance for overhead and profit on Change Order work shall be fifteen percent (15%) to the Contractor on all work performed himself; ten percent (10%) to the subcontractor on all work that he does, plus ten percent (10%) to the Contractor for work done by the subcontractor and superintended by the Contractor.

ARTICLE 8 - TIME

8.1 LIQUIDATED DAMAGE

- A. The Contractor, understanding from the nature of the subject matter of this Contract that the COUNTY will suffer loss and damages in the event of his failure to complete the work of him required under this Contract within the time above stated, or within the time to which the completion date may be extended as hereinabove or hereinafter provided, and that determination of the amount of such loss to damage and damages of the COUNTY for failure would be difficult by reference to any usual pecuniary standard, by reason of uncertainty hereby agrees to pay to the COUNTY and that the COUNTY may deduct from any monies due or payable or to become due or payable to him under the provisions of this Contract, as and for liquidated damages for such failure, the sum of \$1,500.00 per day specified in the Form of Proposal for each and every working day between the above stated Completion Time, or the time to which the same may be extended as hereinabove or hereinafter provided, and the actual time of completion of the work by him to be done whether such work be completed by the Contractor or by the COUNTY because of the Contractor's defaults, the said sum being hereby fixed and settled as the liquidated and ascertained damages which will be suffered by the COUNTY by reason of such failure. The above provisions for liquidated damages for the Contractor's delay in completing his work, or the deduction of such liquidated damages from any monies due or payable or to become due or payable to the Contractor, shall in no way affect, or relieve or release the Contractor from his further or other obligations hereunder, or from the fulfillment of his entire Contract, or from his liability for damages for any failure on his part with failure to fulfill his entire Contract.
- B. The above provisions as to liquidated damages for delays shall apply to delays caused by the Contractor to other contractors in the completion of the Work of such other contractors within the time specified for such completion under their respective agreements with the COUNTY.
- C. In construing the above provisions for liquidated damages, the Contractor agrees to waive any and all defenses in Law or in Equity for any claim of the COUNTY for liquidated damages in the event of lack of substantial completion beyond the completion date as herein fixed except for the specific reason herein set forth.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.1 OWNER'S RIGHT TO OCCUPY

- A. The Owner reserves the right to occupy the portion of the project that is ready for occupancy prior to completion and acceptance of the project after local Municipal construction enforcing agency approval.
- B. The occupancy of any portion of the project does not constitute an acceptance of any work, nor does it waive the Owner's right to liquidate damages or constitute an acceptance of any work, as the project will be accepted as a whole and not in units. Prior to such occupancy, however, the Architect, a representative of the Owner, and the Contractor shall fully inspect the portions of the project to be occupied, preparing a complete list of omissions of materials, faulty workmanship or any items to be repaired, torn out or replaced. The Owner will assume responsibility for damage to premises so occupied, of any items not on his list when such damage is caused other than normal wear and tear, but does not assume responsibility for improper or defective workmanship or materials.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.1 HAZARDOUS MATERIALS

- A. Hazardous material removal is part of this contract. Refer to Section 00800, Section 02085 and Section 02087 of these specifications.
- B. If the contractor encounters hazardous materials in areas of cutting and patching, demolition or other areas of work, it is the responsibility of the contractor to notify the owner immediately and schedule the removal of same.
- C. Contractors are not to rely on statements made by County employees regarding hazardous materials.

ARTICLE 11 - INSURANCE AND BONDS

11.1 AMOUNTS OF INSURANCE CARRIED BY CONTRACTOR

- A. Refer to AIA Document A201 and Amendments.

11.2 LOSS OF USE INSURANCE

- A. The OWNER, at the OWNER's option, may purchase and maintain insurance for protection against loss of use of the Owner's property due to fire or other hazards, however caused. The OWNER waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however cause, to the extent covered by insurance under this Paragraph 11.4.

ARTICLE 12 - CORRECTION OF WORK- NO ENHANCEMENTS

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1 BUY AMERICAN ACT-CONSTRUCTION MATERIALS (APRIL 1984) DOMESTIC MATERIALS

- A. The Buy American Act (41 U.S.C.) provides that the COUNTY give preference to domestic construction materials.
- B. "Components", as used in this clause, means those articles, materials and supplies incorporated directly into construction materials.
- C. "Construction Materials" as used in the clause means articles, materials and supplies brought to the construction site for incorporation into the building or work.
- D. "Domestic construction material", as used in this clause, means (1) a construction material not manufactured, but mined or produced in the United States, or (2) a construction material manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50% of the same class or kind as the construction materials determined to be unavailable pursuant to subparagraph 25.202 (a)(3) of the Federal Acquisition Regulation (FAR) shall be treated as domestic.
- E. The Contractor agrees that only domestic construction material will be used by the contractor, subcontractor, material person, and suppliers in the performance of this contract, except for foreign construction materials, if any, listed in this contract.
- F. (The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954, as amended, and Subpart 25.2 of the FAR).

- G. All Materials furnished for this project shall be mined, produced and fabricated in the United States, Ref. NJSA 52:33-1 to 52:33-4.
- H. Bidders are notified that they must comply with NJSA 52:32-1 to 52:33-4 and NJSA 18A: 18A-20, the statutes on the use of domestic materials on public work.

13.2 LAWS GOVERNING PUBLIC WORK

- A. The paragraphs below supplement the General Conditions. Attention is called, but not limited to the following laws governing public work.

13.3 STATE SALES AND USE TAX EXEMPTION

- A. In accordance with Section 9 (a) (1) of the New Jersey Sales and Use Tax Act, Public Buildings are exempt organizations; bidders and their subcontractors and materials suppliers shall not include New Jersey State Sales in their bids and Use Taxes relative to the performance of the work.

13.4 MUNICIPAL BUILDING PERMIT AND UTILITY CONNECTION CHARGES

- A. P.L. 1983, chapter 496 (formerly s-1934) effective 4/17/84 provides that a local municipal construction enforcing agency issue required construction permit, perform required inspections during construction and issue required certificate of occupancy upon completion of project. The COUNTY OF HUDSON building dept. Has agreed to waive the fee(s) for construction permits; however all other fees for the project will be the responsibility of the contractor(s). This shall include any other fees or payments for any governmental entity or utility company.
- B. Construction code officers and inspectors of the CITY OF ELIZABETH shall be given adequate notice for inspection by the contractor. If the contractor wishes to have inspections, etc. Performed at times other than when the official is usually in the CITY OF ELIZABETH, the contractor shall be responsible to pay any additional cost required to have the inspector on the job when the contractor wants him there, so as not to delay the project.
- C. Any other charges such as street opening permits etc. Shall be paid for by the contractor of the responsible trade.
- D. Any charges by any utility company for extension or hook up of new or existing service shall be paid for by the contractor of the responsible trade.
- E. As of the issuance of these construction documents, all the permits and fees for which the owner is obligated have been paid. The contractor of the responsible trade shall pay for all additional fees and permits.

13.5 NONDISCRIMINATION AND MISCELLANEOUS LABOR PROVISIONS

- A. Refer to AIA Document A201 and Amendments.

13.6 APPLICABLE LAWS AND REGULATIONS

- A. Contractor shall give all notices and comply with all State laws, rules and regulations bearing on the conduct of the work as drawn and specified. If Contractor observes that the Drawings and Specifications are at variance therewith, he shall promptly notify the A/E in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work. If Contractor performs any work contrary to such laws, ordinances, rules and regulations, and without such notice to the COUNTY, he shall bear all costs arising therefrom.

- B. This project is exempt from New Jersey Sales Tax.
- C. Contractor will pay highway fees for damages to sidewalks, streets or other public property or to any public utilities.
- D. Chapter 9, Title 34 Revised Statutes, are to be adhered to where appropriate.
- E. Chapter 10, Title 34, Revised Statutes, providing in the Contract for establishment of an eight-hour working day for laborers, workmen and mechanics.
- F. Chapter 150, Prevailing Wages, Contractors are advised that the New Jersey Prevailing Wage Act, Chapter 150, Laws of 1963, applies to this project. Wage rate determination for the project by the Department of Labor and Industry shall be made a part of each Contract for performance of the described work. Contractors and Subcontractors performing the described work shall post the prevailing wage rates for each craft and classification involved as determined in prominent and easily accessible places at the site of the work or such place or places used to pay workmen their wages.
- G. Chapter 15, Title 40, and Chapters 32 and 33, Title 53, Revised Statutes, whereby the Contractor as a condition of the Contract shall, and hereby does agree, that in the performance of the project, only domestic materials and manufactured, and farm products of the United States will be used, whenever available unless otherwise specifically provided in the Contract with respect to any material which the COUNTY may deem advisable to except from his requirements.
- H. Construction Safety Act, P.L. 1962, Chapter 45, N.J.S.A. 34:5-166 to 34:5-181 under which authority the Commission of Labor and Industry promulgated the State of New Jersey Department of Labor and Industry Construction Safety Code. Where the Code refers to designation of General Contractor for enforcing compliance with the Code, such designation is intended to refer to the Contractor awarded the General Construction Contract. Particular emphasis is placed upon compliance with Articles of the Code wherein the General Contractor is responsible for Safety Inspections and Project Protection. All Contractors are advised that they are also to comply with the Federal Occupational Safety and Health Act of 1970.

13.7 AFFIRMATIVE ACTION REQUIREMENTS

- A. During the performance of this Contract the contractor agrees to follow affirmative action requirements of the State of New Jersey and the COUNTY of Hudson:

13.8 ENVIRONMENTAL PROTECTION

- A. To conform to New Jersey Department of Environmental Protection laws an N.J.A.C. 7:27, Chapters 5 and 7.

13.9 NJ DEPARTMENT OF LABOR PREVAILING WAGE RATE DETERMINATION

- A. Prevailing wage rate determination forms, etc. are available from the State of New Jersey Department of Labor

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT- NO ENHANCEMENTS

<u>OR EQUAL SUBMISSION</u>			
THE FOLLOWING SUBMISSION IS MADE BE THE CONTRACTOR TO THE ARCHITECT FOR APPROVAL OF ITEM INDICATED AS AN OR-EQUAL TO THE SPECIFIED ITEM.			
CONTRACTOR	CONTRACTOR SIGNATURE		SPEC SECTION
	THE CONTRACTOR HAS THE TECHNICAL REQUIREMENT'S & MATERIAL OF THE SPECIFIED ITEM AND FEELS THAT THE OR EQUAL SUBMISSION FULLY MEETS THE REQUIREMENTS OF THE SPEFIFIED PRODUCTS.		TYPE OF PRODUCT
	SIGNED	TITLE	DATE
PRODUCT SPECIFIED	MFG	OR EQUAL SUBMISSION	MFG
MODEL#		MODEL#	
CONTRACTOR SHALL INDICATE DIFFERENCES & EXPLAIN			

**SECTION SGCME - SUPPLEMENTARY GENERAL CONDITIONS
FOR MECHANICAL / ELECTRICAL WORK**

PART 1 GENERAL

1.01 PROVISIONS INCLUDED

- A. Refer to other provisions in Division 1 of these specifications for additional requirements applicable to all the contracts and to the mechanical and electrical work.

1.02 DRAWINGS AND SPECIFICATIONS

- A. The accompanying contract drawings show building mechanical and electrical systems in diagrammatic form. They are in general intended to indicate the desired arrangement of principal apparatus, piping, ductwork, lighting fixtures, devices, and other components of the facilities mechanical and electrical systems. They shall be followed as closely as possible, but proper judgment must be exercised during installation to assure that maximum headroom, required clearances and space for service and safety are maintained. It is intended to provide a neat, functional and serviceable arrangement of the mechanical and electrical installations. It is the contractors' responsibility to overcome localized difficulties and interferences with other new or existing building components or systems. Conflicts with other construction or prevailing conditions shall be rectified at no additional cost, in labor or material, to the owner.
- B. Exact locations and arrangements of all installations shall be determined by coordination drawings and as work progresses. The work in all details being subject for review by the architect, whose decision on all points of construction in question shall be final and binding.
 - 1. Note that all connections to existing installations and service locations may not be shown in their exact position. Contractors are cautioned to verify indicated locations with existing conditions during a bid period facility inspection and prior to the start of construction during preparation of coordination and shop drawings.

1.03 SCHEDULE OF MATERIALS AND EQUIPMENT

- A. Within 14 days (unless indicated otherwise in the general conditions) after approval or acceptance of a contract and before releasing any order, or installation of any materials or equipment, submit for review and comment by the architect, a complete schedule of materials and equipment proposed for installation on this project. Partial lists shall not be submitted and will be returned not reviewed.
 - 1. Any scheduled or specified materials, fixtures or equipment not conforming to specifications will be rejected.
 - 2. Orders for the purchase of devices, materials, fixtures, etc. or other equipment shall not be placed until this schedule is reviewed.
- B. All electrical materials and equipment, for which a labeling service is available, shall bear label of Underwriters' Laboratories, Inc. or other nationally recognized inspection agency, and shall be approved and be labeled by them for the proposed use.
- C. All plumbing or HVAC materials and equipment, for which a listing and or labeling agency is available, shall be listed and bear the label or marking of said agency, and shall be approved and be labeled by them for the proposed use.

1.04 REDESIGN

- A. If an individual contractor makes, or causes to be made a substitution of equipment or otherwise make any substantial change in system design, form, type, or details of construction to that indicated in the bid documents, that contractor shall pay for all costs, including other contractor costs, arising from such changes.

- B. Contractors requesting a change shall pay all engineering review fees required to check the adequacy of a proposed change.
- C. Any changes or departures from the construction and details shown on the drawings shall be made only after acceptance is obtained in writing from the architect.

1.05 UNION LABOR REQUIREMENTS

- A. Each contractor shall pay all costs arising out of contractual union requirements necessitating additional work required in the performance of work of this contract associated with the installation of materials and equipment.

PART 2 PRODUCTS

2.01 MATERIAL AND LABOR

- A. Furnish all material and labor necessary to deliver to the Owner a complete, and properly functioning, system installed in full accordance with the plans, specifications, local, NJ state laws and all other authorities having jurisdiction. The entire facility's systems are to be furnished and installed as specified, tested and turned over to the Owner in perfect operating condition.
- B. Provide a competent supervisor in responsible charge of the work, who shall be on the site during the erection and installation of materials and equipment furnished and until all systems have been put into operating condition and accepted for beneficial use by the Owner.
- C. The equipment shall be of the manufacturer's standard type, with capacities and detailed requirements as specified and scheduled on the drawings (see paragraph "Substitution of Equipment"). Equipment installed at the exterior of the facility shall be weatherproofed and suitable for outdoor installation and operation. Items shall be standard or customized standard products, of manufacturers specializing in the type of equipment furnished.
 - 1. Where two or more units are the same or similar in form and function they shall be products of a single manufacturer.
 - 2. The component parts of an assembled item need not be the products of the same manufacturer. Where field assembled the component parts of a system shall be supplied by or acceptable to the manufacturer of the primary equipment or component assembly.
 - 3. Unit ratings shall be in accordance with the manufacturer's published information and shall be equal to or exceed capacities specified.
- D. All equipment shall be installed in strict accordance with the drawings, manufacturer's recommendations and applicable governing codes. Major components of equipment shall have a permanent nameplate(s) affixed in a conspicuous place showing manufacturer's name and address, equipment ratings, catalog or model number, and date of manufacture.
- E. All materials shall be new, of best quality of their respective type. Workmanship shall, in all respects, be of the highest grade and all construction shall be done according to the best practices of the trade.
- F. Provide for review, when requested by the Architect or as indicated in the specifications, labeled samples of materials or appliances proposed for use in the building.
 - 1. Required samples are to be provided whether of the specified manufacture and product or a substitution.
- G. Where the words "furnish", "provide", or "install" are mentioned, either singly or in combination, the words are to be interpreted to mean "furnish and install" or "provide and install" including all required utilities, mounting or system connections unless specifically noted otherwise. These words are likewise to be interpreted as being prefixed to all materials, equipment, and apparatus hereinafter mentioned either in abbreviated or schedule information.

2.02 PROTECTION OF WORK AND MATERIALS

- A. Each contractor shall protect the work and material of their trade from damage by their work or workmen, and shall make good all damage thus caused.
- B. Each contractor shall be conscious and considerate of the protective measures for materials and installations of all other trades.
- C. Each contractor shall be responsible for his or her work and equipment until inspected tested and accepted for beneficial use by the owner. Protect work against theft, injury or damage. Carefully store materials and equipment received on the site that is not immediately installed. Protect open ends for work with temporary covers or plugs during the work to prevent damage and entry of obstruction material.
- D. All material delivered to the site shall be adequately protected from exposure to weather until time of installation. Temporary storage at the site shall be kept to minimum. Protect equipment and material with polyethylene covering and keep above grade by the use of wood pallets.

2.03 PIPING IDENTIFICATION

- A. All piping systems and electrical conduit systems that are exposed or are in accessible concealed areas shall be identified with color coded semi-rigid plastic pressure-sensitive identification markers (pressure-sensitive vinyl pipe markers are not acceptable).
- B. Directions of flow arrows are to be included on each piping marker, unless otherwise specified.
- C. In conformance with "Scheme for the Identification of Piping System" (ANSI A13.1-1975), each marker must show:
 - 1. Approved color - coded background
 - 2. Proper color of legend in relation to background color
 - 3. Approved legend letter size
 - 4. Approved marker length
- D. Markers shall be:
 - 1. SETMARK Type Mechanical and Electrical "SNA" markers to be used on diameters 3/4" through 5"
 - 2. SETMARK Type "STR" Mechanical and Electrical markers to be used on diameters 6" or larger
- E. For pipes under 3/4" O. D. (too small for color bands and legends) brass identification tags 1 1/2" in diameter with depressed 1/4" high black filled letters above 1/2" black-filled numbers will be fastened securely at specified locations.
- F. Locations for pipe and electrical markers to be as follows:
 - 1. Adjacent to each valve and fitting (except on plumbing fixtures and equipment)
 - 2. At each branch and riser take-off
 - 3. At each pipe passage through wall, floor and ceiling construction
 - 4. At each pipe passage underground
 - 5. On all horizontal pipe runs - marked every 20'.
- G. Pipe Markers and Brass Pipe and Valve Tags are to be as manufactured by Seton Name Plate Corp. or T & B Westline.

2.04 ACCESS DOORS

- A. Access doors shall be furnished under this contract for valves, cleanouts, dampers, junction boxes, and adjustment of apparatus where necessary and where required in portions of the building where equipment is concealed (ceiling, etc.). Installation requirements are indicated in the specification sections that pertain to the materials in which the access doors are to be installed. The furnishing and installing of access panels in acoustical ceilings are covered under the acoustical specification section. The quantity and locations shall be coordinated with the material installation contractor.

- B. Access doors shall be angle frame, cold rolled steel, shaped to provide a rabbet on four (4) sides to contain door and confine surface.
- C. Access doors to be "Milcor" as manufactured by Inland Steel Products Company, Style K for plastered surfaces and style M for masonry and tile walls. A minimum size of 12" x 12" access doors shall be furnished for single hand access. Larger sizes shall be furnished if the nature of inspection or service requires visual inspection or multiple limb access. (Example: above ceiling exhaust fan and pull boxes)
- D. Where modular hung ceilings are of the concealed spline type, such tiles in which equipment, valves, dampers, gauges, etc., all as described in subparagraph above shall be identified with aluminum markers.
- E. Each contractor shall review building for location of fire rated construction and access doors that are installed in this construction shall have at least an equal (UL) fire rating.

2.05 PERMANENT PROTECTION FOR INSTALLED EQUIPMENT

- A. In all areas of the facility that present an impact hazard to mechanical and/or electrical installations, due to the nature of the area, provide protective devices to protect against the hazard. These protective devices shall not hinder observation or functionality of these installations.
- B. All mechanical and electrical installations in areas exposed to the public or building personnel that requires protection from unauthorized tampering shall be provided with protective devices to control access without concealing required observation or restriction in functionality of the installation.
- C. The above paragraphs require the installation of wire guards on sprinklers, clocks, speakers, unitary emergency lighting equipment, and clear plastic fixed or operable covers for thermostats, Pull Stations, and exposed control operators in such spaces as gymnasiums and exercise rooms, meeting and seminar rooms, libraries, cafeterias, and auditoriums.

PART 3 EXECUTION

3.01 LAYOUT AND INSTALLATION

- A. All new or revised installation piping, ductwork, conduit, cable and other installations shall be run parallel and/or perpendicular to building walls or partitions unless indicated otherwise on the drawings. All work in finished areas shall be concealed unless indicated otherwise on the drawings. Where exposed installation is acceptable installations are to be tight to wall or concealed in overhead structure.
- B. All installations shall be plumb and level unless required by code or other requirement to have a pitch for draining.

3.02 EXISTING CONDUITS, SEWERS, PIPES, ETC.

- A. Take all precautions and procedures necessary to protect, support and maintain all existing electrical distribution and circuiting, sewers, water, gas, and building service piping intended to remain active.
- B. Electrical, communication, and data wiring, cable, conduit, and distribution equipment within the area of construction shall be maintained in service. Services supplying areas of the facility not involved in the construction and/or renovations shall be relocated, protected, and supported as required to accommodate new construction.
- C. In the event that any sewer, water, gas, or building service piping, electrical, communication, or data conduits, or other fixtures are damaged, they shall be repaired by the contractor and the expense of said repairs shall be borne by the contractor.

- D. Should it become necessary to temporarily remove any electrical cable or conduits, ductwork or accessories, mechanical equipment, water, gas, drainage, or other mechanical or electrical installations, in order to permit the use of a particular method of construction or in order to clear the structure being built, notify the Architect, both orally and in writing, of the location and circumstances and cease work, if necessary, until satisfactory arrangements have been made with the owner to properly coordinate and schedule the work so as to provide an acceptable level of interference with building operations. No claims for damages will be allowed on account of any delay occasioned thereby. The entire cost of such changes or temporary removals shall be considered as part of this contract and shall be performed at no additional cost to the owner or delay in contract completion date.

3.03 SCAFFOLDING, RIGGING AND HOISTING

- A. Unless otherwise specified, each contractor shall furnish all scaffolding, rigging, hoisting and services necessary to the delivery, onto the premises, and the erection in place, of any equipment and/or apparatus furnished. The Contractor shall remove this equipment from the premises at completion of installation and when no longer required.

3.04 ELECTRICAL WIRING

- A. Unless herein specified or indicated otherwise on the drawings, all power wiring to electrical motors, controls (supplied or installed by this contractor or other trades), appliances, equipment, etc., shall be furnished and installed by electrical contractor.
- B. Electrical line or low voltage wiring for a digital, electrical or electronic mechanical equipment control system shall be the responsibility of the Mechanical Contractor. This does not include the wiring to power the control system.
- C. Each contractor will set their own equipment including all controls which are integral with piping. The electrical contractor will make the power connections and will mount and wire separate starters, disconnects, etc, that are delivered to him by other contractors or the owner.
- D. All electrical equipment furnished by any contractor, whether or not part of the manufacturer's equipment, shall be made readily accessible for servicing by the Electrical Contractor and the Owner.
- E. All wiring, conduit and electrical equipment and systems are to be concealed in walls, above ceilings, or below floor in all finished areas. Chases constructed for building mechanical or electrical systems are not considered finished spaces.
- F. In finished areas with exposed structure wiring and conduit may be run in concealed in structural members or at roof structure. All such exposed installations shall be run perpendicular or parallel to structural members.

3.05 PIPE SLEEVES AND ESCUTCHEONS

- A. Where new piping passes through new or existing interior masonry or concrete walls, or floors, provide new pipe sleeves. The sleeves shall be malleable iron pipe. Where pipe is to be insulated, insulation shall run continuous through sleeves. Sleeves are to be secured in place using mortar material to match that used in construction of the wall. The air space between the pipe or insulation and the sleeve shall be 1/4" minimum. Provide caulking for air tight installation between outside diameter of pipe or insulation and inside diameter of pipe sleeve. Each contractor shall be responsible for exact location of these sleeves. Each contractor has the option to utilize "Link seal pipe to wall penetration seal."
- B. Where new piping passes through new or existing interior fire rated walls, or floors, provide new pipe sleeves.
- C. Sleeves shall not be used in any portions of the building where there use would conflict with construction features of the building.

- D. Where exposed pipes penetrate walls or floors in finished spaces, they shall be provided with chrome plated split concealed hinged escutcheons on both sides.
- E. Ducts, pipes, conduits, etc. that penetrate rated construction. Ducts that pass through rated construction shall have fire and/or smoke dampers provided that are equal to the fire-resistance rating of the penetrated partition. Their installation shall comply with the requirements of NFPA.
- F. Metallic piping and conduits may pass through construction required to have a fire-resistance rating provided that the space between the pipe or conduit and its sleeve is completely packed with a non combustible material or the opening is filled with UL listed intumescent material and finished to match the surrounding area. The aggregate area of such openings shall not exceed 25 square inches in any 100 square feet of wall or floor area.
- G. Nonmetallic piping penetrating fire rated construction shall be sleeved and sealed with an expanding intumescent material that provides a fire rating at least equal to construction penetrated.

3.06 SUPPORTS FOR INSTALLATIONS AND SEISMIC REQUIREMENTS

- A. All mechanical and electrical installations shall be supported and/or restrained in accordance with the Uniform Construction Code seismic requirements for the geographic location of the project.
- B. All mechanical or electrical materials and equipment hung from building steel or mounted on walls shall be bolted to a support structure designed to both support and restrain them. All floor mounted transformers shall be securely bolted to the floor system and/or restrained in accordance with seismic requirements from horizontal or vertical movement.
- C. Floor mounted electrical equipment that is static (not mechanical or electro mechanical) in nature shall be bolted in place or restrained from both horizontal and vertical movement.
- D. All motor driven equipment or equipment containing operating mechanical components shall be vertically and horizontally restrained.

3.07 OFFSETS, TRANSITION AND CHANGES IN DIRECTION

- A. Offsets, transitions and changes in direction of pipes, ducts, electrical raceways shall be made as required to maintain proper headroom and pitch of sloping lines whether or not indicated on the drawings. Each contractor shall provide air vents, sanitary vents, clean outs, pull boxes, etc., as required to effect these offsets, transitions and changes in direction at no additional cost.
- B. All offsets, transitions, and direction changes shall be made using standard fittings and devices. Offsets shall be made at equal angles of 45 degrees or less.

3.08 CONCRETE AND MASONRY WORK

- A. Except as otherwise shown or specified under the Mechanical and Electrical Contractors of the Specifications, these subcontractors shall provide such work to conform to the same requirements as the section covering concrete and masonry subcontractors.

3.09 QUIET OPERATION

- A. Equipment shall operate under all conditions of load without sound or vibration, which is abnormally high or objectionable in the opinion of the Architect. In case of moving machinery, sound or vibration noticeable outside of room in which it is installed or annoyingly noticeable inside its own room, will be considered objectionable by the Architect. The Contractor at his expense shall correct such objectionable sound or vibration conditions in an approved manner.

3.10 MANUFACTURER'S REPRESENTATIVE

- A. Provide, at the appropriate time or as directed by the Architect, the services of a competent factory-trained engineer of the manufacturer of the equipment, to inspect, adjust and place in proper

operating condition any and all electronic and mechanical items of manufacturer. No additional compensation will be allowed for such services.

3.11 INSTRUCTIONS AND MAINTENANCE MANUALS

- A. Unless indicated otherwise in the general or supplemental general conditions provide 6 copies of all printed materials required by this paragraph.
- B. Instructions:
 - 1. Each contractor shall instruct a representative of the owner as to the operation of all systems. The instructions shall include the operation of all systems. The instructions shall include the operation of heating, ventilating and air conditioning systems, plumbing systems and electrical systems. Each contractor shall go over the entire work with the Owner's representative showing him all locations of control valves, motors, etc., instructing him how to lubricate, how to disconnect motors, etc.
 - 2. The contractor is to provide, at their expense, a factory representative to provide two separate periods of instruction in the operation and maintenance of major equipment and systems.
 - 3. The contractor shall video tape these instructions.
- C. Maintenance Manuals:
 - 1. Submit to the Architect for review, prior to acceptance of the facility, a complete set of written maintenance instructions. Partial or separate data will not be accepted. Data shall be contained in three ring binders and consist of the following minimum submissions.
 - 2. Also submit the following:
 - a. All information included in training sessions.
 - b. Valve Directories - indicating valve locations and functions and identification for each numbered valve. Four (4) copies submitted.

Provide a framed (8" X 10" min.) copy of each valve schedule and mount on where directed by the owner. Frames are to be metal or plastic and be complete with glass inserts and rigid backing.
 - c. Operating and Maintenance Instructions - Type-written, step-by-step, operation and maintenance instructions, catalog cuts, data sheets and prints covering all items of submitted equipment and materials including, pumps, air conditioning equipment, automatic temperature controls, plumbing equipment and fixtures, electrical light fixtures, electrical equipment and system (i.e., fire alarm, communication, data, electrical distribution and control systems, etc.).
 - 3. These manuals shall include, but not limited to, the following information:
 - a. Plumbing and Drainage Systems:
 - 1) Include repair and replacement parts lists for equipment, fixtures and fittings.
 - b. Electrical System:
 - 1) Provide local sources of stocked replacement switch and outlet devices, overcurrent protective devices, alarm, and communication devices.
 - 2) Listing of all color code systems.
 - 3) System voltages between phases and phase to neutral.
 - 4) Cuts of lighting fixtures, devices, equipment and specialties.
 - c. Heating, Ventilating and Air Conditioning System:
 - 1) Explanation of operating manual and its use.
 - 2) Description of systems and equipment including control system.
 - 3) System starting procedure and events.
 - 4) Winter Operation sequence of operation and control.
 - 5) Summer Operation sequence of operation and control.
 - 6) Maintenance and Lubrication Chart.
 - 7) Recommended list of stored spare parts and maintenance supplies.

- d. Manufacturer's literature descriptive of care for all major items of equipment and all mechanical shop drawings indicated in the Mechanical and Electrical Sections.
 - e. Complete wiring diagrams (all systems), including coordinated wiring diagram with actual field wired color coding.
 - f. Maintenance Schedule - A list for each item of equipment requiring maintenance showing the exact type of service to be performed on each component and item of equipment. Include a schedule indicating when the service or inspection for each item of equipment should occur.
4. Binders - Three (3) complete sets of the above data in loose-leaf, 3 ring-type, binders with hard covers with permanent identification title on front, side, and back of cover. Plumbing, heating, ventilating, air conditioning and electrical data shall be in separate binders.

3.12 RESPONSIBILITY FOR HVAC CONTROLS

- A. Mechanical contractor shall bear full responsibility for proper installation and operation of all HVAC controls. He shall bear all expenses that arise due to any changes or additions (including the affected work of other trades) necessary for the operation of those controls as required and specified.
- B. The electrical contractor shall be responsible to provide power to control system. This does not include interconnect wiring or individual equipment power for "control", at any voltage.

3.13 DAMAGED WORK

- A. Protect and maintain in perfect condition all materials, apparatus, fittings, fixtures, and trim. Should any items be broken, damaged or operation impaired, no matter how or by whom such damage is caused, this work will be corrected and damaged items replaced with new, with no additional cost to the Owner, or a delay in the project completion. The trade that originally performed such work shall repair any work that requires repair, regardless of who caused such damage.
- B. Any cost related to repair of damage to work or materials, shall remain the contractors and not the responsibility of the owner, architect, engineers or their representative.

3.14 CUTTING AND PATCHING

- A. Contractors shall perform all cutting and patching of walls, ceilings, and floors required by work of their trade and return surrounding area to like-new condition.
- B. Contractors shall furnish and locate all sleeves and inserts, required for their work, before the walls, floors, roof, and ceilings are constructed. Penetrations required after construction of walls, floors, roof, or ceilings will be the responsibility of the contractor who shall bear the cost of installation.
- C. Each contractor shall provide all inserts, drilling and fasteners required for installation of their hangers and supports.
- D. Where shafts and chases are indicated or required, the General Contractor will provide them. Each contractor will furnish the General Contractor with the necessary layout for the location of the chases.
- E. Any cutting or patching or repairing of rough or unfinished work that becomes necessary by the failure of any contractor to coordinate the proper space requirements for installation of his work must be done by the trades whose work is affected and paid for by that Contractor.
- F. For work to be done on the existing roof, care shall be taken to be certain that the area of work is weather tight at all times. The contractor shall contact the existing roof manufacturer to properly cut and seal weather tight the existing roof and roof structure. The contractor shall hire a qualified New Jersey licensed structural engineer to provide details for the required roof openings,

3.15 TEMPORARY USE OF BUILDING SERVICES AND EQUIPMENT

- A. Selected Mechanical and Electrical installations may, with the approval of the owner, be used on a temporary basis. These temporary uses may include lighting, power outlets, and HVAC equipment.
- B. All utility costs associated with the use of owner services and equipment shall be paid by the contractor requiring their use. These costs shall either be paid to the contractor supplying the temporary service if the buildings existing utilities are being used for construction. It shall be calculated on a square foot basis. This item is intended to cover temporary use of services that would normally, or by contractual agreement, be provided by the installing contractor requiring the service.
- C. At the end of temporary all equipment and materials shall be cleaned, repaired or replaced to return items to like new condition.
- D. The contractor of equipment being used temporarily shall extend the factory warranty/guarantee to provide the same length of coverage as if the equipment had not been used prior to date of substantial completion.

END OF SECTION SGCME

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Project information.
- 2. Work covered by Contract Documents.
- 3. Work by Owner.
- 4. Owner-furnished products.
- 5. Access to site.
- 6. Coordination with occupants.
- 7. Work restrictions.
- 8. Specification and drawing conventions.
- 9. Miscellaneous provisions.

- B. Related Requirements:

- 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

- A. Project Identification: RENOVATIONS AND REHABILITATION CLERK, PASSPORT, ELECTIONS, RECORD OFFICES

- 1. Project Location: 2 BROAD STREET ELIZABETH, NJ 07201

- B. Owner: COUNTY OF UNION, DIVISION OF ENGINEERING, 2325 SOUTH AVENUE, SCOTCH PLAINS, NJ 07076

- 1. OWNER'S REPRESENTATIVE: THOMAS O. MINEO, P.E. COUNTY ENGINEER

- C. Architect: THE CONTRACT DOCUMENTS, DATED MAY 2021, WERE PREPARED FOR THE PROJECT BY THE MUSIAL GROUP, p.a., ARCHITECTURE-PLANNING-INTERIOR DESIGN, 191 MILL LANE, MOUNTAINSIDE, NJ 07092, studio@themusialgroup.com, PHONE 908-232-2860, FAX 908-232-2845.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:

1. The Building Work includes BUT IS NOT LIMITED TO THE FOLLOWING:
 - a. DEMOLITION OF ITEMS ON THE INTERIOR OF THE BUILDING, INCLUDING BUT NOT LIMITED TO: EXISTING WALLS, DOORS, CEILING AND FLOORING MATERIAL, HAZARDOUS MATERIAL REMOVAL, ETC.
 - b. NEW WORK INCLUDES BUT IS NOT LIMITED TO: NEW WALLS, CEILINGS, DOORS, LIGHTING, AND POWER & DATA OUTLETS. STRUCTURAL STEEL WORK IS REQUIRED TO SUPPORT THE NEW HVAC EQUIPMENT ON ROOF. THERE ARE NEW TOILET ROOMS AS PART OF THIS PROJECT AND THEREFORE NEW ROOF PENETRATIONS. THEREFORE THE ROOF MUST BE CUT AND PATACHED AND PROVIDED WITH A WATER TIGHT ROOF.
 - c. THIS FLOOR AND THE FLOOR BELOW AND ABOVE IS OCCUPIED AND THE CONTRACTOR SHALL NOT IMPACT THE OPERATION OF THE OTHER OCCUPIED OFFICES ON THIS FLOOR OR OTHER FLOORS AND SHALL COOPERATE WITH THE OWNER TO LIMIT THE DISRUPTION OF THE ADJACENT OCCUPIED SPACES.
 - d. THE FLOOR BELOW IS OCCUPIED BY THE FACILITIES DEPARTMENT SHOPS AND WORK IN THIS AREA MUST BE COORDINATED WITH THE FACILITIES DEPARTMENT FOR ACCESS.
 - e. THE PUBLIC VISITS THE ELECTION OFFICE AND THE PASSPORT OFFICE ON A REGULAR BASIS AND THEREFORE SAFE ACCESS MUST BE PROVIDED TO THESE AREAS AT ALL TIMES.
 - f. IT IS IMPORTANT FOR THE CONTRACTOR TO CAREFULLY COORDINATE HIS WORK PER THE PHASING PLAN INCLUDED AS PART OF THE SPECIFICATIONS SO THAT THE WORK CAN BE UNDERTAKEN IN A SAFE AND REASONABLE AMOUNT OF TIME. THE PHASING PLAN IS BELOW AND IS THE ARCHITECT'S PROFESSIONAL OPINION AS TO CONSTRUCT THE WORK WITH THE LEAST AMOUNT OF DISRUPTION TO THE OCCUPANTS. HOWEVER, THE OWNER AND THE ARCHITECT EXPECT THAT THE CONTRACTOR WILL REVIEW IN DETAIL THESE SUGGESTS FROM A MEANS AND METHODS APPROACH TO COME TO THE MOST COST EFFECTIVE APPROACH WITH THE LEAST AMOUNT OF DISRUPTION TO THE OCCUPANTS. SINCE THE ENTIRE SPACE CAN NOT BE VACATED AT ONE TIME IT WAS FELT THAT THE BEST APPROACH WOULD BE TO PHASE THE WORK IN THIS AREA FOR THE VARIOUS DEPARTMENTS.

2. PHASTING PLAN:

PHASE 1:
CONSTRUCT NEW RESTROOMS

- 1.1. Install new temp walls in Record Room.
- 1.2. Install new passport & clerk demising wall in records room
- 1.3. Demolish portion of wall between Records Room & Clerk's Office.
- 1.4. Move Clerk workstations 7, 9, 10, 11, 12, 13 into temp records room space. Move Clerk workstations 5, 6 into existing lunch area.
- 1.5. Relocate Map cabinets to temp records room space.
- 1.6. Install temp walls around future restrooms.
- 1.7. Move printers and copiers into temp space adjacent to where old 10,11,12,13 workstations were.
- 1.8. Construct Restrooms.

PHASE 2

DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCH ROOM

- 2.1. Relocate filing cabinets into space previous clerk workstations #6, 7, 8
- 2.2. Install temp walls around Existing Restroom.
- 2.3. Demolish Existing Restroom, Storage Room & Lunchroom
- 2.4. Move Clerk Desks #33 (Laura), 5, 6, from lunch room into final locations. Move Clerk Desks #7, 9, 10, 11, 12, 13 to final locations.
- 2.5. Move map cabinets, map books, veterans records & foreclosure records into final locations.

PHASE 2A

CONSTRUCT FILING CABINET EXTENSION

- 2A.1. Construct Filing Cabinet Extension adjacent to PHASE 1 restroom.
- 2A.2. Move Filing Cabinets from Phase 2, Item 1 location to final location.

PHASE 3

CONSTRUCT NEW PASSPORT OFFICES

- 3.1. Move Clerk workstations #28, 29, 30, 31, 31 to record room temp offices.
- 3.2. Construct partitions around new Passport office work area.
- 3.3. Demolish existing walls within new Passport office work area.
- 3.4. Construct new passport office.
- 3.5. Construct new entry into records room during off hours
- 3.6. Construct new flooring and ceiling finishes in corridor between new passport & men's room after hours.

PHASE 4

CONSTRUCT NEW ELECTIONS OFFICES & ELECTIONS CORRIDOR

- 4.1. Move Passport workstations #1, 2, 3, 4, 5 into new passport space.
- 4.2. Construct temporary walls around perimeter of temporary elections space (old passport).
- 4.3. Demolish existing passport casework
- 4.4. Construct temporary office walls in old passport offices for temporary elections space.
- 4.5. Move Elections workstations into temporary elections office.
- 4.6. Construct new elections offices and new plan west corridor. Access to elections and Clerk is via elevator & adjacent stair.

PHASE 4a

CONSTRUCT ELECTIONS CORRIDOR

- 4A.1. Move Elections into new elections office.
- 4A.2. Complete construction of remaining portion of corridor.

PHASE 5

CLERK OFFICES

- 5.1. Move Clerk workstations #14, 15, 16, 17, 18, 19, 20, 21, 22, 34, & 35 to old passport temp office space and records room space.
- 5.2. Construct Clerk Office Part 1.

PHASE 5A
CLERK OFFICES

- 5A.1. Move Clerk workstations 14,15,16,17,18, 19, 20, 21,22,30,31,32,34,& 35 from old passport temp office and records room space into final space.
- 5A.2. Move Clerk workstations 23, 24, 25, 26, 27 into old passport temp offices and records room space.
- 5A.3. Construct Clerk Office Part 2

PHASE 6
LUNCH ROOM CONFERENCE ROOM

- 6.1. Construct Phase 6 Lunch Room & Conference Rooms
- 6.2. Complete Records room walls & remove temp walls.

AFTER THE OVER ALL CERTIFICATE OF OCCUPANCY IS RECEIVED AFTER THE COMPLETION OF THIS PHASE; AT THAT TIME THE WARRENTIES AND GUARENTEES SHALL START. THE CONTRACTOR SHALL PAY ANY ADDITIONAL CHARGES THAT MAY BE CHARGED UPON HIM BY THE MANUFACTURERS TO MAKE THIS OCCUR.

- 3. CONTRACTOR SHALL SATISFY THEMSELVES, BY PERSONAL INSPECTION OF THE SITE OF THE PROPOSED IMPROVEMENT AND BY SUCH OTHER METHODS AS DESIRED OR PREFERRED BY HIM, AS TO THE PRESENT CONDITION AND NATURE THEREOF, AND THE SUFFICIENCY OF THE SPECIFICATIONS, PLANS, DRAWINGS AND ESTIMATES, AND WILL NOT, AT ANY TIME AFTER SUBMISSION OF BID OR PROPOSAL, DISPUTE ANY DIRECTIONS EXPLAINING OR INTERPRETING THE SAME, NOR CLAIM ANY MISUNDERSTANDING THEREOF. THE CONTRACTOR ENTERING TO DO HIS INSPECTION OF EXISTING CONDITIONS SHALL TAKE CARE DURING THE INSPECTION AND PROPERLY PROTECT HIS PEOPLE DURING THE INSPECTION.
- 4. THE CONSTRUCTION DRAWINGS AND THE SPECIFICATIONS WORK TOGETHER IN CONCERT. THESE DOCUMENTS MAY BE ALTERED DURING BIDDING THRU ADDENDUM OR CLARIFICATION. TOGETHER, THE DRAWINGS, SPECIFICATIONS AND ALL ADDENDA AND CLARIFICATIONS FORM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL READ AND REVIEW THE SPECIFICATIONS AS CAREFULLY AS HE REVIEWS THE DRAWINGS. ITEMS IN THE SPECIFICATIONS MAY NOT BE SHOWN ON DRAWINGS AND VICE VERSA. THIS HOWEVER DOES NOT MEAN THAT A PRODUCT, PIECE OF EQUIPMENT OR OTHER CONSTRUCTION ITEM NOT SHOWN OR INDICATED ON ONE OR THE OTHER IS NOT PART OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR ALL ITEMS LISTED IN EITHER THE SPECIFICATIONS, THE DRAWINGS, ADDENDA OR CLARIFICATIONS.

B. Type of Contract:

- 1. Project will be constructed under a single LUMP SUM contract.
- 2. Alternates may be taken but only in the order that they are listed (if any)

1.5 WORK BY OWNER

- A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Concurrent Work: Owner may perform some construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.
- C. The Owner will relocate furniture that needs to be relocated to allow the contractor to undertake his work. The Contractor Shall coordinate this work with the Owner and shall give ample time for the Owner to undertake this work. This work shall be shown on the Contractors detailed construction schedule and coordinated with the Owner when this construction schedule is prepared.
- D. It is expected that the owner will provide the wiring for the security camera's, data wiring for computers and the security hardware for the door controls. However, this contractor shall provide the appropriate conduit with pull string to each location. This work shall be coordinated with the owner and or his security and/or data contractor.

1.6 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to **work in areas** AS APPROVED BY OWNER. Do not disturb portions of Project site beyond areas in which the Work is APPROVED.
 - 1. Other parts of the building are occupied by county employees and the public. Contractor shall not disturb operations of the other occupants of the building.
 - 2. Driveways, Walkways and Entrances: Keep driveways EXISTING **parking LOTS, loading areas**, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather tight condition throughout construction period. Repair damage caused by construction operations.
 - 1. Limits: Confine construction operations to AREA OF THE BUILDING THAT IS OCCUPIED BY THE COUNTY CLERKS OFFICE, PASSPORT AND ELECTIONS AND THE COUNTY RECORD ROOM. CONTRACTOR WILL NEED LIMITED ACCESS TO THE INTERIOR FLOORS OF THE BUILDING FOR THE REMOVAL AND INSTALLATION OF THE WALLS, CEILING, AND ACCESSORIES, ETC AND SHALL COORDINATE WITH THE OWNER TO CAUSE THE LEAST AMOUNT OF DISRUPTION TO THE OCCUPANTS OF THE ADJACENT AREAS AND THE BASEMENT. ACCESS WILL BE REQUIRED TO THE BASEMENT FLOOR FOR INSTALLATION OF CERTAIN ITEMS, AND ACCESS TO THE BASEMENT FLOOR WILL BE COORDINATED WITH THE OWNER. . **TO OBTAIN ACCESS TO THESE AREAS, THE CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE OWNER 72 HOURS IN ADVANCE.**

1.7 COORDINATION WITH OCCUPANTS

- A. Partial Owner Occupancy: Owner will occupy the ENTIRE premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 2. Provide not less than **72** hours' notice to Owner of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. Work Restrictions, General:

EMPLOYEE SCREENING & IDENTIFICATION

1. It is the requirement of the County of Union that ALL contractors (both General Contractors and their sub-contractors) and their personnel be vetted through a fingerprint based background check process prior to being permitted entry into the County facility(s) and the commencement of the proposed work.
2. It is the responsibility of the General Contractor or vendor in charge, to make sure that all personnel who will be working in and around the County facility contact the State of New Jersey, Department of Law & Public Safety, Division of State Police Criminal Information Unit at (609) 822-2000, Ext. 2918 or visit their website at <https://njsp.org/criminal-history-records/> and follow the instructions to obtain a copy of each person's "Individual Criminal History Record".

PLEASE NOTE: ALL FEES & TIME ASSOCIATED IN COMPLETING THIS PROCESS ARE THE SOLE RESPONSIBILITY OF THE APPLICANT AND/OR THEIR AFFILIATES (E.G. GENERAL CONTRACTOR AND/OR SUBCONTRACTORS).

Once obtained, original sealed records(no copies) shall be sent/delivered to the Union County Sheriff's Office at the following address:

Union County Sheriff's Office
2 Broad Street, Control Center
Elizabeth, NJ 07207
908-527-4440

3. Upon completion of the review and processing of the information received, the Union County Sheriff's Office will issue identification cards to all contractors' personnel authorized in to the County facility to conduct work activities. It is the responsibility of the General Contractor or vendor in charge of the proposed work to maintain a current and accurate list of any and all screened and approved personnel with the Union County Sheriff's Office.

4. THE COUNTY OF UNION SHALL NOT BE RESPONSIBLE FOR ANY DELAYS AND/OR DAMAGES EITHER DIRECTLY OR INDIRECTLY RESULTING FROM THE FAILURE TO COMPLY WITH THESE REQUIREMENTS BY ANY GENERAL CONTRACTOR OR VENDOR IN CHARGE.

- B. On-Site Work Hours: Limit work in the existing building to normal business working hours Monday through Friday, unless work must be done to meet the scheduled date of completion.
1. Weekend Hours: COORDINATE WITH OWNER AND AUTHORITIES HAVING JURISDICTION.
 2. Early Morning Hours: COORDINATE WITH OWNER AND AUTHORITIES HAVING JURISDICTION.
 3. Hours for Utility Shutdowns: COORDINATE WITH OWNER AND AUTHORITIES HAVING JURISDICTION.
 4. Hours for Core Drilling COORDINATE WITH OWNER AND AUTHORITIES HAVING JURISDICTION.
 5. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify **OWNER AND Architect** not less than **two** days in advance of proposed utility interruptions.
 2. Obtain THROUGH **Architect, Owner's** written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
1. Notify **OWNER AND Architect** not less than **two** days in advance of proposed disruptive operations.
 2. Obtain THROUGH **Architect, Owner's** written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances **within the existing building AND/OR on Project site** is not permitted.
- G. Employee Identification: **Owner will provide** identification tags for Contractor personnel working on Project site if the owner deems it to be necessary. Require personnel to use identification tags at all times, if required by owner.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations **published as part of the U.S. National CAD Standard and scheduled on Drawings.**
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.
 - 2. ALL ALLOWANCES LISTED SHALL BE INCLUDED IN FINAL BID AND INDICATED ON SCHEDULE OF VALUES.
- B. Types of allowances include the following:
 - 1. Contingency allowances.
- C. Related Requirements:
 - 1. Section 012200 "Unit Prices" for procedures for using unit prices.
 - 2. Section 014000 "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.4 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.5 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.6 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.7 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's **overhead, profit, and** related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, **taxes**, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. ALLOWANCE NO. 1: GENERAL CONTINGENCY ALLOWANCE:
 1. \$350,000.00 (THREE HUNDRED FIFTY THOUSAND DOLLARS).

END OF SECTION 012100

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Sections:
 - 1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement THROUGH SUBMISSION WITH THE CONTRACTOR'S BID, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate CHANGE ORDER modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased OR If OWNER DECIDES TO ADD OR DELETE MATERIALS OR SERVICES TO OR FROM THE Work required by the Contract Documents VIA CHANGE ORDER.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included IN THE BID PROPOSAL FORM AND SHALL BE FILLED OUT BY THE CONTRACTOR AND SUBMITTED WITH THEIR BID. These prices are for material and labor for any additional item of work or the deletion of an item of work.

- E. If the unit prices stated in the Contract Documents for additional work and the application of those unit prices will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted prior to their application against quantities of changed work.
- F. The Add / Deduct amounts shown shall not vary by more than 10%.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

- A. A LIST OF UNIT PRICES IS CONTAINED IN THE BID PROPOSAL AND SHALL BE FILLED OUT BY THE CONTRACTOR AND SUBMITTED WITH THEIR BID.

END OF SECTION 012200

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Division 01 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on **AIA Document G710, "Architect's Supplemental Instructions." OR STANDARD COMPANY LETTERHEAD OR STANDARD EMAIL FORMAT OF THE ARCHITECT.**

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: **Architect** will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by **Architect** are not instructions either to stop work in progress or to execute the proposed change.
 - 2. IMMEDIATELY after receipt of Proposal Request, BUT NO LONGER THAN SEVEN (7) CALENDAR DAYS, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. SUBMIT A DETAILED BREAKDOWN. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change. LABOR RATES WILL BE THE PREVAILING WAGE RATE AS SET BY **UNION COUNTY and/or STATE OF NEW JERSEY.**

- d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use **CSI Form 13.6B "Proposal Worksheet Summary" and 13.6C "Proposal Worksheet Detail"** OR OTHER SIMILAR forms acceptable to **Architect**.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to **Architect**.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change. LABOR RATES WILL BE THE PREVAILING WAGE RATE AS SET BY **UNION COUNTY**.
 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 7. Proposal Request Form: Use EITHER **CSI Form 13.6A "Change Order Request (Proposal)" with attachments CSI Form 13.6B "Proposal Worksheet Summary" and 13.6C "Proposal Worksheet Detail"** OR OTHER SIMILAR forms acceptable to **Architect**.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, **Architect** will issue a Change Order for signatures of Owner and Contractor on **AIA Document G701**.
- B. WHEN A CHANGE IN THE WORK INCLUDES A CATEGORY OR CATEGORIES OF WORK BOTH ADDED TO AND DEDUCTED FROM THE CONTRACT, THE TOTAL QUANTITIES OF ADDED WORK AND OF DELETED WORK SHALL BE DETERMINED SEPARATELY FOR EACH CATEGORY AND THE APPROPRIATE NET COST OF THE WORK SHALL BE APPLIED TO THE DIFFERENCE BETWEEN THE TWO TOTAL QUANTITIES.
- C. OVERHEAD AND PROFIT
 1. FOR ALL EXTRA WORK PERFORMED BY THE CONTRACTOR'S OWN FORCES, THE GROSS COST TO THE OWNER SHALL INCLUDE THE NET COST OF THE WORK TO THE

CONTRACTOR PLUS AN ALLOWANCE FOR OVERHEAD AND PROFIT NOT TO EXCEED 15% OF THE NET COST. THE ALLOWABLE OVERHEAD AND PROFIT AMOUNTS ARE REGARDLESS OF THE NUMBER OF TIERS OF SUBCONTRACTORS, SUPPLIERS OR VENDORS.

2. FOR ALL EXTRA WORK PERFORMED BY A SUBCONTRACTOR, THE GROSS COST TO THE OWNER SHALL INCLUDE THE NET COST OF THE WORK TO THE SUBCONTRACTOR PLUS AN ALLOWANCE FOR OVERHEAD AND PROFIT NOT TO EXCEED 10% OF THE NET COST, PLUS THE CONTRACTOR'S OVERHEAD AND PROFIT NOT TO EXCEED 10% OF THE SUBCONTRACTOR'S NET COST.

3. PAYROLL FOR MAIN OFFICE ADMINISTRATION AND PERSONAL, INCIDENTAL GENERAL OFFICE SUPPLIES. OR CONTRACTOR'S CAPITAL EXPENSES INCLUDING INTEREST ON THE CONTRACTOR'S CAPITAL EMPLOYED FOR THE WORK ARE NOT COMPENSABLE.

4. COSTS DUE TO THE NEGLIGENCE OF ANY CONTRACTOR OR SUBCONTRACTOR DIRECTLY OR INDIRECTLY EMPLOYED BY ANY OF THEM FOR WHOSE ACTS THEY ARE LIABLE ARE NOT COMPENSABLE.

5. SCHEDULE EXTENSION: ANY CLAIM FOR AN EXTENSION, OR EXTENSIONS, OF TIME MUST BE FULLY SUBSTANTIATED BY INCORPORATION OF THE IMPACT FROM THE CHANGED CONDITION INTO AN UPDATE OF THE CONTRACTOR'S PRECEDENCE BASED PROJECT SCHEDULE. THIS UPDATE MUST ALSO REFLECT ANY OTHER IMPACTS OF THE SCHEDULE RESULTING FROM DELAYS, CONCURRENT OR NON-CONCURRENT, FOR WHICH ANY OF THE CONTRACTORS IS RESPONSIBLE. NO CLAIMS WILL BE EVALUATED OR ACCEPTED WITHOUT INCLUSION OF THE SUBSTANTIATION REQUIREMENTS SET FORTH IN THIS ARTICLE. THIS UPDATED SCHEDULE MUST BE SUBMITTED WITHIN FOURTEEN(14) CALENDAR DAYS OF THE OCCURANCE.

6. ALL CLAIMS INCLUDING BUT NOT LIMITED TO DELAY RELATED CLAIMS IN EXCESS OF \$25,000 EITHER INDIVIDUALLY OR COLLECTIVELY SHALL COLLECTIVELY BE SUBJECT OF A FINANANCIAL, AND, OR, TECHNICAL AUDIT AT THE OPTION OF THE PARTY AGAINST WHOM THE CLAIM IS BEING MADE. THE CLAIMANT SHALL MAKE ITS BOOKS AND RECORDS AVAILABLE FOR REVIEW AUDIT AND INSPECTION ON REASONABLE NOTICE.

- D. NET COST OF EXTRA WORK SHALL BE THE ACTUAL OR PRO-RATED COST OF:
1. LABOR, INCLUDING FOREMAN AND SUPERINTENDENT, AT THE PREVAILING RATE OF WAGES, CONTRIBUTIONS AND TAXES.
 2. MATERIALS ENTERING PERMANENTLY INTO THE WORK, INCLUDING DELIVERY TO THE SITE.
 3. THE OWNERSHIP OR RENTAL COST OF CONSTRUCTION EQUIPMENT AND EXPENDABLE TOOLS, PRO-RATED FOR THE TIME NECESSARY FOR THE WORK.
 4. POWER AND CONSUMABLE SUPPLIES FOR THE OPERATION OF POWER EQUIPMENT, PRO-RATED FOR THE TIME NECESSARY FOR THE WORK.
 5. INSURANCE AND BONDS.
- E. GROSS COSTS SHALL BE NET COSTS PLUS THE ALLOWANCES DESCRIBED ABOVE, SUCH ALLOWANCES BEING INCLUSIVE, OF ALL COST OF SUPERINTENDENCE, SUPERVISION, ENGINEERING, OVERHEAD, PROFIT, ADMINISTRATIVE AND SITE OFFICE EXPENSES AND ALL OTHER GENERAL EXPENSES.
- F. CONTRACTOR SHALL INCLUDE SUPPORTING DOCUMENTATION FROM ALL SUBCONTRACTORS INVOLVED IN ANY PROPOSAL REQUEST. THIS DOCUMENTATION

SHALL INCLUDE MANHOURS AND HOURLY RATES, MATERIAL LIST AND COSTS, AND OVERHEAD AND PROFIT. SUPPORTING DOCUMENTATION WILL BE ATTACHED TO CHANGE ORDER PREPARED BY ARCHITECT.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. **Construction** Change Directive: **Architect** may issue a **Construction** Change Directive on **AIA Document G714**. **Construction** Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. **Construction** Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the **Construction** Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date **BUT NO LATER THAN 21 DAYS AFTER AWARD OF CONTRACT AND no later than **TEN** days before the date scheduled for submittal of initial Applications for Payment. DIVIDE SCHEDULE OF VALUES INTO SECTIONS AS FOLLOWS:**
 - a. AREAS OF RENOVATION
 - 1) INCLUDE AT A MINIMUM EACH DIVISION AND SUBDIVISION.
 - 2) INCLUDE MATERIAL BREAKDOWN FOR EACH SUBDIVISION.
 - 3) INCLUDE LABOR BREAKDOWN FOR EACH SUBDIVISION.

- 4) INCLUDE LINE ITEM FOR SHOP DRAWINGS FOR EACH ITEM REQUIRING SHOP DRAWINGS.
 - b. EACH ACCEPTED ALTERNATE (if any).
 - c. LINE ITEMS FOR:
 - 1) MOBILIZATION.
 - 2) PUNCHLIST.
 - 3) CLOSEOUT DOCUMENTS.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange schedule of values consistent with format of **AIA Document G703. SUBMIT DRAFT OF AIA DOCUMENT G703 CONTINUATION SHEETS FOR APPROVAL BY ARCHITECT.**
 3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of **five** percent of the Contract Sum. **IF CONTRACTOR OR ANY SUBCONTRACTOR WANTS TO BE PAID FOR SHOP DRAWINGS OR ANY OF THE ITEMS LISTED ABOVE INDIVIDUALLY THEY MUST BE SPECIFICALLY LISTED IN THE SCHEDULE OF VALUES.**
 - a. Include separate line items under **Contractor and** principal subcontracts for Project closeout requirements in an amount totaling **five** percent of the Contract Sum and subcontract amount.
 5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If ITEMS ARE STORED OFF SITE, evidence of insurance or bonded warehousing SHALL BE PROVIDED AT THE TIME THE REQUEST FOR PAYMENT FOR THESE ITEMS IS MADE. ARCHITECT, AT HIS OPTION, WILL TRAVEL TO OFF SITE LOCATION TO VERIFY MATERIAL. OWNER AND ARCHITECT HAVE THE OPTION OF NOT APPROVING PAYMENT FOR MATERIAL STORED OFF SITE, IF THEY FEEL IT IS IN THE BEST INTERESTS OF THE OWNER.
7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.
9. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
 - b. IF MOBILIZATION COSTS ARE SHOWN, THEY SHALL BE COMPLETELY BROKEN DOWN AND JUSTIFIED WITH A WRITTEN EXPLANATION BY THE CONTRACTOR.
10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum. EACH CHANGE ORDER SHALL BE LISTED SEPARATELY ON THE SCHEDULE OF VALUES, BUT CANNOT BE INCLUDED IN THE SCHEDULE OF VALUES UNTIL SIGNED BY ALL PARTIES.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
 2. RETAINAGE: THE RETAINAGE SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE STATE OF NEW JERSEY REGARDING BIDS ON PROJECTS OF THIS SIZE AND COST, TYPICALLY NOT MORE THAN TWO PERCENT (2%) OF THE TOTAL COST OF CONSTRUCTION OF THE PROJECT.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement and WILL BE one month, ending on the **last day of the month**. PENCIL COPY AND FINAL PAYMENT APPLICATION SUBMITTAL SHALL BE REVIEWED WITH THE OWNER FOLLOWING AWARD OF CONTRACT AND SHALL BE INCLUDED IN OWNER/CONTRACTOR AGREEMENT.

1. Submit draft copy of Application for Payment **seven** days prior to due date for review by Architect.
- C. Application for Payment Forms: Use **AIA Document G702 and AIA Document G703** as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. **Architect** will return incomplete applications without action.
1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: **FOLLOWING PENCIL COPY REVIEW**, Submit **THREE (3)** signed and notarized original copies of each Application for Payment to **Architect** by a method ensuring receipt **within 24 hours**. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
 2. **PAYROLL REPORTS SHALL BE SUBMITTED DIRECTLY TO OWNER, WITH A COPY TO THE ARCHITECT.**
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.

3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner ON THE FOLLOWING FORMS OR SIMILAR:
 - a. AIA DOCUMENT G706, "CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS."
 - b. AIA DOCUMENT G706A, "CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS."
- H. CONSTRUCTION PHOTOGRAPHS:
1. SUBMIT CONSTRUCTION PHOTOGRAPHS WITH EACH APPLICATION FOR PAYMENT IN COMPLIANCE WITH SPECIFICATION SECTION 013233: PHOTOGRAPHIC DOCUMENTATION.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. **LETTER FROM CONTRACTOR'S BONDING COMPANY APPROVING SCHEDULE OF VALUES BREAKDOWN. NO PAYMENTS WILL BE MADE TO CONTRACTOR UNTIL LETTER FROM BONDING COMPANY APPROVING SCHEDULE OF VALUES AS WELL AS CONTRACTORS CONSTRUCTION SCHEDULE IS RECEIVED. CONTRACTOR SHALL ALSO SUBMIT A COPY OF THE INVOICE SHOWING THE COST OF THE BOND FROM HIS BROKER.**
 2. List of subcontractors.
 3. Schedule of values.
 4. Contractor's construction schedule (preliminary if not final).
 5. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
 6. Products list (preliminary if not final).
 7. Schedule of unit prices.
 8. Submittal schedule (preliminary if not final).
 9. List of Contractor's staff assignments.
 10. List of Contractor's principal consultants.
 11. Copies of building permits.
 12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 13. Initial progress report.
 14. Report of preconstruction conference.
 15. Certificates of insurance and insurance policies.
 16. Performance and payment bonds.
 17. Data needed to acquire Owner's insurance.
- J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. **Use CSI Form 1.5A.** Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

- B. Key Personnel Names: Within **15** days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities **and activities of other contractors** to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.
- E. PROJECT COORDINATOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN ALL TRADES PRESENT ON THE PROJECT.
1. **GENERAL CONSTRUCTION CONTRACTOR** SHALL ACT AS PROJECT COORDINATOR, NAME INDIVIDUAL ASSIGNED THAT RESPONSIBILITY
- F. MECHANICAL/ELECTRICAL COORDINATOR, WHO SHALL BE SUBORDINATE TO PROJECT COORDINATOR, SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN THE **PLUMBING CONTRACTOR, HVAC CONTRACTOR, ELECTRICAL CONTRACTOR** AND THE **SPRINKLER SUB CONTRACTOR**.
1. **MECHANICAL CONTRACTOR** SHALL ACT AS MECHANICAL/ELECTRICAL COORDINATOR AND PREPARE COORDINATION DRAWING SHOWING MECHANICAL SYSTEMS (DUCT WORK, PLUMBING AND MECHANICAL PIPING), SPRINKLER PIPING AND ELECTRICAL CONDUIT AND LIGHTING FIXTURES.
- 1.6 PROJECT COORDINATORS
- A. PROJECT COORDINATOR SHALL BE THE GENERAL CONSTRUCTION CONTRACTOR. THE GENERAL CONTRACTOR SHALL ASSIGN A PERSON ON HIS STAFF TO BE THE FULL-TIME PROJECT COORDINATOR. THEY SHALL BE EXPERIENCED IN ADMINISTRATION AND SUPERVISION OF BUILDING CONSTRUCTION, INCLUDING MECHANICAL AND ELECTRICAL WORK.
1. COORDINATION ACTIVITIES OF PROJECT COORDINATOR INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
 - a. **INSURANCE THAT MECHANICAL COORDINATOR PREPARES COODINATION DRAWINGS FOR MECHANICAL, PLUMBING AND ELECTRICAL TRADES.**
 - b. PROVIDE OVERALL COORDINATION OF THE WORK.
 - c. COORDINATE SHARED ACCESS TO WORK SPACES.
 - d. COORDINATE PRODUCT SELECTIONS FOR COMPATIBILITY.
 - e. PROVIDE OVERALL COORDINATION OF TEMPORARY FACILITIES AND CONTROLS.
 - f. COORDINATE, SCHEDULE, AND APPROVE INTERRUPTIONS OF PERMANENT AND TEMPORARY UTILITIES, INCLUDING THOSE NECESSARY TO MAKE CONNECTIONS FOR TEMPORARY SERVICES.
 - g. COORDINATE CONSTRUCTION AND OPERATIONS OF THE WORK WITH WORK PERFORMED BY EACH CONTRACT.
 - h. PREPARE COORDINATION DRAWINGS TO COORDINATE WORK BY MORE THAN ONE CONTRACTOR.
 - i. COORDINATE SEQUENCING AND SCHEDULING OF THE WORK. INCLUDING THE FOLLOWING:
 - j. COORDINATE STRUCTURAL STEEL WITH REQUIRED OPENINGS FOR MECHANICAL/ELECTRICAL EQUIPMENT AND SYSTEMS.

- 1) INITIAL COORDINATION MEETING: AT EARLIEST POSSIBLE DATE, ARRANGE AND CONDUCT A MEETING WITH SEPARATE CONTRACTORS FOR SEQUENCING AND COORDINATING THE WORK; NEGOTIATE REASONABLE ADJUSTMENTS TO SCHEDULES.
 - 2) PREPARE A CONSTRUCTION SCHEDULE FOR ENTIRE PROJECT. BASE SCHEDULE ON PRELIMINARY CONSTRUCTION SCHEDULE. SECURE TIME COMMITMENTS FOR PERFORMING CRITICAL CONSTRUCTION ACTIVITIES FROM SEPARATE CONTRACTORS.
 - 3) DISTRIBUTE COPIES OF SCHEDULE TO ARCHITECT, OWNER, AND SEPARATE CONTRACTORS.
-
- k. PROVIDE CONSTRUCTION PHOTOGRAPHY.
 - l. PROVIDE QUALITY-ASSURANCE AND QUALITY CONTROL SERVICES SPECIFIED IN DIVISION 1 SECTION "QUALITY REQUIREMENTS."
 - m. COORDINATE SEQUENCE OF ACTIVITIES TO ACCOMMODATE TESTS AND INSPECTIONS, AND COORDINATE SCHEDULE OF TESTS AND INSPECTIONS.
 - n. PROVIDE INFORMATION NECESSARY TO ADJUST, MOVE, OR RELOCATE EXISTING UTILITY STRUCTURES AFFECTED BY CONSTRUCTION.
 - o. LOCATE EXISTING PERMANENT BENCHMARKS, CONTROL POINTS, AND SIMILAR REFERENCE POINTS, AND ESTABLISH PERMANENT BENCHMARKS ON PROJECT SITE.
 - p. PROVIDE FIELD SURVEYS OF IN-PROGRESS CONSTRUCTION AND SITE WORK.
 - q. PROVIDE PROGRESS CLEANING OF COMMON AREAS AND COORDINATE PROGRESS CLEANING OF AREAS OR PIECES OF EQUIPMENT WHERE MORE THAN ONE CONTRACTOR HAS WORKED.
 - r. COORDINATE CUTTING AND PATCHING.
 - s. COORDINATE PROTECTION OF THE WORK.
 - t. COORDINATE FIRESTOPPING.
 - u. COORDINATE PREPARATION OF PROJECT RECORD DOCUMENTS IF INFORMATION FROM MORE THAN ONE CONTRACTOR IS TO BE INTEGRATED WITH INFORMATION FROM OTHER CONTRACTORS TO FORM ONE COMBINED RECORD.
 - v. PRINT AND SUBMIT **RECORD TRANSPARENCIES** IF INSTALLATIONS BY MORE THAN ONE CONTRACTOR ARE INDICATED ON THE SAME CONTRACT DRAWING OR SHOP DRAWING.
 - w. COLLECT RECORD SPECIFICATION SECTIONS FROM OTHER CONTRACTORS, COLLATE SECTIONS INTO NUMERIC ORDER, AND SUBMIT COMPLETE SET.
 - x. COORDINATE PREPARATION OF OPERATION AND MAINTENANCE MANUALS IF INFORMATION FROM MORE THAN ONE CONTRACTOR IS TO BE INTEGRATED WITH INFORMATION FROM OTHER CONTRACTORS TO FORM ONE COMBINED RECORD.
-
- B. MECHANICAL/ELECTRICAL COORDINATOR: FULL-TIME MECHANICAL/ELECTRICAL COORDINATOR SHALL BE EXPERIENCED IN COORDINATION OF MECHANICAL AND ELECTRICAL CONSTRUCTION, INCLUDING COORDINATION OF TYPE OF OPERATIONS REQUIRED FOR THIS PROJECT, AND SHALL BE LICENSED TO PRACTICE AS A PROFESSIONAL ENGINEER IN LOCATION OF PROJECT AND SHALL BE RESPONSIBLE FOR ALL COORDINATION AND SCHEDULING OF MECHANICAL AND ELECTRICAL WORK

AND SHOULD BE EITHER A FULL TIME EMPLOYEE OR CONTRACTUAL EMPLOYEE OF THE MECHANICAL CONTRACTOR.

1. COORDINATION ACTIVITIES OF MECHANICAL/ELECTRICAL COORDINATOR INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
 - a. **PREPARE MECHANICAL, PLUMBING, AND ELECTRICAL COORDINATION DRAWINGS. THESE DRAWINGS SHALL BE PREPARED PRIOR TO COMMENCEMENT OF WORK.**
 - b. SCHEDULE AND SEQUENCE MECHANICAL, PLUMBING AND ELECTRICAL ACTIVITIES.
 - c. COORDINATE SHARING ACCESS TO WORK SPACES BY MECHANICAL AND ELECTRICAL CONTRACTORS.
 - d. COORDINATE INTEGRATION OF MECHANICAL AND ELECTRICAL WORK INCLUDING SPRINKLER PIPING INTO LIMITED SPACES.
 - e. COORDINATE PROTECTION OF MECHANICAL AND ELECTRICAL CONTRACTORS' WORK.
 - f. COORDINATE CUTTING AND PATCHING FOR MECHANICAL AND ELECTRICAL WORK.
 - g. COORDINATE TESTS AND INSPECTIONS FOR MECHANICAL AND ELECTRICAL WORK.
 - h. COORDINATE MECHANICAL AND ELECTRICAL TEMPORARY SERVICES AND FACILITIES.

1.7 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings THAT COORDINATE ALL TRADES INCLUDING BUT NOT LIMITED TO PLUMBING, ELECTRICAL, HVAC, SPRINKLER, ETC. IN accordance WITH requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 1. INSTALLATION OF PLUMBING, MECHANICAL, ELECTRICAL, DUCTWORK ETC. SHALL BE CONTINGENT ON PREPARATION OF COORDINATION DRAWINGS. IF CONTRACTOR OPTS TO INSTALL ANY OF THESE ITEMS PRIOR TO COORDINATION DRAWING PREPARATION, ALL COSTS AND TIME FOR MATERIAL AND LABOR ASSOCIATED WITH CONFLICTS BETWEEN TRADES, CEILING HEIGHTS INDICATED IN CONTRACT DOCUMENTS OR OTHER BUILDING ELEMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
 2. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. DRAWINGS SUBMITTED THAT ARE REPLICATIONS OF THE CONTRACT DOCUMENTS SHALL BE REJECTED WITHOUT REVIEW Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.

- b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
- c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
- d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
- e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
- f. Indicate required installation sequences.
- g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
2. File Preparation Format: **DWG**, operating in **Microsoft Windows** operating system.
3. File Submittal Format: Submit or post coordination drawing files using **Portable Data File (PDF) format**.
4. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in AUTOCAD.
 - c. Contractor shall execute a data licensing agreement in the form of **AIA Document C106**.

1.8 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Architect.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.

9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: **AIA Document G716** OR SIMILAR.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow **seven** working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within **[10]** days of receipt of the RFI response.
- E. RFI Log: CONTRACTOR SHALL Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log **weekly**. Use **CSI Log Form 13.2B** AND Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.

- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within **seven** days if Contractor disagrees with response.
 - 1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 - 2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.9 PROJECT MEETINGS

- A. General: GENERAL CONTRACTOR SHALL **Schedule and conduct** meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: MINUTES SHALL BE PREPARED AND DISTRIBUTED BY ARCHITECT FOR ALL MEETINGS OUTLINED IN THIS SECTION EXCEPT FOR MINUTES OF COORDINATION MEETINGS. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within SEVEN days of the meeting.
- B. Preconstruction Conference: **Architect will schedule and conduct** a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than **15** days after execution of the Agreement.
 - 1. Conduct the conference to review responsibilities and personnel assignments.
 - 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. REVIEW PRELIMINARY construction schedule.
 - b. REVIEW ADENDA AND CLARIFICATIONS ISSUED DURING BIDDING. GENERAL CONTRACTOR TO PROVIDE DOCUMENTATION SIGNED BY ALL MAJOR SUBCONTRACTORS AND SUPPLIERS STATING THAT THEY HAVE RECEIVED ALL ADDENDUMS AND CLARIFICATIONS ISSUED DURING BIDDING.
 - c. REVIEW ANY ACCEPTED ALTERNATES. GENERAL CONTRACTOR TO PROVIDE DOCUMENTATION SIGNED BY ALL MAJOR SUBCONTRACTORS AND SUPPLIERS STATING THAT THEY HAVE RECEIVED A LIST OF ACCEPTED ALTERNATES.
 - d. DOCUMENTATION FROM ANY AND ALL SUBCONTRACTORS THAT THEY HAVE REVIEWED THE ENTIRE SET OF DRAWINGS AND SPECIFICATIONS.
 - e. REVIEW OF COORDINATION DRAWING PROCEDURES.
 - f. Critical work sequencing and long-lead items.
 - g. Designation of key personnel and their duties.
 - h. Lines of communications.
 - i. Procedures for processing field decisions and Change Orders.

- j. Procedures for RFIs.
 - k. Procedures for testing and inspecting.
 - l. Procedures for processing Applications for Payment.
 - m. Distribution of the Contract Documents.
 - n. Submittal procedures.
 - o. Preparation of record documents.
 - p. Use of the premises **and existing building AREAS**.
 - q. Work restrictions.
 - r. Working hours.
 - s. Owner's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for moisture and mold control.
 - v. Procedures for disruptions and shutdowns.
 - w. Construction waste management and recycling.
 - x. Parking availability.
 - y. Office, work, and storage areas.
 - z. Equipment deliveries and priorities.
 - aa. First aid.
 - bb. Security.
 - cc. Progress cleaning.
4. Minutes: ARCHITECT will record and distribute meeting minutes.
- C. Preinstallation Conferences: CONTRACTOR SHALL conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.

- t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: **CONTRACTOR SHALL Schedule and conduct** a project closeout conference, at a time convenient to Owner and Architect, but no later than **90** days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Preparation of Contractor's punch list.
 - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - i. Submittal procedures.
 - j. Owner's partial occupancy requirements.
 - k. Installation of Owner's furniture, fixtures, and equipment.
 - l. Responsibility for removing temporary facilities and controls.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: **ARCHITECT SHALL Conduct** progress meetings at intervals AS APPROVED BY OWNER. AS JOB CONSTRUCTION PROGRESSES, FREQUENCY OF MEETINGS TO BE REVIEWED BY OWNER, CONTRACTOR AND ARCHITECT
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in

planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of proposal requests.
 - 15) Pending changes.
 - 16) Status of Change Orders.
 - 17) Pending claims and disputes.
 - 18) Documentation of information for payment requests.
 4. Minutes: ARCHITECT will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- F. Coordination Meetings: CONTRACTOR SHALL conduct Project coordination meetings at **weekly** intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of Owner and Architect, IF THEY WISH TO BE PRESENT, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities

- shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Change Orders.
 3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's construction schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Special reports.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting schedules and reports.
 - 2. Section 014000 "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF electronic file OR
 - 3. **THREE** paper copies.
- B. Startup construction schedule.

- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- D. Daily Construction Reports: Submit (2) TWO COPIES at **monthly** intervals.
- E. Material Location Reports: Submit (2) TWO COPIES at **monthly** intervals.
- F. Field Condition Reports: Submit (2) TWO COPIES at time of discovery of differing conditions.
- G. Special Reports: Submit (2) TWO COPIES at time of unusual event.

1.5 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for **the Notice to Proceed** to date of **Substantial Completion**.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than **(20) TWENTY** days, unless specifically allowed by Architect.
 - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - a. WINDOWS.
 - b. ANY OTHER LONG LEAD TIME ITEM.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 - 4. Startup and Testing Time: Include no fewer than **(15) FIFTEEN** days for startup and testing.

5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 6. Punch List and Final Completion: Include not more than **(30) THIRTY** days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work under More Than One Contract: Include a separate activity for each contract.
 2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 3. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 4. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 5. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Permanent space enclosure.
 - b. Completion of mechanical installation.
 - c. Completion of electrical installation.
 - d. Substantial Completion.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, **and the following interim milestones:**
1. WINDOW INSTALLATION.
 2. COMPLETION OF CORNICE WORK.

- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
 - 1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is **(14) FOURTEEN** or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

2.2 STARTUP CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within **(7) seven** days of date established for **the Notice to Proceed**.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first **90** days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within **30** days of date established for **the Notice to Proceed**. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in **TEN (10)** percent increments within time bar.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.

3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (see special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. **Construction** Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

- B. Material Location Reports: At **monthly** intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within **one** day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At **monthly** intervals, update schedule to reflect actual construction progress and activities. Issue schedule **one week** before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect AND Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final completion construction photographs.
 - 4. Preconstruction video recordings.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting photographic documentation.
 - 2. Section 017700 "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For **photographer**.
- B. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each **photograph AND video recording**. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- C. Digital Photographs: Submit image files within AS OUTLINED IN PART 3: EXECUTION.
 - 1. Digital Camera: Minimum sensor resolution of **8** megapixels.
 - 2. Format: Minimum **3200 by 2400** pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.

- D. Video Recordings: Submit video recordings AS OUTLINED IN PART 3: EXECUTION within **seven** days of recording.
1. Submit video recordings in **digital video disc format OR FLASH DRIVE acceptable to Architect.**
 2. Identification: With each submittal, provide the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date video recording was recorded.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Weather conditions at time of recording.
 3. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, three-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as corresponding video recording. Include name of Project and date of video recording on each page.

1.4 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.5 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of **8** megapixels, and at an image resolution of not less than **3200 by 2400** pixels.
- B. Digital Video Recordings: Provide high-resolution, digital video disc **in format acceptable to Architect.**

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.

- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
1. Date and Time: Include date and time in file name for each image.
 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- D. Preconstruction Photographs: Before **commencement of INTERIOR DEMOLITION WORK AND starting construction**, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points. Also take photos of the exterior of the building that might be impacted by demolition or construction operations including the path of travel for the removal of construction debris including the interior 4 sides of the elevators without the elevator pads.
1. Flag **construction limits** before taking construction photographs.
 2. Take **TWENTY FIVE (25)** photographs (VIEWS) to show existing conditions adjacent to property before starting the Work.
 3. Take at least **FIFTY (50)** photographs (VIEWS) of existing building to accurately record physical conditions at start of construction.
 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- E. Periodic Construction Photographs: TWENTY-FIVE (25) photographs (VIEWS) **weekly, with timing each month adjusted to coincide** with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- F. Final Completion Construction Photographs: Take **TWENTY FIVE (25)** color photographs after date of Substantial Completion for submission as project record documents. **Architect** will inform photographer of desired vantage points.
1. Do not include date stamp.
- G. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
1. Three days' notice will be given, where feasible.
 2. In emergency situations, take additional photographs within 24 hours of request.
 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.

3.2 CONSTRUCTION VIDEO RECORDINGS

- A. Video Recording Photographer: Engage a qualified videographer to record construction video recordings.
- B. Recording: Mount camera on tripod before starting recording unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.
- C. Narration: Describe scenes on video recording by **audio narration by microphone while** video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.
 - 1. Confirm date and time at beginning and end of recording.
 - 2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.
- D. Preconstruction Video Recording: Before starting **EXTERIOR WORK AND construction**, record video recording of Project site and surrounding properties from different vantage points, as directed by **Architect**.
 - 1. Flag **construction limits** before recording construction video recordings.
 - 2. Show existing conditions adjacent to Project site before starting the Work.
 - 3. Show protection efforts by Contractor.

3.3 DEMONSTRATION AND TRAINING VIDEOTAPES

- A. General: Engage a qualified commercial photographer to record demonstration and training videotapes. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
 - 2. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date videotape was recorded.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
- B. RECORD INSTRUCTION OF OWNER'S PERSONNEL BY CONTRACTOR IN THE OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS. EDIT VIDEOTAPE TO REMOVE NON-INSTRUCTIONAL CONVERSATION. PHOTOGRAPHER SHALL SELECT VANTAGE POINTS TO BEST SHOW EQUIPMENT, SYSTEMS, AND PROCEDURES DEMONSTRATED. MINIMUM RECORDING TIME SHALL BE **EIGHT (8) HOURS**.

- C. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label.
- D. Narration: Describe scenes on videotape by **audio narration by microphone while** videotape is recorded. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - 1. information as the corresponding videotape. Include name of Project and date of videotape on each page.
- E. Videotape Format: Provide high-quality VHS color videotape in full-size cassettes.
- F. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - 3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4. Division 1 Section "Photographic Documentation" for submitting construction photographs and construction videotapes.
 - 5. Division 1 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
 - 6. Division 1 Section "Closeout Procedures" for submitting warranties.
 - 7. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 8. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 9. Division 1 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
 - 10. Divisions 2 through 16 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.
- C. "OR EQUAL" PRODUCT SUBMISSION: PRODUCT, MATERIAL OR EQUIPMENT OTHER THAN SPECIFIED PRODUCT BUT EQUAL TO OR BETTER THAN SPECIFIED PRODUCT IN CONSTRUCTION, QUALITY, PERFORMANCE ETC. SUBSTITUTIONS ARE CONSIDERED TO BE OF LESSER QUALITY AND/OR VALUE AND IF ALLOWED BY ARCHITECT FOLLOWING REVIEW, THEIR INCORPORATION INTO THE PROJECT WILL RESULT IN A CREDIT TO THE OWNER.

1.4 SUBMITTAL PROCEDURES

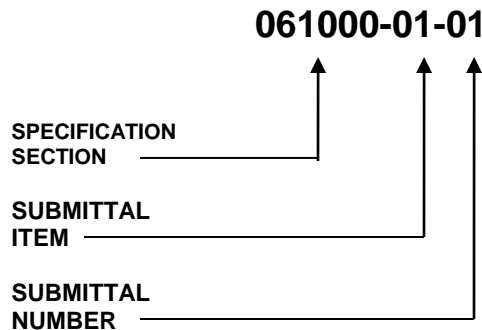
- A. General: Electronic copies of CAD Drawings of the Contract Drawings WILL NOT BE provided by Architect for Contractor's use in preparing submittals.
- B. Contractor shall submit digital copies of the shop drawings to the architect. The architect will forward to the architects consultants.
- C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- D. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- E. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. ANY SUBMITTALS FOR LONG LEAD TIME ITEMS OR ITEMS REQUIRING EXTENSIVE REVIEW SHALL BE SUBMITTED BY THE CONTRACTOR WELL IN ADVANCE OF DATE FOR ORDER FOR TIMELY INCORPORATION INTO THE PROJECT. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow TEN (10) CALANDER days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow TEN (10) CALENDAR days for review of each resubmittal.
 - 4. FOR REVIEW OF COMPLEX ITEMS SUCH AS STRUCTURE, DOORS AND FRAMES, , HARDWARE ETC. ADDITIONAL TIME SHALL BE ALLOWED.
- F. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 - 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. TO.
 - d. FROM.
 - e. Name and address of Architect.
 - f. Name and address of Contractor.
 - g. Name and address of subcontractor.

- h. Name and address of supplier.
- i. Name of manufacturer.
- j. SUBMITTAL TYPE (SHOP DRAWINGS, PRODUCT DATA, SAMPLES, INFORMATIONAL SUBMITTAL).
- k. DESCRIPTION OF SUBMITTAL.
- l. Submittal number, including revision identifier. The nomenclature for the submitting procedure is to be as follows:

SUBMITTAL LABELING SHALL BE COMPRISED OF 3 COMPONENTS:

- A. **SPECIFICATION SECTION**, WHICH DESIGNATES WHICH SECTION THE SUBMITTAL IS ASSOCIATED WITH.
- B. **SUBMITTAL ITEM** (I.E. PRODUCT DATA, SHOP DRAWINGS, WARRANTIES ARE TO BE SUBMITTED INDIVIDUALLY AS SEPARATE SUBMITTAL ITEMS)
- C. **SUBMITTAL NUMBER**, WHICH INDICATES THE (RE)SUBMITTAL ITERATION.

FOR EXAMPLE, THE FOLLOWING REPRESENTS THE CORRECT MEANS OF REPRESENTING THE FIRST SUBMITTAL OF ROUGH CARPENTRY PRODUCT DATA



- m. Number and title of appropriate Specification Section.
 - n. Drawing number and detail references, as appropriate.
 - o. Location(s) where product is to be installed, as appropriate.
 - p. Other necessary identification.
- G. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- H. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- 1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
 - 2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.
- I. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.

1. Transmittal Form: Use AIA Document G810.
 2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.
- J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked "APPROVED" OR "APPROVED AS CORRECTED."
- K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- L. Use for Construction: Use only final submittals with mark indicating "APPROVED" OR "APPROVED AS CORRECTED" taken by Architect.
- M. SHOP DRAWINGS BEARING THE ARCHITECT'S STAMP "APPROVED" OR "APPROVED AS CORRECTED" SHALL BE AT THE PROJECT SITE DURING CONSTRUCTION OPERATIONS FOR THAT ITEM. IF THE ARCHITECT FINDS THAT A SHOP DRAWING IS ON SITE NOT BEARING HIS STAMP, THE OWNER HAS THE RIGHT TO STOP THAT WORK UNTIL THE PROPER SHOP DRAWING IS ON SITE.
- 1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES.
- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be **not** provided by Architect for Contractor's use in preparing submittals.
1. Architect will furnish Contractor one set of digital data drawing files (PDF's) of the Contract Drawings for use in preparing Shop Drawings and Project record drawings FOR A FEE.
 - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Digital Drawing Software Program: The Contract Drawings are available in PDF.
 - c. Auto Cad files may be provided at the discretion of the architect, however Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement and pay a small fee to the architect to cover the cost of providing the files in a format the contractor can use.
 - d. DRAWING FILES WILL NOT BE RELEASED UNTIL FEE IS PAID AND AN EXECUTED AIA DOCUMENT C106 IS RETURNED TO ARCHITECT.
 - e. The following digital data files will be furnished for each appropriate discipline:
 - 1) FLOOR PLANS
 - 2) ELECTRICAL DRAWINGS.
 - 3) PLUMBING DRAWINGS

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
 - 4. Submit Product Data before or concurrent with Samples.
 - 5. Number of Copies: Submit DIGITAL copies of Product Data, unless otherwise indicated. CONTRACTOR SHALL Mark up and retain one returned copy as a Project Record Document.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. DO NOT BASE SHOP DRAWINGS ON REPRODUCTIONS OF THE CONTRACT DOCUMENTS OR STANDARD PRINTED DATA. SUCH SHOP DRAWINGS SHALL BE REJECTED BY THE ARCHITECT AND RETURNED TO THE CONTRACTOR WITHOUT REVIEW.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shop work manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.

- o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings digitally. For drawings 24" x 36" , but no larger than 30 by 42 inches.
 - 3. Number of Copies for large scale sheets: Submit Three (3) opaque copies of each submittal. Architect will MARK UP ALL COPIES, RETAIN Two (2) copies; remainder will be returned. CONTRACTOR SHALL Mark up and retain one returned copy as a Project Record Drawing.
- D. Samples: Submit PHYSICAL Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 - 3. Disposition: Maintain paper sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 - 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit SIX (6) PHYSICAL full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect WILL PREPARE COLOR SCHEDULE AND APPROPRIATE DRAWINGS FOR IMPLEMENTATION OF COLOR SCHEMES DURING CONSTRUCTION.
 - 1) SUBMIT A SINGLE SAMPLE WHERE ASSEMBLY DETAILS, WORKMANSHIP, FABRICATION TECHNIQUES, CONNECTIONS, OPERATION, AND OTHER SIMILAR CHARACTERISTICS ARE TO BE DEMONSTRATED.
 - 2) IF VARIATION IN COLOR, PATTERN, TEXTURE, OR OTHER CHARACTERISTIC IS INHERENT IN MATERIAL OR PRODUCT REPRESENTED BY A SAMPLE, SUBMIT AT LEAST THREE (3) SETS OF PAIRED UNITS THAT SHOW APPROXIMATE LIMITS OF VARIATIONS.
 - 5. SAMPLES FOR VERIFICATION: WHERE INDICATED, SUBMIT FULL-SIZE UNITS OR SAMPLES OF SIZE INDICATED, PREPARED FROM SAME MATERIAL TO BE USED FOR THE WORK, CURED AND FINISHED IN MANNER SPECIFIED, AND PHYSICALLY IDENTICAL WITH MATERIAL OR PRODUCT PROPOSED FOR USE, AND THAT SHOW FULL RANGE OF COLOR AND TEXTURE VARIATIONS EXPECTED. SAMPLES INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: PARTIAL SECTIONS OF MANUFACTURED OR FABRICATED COMPONENTS; SMALL

CUTS OR CONTAINERS OF MATERIALS; COMPLETE UNITS OF REPETITIVELY USED MATERIALS; SWATCHES SHOWING COLOR, TEXTURE, AND PATTERN; COLOR RANGE SETS; AND COMPONENTS USED FOR INDEPENDENT TESTING AND INSPECTION.

- E. PRODUCT SCHEDULE OR LIST: PREPARE A WRITTEN SUMMARY INDICATING TYPES OF PRODUCTS REQUIRED FOR THE WORK AND THEIR INTENDED LOCATION. INCLUDE THE FOLLOWING INFORMATION IN TABULAR FORM:
1. TYPE OF PRODUCT. INCLUDE UNIQUE IDENTIFIER FOR EACH PRODUCT.
 2. NUMBER AND NAME OF ROOM OR SPACE.
 3. LOCATION WITHIN ROOM OR SPACE.
 4. NUMBER OF COPIES: SUBMIT **THREE** (3) COPIES OF PRODUCT SCHEDULE OR LIST, UNLESS OTHERWISE INDICATED. ARCHITECT WILL RETURN TWO (2) COPIES.
 5. MARK UP AND RETAIN ONE RETURNED COPY AS A PROJECT RECORD DOCUMENT.
- F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:
1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
 4. Number of Copies: Submit DIGITAL copies of subcontractor list, unless otherwise indicated.
 - a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
1. Number of Copies: Submit DIGITAL copies in PDF format of each submittal, unless otherwise indicated. Architect will not return copies.
 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

- B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination" AND "SUPPLEMENTARY GENERAL CONDITIONS FOR MECHANICAL."
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- M. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

- N. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- O. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- P. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- Q. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- R. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- S. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
 - 1. Preparation of substrates.
 - 2. Required substrate tolerances.
 - 3. Sequence of installation or erection.
 - 4. Required installation tolerances.
 - 5. Required adjustments.
 - 6. Recommendations for cleaning and protection.
- T. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Name, address, and telephone number of factory-authorized service representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- U. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

- V. Construction Photographs and Videotapes: Comply with requirements specified in Division 1 Section "Photographic Documentation."
- W. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect.
 - 1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

2.3 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three (3) copies of a statement, signed and sealed by the responsible design professional, LICENSED TO PRACTICE IN THE STATE OF NEW JERSEY for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.
 - 2. CONTRACTOR SHALL INSURE THAT APPROPRIATE AMOUNT OF TIME IS ALLOWED FOR THEIR ENGINEER TO PREPARE DRAWINGS AND CALCULATIONS FOR ITEMS INDICATED AS DELEGATED DESIGN SO THAT SCHEDULE IS NOT IMPACTED.
 - 3. DELEGATED DESIGN SUBMITTALS WILL BE REVIEWED BY THE ARCHITECT FOR DESIGN INTENT ONLY. DELEGATED DESIGN SUBMITTALS WILL BE RETURNED TO THE CONTRACTOR MARKED "REVIEWED FOR DESIGN INTENT ONLY"

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. APPROVAL STAMP: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S/ ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 - 1. APPROVED.
 - 2. APPROVED AS CORRECTED.
 - 3. REVISE AND RESUBMIT.
 - 4. REJECTED.
- C. ITEMS MARKED "APPROVED" AND "APPROVED AS CORRECTED"
 - 1. FABRICATION/INSTALLATION MAY BE UNDERTAKEN. APPROVAL DOES NOT AUTHORIZE CHANGES IN THE CONTRACT SUM OR CONTRACT TIME UNLESS STATED BY CHANGE ORDER OR CONSTRUCTION CHANGE DIRECTIVE.
- D. ITEMS MARKED "REVISE AND RESUBMIT" AND "REJECTED"
 - 1. FABRICATION/ INSTALLATION MAY NOT BE UNDERTAKEN. IN RESUBMITTING, LIMIT CORRECTIONS TO THE ITEMS MARKED.
 - 2. PHOTOCOPIES OF SHOP DRAWINGS MARKED "REVISE AND RESUBMIT" BY ARCHITECT SHALL NOT BE USED AS PART OF ANY RESUBMISSION. CONTRACTOR SHALL INCORPORATE ARCHITECTS COMMENTS INTO REVISED SHOP DRAWINGS AND RESUBMIT.
- E. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- F. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- G. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Requirements:
 - 1. Divisions 02 through 27 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
 2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
 3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of **five** previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- 1.4 CONFLICTING REQUIREMENTS
- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 DELEGATED DESIGN

- A. PERFORMANCE AND DESIGN CRITERIA: WHERE PROFESSIONAL DESIGN SERVICES OR CERTIFICATIONS BY A DESIGN PROFESSIONAL ARE SPECIFICALLY REQUIRED OF CONTRACTOR BY THE CONTRACT DOCUMENTS, PROVIDE PRODUCTS AND SYSTEMS COMPLYING WITH SPECIFIC PERFORMANCE AND DESIGN CRITERIA INDICATED.
1. IF CRITERIA INDICATED ARE NOT SUFFICIENT TO PERFORM SERVICES OR CERTIFICATION REQUIRED, SUBMIT A WRITTEN REQUEST FOR ADDITIONAL INFORMATION TO ARCHITECT.

1.6 ACTION SUBMITTALS

- A. Shop Drawings: For mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
1. Indicate manufacturer and model number of individual components.
 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.7 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data : For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
 2. Entity responsible for performing tests and inspections.
 3. Description of test and inspection.
 4. Identification of applicable standards.
 5. Identification of test and inspection methods.
 6. Number of tests and inspections required.
 7. Time schedule or time span for tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique characteristics of each quality-control service.

1.8 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within **Notice to Proceed**, and not less than **five** days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager **may also serve as Project superintendent**.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
 - 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.9 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.
- 1.10 QUALITY ASSURANCE
- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to **ASTM E 329**; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, **and** mockups; do not reuse products on Project.
 - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- J. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.11 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, **and the Contract Sum will be adjusted by Change Order.**
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspecting will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents **as a component of Contractor's quality-control plan**. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.
- 1.12 SPECIAL TESTS AND INSPECTIONS
- A. Special Tests and Inspections: **Engage** a qualified **testing agency** to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, **as indicated in Statement of Special Inspections attached to this Section**, and as follows:

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ICC International Code Council (888) 422-7233
www.iccsafe.org

ICC-ES ICC Evaluation Service, Inc. (800) 423-6587
www.icc-es.org (562) 699-0543

- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

COE Army Corps of Engineers
www.usace.army.mil

CPSC Consumer Product Safety Commission (800) 638-2772
www.cpsc.gov (301) 504-7923

DOC Department of Commerce (202) 482-2000
www.commerce.gov

DOD Department of Defense (215) 697-6257
http://dodssp.daps.dla.mil

DOE Department of Energy (202) 586-9220
www.energy.gov

EPA Environmental Protection Agency (202) 272-0167

FAA	Federal Aviation Administration www.faa.gov	(866) 835-5322
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	(888) 463-6332 www.fda.gov	
GSA	General Services Administration	(800) 488-3111
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NCHRP	(See TRB)	
NIST	National Institute of Standards and Technology	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Buildings Service (See GSA)	
PHS	(202) 690-7694 http://www.hhs.gov/ophs/	
RUS	Rural Utilities Service	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board http://gulliver.trb.org	(202) 334-2934
USDA	(202) 720-2791 www.usda.gov	
USP	U.S. Pharmacopeia	(800) 227-8772
USPS	Postal Service www.usps.com	(202) 268-2000

- D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to

change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board www.access-board.gov	(202) 272- 0080
CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(866) 512- 1800 (202) 512- 1800
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	(215) 697- 2664
DSCC	Defense Supply Center Columbus (See FS)	
FED-STD	Federal Standard (See FS)	
FS	(215) 697-2664 Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil/ www.dsp.dla.mil Available from General Services Administration Available from National Institute of Building Sciences www.wbdg.org/ccb	(202) 619- 8925 (202) 289- 7800
FTMS	Federal Test Method Standard (See FS)	
MIL		
MIL-STD	(See MILSPEC)	
MILSPEC	(215) 697-2664 Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	
UFAS	(800) 872-2253	

Available from Access Board

(202) 272-
0080

www.access-board.gov

- E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, TEMPORARY CONSTRUCTION, ADMINISTRATIVE FACILITIES, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, **Owner's construction forces**, Architect, **occupants of Project**, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- D. COORDINATE ALL USAGE AND CONNECTIONS TO EXISTING SYSTEMS WITH OWNER PRIOR TO START OF CONSTRUCTION AND USE. DO NOT INTERRUPT ANY SERVICES CURRENTLY IN USE BY OWNER OCCUPANTS IN THE BUILDING WITHOUT WRITTEN NOTICE TO THE OWNER 48 HOURS IN ADVANCE.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
 - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
 - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 - 3. Indicate sequencing of work that requires water, such as sprayed materials and CONCRETE CUTTING AND grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste handling procedures.
 - 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in THE NJUCC AND **ICC/ANSI A117.1**.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
 - 1. SPECIFIED WARRANTIES SHALL NOT BE REDUCED OR VOIDED BY TEMPORARY USE OF PERMANENT FACILITIES. ALL WARRANTIES AND GUARANTEES START AT DATE OF CERTIFICATE OF OCCUPANCY.
- B. CONDITIONS OF USE: THE FOLLOWING CONDITIONS APPLY TO USE OF TEMPORARY SERVICES AND FACILITIES BY ALL PARTIES ENGAGED IN THE WORK:

1. KEEP TEMPORARY SERVICES AND FACILITIES CLEAN AND NEAT.
2. RELOCATE TEMPORARY SERVICES AND FACILITIES AS REQUIRED BY PROGRESS OF THE WORK AT NO COST TO OWNER.
3. CONTRACTOR SHALL PROVIDE TEMPORARY COVERS OVER ALL RETURN REGISTERS AND PROVIDE NEW CLEAN FILTERS AT TIME OF CERTIFICATE OF OCCUPANCY OR TEMPORARY CERTIFICATE OF OCCUPANCY. IF DUCTS REQUIRE CLEANING AS A RESULT OF TEMPORARY HEAT OR AIR CONDITIONING, THE CONTRACTOR SHALL CLEAN DUCTWORK. ALL COSTS FOR CLEANING THE DUCTWORK SHALL BE BY THE CONTRACTOR.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide **galvanized steel** bases for supporting posts. FOR USE AS TEMPORARY SECURITY AROUND HAZARDOUS WORK LOCATIONS, EQUIPMENT, TEMPORARY EXIT WALKS, ETC. CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AROUND ALL AREAS OF EQUIPMENT, AT AREAS OF OVERHEAD CONSTRUCTION AND SCAFFOLDING. CONTRACTOR SHALL CONTINUALLY MONITOR PLACEMENT OF PORTABLE FENCING AND PROGRESS OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR THE RELOCATION OF PORTABLE FENCING AS REQUIRED DUE TO PROGRESS, STAGING AND PHASING OF CONSTRUCTION AT NO COST TO THE OWNER. COORDINATE AT ALL TIMES WITH OWNER FOR SITE WORK AND TEMPORARY FENCING SPECIFIED THEREIN.
- B. Lumber and Plywood: Comply with requirements in Division 6 Section "**Rough Carpentry**."
- C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- D. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches AS CONSTRUCTION OPERATIONS PROGRESS TO THE POINT WHERE PERMANENT FINISHES ARE INSTALLED.
- E. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: THE CONTRACTOR SHALL UTILIZE A FIELD OFFICE IN THE BUILDING sufficient size to accommodate needs of THE Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep OFFICE clean and orderly. CONTRACTOR SHALL Furnish and equip offices as follows:

1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 2. Conference room of sufficient size to accommodate meetings of **10** individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack and marker boards.
 3. Drinking water.
 4. INTERNET CONNECTION.
 5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
 6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
1. Store combustible materials apart from building.
 2. COORDINATE WITH OWNER FOR LOCATIONS OF TOILET UNITS, STORAGE SHEDS.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. SELF-CONTAINED TOILET UNITS: SINGLE-OCCUPANT UNITS OF CHEMICAL, AERATED RECIRCULATION OR COMBUSTION TYPE; VENTED; FULLY ENCLOSED WITH A GLASS-FIBER-REINFORCED POLYESTER SHELL OR SIMILAR NON-ABSORBENT MATERIAL.
- C. DRINKING-WATER FIXTURES: **CONTAINERIZED, TAP-DISPENSER, BOTTLED-WATER DRINKING-WATER UNITS**, INCLUDING PAPER CUP SUPPLY.
1. WHERE POWER IS ACCESSIBLE, PROVIDE ELECTRIC WATER COOLERS TO MAINTAIN DISPENSED WATER TEMPERATURE AT 45 TO 55 DEG F.
- D. ELECTRICAL OUTLETS: PROPERLY CONFIGURED, NEMA-POLARIZED OUTLETS TO PREVENT INSERTION OF 110- TO 120-V PLUGS INTO HIGHER-VOLTAGE OUTLETS; EQUIPPED WITH GROUND-FAULT CIRCUIT INTERRUPTERS, RESET BUTTON, AND PILOT LIGHT.
- E. POWER DISTRIBUTION SYSTEM CIRCUITS: WHERE PERMITTED AND OVERHEAD AND EXPOSED FOR SURVEILLANCE, WIRING CIRCUITS, NOT EXCEEDING 125-V AC, 20-A RATING, AND LIGHTING CIRCUITS MAY BE NONMETALLIC SHEATHED CABLE.
- F. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work. COORDINATE ALL PROPOSED LOCATIONS WITH OWNER.
 - 1. Locate facilities to limit site disturbance.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities BUT NOT LATER THAN DATE OF SUBSTANTIAL COMPLETION.
- C. REMOVE TEMPORARY FACILITIES WHEN NO LONGER NEEDED, OR WHEN USE OF APPROPRIATE PERMANENT FACILITY IS APPROVED, BUT NOT LATER THAN SUBSTANTIAL COMPLETION.
 - 1. EXCEPTION: WHEN THE ARCHITECT OR OWNER REQUESTS USAGE.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- C. Sanitary Facilities: CONTRACTOR SHALL Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Toilets: Use of Owner's existing toilet facilities **WILL NOT BE permitted.**
 - 2. DISPOSABLE SUPPLIES: PROVIDE TOILET TISSUE, PAPER TOWELS, PAPER CUPS, AND SIMILAR DISPOSABLE MATERIALS FOR EACH TEMPORARY FACILITY. MAINTAIN ADEQUATE SUPPLY. PROVIDE COVERED WASTE CONTAINERS FOR DISPOSAL OF USED MATERIAL.
 - 3. WASH FACILITIES: PROVIDE SAFETY SHOWERS, EYEWASH FOUNTAINS, AND SIMILAR FACILITIES FOR CONVENIENCE, SAFETY, AND SANITATION OF PERSONNEL.
 - 4. DRINKING-WATER FACILITIES: PROVIDE BOTTLED-WATER, DRINKING-WATER UNITS.
 - a. WHERE POWER IS ACCESSIBLE, PROVIDE ELECTRIC WATER COOLERS TO MAINTAIN DISPENSED WATER TEMPERATURE AT 45 TO 55 DEG F.
 - 5. LOCATE DRINKING-WATER FIXTURES SO PERSONNEL NEED NOT WALK MORE THAN **200 FEET HORIZONTALLY** TO FACILITIES.
- D. Heating **and Cooling**: CONTRACTOR SHALL MAINTAIN EXISTING AND Provide SUPPLEMENTAL temporary heating **and cooling** required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

- E. Isolation of Work Areas in Occupied Facilities: BUILDING WILL BE OCCUPIED AT ALL TIMES. CONTRACTOR SHALL Prevent dust, fumes, and odors from entering occupied areas.
1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings PREPARED BY CONTRACTOR. ISOLATE DUCTWORK AS FOLLOWS:
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- F. Ventilation and Humidity Control: CONTRACTOR SHALL Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- G. WINDOW REMOVAL AND INSTALLATION: CONTRACTOR SHALL NOT REMOVE ANY EXISTING WINDOWS WITHOUT BEING READY TO INSTALL TEMPORARY PROTECTION WHERE THE WINDOW IS REMOVED. CONTRACTOR SHALL PROVIDE TEMPORARY WATERPROOF CLOSURE OF WINDOW OPENINGS DURING WORK. CONTRACTOR SHALL REVIEW AND COORDINATE WINDOW RELOCATION WITH OWNER FOR APPROVAL PRIOR TO BEGINNING REMOVAL AND REINSTALLATION WORK.
- H. Electric Power Service: CONTRACTOR SHALL Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
1. ELECTRIC DISTRIBUTION: CONTRACTOR SHALL PROVIDE RECEPTACLE OUTLETS ADEQUATE FOR CONNECTION OF POWER TOOLS AND EQUIPMENT.
 - a. PROVIDE WATERPROOF CONNECTORS TO CONNECT SEPARATE LENGTHS OF ELECTRICAL POWER CORDS IF SINGLE LENGTHS WILL NOT REACH AREAS WHERE CONSTRUCTION ACTIVITIES ARE IN PROGRESS. DO NOT EXCEED SAFE LENGTH-VOLTAGE RATIO.
 - b. PROVIDE WARNING SIGNS AT POWER OUTLETS AS REQUIRED BY ALL APPLICABLE CODES AND AGENCIES.
 - c. PROVIDE METAL CONDUIT, TUBING, OR METALLIC CABLE FOR WIRING EXPOSED TO POSSIBLE DAMAGE. PROVIDE RIGID STEEL CONDUITS FOR WIRING EXPOSED ON GRADES, FLOORS, DECKS, OR OTHER TRAFFIC AREAS.
 - d. PROVIDE METAL CONDUIT ENCLOSURES OR BOXES FOR WIRING DEVICES.
 - e. PROVIDE 4-GANG OUTLETS, SPACED SO 100-FOOT EXTENSION CORD CAN REACH EACH AREA FOR POWER HAND TOOLS AND TASK LIGHTING. PROVIDE A SEPARATE 125-V AC, 20-A CIRCUIT FOR EACH OUTLET.

- f. PROVIDE ANY 220-VOLT POWER THAT MAY BE REQUIRED FOR SPECIALTY EQUIPMENT NEEDED BY OTHERS FOR THE USE OF THEIR EQUIPMENT.
- I. Telephone Service: CONTRACTOR SHALL Provide CELLULAR telephone service for use by all construction personnel.
 1. Provide additional telephone lines for the following:
 - a. Provide a dedicated telephone line for each facsimile machine in each field office.
 2. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Engineers' offices.
 - g. Owner's office.
 - h. Principal subcontractors' field and home offices.
 3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.
 4. CONTRACTOR SHALL PAY ALL CELLULAR TELEPHONE BILLS AND FEES.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 1. Provide construction for temporary shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- C. Parking: **THERE IS NO PARKING ON SITE. CONTRACTOR SHALL MAKE HIS OWN PARKING ARRANGEMENTS, BUT PARKING IS LIMITED ON SITE AND WILL NOT BE PROVIDED BY OWNER. THERE IS A MUNICIPAL PARKING GARAGE ONE BLOCK FROM THE CONSTRUCTION OPERATIONS.**
- D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations. SINCE THIS IS AN INTERIOR RENOVATION THERE IS NO DEWATING REQUIRED.
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. ENGAGE AN EXPERIENCED SIGN PAINTER TO APPLY GRAPHICS FOR PROJECT IDENTIFICATION SIGNS. COMPLY WITH DETAILS INDICATED.
 2. Provide temporary, directional signs for construction personnel and visitors.
 3. CONSTRUCT SIGNS OF EXTERIOR-TYPE GRADE B-B HIGH-DENSITY CONCRETE FORM OVERLAY PLYWOOD IN SIZES AND THICKNESSES INDICATED. SUPPORT ON POSTS OR FRAMING OF PRESERVATIVE-TREATED WOOD OR STEEL.
 4. PAINT SIGN PANEL AND APPLIED GRAPHICS WITH EXTERIOR-GRADE ALKYD GLOSS ENAMEL OVER EXTERIOR PRIMER. IF VINYL LETTERS ARE USED, GENERAL CONTRACTOR SHALL BE CERTAIN THAT LETTERS CANNOT BE REMOVED. COVER SIGN WITH MATERIAL THAT WILL NOT ALLOW VINYL LETTERS TO BE REMOVED.
 5. PROJECT SIGNS: PROVIDE TWO (2)
 - a. SIZE EIGHT (8) FEET X EIGHT (8) FEET
 - b. PROVIDE THE FOLLOWING INFORMATION ON SIGNS:
 - 1) PROJECT NAME.
 - 2) OWNERS NAME.
 - 3) NAMES OF ALL COMMISSIONERS
 - 4) ARCHITECT'S NAME.
 - 5) NAME GENERAL CONTRACTOR.
 6. TEMPORARY DIRECTIONAL SIGNAGE
 - a. PROVIDE PLYWOOD AND WOOD POST DIRECTIONAL SIGNAGE TO OWNER FOR CREATION OF TEMPORARY DIRECTIONAL SIGNAGE.
 - b. SIZE: MINIMUM OF 2' X 2' DEPENDING ON THE LOCATION WITHIN THE BUILDING.
 7. Maintain and touchup signs so they are legible at all times.
- F. Waste Disposal Facilities: CONTRACTOR SHALL Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."
1. PROVIDE SEPARATE CONTAINERS, CLEARLY LABELED, FOR EACH TYPE OF WASTE MATERIAL TO BE DEPOSITED.
 2. DEVELOP A WASTE MANAGEMENT PLAN FOR WORK PERFORMED ON PROJECT. INDICATE TYPES OF WASTE MATERIALS PROJECT WILL PRODUCE AND ESTIMATE QUANTITIES OF EACH TYPE. PROVIDE DETAILED INFORMATION FOR ON-SITE WASTE STORAGE AND SEPARATION OF RECYCLABLE MATERIALS. PROVIDE INFORMATION ON DESTINATION OF EACH TYPE OF WASTE MATERIAL AND MEANS TO BE USED TO DISPOSE OF ALL WASTE MATERIALS.
 3. DISPOSE OF LEGALLY AND IN COMPLIANCE WITH ALL NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION RULES AND REGULATIONS AND THE RULES AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.
 4. REMOVE DEBRIS FROM ELEVATED PORTIONS OF BUILDING BY CHUTE, HOIST, OR OTHER DEVICE THAT WILL SAFELY CONVEY DEBRIS TO GRADE LEVEL IN A CONTROLLED DESCENT.
- G. JANITORIAL SERVICES: CONTRACTOR SHALL PROVIDE JANITORIAL SERVICES ON A REGULAR BASIS FOR TEMPORARY OFFICES, FIRST-AID STATIONS, TOILETS, WASH FACILITIES, LUNCHROOMS, AND SIMILAR AREAS.

- H. STORAGE AND FABRICATION SHEDS AND TRAILERS: CONTRACTOR SHALL PROVIDE SHEDS SIZED, FURNISHED, AND EQUIPPED TO ACCOMMODATE MATERIALS AND EQUIPMENT INVOLVED, INCLUDING TEMPORARY UTILITY SERVICES. SHEDS MAY BE OPEN SHELTERS OR FULLY ENCLOSED SPACES WITHIN BUILDING OR ELSEWHERE ON-SITE AS APPROVED BY OWNER.
1. CONSTRUCT FRAMING, SHEATHING, AND SIDING USING FIRE-RETARDANT-TREATED LUMBER AND PLYWOOD.
 2. PAINT EXPOSED LUMBER AND PLYWOOD WITH EXTERIOR-GRADE ACRYLIC-LATEX EMULSION OVER EXTERIOR PRIMER.
 3. USE OF OWNERS BUILDINGS FOR STORAGE IS NOT PERMITTED UNLESS APPROVED BY OWNER AND ARCHITECT.
- I. Lifts, SCAFFOLDING and Hoists: CONTRACTOR SHALL Provide facilities necessary for hoisting materials and personnel.
1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
 2. CONTRACTOR SHALL PROVIDE GENERAL HOISTING EQUIPMENT, LIFTS AND SCAFFOLDING FOR THE USE OF ALL CONTRACTORS.
 3. THE CONTRACTOR IS RESPONSIBLE TO HOIST ALL MATERIALS AND SHALL PROVIDE HOISTING EQUIPMENT TO COMPLETE THIS WORK.
 4. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL EXISTING ADJACENT PROPERTIES, BUILDINGS, ETC. AND COORDINATION WITH ALL TEMPORARY FACILITIES FOR ALL DEMOLITION WORK AND INSTALLATION OF ALL NEW WORK. CONTRACTOR SHALL CONFIRM OWNER'S EXISTING PROPERTY LIMITS AND REVIEW PROPOSED TEMPORARY FACILITIES WITH OWNER PRIOR TO BEGINNING WORK.

Temporary Elevator Use: ONE OF THE TWO (2) ELEVATORS ADJACENT TO THE COUNTY CLERK'S OFFICE WILL BE PERMITTED TO BE USED BY THE GENERAL CONTRACTOR AND HIS SUB CONTRACTORS DURING CONSTRUCTION. THE GENERAL CONTRACTOR SHALL BE REQUIRED TO PROTECT THE INTERIOR OF THE CAB AS REQUIRED BEFORE THE COMMENCEMENT OF THE PROJECT. ELEVATOR PADS ARE NOT SUFFICIENT FOR THE PROTECTION OF THE CAB.

- J. Existing Stair Usage: Use of Owner's existing stairs TO THE ROOF will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work. ANY DAMAGE THAT OCCURS SHALL BE CORRECTED AND PAID FOR BY THE CONTRACTOR.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: CONTRACTOR SHALL Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: CONTRACTOR SHALL Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to **erosion- and sedimentation-control Drawings AND requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.**
1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: CONTRACTOR SHALL comply with authorities having jurisdiction. Provide barriers in and around WORK AREAS to prevent flooding by runoff of stormwater from heavy rains. DIVERT WATER FROM PARTIALLY COMPLETED CORNICE AND GUTTER WORK AREAS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MEANS AND METHODS FOR DIVERTING ROOF WATER RUNOFF OUT OF THIS AND ALL OTHER WORK AREAS. INCLUDE COSTS ASSOCIATED WITH TEMPORARY STORM DRAINAGE, ETC. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE AND REVISE TEMPORARY MEASURES FOR STORM WATER REMOVAL AT THE START OF EACH PHASE OF CONSTRUCTION.
- E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- G. Site Enclosure Fence: **Before construction operations begin AND Prior to commencing work**, CONTRACTOR SHALL furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering WORK AREAS except by entrance gates.
1. Extent of Fence: **As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.**
 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. **Furnish one set of keys to Owner.**
 3. SET FENCE POSTS WITH TEMPORARY FENCING FEET.
 4. PROVIDE GATES IN SIZES AND AT LOCATIONS NECESSARY TO ACCOMMODATE DELIVERY VEHICLES, EQUIPMENT AND OTHER CONSTRUCTION OPERATIONS.
- H. Security Enclosure and Lockup: CONTRACTOR SHALL Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.

- I. Barricades, Warning Signs, and Lights: CONTRACTOR SHALL Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary AND PERMANENT Egress: CONTRACTOR SHALL Maintain egress from existing occupied facilities AT ALL TIMES and as required by authorities having jurisdiction.
- K. Temporary Enclosures: CONTRACTOR SHALL Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior. IT IS THE CONTRACTORS RESONSIBILITY TO PROPERLY CONSTRUCT ENCLOSURES TO PROTECT THE AREA OF CONSTRUCTION OPERATIONS. FINISHES OR MATERIALS THAT BECOME WET AND/OR DAMAGED WILL BE REPAIRED OR REPLACED BY CONTRACTOR AT NO COST TO THE OWNER. ANY GYPSUM SHEATHING THAT BECOMES WET SHALL BE REMOVED AND REPLACED BY CONTRACTOR AT NO COST TO THE OWNER.
 - 1. VERTICAL OPENINGS: CLOSE OPENINGS OF 25 SQ. FT. OR LESS WITH PLYWOOD OR SIMILAR MATERIALS.
 - 2. HORIZONTAL OPENINGS: CLOSE OPENINGS IN FLOOR OR ROOF DECKS AND HORIZONTAL SURFACES WITH LOAD-BEARING, WOOD-FRAMED CONSTRUCTION.
 - 3. WHERE TEMPORARY WOOD OR PLYWOOD ENCLOSURE EXCEEDS 100 SQ. FT. IN AREA, USE FIRE-RETARDANT-TREATED MATERIAL FOR FRAMING AND MAIN SHEATHING.
- L. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by **Owner** from fumes and noise.
 - 1. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
 - a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
 - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 - 3. Insulate partitions to control noise transmission to occupied areas.
 - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 - 5. Protect air-handling equipment.
 - 6. Provide walk-off mats at each entrance through temporary partition.
- M. Temporary Fire Protection: CONTRACTOR SHALL Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. STORE COMBUSTIBLE MATERIALS IN CONTAINERS IN FIRE-SAFE LOCATIONS.
5. MAINTAIN UNOBSTRUCTED ACCESS TO FIRE EXTINGUISHERS, FIRE HYDRANTS, TEMPORARY FIRE-PROTECTION FACILITIES, STAIRWAYS, AND OTHER ACCESS ROUTES FOR FIREFIGHTING. PROHIBIT SMOKING IN HAZARDOUS FIRE-EXPOSURE AREAS.

- N. Be certain that exit ways from existing building are not obstructed and safe exit IS always be maintained.

3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
1. Protect porous materials from water damage.
 2. Protect stored and installed material from flowing or standing water.
 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 4. Remove standing water from decks.
 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 2. Keep interior spaces reasonably clean and protected from water damage.
 3. Periodically collect and remove waste containing cellulose or other organic matter.
 4. Discard or replace water-damaged material.
 5. Do not install material that is wet.
 6. Discard, replace, or clean stored or installed material that begins to grow mold.
 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 2. Use permanent HVAC system to control humidity.
 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for **48** hours are considered defective.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for **48** hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove materials that can not be completely restored to their manufactured moisture level within **48** hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: CONTRACTOR SHALL Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
 - 1. EXCEPTION: WHEN THE ARCHITECT OR OWNER REQUESTS LONGER USAGE.
- D. PERMANENT FACILITIES USED DURING CONSTRUCTION: CLEAN; REPLACE PARTS THAT ARE WORN IN EXCESS OF THAT EXPECTED DURING NORMAL USE.
 - 1. ALL WARRANTIES AND GUARANTEES SHALL START AT TIME OF THE RECEIPT OF THE FINAL CERTIFICATE OF OCCUPANCY.
- E. Termination and Removal: CONTRACTOR SHALL Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for products selected under an allowance.
 - 2. Section 014200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. "OR EQUAL" PRODUCT SUBMISSION: PRODUCT, MATERIAL OR EQUIPMENT OTHER THAN SPECIFIED PRODUCT BUT EQUAL TO OR BETTER THAN SPECIFIED PRODUCT IN CONSTRUCTION, QUALITY, PERFORMANCE ETC.
 - 2. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 3. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 4. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Comparable Product Requests ("OR EQUAL"): Submit request for consideration of each comparable product. SUBMITTAL SHALL BE ACCOMPANIED BY "OR EQUAL" SUBMISSION FORM FOUND IN THE SPECIAL CONDITIONS. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within FIFTEEN (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.
- C. SUBSTITUTION REQUESTS: SUBSTITUTIONS ARE CONSIDERED TO BE LESSER IN QUALITY OR COST TO THE PRODUCTS SPECIFIED. THEREFORE UNLESS CONTRACTOR PROVIDES CREDIT TO THE OWNER FOR USE OF THE PRODUCT, SUBSTITUTIONS ARE NOT PERMITTED.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. **Manufacturer's Warranty:** Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. **Special Warranty:** Written warranty required by the Contract Documents to provide specific rights for Owner.

B. **Special Warranties:** Prepare a written document that contains appropriate terms and identification, ready for execution.

1. **Manufacturer's Standard Form:** Modified to include Project-specific information and properly executed.
2. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. **Submittal Time:** Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. **General Product Requirements:** Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. **Standard Products:** If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:
 - a. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
4. Manufacturers:
 - a. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match EXISTING", provide a product that complies with requirements and matches EXISTING PRODUCT OR MATERIAL. Architect's decision will be final on whether a proposed product matches.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied,

Architect may return requests without action, except to record noncompliance with these requirements:

1. FULLY EXECUTED COPIES OF "OR EQUAL" SUBMISSION FORM INCLUDED IN CONTRACT DOCUMENTS.
2. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work. ANY REVISIONS TO WORK INSTALLED OR INDICATED ON THE CONSTRUCTION DOCUMENTS DUE TO CONTRACTOR "OR EQUAL" SUBMISSIONS WILL BE PERFORMED AND PAID FOR BY THE CONTRACTOR.
3. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
4. Evidence that proposed product provides specified warranty.
5. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
6. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.
9. Correction of the Work.

- B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
4. Section 024119 "Selective Structure Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For **professional engineer**.
- B. Certificates: Submit certificate signed by **professional engineer** certifying that location and elevation of improvements comply with requirements.

- C. Cutting and Patching Plan: Submit plan describing procedures at least **10** days prior to the time cutting and patching will be performed. Include the following information:
1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 4. Dates: Indicate when cutting and patching will be performed.
 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
- D. Certified Surveys: Submit **two** copies signed by **professional engineer**.
- E. Final Property Survey: Submit **10** copies showing the Work performed and record survey data.

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
 - a. STRUCTURAL STEEL
 - b. ROOF DECK.
 - c. CONCRETE LINTELS
 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. **Operational elements include the following:**
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Mechanical systems piping and ducts.
 - f. Control systems.
 - g. Communication systems.
 - h. Fire-detection and -alarm systems.
 - i. Conveying systems.
 - j. Electrical wiring systems.
 - k. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. **Other construction elements include but are not limited to the following:**
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Equipment supports.
 - d. Piping, ductwork, vessels, and equipment.
 - e. Noise- and vibration-control elements and systems.
 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of EXISTING underground utilities, **mechanical and electrical systems**, and other construction affecting the Work.
 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.
 - 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to **local utility** AND **Owner** that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction AS PER CONSTRUCTION DOCUMENTS. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."
- E. Surface and Substrate Preparation: Comply with manufacturer's written recommendations for preparation of substrates to receive subsequent work.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

- B. General: Engage a **professional engineer** to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish limits on use of Project site.
 - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 4. Inform installers of lines and levels to which they must comply.
 - 5. Check the location, level and plumb, of every major element as the Work progresses.
 - 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of **two** permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of **96 inches** in occupied spaces and **90 inches** in unoccupied spaces COORDINATED WITH ARCHITECT.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to **prevent** interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. **Concrete and Masonry:** Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

- a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
3. Floors and Walls: Where walls or partitions that WERE removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
- a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction personnel.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
 2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

5. IF PROJECT SITE AND/ OR BUILDING IS KEPT IN AN UNCLEAN STATE AS DETERMINED BY THE OWNER / ARCHITECT FOR A PERIOD OF ONE WEEK AT ANY POINT DURING CONSTRUCTION, OWNER RESERVES THE RIGHT TO EMPLOY A CLEANING SERVICE AT THE EXPENSE OF THE CONTRACTOR. THIS SHALL COMMENCE AFTER IMMEDIATE NOTIFICATION TO THE CONTRACTOR.
 - B. Site: Maintain Project site free of waste materials and debris.
 - C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
 - D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
 - E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
 - F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
 - G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in **Section 015000 "Temporary Facilities and Controls", Section 017419 "Construction Waste Management and Disposal" AND ALL STATE AND LOCAL CODES AND REQUIREMENTS.**
 - H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
 - I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
 - J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- 3.9 STARTING AND ADJUSTING
- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
 - C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.
 - 2. Section 017300 "Execution" for progress cleaning of Project site.
 - 3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 4. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 5. Section 017900 "Demonstration and Training" for requirements for instructing Owner's personnel.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

- B. Submittals Prior to Substantial Completion: Complete the following a minimum of ten (10) days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by **Architect**. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain **Architect's** signature for receipt of submittals.
5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

- C. Procedures Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in heat and other utilities.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of **10** days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. **Use CSI Form 14.1A.**

1. Organize list of spaces in sequential order, **starting with exterior areas first and proceeding from lowest floor to ROOF.**
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
4. Submit list of incomplete items in the following format:
 - a. PDF electronic file OR
 - b. **Three** paper copies. Architect will return **two** copies.

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within **15** days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. CONTRACTOR SHALL Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
 - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

- D. Construction Waste Disposal: Comply with waste disposal requirements in [**Section 015000 "Temporary Facilities and Controls."**]

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Product maintenance manuals.
 - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.

- a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer Comments on draft submittals.
2. **Three** paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return **two** copies.
- C. Initial Manual Submittal: Submit draft copy of each manual at least **30** days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least **15** days before commencing demonstration and training. Architect will return copy with comments.
1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within **15** days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
1. List of documents.
 2. List of systems.
 3. List of equipment.
 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, **loose-leaf** binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear

plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

- a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name **and** subject matter of contents, **and indicate Specification Section number on bottom of spine.** Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
 1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of operation and maintenance manuals.
 2. Comply with requirements of newly prepared record Drawings in Section 017839 "Project Record Documents."
- G. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
1. Record Drawings.
 2. Record Specifications.
 3. Record Product Data.
 4. Miscellaneous record submittals.
- B. Related Requirements:
1. Section 017300 "Execution" for final property survey.
 2. Section 017700 "Closeout Procedures" for general closeout procedures.
 3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
1. Number of Copies: Submit **one** set of marked-up record prints.
 2. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal: Submit **one paper copy set AND ONE (1) PDF electronic files SET** of marked-up record prints. Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal: Submit **THREE (3) paper copies AND THREE (3) PDF electronic files** of marked-up record prints. Print each Drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit **THREE (3) paper copy AND THREE (3) annotated PDF electronic file** of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit **THREE (3) paper copies AND THREE (3) annotated PDF electronic files and directories** of each submittal.
1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

- D. Miscellaneous Record Submittals: Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit **THREE (3) paper copies AND THREE (3) annotated PDF electronic files and directories** of each submittal.
- E. Reports: Submit written report **weekly** indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding archive photographic documentation.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or **Construction** Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 - 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file **with comment function enabled**.
 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Architect for resolution.
 4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 013300 "Submittal Procedures" for requirements related to use of Architect's digital data files.
 - b. Architect will provide data file layer information. Record markups in separate layers.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file **with comment function enabled**.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 5. Note related Change Orders, **record Product Data**, and record Drawings where applicable.

- B. Format: Submit record Specifications as **scanned PDF electronic file(s) of marked-up paper copy of Specifications.**

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, **record Specifications**, and record Drawings where applicable.
- B. Format: Submit record Product Data as **paper copy OR scanned PDF electronic file(s) of marked-up paper copy of Product Data.**
 - 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as **PDF electronic file, paper copy OR scanned PDF electronic file(s) of marked-up miscellaneous record submittals].**
 - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.
- B. Related Requirements:
 - 1. DIVISION 1 SECTION "PHOTOGRAPHIC DOCUMENTATION" FOR PREPARING AND SUBMITTING DEMONSTRATION AND TRAINING VIDEOTAPES.
 - 2. Divisions 02 through 27 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Qualification Data: For **instructor**.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.4 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit **two (2)** copies within **seven** days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.

- b. Name and address of videographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date of video recording.
2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
 3. At completion of training, submit complete training manual(s) for Owner's use. COORDINATE WITH SPECIFICATION SECTION 013233: PHOTOGRAPHIC DOCUMENTATION.

1.5 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

1.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:

- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. Owner will furnish an instructor to describe Owner's operational philosophy.
 - 3. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner, **through Architect**, with at least **seven** days' advance notice.

- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Cleanup: Collect used and leftover educational materials and **give to Owner**. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice. **COMPLY WITH DIVISION 1, SECTION: "PHOTOGRAPHIC DOCUMENTATION" FOR PREPARING AND SUBMITTING DEMONSTRATION AND TRAINING VIDEOTAPES.**

END OF SECTION 017900

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected site elements.
 - 2. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
 - 2. Section 017300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. HISTORIC ITEMS, BUILDING COMPONENTS, ANTIQUES, AND OTHER ITEMS OF INTEREST OR VALUE TO OWNER THAT MAY BE ENCOUNTERED OR UNCOVERED DURING THE WORK, REGARDLESS OF WHETHER THEY WERE PREVIOUSLY DOCUMENTED, REMAIN OWNER'S PROPERTY.
- B. EXCEPT FOR ITEMS OR MATERIALS INDICATED TO BE REUSED, SALVAGED, REINSTALLED, OR OTHERWISE INDICATED TO REMAIN THE OWNER'S PROPERTY, DEMOLISHED MATERIALS SHALL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM THE SITE WITH FURTHER DISPOSITION AT THE CONTRACTORS' OPTION.

1.5 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site
 - 1. Inspect and discuss condition of construction to be selectively demolished.

2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control, and for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's tenants' on-site operations are uninterrupted.
 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 3. Coordination for shutoff, capping, and continuation of utility services.
 4. Use of stairs.
 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Pre-demolition Photographs: Submit before Work begins.
- E. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. RECORD DRAWINGS AT PROJECT CLOSEOUT INDICATION OF AS-BUILT CONDITIONS.
- C. IDENTIFY AND ACCURATELY LOCATED CAPPED UTILITIES AND OTHER SUBSURFACE STRUCTURAL, ELECTRICAL, OR MECHANICAL CONDITIONS.

1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

- D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

- 1. Maintain fire-protection facilities in service during selective demolition operations.

- E. HISTORIC AREAS: DEMOLITION AND HAULING EQUIPMENT AND OTHER MATERIALS SHALL BE OF SIZES THAT CLEAR SURFACES WITHIN HISTORIC SPACES, AREAS, ROOMS, AND OPENINGS, INCLUDING TEMPORARY PROTECTION, BY 12 INCHES OR MORE.

1.9 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Survey of Existing Conditions: Record existing conditions by use of measured drawings and preconstruction photographs

1. Comply with requirements specified in Section 013233 "Photographic Documentation."
2. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 1. Arrange to shut off indicated utilities with utility companies.
 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - d. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly
- B. The removal of asbestos material is part of this contract and is covered in other parts of these specifications.

3.5 PATCHING AND REPAIRS

- A. GENERAL: PROMPTLY REPAIR DAMAGE TO ADACENT STRUCTURE CAUSED BY SELECTIVE DEMOLITION OPERATIONS.
- B. REPAIRS: WHERE REPAIR TO EXISTING SURFACES ARE REQUIRED, PATCH TO PRODUCE SURFACES SUITABLE FOR NEW MATERIALS.

1. COMPLETELY FILL HOLES AND DEPRESSIONS IN EXISTING WALLS THAT ARE TO REMAIN WITH AN APPROVED PATCHING MATERIAL APPLIED ACCORDING TO MANUFACTURER'S WRITTEN RECOMMENDATIONS.

- C. FINISHES: RESTORE EXPOSED FINISHES OF PATCHED AREAS AND EXTEND RESTORATION INOT ADJOINING CONSRUCTION IN A MANNER THAT ELIMINATES EVIDENCE OF PATCHING AND REFINISHING
- D. FLOORS AND WALLS: PROVIDE AN EVEN SURFACE OF UNIFROM FINISH COLOR, TEXTURE, AND APPEARANCE. REMOVE EXISTING FLOOR AND WALL COVERINGS AS REQUIRED FOR DEFINED SCOPE OF WORK AND, IF NECESSAREY, PATCH OR REPAIR DETERIORATED AREAS TO ACHIEVE UNIFORM COLOR AND APPEARANCE WHERE MATERIALS ARE TO REMAIN EXPOSED.

1. PROVIDE MATERIALS AND COMPLY WITH INSTALLATION REQUIREMENTS SPECIFIED IN OTHER SECTIONS OF THESE SPECIFICATIONS.

2. WHERE PATCHING OCCURS IN A PAINTED SURFACE, APPLY PRIMER AND INTERMEDIATE PAINT COATS OVER PATCH AND APPLY FINAL PAINT COAT OVER ENTIRE UNBROKEN SURFACE CONTAINING PATCH. PROVIDE ADDITIONAL COATS UNTIL PATCH BLENDS WITH ADJACENT SURFACES.

3.6 DISPOSAL OF DEMOLISHED MATERIALS.

- A. Do not allow demolished materials to accumulate on-site.
 - 1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 2. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 3. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 035420 – CEMENT BASED SELF LEVELING UNDERLAYMENT

PART 1

1.01 SUMMARY OF WORK

- A. The Work of this Section shall include, but not be limited to, installation of hydraulic cement-based self-leveling underlayment (SLU) on slabs to the elevation required to place finish material at the contract elevation. Prepare substrate to receive the SLU and install as per this Section and per manufacturer's recommendations. Multiple substrate conditions exist including a number of existing substrates as well as new construction. SHOT BLAST GRINDING DOWN OF TERRAZZO SURFACE AND/OR SCARIFICATION WILL BE REQUIRED AT THE EXISTING TERRAZZO TO REMOVE SEALERS AND ACCEPT PRIMER AS WELL AS AT THE CONCRETE SLAB TO REMOVE EXISTING ADHESIVES. TERRAZZO IS TO BE REDUCED IN THICKNESS TO ENABLE MORTAR PLACE STONE FLOOR TO ACHIEVE CONSISTENT FINISH FLOOR ELEVATION FLUSH WITH ADJACENT SURFACES THAT ARE PART OF PROJECT SCOPE AS WELL AS ADJACENT FLOORING THAT IS NOT PART OF THIS PROJECT. PRIME WITH CMP AS100 OR APPROVE EQUAL. BARREL MIX, GAUGE RAKES AND SMOOTH LEVEL 1 BY CMP OR APPROVED EQUAL
- B. Provide on all slabs to provide a uniform surface to receive finish.
- C. Moisture content of the concrete slabs shall be checked and documented in writing by the Contractor to ensure the moisture content is acceptable for all materials to be placed on the slab (SLU, finish flooring).
 - 1. Slabs shall be tested utilizing the calcium chloride moisture test and, if required by the floor finish manufacturer, using in-situ test probe method for relative humidity.
 - 2. New concrete slabs shall be cured a minimum of twenty-eight (28) days for normal weight concrete and 56 days for lightweight concrete prior to testing.

1.02 RELATED SECTIONS

- A. Resilient Sheet Flooring.....Section 096500
- B. Cast-in-Place Concrete..... Section 033000
- C. Selective Demolition.....Section 024119
- D. Ceramic tile.....Section 093000
- E. Carpet tile.....Section 096900
- F. Stone Flooring.....Section 096340

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM), latest editions.

- C31 Standard Testing Method How to Cast the In-Field F_c and F_i Test Cubes
- C94 Standard Specification for Ready-Mixed Concrete
- C109 Standard Test Method for Compressive Strength of Hydraulic Mortars Using 2-inch or [50mm] Cube Specimens
- C157 Standard Test Method for Length Change of Change of Hardened Hydraulic-Cement Mortar and Concrete
- C191 Test Using Vicat Needle to Determine Final Setting Time of (SLU) Mix
- C596 Standard Test Method to Determine Amount of Water Content in Concrete and Concrete Coatings of Hydraulic Cement Grout (Non-Shrink)
- C1583 Test Method Standard for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Surfaces
- F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
- F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

1.04 SUBMITTALS

A. 035420_01 Product Data

Submit manufacturer's technical data for all materials, including repair material, primer, self-leveling underlayment, epoxy, and moisture mitigation membrane.

B. 035420_02 Shop Drawings

Plans indicating substrates, locations, and average depths of cement-based underlayment based on survey of substrate conditions.

C. 035420_03 Quality Control Submittals

1. Test Reports:

a. Submit independent laboratory test reports for the performance criteria specified in Part 2 for the SLU (For products not listed).

b. Moisture testing:

1) Calcium chloride moisture test indicating substrate moisture content is within acceptable limits to receive SLU and finish flooring.

2) Relative Humidity moisture test indicating substrate moisture content is within acceptable limits to receive SLU and finish flooring.

2. Certificates

Furnish single-source Manufacturer's certification that materials meet or exceed Specification requirements.

3. Manufacturer's Instructions: Furnish manufacturer's printed material, specifications, and application instructions for installation of all component materials to complete the Work of this Section.

4. Written Repair Procedure

Submit written copies of procedures of actual process to be utilized to install self-leveling underlayment, including surface preparation and mixing procedures. Procedure is to be signed by manufacturer's representative for locations where drawings require manufacturer's representative to inspect and certify compatibility of manufacturer's product with substrate.

5. Manufacturer's Field Reports

Manufacturer's representative of single-source cement-based self-leveling underlayment shall submit field reports of surface preparation inspection and underlayment placement.

6. Qualifications

Provide proof of Manufacturer and Installer qualifications and experience specified under "Quality Assurance".

7. Installer's Field Schedules

- a. Appendix A Schedule completed, dated and signed by individual certified Installer-Applicator.
- b. Appendix B Schedule completed, dated and signed by individual certified Installer-Applicator.

035420_04 Guarantee

Installer's installation guarantee and manufacturer's material warranty.

035420_05 Mock-up

Provide mock-up of SLU installation.

1.05 QUALITY ASSURANCE

A. Qualifications

- 1. Installer/Applicator: An experienced installer/ applicator, trained by the manufacturer to install their system, who has completed cement-based underlayment applications similar in material and extent to that required for this Project, and whose work has resulted in construction with a record of

successful continuous in-service performance for a minimum of three (3) years.

2. Manufacturer: A minimum of four (4) years successful continuous experience in the manufacturer of hydraulic cement-based self-leveling underlayments capable of being applied over the varied substrates of existing buildings.

B. Mockups

1. Before installing self-leveling underlayment, apply mockups to demonstrate quantities of materials and execution. Comply with the following requirements, using materials indicated for the completed Work.
 - a. Architect will select one area or surface to represent surfaces and conditions for application on each substrate required.
 - 1) Mock-up of installed underlayment shall be no less than 3'-0" X 3'-0" and preferably shall be 6'-0" X 6'-0".
 - 2) Mock-up of installed underlayment shall be prepared *in-situ* and shall be retained in-situ as example of quality of installation as well as underlayment mix.
 - 3) Mock-up of installed underlayment will be inspected no less than 7 days old.
 - b. Notify Authority seven days (7) in advance of dates and times when mockups will be applied.
 - c. Obtain Authority's approval of mockups before starting underlayment application.
 - d. Maintain mockups, during underlayment application and until installation of finish flooring, in an undisturbed condition as a standard for judging the complete work.
 - e. Approved mockups may become part of the completed work if undisturbed when finish flooring is installed.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage, mixing with other components, and application. Do not break open manufacturer's factory seals of any component packaging until installation.
- B. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental conditions.
- C. Keep all self-leveling underlayment components on a clean dry pallet raised up from the floor the pallet is sitting on in a temperature-controlled and humidity-controlled, secured and locked room until actual incorporation into the Work of this Section.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not install self-leveling underlayment until floor penetrations and peripheral work is completed. Where placed on new concrete, concrete slab shall have cured a minimum of 28 days for normal weight concrete and 56 days for lightweight concrete and is dependant on results of moisture testing for both SLU and finish flooring. Testing shall be done under the conditions described in B below.
- B. Maintain ambient conditions to which the floor will be maintained under in-situ conditions. Buildings that are or will be air conditioned shall have conditions maintained at a temperature of 78°F together with 50% relative humidity for seventy-two (72) hours continuously prior to installation of underlayment and for the same period after in the space below as well as the space in which the material is being placed. Provide temporary equipment to provide such conditions. Do not utilize forced cooling or heating that produces rapid air movement, which will result in premature wicking of moisture affecting setting and surface of the SLU setting for the first 24 hours after placement. Do not install in temperatures below 50°F or over 90°F. Comply with manufacturer's written recommendations for substrate temperature and moisture content, ambient temperature and humidity, ventilation, and other conditions affecting self-leveling underlayment material's performance.
- C. Close areas to traffic during underlayment application and for a minimum twenty-four (24) hour period after installation-application (longer if needed due to actual installation conditions or material type as recommended in writing by manufacturer).

1.08 COORDINATION

- A. Coordinate cement-based underlayment with requirements of finish flooring products, including adhesives, specified in Division 9 Sections.
 - 1. Before installing surface sealers recommended by underlayment manufacturer, if any, verify compatibility with finish installation adhesives.
 - 2. For existing construction, coordinate use of ACM materials encapsulant used under requirements of section 02081 with SLU manufacturer's requirements for substrate preparation and use of primer/bonding agent.

1.09 GUARANTEE

- A. Provide Manufacturer's five-year warranty covering defects in materials.
- B. Provide Contractor's two-year guarantee covering materials and workmanship that self-leveling material will not fail or cause failure of finish material.
- C. For surfaces receiving moisture mitigation membrane, manufacturer's ten-year material and labor warranty against failure of those materials placed on the material due to the affects of moisture migration or bond.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Self-leveling underlayment and repair material
 - 1. LEVEL-1 self leveling underlayment
CMP Specialty Products, Inc
601 South 10th Street, Allentown, PA 18103
 - 2. Ardex Inc.
400 Ardex Park Dr, Aliquippa, Pennsylvania 15001
 - 3. Dayton Superior Chemical Division
4226 Kansas Avenue, Kansas City, KS 66108.
 - 4. Silpro LLC
2 New England Way, Ayer, MA 01432
 - 5. Dramatic Surface Products/ H.B. Fuller Company
1200 Willow Lake Boulevard, St. Paul, MN 55164

- B. Moisture Mitigation Membrane
 - 1. Koester American Corp.
2585 Aviator Drive, Virginia Beach, VA 23453
 - 2. Sinak
1949 W. Walnut Ave, San Diego, CA 92101
 - 3. Ardex
400 Ardex Park Dr, Aliquippa, Pennsylvania 15001
 - 4. CMP
1200 Willow Lake Boulevard, St. Paul, MN 55164

C. Material Coordination

Contractor shall provide systems and materials compatible with and acceptable to the SLU manufacturer. Where moisture mitigation membrane is placed, the Contractor shall test the installation of the SLU on the moisture mitigation membrane with the moisture mitigation membrane manufacturer to ensure proper bond is achieved and ensure the warranty against failure will be received.

2.02 MATERIALS

- A. General: All self-leveling underlayments are to be hydraulic cement based capable of being installed in spaces subject to moisture without degradation under wet conditions and able to receive floor covering in 16 hours under climate controlled conditions ("self-drying"). The products listed have been tested by the Authority's testing laboratory consultant by laboratory mock-ups and ASTM testing or through successful field testing. No other products will be accepted without going through the testing procedure, which is to be at the manufacturer's cost. Use of materials specified is also dependant on manufacturer's requirements, in which they may not permit the installation on certain substrates due to their material properties. Moisture

mitigation membranes, installed prior to application of the SLU, must be acceptable to the SLU manufacturer.

B. Material/Performance Testing to be performed for product not listed – Authority will compare the following against accepted materials

1. Sulfate testing per ASTM C114
2. Compression strength test as per ASTM C109- For both specified amount of water and with additional 1 quart listing testing at 7 days and 28 days.
3. Shrinkage testing per ASTM C596 - For both specified amount of water and with additional 1 quart listing testing at 7 days, 14 days, 21 days, and 28 days.
4. Bond tensile pull in accordance with ASTM C1583.
5. Mixing and placement - For both specified amount of water and with additional 1 quart – Petrographic analysis in accordance with ASTM C1324
 - a. Material Segregation during mixing
 - b. Material segregation after placement and hardening. Sections taken shall clearly show the bond line and the aggregate within matrix.
6. In-situ testing - For both specified amount of water and with additional 1 quart:

Placement on a 4x4 slab of lightweight structural concrete, with photographs. If deemed appropriate by the Authority, photographic evidence from other projects may be acceptable.

B. Self-Leveling Underlayment for placement on Hard Concrete Surface (Minimum $f'c = 4,000$ psi)

1. Primers:
 - a. CMP AS-100 Primer
 - b. Ardex Primer P-51
 - c. Dayton Superior J-42 Primer
 - d. Silpro C-21, Silflo Primer
 - e. Dramatic Surface Products DSP 500 Primer
2. Flash Patch:

- a. Ardex SD-F Feather Finish
 - b. Dayton Superior Sure Finish
 - c. Silpro Skim Pro
 - d. Dramatic Surface Products DSP 502 Skim Coat
 - e. CMP Ultra Finish
3. Self-Leveling Underlayment (depending on Build up Thickness):
- a. Ardex K-15
 - b. Dayton Superior Levelayer I & II
 - c. Silpro Silflo 230
 - d. Dramatic Surface Products DSP 520
 - e. CMP Level Finish

C. Strengthening Underlayment for placement on Soft Cementitious Material – Installation of strengthening membrane to reinforce substrate

1. Strengthening Membrane (normal setting):
- a. Dayton Superior Conspec Special Patch/ Special Bond Acrylic with fiberglass mesh
 - b. Silpro Masco/C-21 with fiberglass mesh
 - c. Dramatic Surface Products DSP 504/DSP 501 with fiberglass mesh
2. Strengthening Membrane (fast setting):
- a. Dayton Superior Conspec Special Patch/ Special Bond Acrylic with fiberglass mesh
 - b. Silpro Fasco/C-21 with fiberglass mesh
 - c. Dramatic Surface Products DSP 506/DSP 501 with fiberglass mesh
 - d. CMP SR-P/Polybond with fiberglass mesh

- D. Aggregates:
 - 1. Provide aggregates when recommended in writing by underlayment manufacturer for underlayment thickness required.
 - 2. Mixed with self-leveling material: Well-graded, washed 1/8" to 1/4" stone or coarse sand as recommended by underlayment manufacturer.
 - 3. Preplaced Stone: 3/8" or 3/4" clean, crushed, washed stone of a single gradation as recommended by manufacturer.
- E. Water: Shall be clean New York City (potable) water free of injurious foreign matter conforming to the requirements for water specified in ASTM C94 at a temperature of not less than 50°F nor more than 70°F.
- G. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
- H. Moisture Mitigation Membrane: Material that when placed will prevent moisture and alkalydes from affecting adhesives and materials and shall be placed at a rate to mitigate up to 25 pounds per 1,000 square feet in 24 hours.
 - 1. Sinak HLQ- V-Poxy -Relay system
 - 2. Koester Vap 2000
 - 3. ARDEX MC Rapid or ARDEX MC Plus
 - 4. CMP V-20 Plus or V-25
- I. Moisture Test Kits:
 - 1. Vinyl Plastics, Inc. Sheboygan, WI 53082
 - 2. Sealflex Industries Costa Mesa, CA
 - 3. Floor Seal Technology, Inc. San Jose, CA 95112
 - 4. Wagner RH
 - 5. Tramex RH

2.03 PRE-INSTALLATION MEETING

- A. Conduct a pre-installation meeting with the manufacturer's representative to review the methods and procedures, including surface preparation, for a satisfactory self-leveling underlayment installation.
- B. Meeting shall occur with sufficient time to have submittal, procedures, and test panels completed prior to work progressing.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, with Installer present for conditions affecting performance of underlayment including substrate moisture content. Begin underlayment application only after unsatisfactory conditions have been corrected and substrate condition inspected and approved by the manufacturer's representative and by Architect/Engineer. SLU installer shall not proceed until above required environmental conditions can be verified and recorded on provided Schedules for a minimum of seventy-two (72) hours prior to SLU application in respective space.
- B. Perform moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry by the two following test methods. The values indicated shall be verified with the manufacturer of the actual floor finish material:
 - 1. Tests in accordance with ASTM F1869: Moisture vapor transmission shall not exceed 3 pounds per 1,000 square feet in 24 hours.
 - 2. Tests in accordance with ASTM F2170: Relative Humidity shall not exceed 75%.

3.02 PROTECTION

- A. Protect substrate and materials from freezing before and after installation.
- B. Protect adjacent finish materials and previously poured concrete slabs and SLU against spatter during SLU placement.

3.03 REMOVAL/DEMOLITION

- A. The pattern and extent of the demolition and removal of the deteriorated materials shall be per engineer's recommendations. The following shall be followed:
 - 1. Overcut: The removal of the deteriorated material shall extend laterally at least 6" into sound material. A pattern outlines the extent of removal shall be established so when removal is complete, there will be no loose material left. The new substrate will be built on and around sound materials.
 - 2. Undercut: When metal, rebar or reinforcing mesh are encountered, at least $\frac{3}{4}$ " of the substrate material under the reinforcing shall be removed to allow proper bond between the reinforcing bars and the new material.
 - 3. Cutback: Residual mastic on old surface shall be removed.

3.04 SURFACE PREPARATION

- A. General: The surface of the existing substrate where the new self-leveling underlayment is to be applied shall be thoroughly shot-blasted and cleaned to an ICRI CSP3-5 minimum surface preparation, or greater if required by SLU manufacturer. Machine grinders with HEPA attachments such as the Hilti DG150 are acceptable for those substrates that are subject to asbestos abatement or where

shot blasting equipment use is not feasible, such as cinder fill concrete, and will be able to produce the profile required by the SLU manufacturer. Use of a scarifier or scabber is prohibited. The surfaces that are to receive new substrate material shall be free of laitance, asphalt, old paint, mastic, etc. that may inhibit bond between the old and the new material. Chemical treatment of the substrate (acid etching, citrus cleaner) is prohibited. After shot blasting/grinding the surface, notify the engineer for inspection.

1. Prepare and clean substrate according to manufacturer's written instructions for substrate indicated. Provide clean, dry, neutral-pH substrate for underlayment application.
 2. Treat nonmoving substrate cracks to prevent cracks from telegraphing (reflecting) through underlayment. Rout any cracks and fill the cracks with the epoxy, scraping smooth and level with the substrate while broadcasting sand to allow for bonding of the SLU. After set, remove all loose sand.
 - a. Sikadur 52 epoxy by Sika
 - b. Sure-inject J-56 by Dayton Superior
 - c. Ardex ArdiSeal 2C Semi-Rigid Epoxy
 - d. CM-10 by CMP Specialty Products, Inc.
 3. Fill substrate voids, holes and patch the low spots with the following products to prevent underlayment from leaking:
 - a. Sika top 122 plus patching grout by Sika
 - b. Ardex SD-P by Ardex
 - c. HD-50 or Conspec Special Patch/Special Bond Acrylic by Dayton Superior
 - d. Fastcrete, Mascrete, or Patchco by Silpro
 - e. DSP 506 by Dramatic Surface Products
 - f. CMP SR-P by CMP
- B. New Concrete Substrates: Mechanically remove laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond according to manufacturer's written instructions.
- C.
1. Install underlayment reinforcement recommended in writing by manufacturer.
- D. Metal stair pan Substrates: Mechanically remove rust, foreign matter, and other contaminants that might impair underlayment bond according to manufacturer's

written instructions. Apply corrosion resistant coating compatible with underlayment if recommended in writing by underlayment manufacturer.

- E. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond according to manufacturer's written instructions.
- F. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.05 APPLICATION

- A. General: Mix and apply underlayment components according to manufacturer's written instructions.
 - 1. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
 - 2. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
- B. Mixing and installation of moisture mitigation membrane. Choice of material must be based on compatibility to self-leveling material selected to provide the proper bond.
 - 1. Mix material in accordance with manufacturer's instructions.
 - 2. Provide mix and applications to provide resistance up to 25 pounds per 1,000 square feet in 24 hours, including application of materials to provide bond to the SLU.
- C. Mixing of SLU
 - 1. Provide water of exact quantity as required by manufacturer.
 - 2. Provide mechanical mixer for mixing SLU material with water at project site. Equip mixer with a suitable water-measuring device.
 - 3. Use only mixers that are capable of mixing the dry SLU mix and water (and aggregate where required) into a uniform self-leveling mix.
- D. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- E. Installation
 - 1. Apply self-leveling underlayment, in accordance with the manufacturer's instructions, to a minimum thickness of 1/8" over high points. Utilize a gage rake to provide a uniform average thickness and finish with a smoother to provide a level, smooth plane finish, free of score marks, grooves, depressions and ripples. Finish tolerance shall be as required for finish flooring:

- c. All Other finishes (tile, poured floors, etc): Finish tolerance no greater than $\pm 3/16$ " in ten feet.
2. Where joints are required, construct to match and coincide with joints in base slab. Provide other joints as shown.
3. Where depth of material will be over 3/4" deep (or less depending on manufacturer's printed literature for that product), place in two lifts by providing aggregate in the mix to extend the material of the first lift, followed by a finish pour of 1/4" without aggregate. The proportion of aggregate to SLU shall be as recommended by the manufacturer in writing. If acceptable and recommended in writing by the manufacturer, place uniform stone loose (after priming of substrate) and place self-leveling on stone. As an alternative, place non-extended mix in 3/4" maximum lifts (or less depending on manufacturer's recommendations for that product). Allow time between lifts as recommended by manufacturer to allow for curing and shrinkage. Prepare surface of each lift as recommended by manufacturer.
4. Provide for transition between adjacent area not scheduled to receive underlayment.

3.06 PROTECTION

- A. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes. Protect all freshly deposited underlayment from premature drying and excessively hot or cold temperatures and maintain it with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the underlayment.
- B. Protect underlayment against damage by covering with suitable protective materials such as kraft building paper, plywood, masonite or similar or in accordance with manufacturer's recommendations until installation of finish material.
- C. Protect underlayment from concentrated and rolling loads for remainder of construction period.
- D. Do not walk on or install finish flooring over underlayment for a minimum of 24 hours after placement, or longer if required by the SLU manufacturer due to material type or environmental conditions.

3.07 FIELD QUALITY CONTROL

A. Field Samples

Periodically throughout placement as recommended by manufacturer, conduct "Patty" or "Flow Ring" test to confirm proper water/cement ratio. If requested, cast three brass-molded cubes in the presence of manufacturer's representative for compressive strength documentation.

B. Inspection

Notify the Authority of the beginning of each phase of work so the Engineer or Architect-of-Record and other Authority Representatives can make inspections. Do not proceed with installation of materials until substrates have been prepared and approved by the Engineer/Architect-of-Record and the manufacturer's representative. The Authority may also elect to engage a licensed laboratory to take samples of the material and witness the mixing.

D. Manufacturer's Field Service

Obtain services of self-leveling underlayment manufacturer's representative to inspect and supervise substrate preparation and placement of the material. The manufacturer's representative is to inspect the substrate to ensure their material is appropriate for the application, that jobsite environmental conditions for placement are met, and to ensure the substrate preparation is adequate and shall provide a written report of such inspection.

3.08 ACCEPTANCE OF SELF-LEVELING UNDERLAYMENT WORK

A. General

1. Completed underlayment work that meets all applicable requirements will be accepted without qualification.
2. Completed underlayment work that fails to meet one or more requirements but which has been repaired to bring it into compliance will be accepted without qualification.
3. Failure of self-leveling underlayment to bond to substrate (as indicated by a hollow sound when tapped), or disintegration or other failure of underlayment to perform in accordance with product data, will be considered failure of materials and workmanship. Repair or replace underlayments in areas of such failures. Underlayment work judged inadequate or deemed unacceptable due to appearance shall be replaced if so directed by the Engineer at the Contractor's expense.
4. Pay all costs incurred by the Authority in providing additional testing and/or analysis required by this Section.
5. The Authority will pay all costs of additional testing and analysis made at its own request that is not required by this Section or which shows concrete is in compliance with the Contract Documents.

B. Dimensional Tolerances

Finished underlayment exceeding the tolerances may be repaired provided that strength, durability, or appearance is not adversely affected. High spots may be removed with a terrazzo grinder, low spots filled with a cement-based patching compound, or other remedial measures performed as permitted and as acceptable to the self-leveling underlayment manufacturer.

END OF SECTION

SECTION 042000 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Concrete Masonry Units for INFILL AT DOOR 403 TO STORAGE ROOM IN ELECTIONS
 - 2. Miscellaneous masonry accessories.
 - 3. PROTECTING AND CLEANING OF MASONRY.
- B. Related Sections:
 - 1. Division 7 Section "Joint Sealants"
 - 2. Division 05 Section "Metal Fabrications" for furnishing steel **lintels and shelf angles** for unit masonry.
 - 3. ACI 530.1-08/ASCE6-08/TMS602-08 SPECIFICATIONS FOR MASONRY STRUCTURES.
 - 4. ACI 530-08/ASCE5-08/TMS402-08.
- C. Products installed, but not furnished, under this Section include the following:
 - 1. Steel **lintels** for masonry, furnished under Division 5 Section "Metal Fabrications."

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.
 - 1. PROVIDE UNIT MASONRY THAT DEVELOPS THE FOLLOWING NET AREA COMPRESSION STRENGTHS (F'M) AT 28 DAYS, DETERMINE COMPRESSIVE STRENGTH OF MASONRY BY TESTING MASONRY PRISMS ACCORDING TO ASTM C131

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
 - 1. Anchoring Steel & Lintel at Elections Storage Room Door 403: Detail bending and placement of reinforcing bars, anchors and doweling. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.

1.5 INFORMATIONAL SUBMITTALS

- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 - 1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
- B. Qualification Data: For testing agency.
- C. Material Certificates: For each type and size of the following:
 - 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. .
 - 2. Cementitious materials. Include brand, type, and name of manufacturer.
 - 3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 4. Grout mixes. Include description of type and proportions of ingredients.
 - 5. Joint reinforcement.
 - 6. Anchors, ties, and metal accessories.
 - 7. ALL OTHER SUBMITTALS REQUIRED BY ACI530.1-05/ASCE6-05/TMS602-05.
- D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
 - 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.6 QUALITY ASSURANCE

- A. COMPLY WITH REQUIREMENTS OF ACI530.1-05/ASCE6-05/TMS602-05.
- B. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.
- C. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- D. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.
- E. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

- F. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
- G. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver pre-blended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store pre-blended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 PROJECT CONDITIONS

- A. COMPLY WITH REQUIREMENTS OF ACI530.1-05/ASCE6-05/TMS602-05.
- B. COMPLY WITH N.J.U.C.C.
- C. Protection of Masonry: During construction, cover tops of walls, projections, and sills OR INCOMPLETE MASONRY ELEMENTS with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
- D. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
 - 1. WATER: DO NOT HEAT WATER FOR MORTAR OR GROUT TO MORE THAN 160 DEGREES F.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

- B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

- A. Regional Materials: CMUs shall be manufactured within 500 miles of Project site from aggregates **and cement** that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.
- B. CMUs: **ASTM C 90, AND ASTM C129.**
 - 1. COMPLY WITH ASTM C 90 FOR LOAD BEARING CMU.
 - 2. COMPLY WITH ASTM C 129 FOR NON-LOAD BEARING CMU.
 - 3. Density Classification: **Normal weight.**
 - 4. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
 - a. 8 inches X 16 INCHES nominal; 7-5/8 inches X 15-5/8 INCHES actual. WITH NOMINAL THICKNESSES OF 8" BLOCK
 - 5. UNIT COMPRESSION STRENGTH: PROVIDE: PROVIDE UNITS WITH MINIMUM AVERAGE NET AREA COMPRESSION STRENGTH OF 1900 PSI
 - 6. AGGREGATES:
 - a. ASTM 331 LIGHTWEIGHT EXPANDED SHALE AGGREGATE- SOLITE OR EQUAL AND A MINIMUM WEIGHTED AVERAGE OF 20% POST-CONSUMER RECYCLED CONTENT MATERIAL, OR A MINIMUM WEIGHTED AVERAGE 40% POST –INDUSTRIAL RECYCLED CONTENT MATERIAL.
 - b. ASTM C33 NORMAL WEIGHT
 - 7. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
 - 8. **Available** Products:
 - a. Concrete Masonry Units AS MANUFACTURED BY CLAYTON BLOCK CO., INC., 515 RT. 528, LAKEWOOD, NJ 08701, 800-662-3044.
 - b. APPROVED EQUAL.

2.3 MORTAR AND GROUT MATERIALS

- A. NO MASONRY CEMENT WILL BE ACCEPTED OR SHALL BE USED.
- B. MASONRY WALL IS TO BE FILLED SOLID
- C. GENERAL:
 - 1. MORTAR SHALL CONFORM TO ASTM C270.
 - 2. GROUT SHALL CONFORM TO ASTM C476.
 - 3. MORTAR AND GROUT STRENGTHS SHALL BE AS INDICATED ON DRAWINGS.
- D. Regional Materials: Aggregate for mortar and grout, **cement, and lime** that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.
- E. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- F. Hydrated Lime: ASTM C 207, Type S.

- G. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S AND containing no other ingredients.
- H. Aggregate for Mortar: ASTM C 144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 3. AGGREGATE TO BE WASHED AND HEATED TO REMOVE FOREIGN SUBSTANCES INCLUDING SILT, CLAY AND ORGANICS.
- I. Aggregate for Grout: ASTM C 404.
- J. Water: Potable.

2.4 REINFORCEMENT

- A. COMPLY WITH REQUIREMENTS OF ACI530.1-05/ASCE6-05/TMS602-05.
- B. VERTICAL REINFORCING STEEL:
 - 1. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
 - 2. 16" o.c. w/8" dowel into existing walls @ jambs, head & sill
- C. Masonry Joint Reinforcement: COMPLY WITH THE FOLLOWING GENERAL REQUIREMENTS FOR MATERIALS REQUIRED IN JOINT REINFORCEMENT AND ANCHORAGE DEVICES:
 - 1. COMPLY WITH ASTM A 951/A 951M.
 - 2. Interior Walls: **Hot-dip** galvanized, carbon steel.
 - 3. Exterior Walls: **Stainless** steel ASTM A 580/A 580M, Type **304**.
 - 4. ANCHORS AND MISCELLANEOUS SHEET METAL IN MASONRY ACCESSORIES AT EXTERIOR EXPOSURES.
 - a. Stainless-Steel Sheet: ASTM A 666, Type **304**.
 - 5. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- D. HORIZONTAL Masonry Joint Reinforcement for Single-Wythe Masonry:
 - 1. SINGLE WYTHER CMU WALLS:
 - a. WIDTH TO BE APPROXIMATELY 2" LESS THAN WIDTH OF CMU, PROVIDING NOT LESS THAN 5/8" MORTAR COVERAGE ON EXTERIOR EXPOSURES AND 1/2" ELSEWHERE.
 - b. Wire Size for Side Rods: **W1.7 or 0.148-inch** diameter OR AS OTHERWISE INDICATED ON ARCHITECTURAL AND STRUCTURAL DRAWINGS
 - c. Wire Size for Cross Rods: **W1.7 or 0.148-inch** diameter OR AS OTHERWISE INDICATED ON ARCHITECTURAL AND STRUCTURAL DRAWINGS.
 - d. Provide in PREFABRICATED STRAIGHT lengths of not less than 10 feet, with prefabricated corner AT ALL CORNERS and tee units AT ALL MASONRY WALL INTERSECTIONS UNLESS OTHERWISE INDICATED.
 - e. CONFIGURATION: TRUSS TYPE WITH DEFORMED CONTINUOUS SINGLE PAIR OF SIDE RODS AND PLAIN DIAGONAL CROSS RODS AT NOT MORE THAN 16" O.C.

2. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. HOHMANN AND BARNARD, #120 TRUSS.
 - b. DAYTON SUPERIOR, Dur-O-Wal DA3100
 - c. APPROVED EQUAL

2.5 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
 2. Stainless-Steel Wire: ASTM A 580/A 580M, **Type 304**.
 3. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 4. Stainless-Steel Sheet: ASTM A 666, **Type 304**.
- B. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
 1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- diameter, (MIN.) **stainless-steel** wire.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) HOHMANN AND BARNARD, #359 WELD-ON TIES.
 - 2) DAYTON SUPERIOR, DA709
 - 3) APPROVED EQUAL
 2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from **0.25-inch-** diameter, **stainless-steel** wire.
 3. ANCHORS FOR ANCHORING MASONRY TO STRUCTURAL COLUMN WHEN MASONRY IS PARALLEL TO COLUMN FLANGE.
 - a. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
 - 1) HOHMANN AND BARNARD, #351 WIRE COLUMN TIE.
 - 2) APPROVED EQUAL
 4. Stainless-Steel Drill Screws for Steel Studs: Proprietary fastener consisting of carbon-steel drill point and 300 Series stainless-steel shank, complying with ASTM C 954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads.
 - a. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following:**
 - 1) Dayton Superior Corporation, Dur-O-Wal Division; Stainless Steel SX Fastener.
 - 2) ITW Buildex; Scots long life Tekes.
 - 3) APPROVED EQUAL

- C. Partition Top anchors: 0.105-inch- thick metal plate with 3/8-inch- diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from **steel, hot-dip galvanized after fabrication**.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. HOHMANN AND BARNARD, #PTA-420.
 - b. DAYTON SUPERIOR, DA411
 - c. APPROVED EQUAL
- D. ADJUSTABLE ANCHORS FOR CONNECTING CMU PARTITIONS TO OTHER CMU WALLS, CONCRETE PEDESTALS AND STEEL STRUCTURE.
1. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS.
 - a. D/A 2200 - JOINT STABILIZING ANCHOR BY DUR-O-WALL.
 - b. SLIP-SET ANCHOR BY HOHMANN AND BARNARD.
 - c. APPROVED EQUAL.

2.6 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
1. Stainless-Steel Wire: ASTM A 580/A 580M, Type 316.
 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 3. Stainless-Steel Sheet: ASTM A 666, Type 316.
 4. Stainless-Steel Drill Screws for Steel Studs: Proprietary fastener consisting of carbon-steel drill point and 300 Series stainless-steel shank, complying with ASTM C 954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Dayton Superior Corporation, Dur-O-Wal Division; Stainless Steel SX Fastener.
 - 2) ITW Buildex; Scots long life Tekes.
 - 3) APPROVED EQUAL

2.7 MISCELLANEOUS ANCHORS

- A. COMPLY WITH REQUIREMENTS OF ACI530.1-05/ASCE6-05/TMS602-05.
- B. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.
- C. Postinstalled Anchors: Torque-controlled expansion anchors or chemical anchors.
1. Load Capacity: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

2. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 unless otherwise indicated.
3. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

D. Application:

1. Where flashing is fully concealed, use flexible flashing.

E. Solder and Sealants for Sheet Metal Flashings:

1. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
2. Elastomeric Sealant: ASTM C 920, chemically curing silicone sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.8 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) HOHMAN AND BARNARD, #NS
 - 2) APPROVED EQUAL.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. D/A 2001 BY DUR-O-WALL.
 - b. RS STANDARD BY HOHMANN AND BARNARD.
 - c. APPROVED EQUAL.

C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

D. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.

- a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Dayton Superior Corporation, Dur-O-Wal Division; Cell Vents.
 - 2) Hohmann & Barnard, Inc.; Quadro-Vent.
 - 3) APPROVED EQUAL

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 - 2. Verify that foundations are within tolerances specified.
 - 3. Verify that reinforcing dowels are properly placed.
 - 4. GENERAL CONTRACTOR TO MAKE CORRECTIONS AS REQUIRED TO BRING WORK INTO COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Leave openings for equipment to be installed before completing masonry. COORDINATE SIZES OF OPENINGS REQUIRED WITH OTHER TRADES. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed. DO NOT USE WET CUTTING TECHNIQUES ON UNIT MASONRY.

3.3 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Level 1 special inspections according to the "International Building Code."
 - 1. THE CONTRACTOR SHALL INFORM THE OWNER AND ARCHITECT A MINIMUM OF FORTY-EIGHT (48) HOURS, OR TWO (2) WORKING DAYS, IN ADVANCE OF THE DATE ON WHICH INSPECTION IS NEEDED.
 - 2. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 3. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.

4. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Clay Masonry Unit Test: For each type of unit provided, according to ASTM C 67 for compressive strength.
- F. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
- G. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
- H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

3.4 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.5 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
1. Crush masonry waste to less than 4 inches in each dimension.
 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 31 Section "Earth Moving."
 3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000

SECTION 051210 - STRUCTURAL STEEL

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Furnish and erect all structural steel as shown on Drawings.
- B. Repair existing steel members and replace lintels by welding and bolting miscellaneous steel shapes to the existing steel.
- C. Provide shop painting and galvanizing as specified.

1.2 RELATED SECTIONS

- A. Metal Deck.....Section 053000
- B. Painting.....Section 099120

1.3 PERFORMANCE REQUIREMENTS FOR ROOFTOP EQUIPMENT SUPPORTS

- A. Delegated Design: Design RTU supports to comply with wind and seismic performance requirements, including comprehensive engineering analysis by a qualified professional engineer licensed in state of New Jersey, using performance requirements and design criteria indicated.
- B. Wind-Restraint Performance:
Minimum 10 lb/sq. ft multiplied by the maximum area of the mechanical component projected on a vertical plane that is normal to the wind direction, and 45 degrees either side of normal.
- C. Seismic Performance: RTUs shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.4 SUBMITTALS OF ROOFTOP EQUIPMENT SUPPORTS

- A. Product Data: Include manufacturer's technical data for each RTU, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Wiring Diagrams: Power, signal, and control wiring.

- C. Delegated-Design Submittal: For RTU supports indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 2. Detail mounting, securing, and flashing of roof curb to roof structure. Indicate coordinating requirements with roof membrane system.
 3. Wind and Seismic Restraint Details: Detail fabrication and attachment of wind and seismic restraints and snubbers. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.
- D. Manufacturer Wind Loading Qualification Certification: Submit certification that specified equipment will withstand wind forces identified in Division 23 Section "Vibration and Seismic Controls."
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculations.
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of wind force and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- E. Manufacturer Seismic Qualification Certification: Submit certification that RTUs, accessories, and components will withstand seismic forces defined in "Performance Requirements" Article and in Division 23 Section "Vibration and Seismic Controls."
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- F. Coordination Drawings: Plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
1. Structural members to which RTUs will be attached.
 2. Roof openings
 3. Roof curb and flashing.
- G. Operation and Maintenance Data: For RTUs to include in emergency, operation, and maintenance manuals.
- H. Warranty: As specified in this Section.

1.5 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
- B. "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" 9th edition, including supplements. (AISC 335).
- C. American Welding Society (AWS) standards for procedures and materials.
- D. "Code of Standard Practice for Steel Buildings and Bridges" (AISC 303)
- E. Steel Structures Painting Council (SSPC) standards.

1.6 DEFINITIONS

A. Structural Steel

Structural Steel consists of the steel elements of the structural steel frame essential to support the design loads. These elements consist of material as shown on the structural steel plan and listed in Article 2.1 of the AISC "Code of Standard Practice for Steel Buildings and Bridges." Structural steel also includes structural lintels framing over masonry openings bearing on masonry.

1.7 SUBMITTALS (IN ADDITION TO SUBMITTALS OF ROOF TOP UNIT SUPPORTS)

A. Product Data

Submit manufacturers' specifications for the following products:

- 1. Primer paint, galvanizing repair paint
- 2. Expansion/adhesive anchors

B. Shop Drawings

- 1. Failure to submit legible shop drawings will be cause for return without review.
- 2. Provide a set of shop drawings showing all connections, bolting, welding, and size of material. Shop drawing shall show intended method of reinforcing existing members and making connections to existing steel as developed by the detailer based on conditions and actual dimensions.
- 3. Do not order steel in advance of approval of shop drawings, except at own risk.
- 4. Shop drawings shall be prepared under supervision of and bear the seal of a Professional Engineer licensed in the State of New Jersey. Connections not designed on the Drawings shall be done by the detailer's licensed Engineer. Do not submit unchecked shop drawings. After final approval of all shop drawings, submit a final set sealed and signed by the Professional Engineer.
- 5. Shop drawings will be checked for size of material and strength of connection by the Engineer of Record, which shall not render the Engineer of Record responsible for any errors in construction dimensions, etc. that have been made in preparation of shop drawings. The Contractor shall assume full responsibility for the correctness of dimensions and fit.

6. Calculations shall be submitted upon request.
 7. After shop drawings are 100% complete and approved and all field changes have been made, submit a set of as-built drawings to the Authority.
- C. Quality Control Submittals
1. Certificates and Affidavits
 - a. Furnish notarized affidavit from steel manufacturer certifying materials conform to Specification requirements and material was erected as designed.
 - b. Furnish bolt manufacturer's test reports, covering physical and chemical tests, for each lot of high strength bolts submitted.
 - c. Furnish steel manufacturer's certificate certifying welders employed on the Work have met AWS qualifications within the previous twelve months, and for work performed in the field are AWS certified licensed welders.
 - d. Furnish complete listing of ASTM's of materials listed in Part 2 of this Section and certification that materials supplied meet those listed.
 - e. For mechanical and adhesive anchors installed in concrete, submit ICC certification for use in cracked concrete.

1.8 QUALITY ASSURANCE

A. Qualifications

1. Fabricator: Company specializing in the fabrication of steel products to be used in this Contract shall have a minimum of five years experience.
2. Erector: Company specializing in performing the Work of this Section shall have a minimum of three years experience and have done at least three projects with similar quantity of material.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the 2018 International Building Code NJ Edition and all applicable regulations of governmental authorities having jurisdiction, including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.
2. Industry Standards: Standards specified in Article 1.03 apply to Work of this Section. Where more severe requirements than those contained in the Standards are given in this Section or the Building Code, requirements of this Section or the Building Code shall govern.

3. Recommendations or suggestions in the codes and references listed in this Article and under "References" shall be deemed to be mandatory unless they are in violation of the Building Code.

C. Certifications

1. Structural steel shall conform to the material acceptance, certification, and inspection requirements of Section 1701 of the 2018 International Building Code NJ Edition.
2. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the site at such intervals as to insure uninterrupted progress of Work
- B. Deliver anchor bolts and other anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time so as not to delay Work.
- C. Store materials to permit easy access for inspection and identification. Store material of the ground and protect from the weather and contamination.

1.10 FIELD MEASUREMENTS

- A. Take field measurements as required by Drawings. Where possible, take field measurements of existing conditions prior to fabrication. Verify that field measurements are the same as those shown on Drawings and shop drawings. Report all deviations to the Architect in writing.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Paint

1. Tnemec Co.
2. Carboline
3. Sherwin Williams
4. ZRC

B. Expansion/Adhesive Anchors, Fasteners

1. Hilti, Inc.
2. ITW Ramset/Redhead, Inc.
3. Simpson Strong-Tie Anchor System, Columbus, OH
4. Powers Fasteners

2.2 MATERIAL

A. Structural Steel Shapes, Shims, Plates, and Bars

Structural steel shall conform to the provisions of ASTM A36 or ASTM A992, pipe steel to the provisions of ASTM A501, and tube steel to the provisions of ASTM A500, Grade B, unless otherwise noted.

B. Bolts

1. Anchor Bolts: Shall conform to the provisions of ASTM F1554, Grade 36, unless different grade is specified elsewhere. Size and detailing indicated on Drawings.
2. High-Strength Bolts: Shall conform to the requirements of ASTM A325.
3. Provide types as indicated on Drawings. The anchor specified shall be considered the basis of design. As a minimum, all anchors exposed to weather or embedded in masonry are to be Type 316 stainless steel. Anchors shall ICC certified for cracked concrete as per Section -19 of the 2018 International Building Code NJ Edition.

D. Hardware

1. Nuts for anchor bolts and unfinished bolts shall conform to the requirements of ASTM A563.
2. Nuts for high-strength bolts shall conform to the provisions of ASTM A194 or ASTM A563 as specified in ASTM A325.
3. Washers shall conform to the provisions of ASTM F436.

E. Filler Metal for Welding

1. Welding electrode shall conform to E70XX classification of AWS A5.1 for welding of new steel to new steel.
2. Welding electrode shall be compatible with existing steel where connections are made to steel of existing building. Electrode shall be E7018 unless determined otherwise. E7018 are low hydrogen electrodes that must be kept extremely dry.

F. Structural Steel Primer Paint

Provide type of primer indicated on steel under the following application conditions.

1. Interior application: Modified alkyd rust-inhibitive type containing no lead equal to Tnemec Co. No. 10-99 or Carboline Carbocoat 115-SG. Red oxide paint is not acceptable.
2. Primer for galvanized steel to be painted: Epoxy paint equal to Tnemec Co. Series FC27 Typoxy or Carboline Carboguard 888.
3. Steel embedded in exterior masonry wall and exterior application: High adhesion high-solids epoxy coating equal to Tnemec Co. Series 135 Chembuild or Carboline Carboguard 890. This paint shall also be used on the existing steel exposed by

masonry removals and wherever else existing steel is to be painted. Top coats for exposed steel is to be the epoxy coat system given in Section 09900.

G. Galvanizing by the Hot-dip Method

1. Galvanize structural shapes in accordance with ASTM A123.
2. Galvanize hardware in accordance with ASTM A153.
3. Galvanizing repair paint for regalvanizing welds and damaged areas shall conform to ASTM A780 and comply with Military Specification MIL-P-21035, such as ZRC Cold Galvanizing Compound.

2.3 SHOP ASSEMBLY - FABRICATION

A. General

1. Do not fabricate until shop drawings have been reviewed.
2. Fabricate and assemble steel in shop to greatest extent possible. Fabricate items and assemblies in accordance with AISC Specifications and the shop drawings. Properly mark members for field assembly.

B. Shop Connections

1. Weld or high-strength bolt shop connections as indicated on Drawings.
2. High-strength bolt connections are friction (slip-critical) connections. Install high-strength bolts in accordance with "Specification for Structural Joints using ASTM A325 or A490 Bolts" (RCRBSJ).
3. Welding: Comply with "Structural Welding Code" for procedures, appearance, and quality of welds and methods used in correcting welded work.
4. Holes for other Work
 - a. Provide holes and openings required for securing other Work to steel framing and for passage of other Work through framing members. Coordinate with Drawings of other Work.
 - b. Cut, drill, flame cut, or punch holes perpendicular to metal surfaces. Method of cutting must not produce a roughness of over 1000 micro inches. Surfaces exceeding these limits must be repaired by machine grinding. Reinforce all openings with steel shapes as shown on shop drawings.

C. Shear Stud Connectors (Non-Metal Deck Construction)

1. Weld shear studs to beams with automatically timed stud welding equipment at spacing shown on Drawings. Size, type, and length specified on Drawings.
2. Top flanges of beams must be free of paint, heavy rust, millscale, dirt, ice and/or water, and any other material that will interfere with the welding operation.

2.4 SHOP PAINTING

A. General

Apply one shop coat of primer paint on structural steel except as follows:

1. Steelwork or portions of such to receive sprayed fireproofing. Steel that is exposed to the cavity and within the block back-up is to be painted, unless indicated to be galvanized.
2. Top flanges of structural steel members requiring stud shear connectors or supporting metal deck.
3. Contact surfaces of structural steel that are to be bolted or welded together and surfaces within 2" of field welds.
4. Steel members, hardware, and miscellaneous pieces to be galvanized and not specified or indicated to be painted.

B. Cleaning and Surface Preparation

1. Clean all steel first in accordance with SSPC-SP1.
2. Clean steel work not to be painted (except steel work to be galvanized) in accordance with SSPC-SP2.
3. Clean new steel work to be painted within the same day as it will be applied and in accordance with SSPC-SP3 for interior steel and SSPC-SP6 for exterior steel.

C. Shop Coat

1. Apply structural steel primer paint for interior application at a rate to provide dry film thickness of 2.0 to 3.5 mils. Apply primer paint for embedded in exterior masonry wall and exterior application at a rate to provide dry film thickness of 7.0 to 9.0 mils. Provide full coverage of joints, corners, edges, and exposed surfaces. Apply to dry surfaces only, when surface temperatures are above dew-point, by brush, spray, or roller, thoroughly and evenly, in strict accord with manufacturer's instructions for every detail of handling.
2. Apply second coat of the approved primer, in a darker shade, to surfaces inaccessible to painting after assembly or erection.
3. Protect machined surfaces with an approved rust-inhibiting coating that is readily removable prior to erection.

2.5 GALVANIZING

A. General

Galvanize all steel exposed to the weather and other members designated on Drawings to receive it. Galvanize all lintels, attachment clips, and hardware.

B. Cleaning and Surface Preparation

1. Hardware (bolts, nuts, etc.): Clean and leave free of mill scale before galvanizing.

1. Clean all steel first in accordance with SSPC-SP1 if needed.
 3. Steel members: Clean in accordance with SSPC-SP8 before hot-dip galvanizing.
 4. Steel members: Clean in accordance with SSPC-SP10 before zinc metallizing. Surface shall have a 3-4 mil anchor pattern. Moisture cannot be present on steel and temperature cannot be less than 5°F above the dew point. Thermal spray must be applied within 4 hours of blasting.
- C. Shop Coat - Hot-dip Galvanizing – Provide for items not to have finish paint coat.
1. Galvanize hardware in accordance with ASTM A153.
 2. Galvanize steel shapes in accordance with ASTM A123. Apply zinc coating as per Thickness Grade specified in ASTM A123.

2.6 SOURCE QUALITY CONTROL

A. Testing

1. General

- a. Structural steel work is subject to all tests required by the Special Inspection requirements of the 2018 International Building Code NJ Edition.
- b. Cooperate with the Testing Laboratory in making all required tests.

2. Tests: To be performed by the Authority's Testing Laboratory.

- a. Shop bolted connections: Tested in accordance with AISC specifications.
- b. Shop welding - The laboratory will perform the following functions:
 1. Certify welders.
 2. Visually inspect all welds, record type and locations of defects, and perform tests if necessary. Check all corrected work.
 3. Perform non-destructive tests if necessary or as required by the Special Inspector.

B. Inspection

1. Testing Laboratory

- a. The Authority will engage a Testing Laboratory or Special Inspection Agency to assist in the inspection of steel fabrication and conduct tests at the mill, shop, or foundry. The laboratory will assist in checking erection tolerances and provide shop and field testing required for all structural steel and metal deck work, including metal deck and studs.
- b. The Testing Laboratory will be responsible to and under the supervision of a Special Inspector.

2. Special Inspector

The Authority will assign, under the requirements of Section 17 of the 2018 International Building Code NJ Edition, a Special Inspector to supervise the Work listed above under "Testing Laboratory".

3. Notification: Notify the Architect before beginning fabrication of the structural steel and supply laboratory with copies of agreements, approved drawings, approved prints of all shop details, etc., and all necessary information relating thereto. Do not ship material to job site until after inspection and approval by the Testing Laboratory.

4. Discretionary Inspections: No mill, shop, foundry, or field inspection, such as is above provided for, shall be held to prohibit or preclude inspection of such materials during delivery and erection at the building by such other persons as the Authority shall direct.

5. Reports: Shop and field reports, including shipments, will be submitted by the Testing Laboratory to the Authority as the work proceeds at the shop or job site. A final report will be submitted by the Testing Laboratory when work is completed at the shop, and again when work is completed in the field. The Special Inspector reserves right to reject material not in compliance with specified requirements at any time.

6. Corrections: Correct deficiencies in work which inspections and tests have indicated to not be in compliance with requirements. Pay for additional tests, at own expense, necessary to reconfirm any non-compliance of original work and as necessary to show compliance of corrected work.

7. Contractor's Responsibility: Inspection and acceptance or failure to inspect shall in no way relieve the Contractor or the mill and shops from their responsibility to furnish satisfactory material strictly in accordance with Drawings and Specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and that erection may proceed. Notify the Architect in writing of conditions that adversely affect the Work. Do not proceed with erection until conditions have been corrected. Beginning of installation means the erector accepts existing conditions.

3.2 ERECTION

A. General

1. Erection shall conform to Section BC 2205.6.4 of the 2018 International Building Code NJ Edition and Section 1.25 of AISC 335.
2. All work shall be erected plumb, square, and true to lines and levels in strict accordance with the structural requirements of the building.
3. Provide all machinery, apparatus, and staging required for the erection of steel work in a thoroughly safe and efficient manner. Install, maintain and remove, without injury to other Work, such temporary bracing, scaffolding, etc. as may be necessary

or required. Care shall be taken that no part of the structure is overloaded during construction.

4. Arrange for deliveries of material to facilitate the rapid and continuous progress of operation, but the site or streets adjacent to same shall not be used for the storage of material unless absolutely necessary and then only with special permission of the Authority and other authorities having jurisdiction.
5. Employ a Licensed Professional Engineer and Land Surveyor to ensure accurate erection of the steel.
6. Do not alter or cut structural members without written approval of the Engineer of Record. Flame cutting in field of members to correct fabrication errors is to be avoided and to be done only upon approval of the Engineer of Record based on the method proposed. Roughness cannot exceed 1000 microinches. Repair of surfaces shall be by mechanical grinding.

B. Temporary Shoring and Bracing

Provide temporary shoring and bracing members with connections of sufficient strength to bear erection loads and guy wires to maintain structure plumb and in true alignment until completion of erection. Remove temporary work when permanent members and bracing are in place and final connections are made. Fill erection bolt-holes on exposed to view members with plug welds and grind smooth.

C. Anchor Bolts

1. Furnish to the concrete masons anchor bolts and other connectors required for securing structural steel to cast-in-place concrete work, together with instructions, templates, etc. necessary for setting them. Anchor bolts are to be surveyed and any approved modifications made prior to placement of columns.
2. For expansion/adhesive anchors used as anchor bolts, drill holes of depth and size required by the manufacturer for the required loading. Have bolt manufacturer perform pullout test to verify capacity prior to final approval.
3. Tighten anchor bolts after support members have been positioned and plumbed. Cut off protruding edges of wedges or shims flush with edge of base or bearing plate prior to packing with grout. Tighten expansion bolts/anchors to torque required by manufacturer.

D. Field Assembly

1. Erect structural frames accurately to lines and elevations indicated. Align and adjust members forming a part of a complete frame or structure before permanently fastening.
2. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly.
3. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
4. Level and plumb individual members of structure within specified AISC tolerances.

5. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
6. Splice members only where indicated and accepted on shop drawings.

E. Connections

1. Field connections between new steel members will typically be bolted unless otherwise indicated on Drawings. Connections made to existing steel shall be welded utilizing E7018 electrode. Follow preheat and interpass temperature requirements given in AWS.
 - a. Provide high-strength bolts for bolted connections except where unfinished bolts are indicated on the Drawings. High-strength bolt connections are friction (slip-critical) connections. Install high-strength bolts in accordance with "Specification for Structural Joints using ASTM A325 or A490 Bolts."
 - b. Provide unfinished bolts where indicated on Drawings. Lock nuts by upsetting bolt end or by similar method when unfinished bolts are not encased in concrete. Tighten all bolts and nuts fully.
 - c. For A325 bolts, hardened washer shall be installed under the turned element. For ASTM A490 bolts, hardened washer shall be installed under the head and nut.
 - d. Where connections are to be made to the vertical face of existing concrete, drill holes to the proper diameter and depth required for installation of expansion/ adhesive anchors and install the anchors as per manufacturer's instructions. Tighten to the torque values specified by the manufacturer. Attach plates flush with concrete surfaces after the surfaces have been cleaned. Have bolt manufacturer perform pullout test to verify capacity and quality of substrate prior to final approval.
2. Holes
 - a. The size of bolt holes shall be in accordance with AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings."
 - b. Ream holes that must be enlarged to admit bolts. Burning or use of drift pins is not permitted.

F. Field Touch-Up

1. Painted Members: After erection, clean all damaged areas in shop coat, exposed surfaces of bolts, bolt heads, nuts and washers, abrasions, and all field welds and unpainted areas adjacent to field welds to the same standards as the shop coat and paint with same paint to same thickness as the shop coat. These areas shall be thoroughly cleaned of rust and other bond inhibiting materials before applying the touch-up paint. Paint all existing steel using the high-solids epoxy specified in Part 2. Finish painting is specified in Section 09900. Provide epoxy coat system for all exterior painting.

2. Galvanized Members: After erection, clean and paint all damaged areas to the galvanizing, welds, and areas adjacent to welds with the galvanizing repair paint. For galvanized members to be painted, finish painting is specified in Section 09900 and shall be the final two coats of the epoxy paint system.

3.3 TOLERANCES

- A. Erection tolerances shall be in accordance with "Code of Standard Practice for Steel Buildings and Bridges".

3.4 FIELD QUALITY CONTROL

- A. Cooperate with the Special Inspector and the Testing Laboratory performing Special Inspection testing.
- B. The Special Inspector will review erection of structural framework and test field bolting and welding as listed in Part 2 of this Section.
- C. The Contractor shall engage an engineer licensed in the state of New Jersey to check tolerances and inspect the erection.

3.5 CLEANING

- A. Structural steel or portions of such to receive sprayed fireproofing shall be clean of dust, grease, oils, loose material, and any other matter which would impair the adhesion of the fireproofing material to the steel.

END OF SECTION 051210

LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Product Data:		_____
1. Primer paint, repair paint		
2. Expansion/adhesive anchors		
Shop Drawings:		_____
1. Steel shop drawings		
2. Calculations		
Certificates:		_____
1. Steel affidavit		
2. Bolt test reports		
3. Welders qualifications & license		
4. Material listing		
5. ICC Certification for Mechanical/Adhesive Anchors		
Qualifications		_____
1. Fabricator		
2. Erector		

* * *

SECTION 053100 - STEEL DECK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Steel roof deck.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 2. Division 5 Section "Structural Steel" for shop-welded shear connectors.
 - 3. Division 5 Section "Metal Fabrications" for framing openings with miscellaneous steel shapes.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each type of deck, accessory, and product specified.
- C. Shop drawings showing layout and types of deck panels, anchorage details, reinforcing channels, pans, deck openings, special jointing, accessories, and attachments to other construction.
- D. Product certificates signed by manufacturers of steel deck certifying that their products comply with specified requirements.
- E. Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.
- F. Product test reports from qualified independent testing agencies evidencing compliance with requirements of the following based on comprehensive testing:
 - 1. Mechanical fasteners.
- G. "Copies of Material Safety Data Sheets (MSDS) for welding rods, and any other hazardous materials"

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed steel deck similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Testing Agency Qualifications: To qualify for acceptance, an independent testing agency must demonstrate to Architect's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM E 699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.
- C. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel" and AWS D1.3 "Structural Welding Code--Sheet Steel."
 - 1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved in the last 2 years if re-certification of welder is required, retesting will be the contractors responsibility.
- D. Fire-Test-Response Characteristics: Where indicated, provide steel deck panels identical to those tested as part of an assembly for fire resistance per ASTM E 119 by a testing and inspection agency performing testing and follow-up services, that is acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: As indicated by design designations listed in UL "Fire Resistance Directory," or another testing and inspecting agency.
 - 2. Labeling: Identify steel deck with appropriate markings of applicable testing and inspecting agency.
- E. FM Listing: Provide steel roof deck evaluated by Factory Mutual and listed in Factory Mutual "Approval Guide" for Class 1 fire rating and Class 1-60 windstorm ratings.
- F. Engineer Qualifications: A professional engineer legally authorized to practice in the jurisdiction where Project is located and experienced in providing engineering services of the kind indicated that have resulted in the installation of steel deck similar to this Project in material, design, and extent and that have a record of successful in-service performance

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1.6 COORDINATION

- A. Coordinate installation of sound-absorbing insulation strips in acoustic deck ribs with related units of Work specified in other Sections to ensure that the insulation is protected against damage from effects of the weather and other causes.
- B. Coordinate installation of trench headers, preset inserts, and duct fittings in cellular metal floor deck with related units of Work specified in other Sections prior to casting concrete slab.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Bowman Metal Deck Armco, Inc.
 - 2. Roof Deck, Inc.
 - 3. United Steel Deck, Inc.
 - 4. Or approved equal

2.2 ROOF DECK

- A. Steel Roof Deck: Fabricate panels without top-flange stiffening grooves conforming to SDI Publication No.29 "Specifications and Commentary for Steel Roof Deck" and the following:
 - 1. Galvanized-Steel Sheet: ASTM A 653, G 60 zinc coated according to ASTM A 653.
 - 2. Span condition: Double span.
 - 3. Side Laps: Interlocking seam.

2.3 COMPOSITE FLOOR DECK

- A. Composite Steel Floor Deck: Fabricate panels with integrally embossed or raised pattern ribs and interlocking side laps, conforming to SDI Publication No. 29 "Specifications and Commentary for Composite Steel Floor Deck," the minimum section properties indicated, and the following:
 - 1. Galvanized-Steel Sheet: ASTM A 653, G 60 zinc coated according to ASTM A 653.
 - 2. Span Condition: Double span.
 - 3. Side Laps: Interlocking seam

2.4 ACCESSORIES

- A. General: Provide accessory materials for steel deck that comply with requirements indicated and recommendations of the steel deck manufacturer.
- B. Mechanical Fasteners: Manufacturer's standard, corrosion-resistant, low-velocity, powder-actuated or pneumatically driven carbon steel fasteners; or self-drilling, self-threading screws.
- C. Side Lap Fasteners: Manufacturer's standard, corrosion-resistant, hexagonal washer head; self-drilling, carbon steel screws, No. 10 minimum diameter.
- D. Rib Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber.
- E. Pour Stops and Girder Fillers: Steel sheet, of same material as deck panels, and of thickness and profile indicated.
- F. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material and thickness as deck panels, unless otherwise indicated.
- G. Hanger Tabs: Manufacturer's standard piercing steel sheet hanger attachment devices for floor deck panels.

- H. Weld Washers: Manufacturer's standard uncoated-steel sheet weld washers, shaped to fit deck rib, 0.0598 inch thick with 3/8-inch minimum diameter pre-punched hole.
- I. Recessed Sump Pans: Manufacturer's standard size, single piece steel sheet 0.071-inch thick minimum, of same material as deck panels, with 1-1/2-inch minimum deep level recessed pans and 3-inch wide flanges. Cut holes for drains in the field.
- J. Shear Connectors: ASTM A 108, Grade 1010 through 1020 headed stud type, cold-finished carbon steel, AWS D1.1, Type B.
- K. Steel Sheet Accessories: ASTM A 446, G 60 coating class, galvanized according to ASTM A 525.
- L. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.
- M. Preset Inserts: Manufacturer's standard, UL-labeled single-piece preset inserts, fabricated from either steel sheet galvanized according to ASTM A 525, G 60 coating class, or zinc sheet, with removable covers.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting framing and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of steel deck.

3.2 PREPARATION

- A. Do not place deck panels on concrete supporting structure until concrete has cured and is dry.
- B. Locate decking bundles to prevent overloading of supporting members.

3.3 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary of SDI Publication No. 29, manufacturer's recommendations, and requirements of this Section.
- B. Place deck panels on supporting framing and adjust to final position with ends accurately aligned and bearing on supporting framing before being permanently fastened. Do not stretch or contract side lap interlocks.
- C. Place deck panels flat and square and fasten to supporting framing without warp or deflection.
- D. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to the decking.
- E. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of decking, and support of other work.

- F. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work.
- G. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's instructions.

3.4 ROOF DECK INSTALLATION

- A. Fasten roof deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter, but not less than 1-1/2 inches long, and as follows:
 - 1. Weld Diameter: 3/4 inch, nominal.
 - 2. Weld Spacing: Weld edge ribs of panels at each support. Space welds an average of 12 inches apart, with a minimum of two welds per unit at each support.
 - 3. Weld Washers: Install weld washers at each weld location.
- B. Side Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding 36 inches, using one of the following methods:
 - 1. Mechanically fasten with self-drilling No. 10 diameter or larger carbon steel screws.
 - 2. Fasten with 1-1/2-inch long minimum welds.
- C. End Bearing: Install deck ends over supporting framing with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 - 1. End Joints: Lapped 2 inches minimum.
- D. Up Lift Loading: For all roof construction, install and anchor deck units to resist gross up lift loading of 45 pounds per square foot at eave overhang and 30 pounds per square foot for other roof areas.
- E. Roof Sump Pans and Sump Plates: Install over openings provided in roof decking, and weld flanges to top of deck. Space welds not more than 12 inches apart with at least one weld at each corner.
- F. Miscellaneous Roof Deck Accessories: Install ridge and valley plates, finish strips, cover plates, end closures, and reinforcing channels according to deck manufacturer's recommendations. Weld to substrate to provide a complete deck installation.
- G. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's instructions to ensure complete closure.

3.5 FLOOR DECK INSTALLATION

- A. Fasten floor deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:
 - 1. Weld Diameter: 3/4 inch, nominal.
 - 2. Weld Spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches apart, but not more than 18 inches apart.
 - 3. Weld Washers: Install weld washers at each weld location.

- B. Side Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, or at intervals not exceeding 36 inches, using one of the following methods:
 - 1. Mechanically fasten with self-drilling No. 10- diameter or larger carbon steel screws.
 - 2. Fasten with 1-1/2-inch- long minimum welds.
- C. End Bearing: Install deck ends over supporting framing with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 - 1. End Joints: Lapped.
- D. Shear Connectors: Weld shear connectors through deck to support framing according to AWS D1.1 and manufacturer's instructions. Butt end joints of deck panels; do not overlap. Remove and discard arc shields welding shear connections.
- E. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations, unless otherwise indicated.
- F. Floor Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck according to SDI recommendations to provide tight-fitting closures at open ends of ribs and sides of decking. Weld cover plates at changes in direction of floor deck panels, unless otherwise indicated.
- G. Maintain smooth cellular raceway interiors free of welds or mechanical fasteners.
- H. Install piercing hanger tabs not more than 14 inches apart in both directions, within 9 inches of walls at ends, and not more than 12 inches from walls at sides, unless otherwise indicated.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: A qualified independent testing agency employed and paid by Owner will perform field quality control testing.
- B. Field welds will be subject to inspection.
- C. Shear connector welds will be inspected and tested according to the requirements of AWS D1.1 for stud welding and as follows:
 - 1. Shear connector welds will be visually inspected.
 - 2. Bend tests will be performed when visual inspections reveal either less than a continuous 360 degree flash or welding repairs to any shear connector.
 - 3. Tests will be conducted on additional shear connectors when weld fracture occurs on shear connectors already tested, according to the requirements of AWS D1.1.
- D. Testing agency will report test results signed/sealed by a Professional Engineers licensed in The State of New Jersey promptly and in writing to Owner, Contractor and Architect.
- E. Remove and replace work that does not comply with specified requirements.
- F. Additional testing will be performed to determine compliance of corrected work with specified requirements.

3.7 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces with galvanized repair paint according to ASTM A 780 and the manufacturer's instructions.

- B. Touchup Painting: Wire brush, clean, and paint scarred areas, welds, and rust spots on both surfaces of installed deck panels.
 - 1. Touch up painted surfaces with same type of shop paint used on adjacent surfaces.
 - 2. Where shop-painted surfaces are exposed in-service, apply touchup paint to blend into adjacent surfaces.

- C. Provide final protection and maintain conditions to ensure steel decking is without damage or deterioration at time of Substantial Completion.

END OF SECTION 053100

SECTION 054000 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
1. Interior non-load-bearing wall framing.
 2. Interior load bearing wall framing
- B. Related Sections include the following:
1. Division 5 Section "Metal Fabrications" for masonry shelf angles and connections.
 2. Division 9 Section "Non-LOAD BEARING STEEL Framing" for interior non-load-bearing, metal-stud framing and ceiling-suspension assemblies.
 3. COORDINATE WITH REQUIREMENTS FOR FIRE RATINGS AND WITH FIREPROOFING ON STRUCTURAL MEMBERS
 4. REVIEW AND VERIFY HEIGHTS OF ASSEMBLIES WITH ACTUAL FINISH FLOOR ELEVATIONS. NOTE DOUBLE HEIGHT SPACES (+/- 24') EXIST IN NEW PASSPORT MAP VIEWING AREA & RECORDS ROOM

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.
1. Wind Loads ON WALLS:
 - a. COMPLY WITH NEW JERSEY UNIFORM CONSTRUCTION CODE.
 - b. COMPLY WITH INTERNATIONAL BUILDING CODE/2018 REQUIREMENTS.
 2. IN ANY CASE, THE MINIMUM STUD SIZE SHALL BE 6 INCH GALVANIZED METAL STUDS AT 16 INCHES ON CENTER MAXIMUM. GAUGE AS PER STRUCTURAL ENGINEER REQUIREMENTS.
 3. DESIGN METAL STUDS TO SUPPORT MATERIALS, PROVIDE 16 GAUGE MINIMUM.
 4. Deflection Limits: Design framing systems to withstand **design loads** without deflections greater than the following:

- a. Non-Load-Bearing Framing: Horizontal deflection of **1/240** of the wall height.
 5. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
 6. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
 - a. Upward and downward movement of **1/2 inch**.
 - B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
 1. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.
- 1.4 SUBMITTALS
- A. **054000_01** Product Data: For each type of cold-formed metal framing product and accessory indicated.
 - B. **054000_02** Shop Drawings: CONTRACTOR SHALL RETAIN AN ENGINEER LICENSED IN THE STATE OF NEW JERSEY TO PROVIDE SIGNED AND SEALED SHOP DRAWINGS SHOWING layout, spacing, sizes, thickness, and types of cold-formed metal framing, CALCULATIONS AND; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, BUILT UP HEADERS, accessories, connection details, and attachment to adjoining Work.
 1. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation. CALCULATIONS SHALL INCLUDE, BUT ARE NOT LIMITED TO:
 - a. DESCRIPTION OF DESIGN CRITERIA
 - b. ENGINEERING ANALYSIS DEPICTING STRESS AND DEFLECTION (STIFFENERS) REQUIREMENTS FOR EACH FRAMING APPLICATION.
 - c. SELECTION OF FRAMING COMPONENTS AND ACCESSORIES
 - d. VERIFICATION OF ATTACHMENTS TO STRUCTURE AND/OR ADJACENT FRAMING.
 - e. CONNECTION DESIGN AND DETAILS.
 2. PROVIDE DETAILS AND DATA INFORMATION ON ALL PROPOSED FASTENING AND CONNECTIONS OF METAL STUD FRAMING TO STEEL FRAMING, AND OR MASONRY.
 - C. **054000_03** ENGINEERING CALCULATIONS: CONTRACTOR SHALL HIRE AN ENGINEER LICENSED IN THE STATE OF NEW JERSEY TO PROVIDE SIGNED

AND SEALED CALCULATIONS FOR LOADINGS AND STRESSES OF SYSTEM MEMBERS AND CONNECTIONS.

- D. **054000_04** Qualification Data: For **professional engineer**.
- E. **054000_05** Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
 - 1. Steel sheet.
 - 2. Expansion anchors.
 - 3. Power-actuated anchors.
 - 4. Mechanical fasteners.
 - 5. Vertical deflection clips.
 - 6. Horizontal drift deflection clips
 - 7. Miscellaneous structural clips and accessories.
- F. **054000_06** Research/Evaluation Reports: For cold-formed metal framing.

1.5 QUALITY ASSURANCE

- A. Engineering Responsibility: CONTRACTOR SHALL HIRE A qualified professional engineer LICENSED IN THE STATE OF NEW JERSEY FOR THE Preparation of Shop Drawings, design calculations, and other structural data FOR THE PROJECT.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.
- D. Product Tests: Mill certificates or data from a qualified independent testing agency, **or in-house testing with calibrated test equipment** indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, **ductility**, and metallic-coating thickness.
- E. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- F. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
- G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:
 - 1. MarinoWare; a division of Ware Industries.
 - 2. Super Stud Building Products, Inc.
 - 3. APPROVED EQUAL.

2.2 MATERIALS

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than **25** percent.
- B. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
 - 1. Grade: **As required by structural performance.**
 - 2. Coating: **G60.**
- C. Steel Sheet for **Vertical Deflection** OR **Drift** Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
 - 1. Grade: **As required by structural performance.**
 - 2. Coating: **G60.**

2.3 NON-LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
 - 1. Minimum Base-Metal Thickness: **16 GAUGE MINIMUM.**
 - 2. Flange Width: **1-5/8 inches.**
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: **Matching steel studs.**
2. Flange Width: **1-1/4 inches.**

C. DEFLECTION CONTROL

1. AT THE OPTION OF THE CONTRACTOR'S ENGINEER SELECT FROM THE FOLLOWING:
 - a. Vertical Deflection Clips: Manufacturer's standard **bypass** OR **head** clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.
 - 1) Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a) MarinoWare, a division of Ware Industries.
 - b) APPROVED EQUAL.
 2. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a) MarinoWare, a division of Ware Industries.
 - b) APPROVED EQUAL.
 - b. Minimum Base-Metal Thickness: 14 GAUGE (**0.0428 inch**).
 - c. Flange Width: **1 inch** plus the design gap for 1-story structures and **1 inch** plus twice the design gap for other applications.
 3. Double Deflection Tracks: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; unpunched, with unstiffened flanges.
 - a. Outer Track: Of web depth to allow free vertical movement of inner track, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
 - a) Minimum Base-Metal Thickness: 14 GAUGE (**0.0677 inch**).
 - b) Flange Width: **1 inch** plus the design gap for 1-story structures and **1 inch** plus twice the design gap for other applications.
 - 2) Inner Track: Of web depth indicated, and as follows:
 - a) Minimum Base-Metal Thickness: 14 GAUGE (**0.0677 inch**).
 - b) Flange Width: **1 inch** plus the design gap for 1-story structures and **1 inch** plus twice the design gap for other applications.
- D. Drift Clips: Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure.

2.4 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
 - 1. Supplementary framing.
 - 2. Bracing, bridging, and solid blocking.
 - 3. Anchor clips.
 - 4. End clips.
 - 5. Stud kickers, knee braces, and girts.
 - 6. Hole reinforcing plates.
 - 7. Backer plates.

2.5 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- B. Anchor Bolts: ASTM F 1554, Grade **36**, threaded carbon-steel **headless, hooked bolts**, and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by **hot-dip process according to ASTM A 153/A 153M, Class C**.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: **SSPC-Paint 20 or DOD-P-21035**.
- B. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.7 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
 - 1. Fabricate framing assemblies using jigs or templates.

2. Cut framing members by sawing or shearing; do not torch cut.
 3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
 4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.
- C. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
 - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
 - a. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Install insulation, specified in Division 7 Section "Building Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 NON-LOAD-BEARING WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to **top and** bottom track USE DEFLECTION TRACK AT HEAD unless otherwise indicated. Space studs as follows:
 - 1. Stud Spacing: As PER CONTRACTOR'S ENGINEER, HOWEVER, MAXIMUM SPACING OF 16" O.C.
 - 2. STUD SPACING AT ACT-4 HEADWALL & AT INTERFACE WITH MOZ METAL PANEL SYSTEM TO BE COORDINATED WITH METAL PANEL MODULE WIDTHS
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
 - 1. Install single-leg deflection tracks and anchor to building structure.
 - 2. Install double deep-leg deflection tracks and anchor outer track to building structure.
 - 3. Connect vertical deflection clips to **bypassing** OR **infill** studs and anchor to building structure.
 - 4. Connect drift clips to cold formed metal framing and anchor to building structure.
- E. Install horizontal bridging in wall studs, spaced in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.
 - 1. Top Bridging for Single Deflection Track: Install row of horizontal bridging within **12 inches** of single deflection track. Install a combination of flat, taut, steel sheet straps of width and thickness indicated and stud or stud-track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 - a. Install solid blocking at centers indicated on SIGNED AND SEALED Shop Drawings.
 - 2. AT THE OPTION OF THE CONTRACTOR'S ENGINEER SELECT FROM THE FOLLOWING:
 - a. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
 - b. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 - c. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, & BUILT UP HEADERS to provide a complete and stable wall-framing system.

3.5 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
 - 1. THE CONTRACTOR SHALL INFORM THE OWNER AND ARCHITECT A MINIMUM OF FORTY-EIGHT (48) HOURS, OR TWO (2) WORKING DAYS, IN ADVANCE OF THE DATE ON WHICH INSPECTION IS NEEDED.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000

SECTION 057000 – DECORATIVE METAL

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes Decorative Metal as shown on drawings and schedules
- B. Drawings and general provisions of the Contract Documents apply to work of this section.
- C. PRODUCT IS TO BE USED AS DECORATIVE METAL FASCIA IN COORDINATION WITH TORSION SPRING METAL CEILING SYSTEM WITHIN CLERK, PASSPORT OFFICES AS WELL AS ELECTIONS CORRIDOR. PRODUCT IS ALSO TO BE USED AS DECORATIVE METAL FASCIA & GRILLE IN RECORDS ROOM. PERFORATION PATTERN OF CEILING AND FASCIA ARE TO MATCH. BASIS OF DESIGN IS MOZ KEY SLOT PANEL SYSTEM. REFER TO DRAWINGS A111, A11A, & A500 SERIES DRAWINGS. CONSTRUCTION OF SHEET METAL TRIM “CANOPIES” AT THE ENTRANCE DOORS TO EACH PHASE ARE PART OF THE PROJECT AND UTILIZE BOTH PERFORATED METAL CEILINGS & SHEET METAL TRIM AS SHOWN ON A500 & A600 SERIES DRAWINGS. PRODUCT IS ALSO TO BE USED AS FASCIA FOR CASEWORK DESK AT MAP VIEWING AREA.

1.2 SUBMITTALS

- A. Shop drawings indicating quantities, dimensions, finishes, and attachment details.
- B. Product literature
- C. Samples for color, pattern, and finish as indicated. SUBMIT SAMPLES OF:1. ENTIRETY OF SYSTEM KEY SLOT PANEL SYSTEM 2.METAL TRIM 3. PERFORATED/ LASERCUT PANEL IN SPECIFIED FINISH
- D. RELATED REQUIREMENTS:
 - 1. SECTION 9 FOR COORDINATION WITH TORSION SPRING METAL CEILING

1.3 QUALITY ASSURANCE

- A. Manufacturer shall have a minimum of 5 years experience in manufacturing decorative metals for commercial use.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in manufacturer's original packaging, properly labeled for identification and installation purposes.
- B. Store in location to avoid damage from job-site traffic, direct sunlight, moisture, stacking or other job-site contaminates. Store in a completely supported flat position. Edge storage is not recommended.
- C. Handle components to avoid denting or scratching of finished surfaces.
- E. DO NOT use markers on protective PVC film. Some types of ink will permeate the film and mark the material surface.

1.5 PROJECT CONDITIONS

- A. Maintain a constant temperature range of 65°F to 85°F (18°C to 24°C), with stable relative humidity, for at least 48 hours prior to, throughout the installation period and maintained consistently thereafter.
- B. Installation locations must be enclosed, weatherproofed and climate controlled prior to commencing installation.
- C. Do not install if relative humidity is greater than 80%.

1.6 WARRANTY

- A. Provide manufacturers warranty against defects in material and workmanship.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Móz Designs, Inc.
 - 711 Kevin Court,
 - Oakland, CA 94621
 - Phone 510-632-0853
 - Fax 510-632-0852
 - Email: estimating@mozdesigns.com

2.2 METALS

A. Aluminum ‘Moz Metals’

- 1. .040” thick Aluminum: Type 5052 alloy complying with ASTM B209
- 2. Sizes: 4’x8’ and 4’x10’ standard sizes FABRICATED TO SHAPES, PROFILES & SIZES SHOWN ON PLANS REFER TO A111 & A500 SERIES DRAWINGS
- 3. Finish: POWDERCOATED SATIN FINISH RAL 6003, Olivgrün
- 4. Custom Options
 - a. Double Side Finish: N
 - b. INTERIOR APPLICATION ONLY

AND

C. Laser Cut Aluminum ‘Moz Metals’

- 1. .090” thick Aluminum: Type 5052 alloy complying with ASTM B209
- 2. Sizes: AS SHOWN ON DRAWINGS
- 3. FOR PATTERN & PANEL SIZES, SEE A111 & A500 SERIES DRAWINGS
- 4. POWDERCOATED SATIN FINISH IN RAL 6003, Olivgrün
- 5. Double Side RAL: N
- 6. INTERIOR APPLICATION ONLY

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine product, substrates and installation conditions.
- B. Notify the contractor and architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Do not proceed with work until conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Prior to installation, clean surface to remove dirt, debris and loose particles. Perform additional preparation procedures as required per the manufacturer's instructions.
- B. Protection: Take all necessary precautions to prevent damage to materials during installation.

3.3 INSTALLATION

- A. Install the work of this section in strict accordance with manufacturer's written Technical Information and workability guidelines

3.4 CLEANING

- A. Remove protective coverings and clean decorative metal to remove adhesives and tape residue. Test all solvents on non-exposed surfaces prior to use.
 - 1. For painted surfaces, use a mild detergent solution on a soft cloth.
 - 2. For stainless steel, use a glass cleaner and a soft cloth.
 - 3. For other surfaces, contact manufacturer for proper cleaning procedures.
 - 4. For HEAVY CLEANING and removal of grease, use oil based mineral spirits or naphtha. Low concentration ammonia based cleaning agents such as glass cleaners may also be used.
 - 5. Minor scuffs can be polished out by hand with a #6 to #9 type finishing polish or wax.
 - 6. DO NOT treat with rubbing compounds or lacquer thinner as this may dissolve or etch the coating.
- B. Visually inspect all exposed surfaces for scratches or blemishes.
- C. Protect Decorative Metal from damage during remainder of construction period.

END OF SECTION 057000

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Wood blocking, cants, and nailers.
 - 2. Plywood backing panels.
 - 3. INSTALLATION OF DOOR HARDWARE.
 - 4. MISCELLANEOUS WOOD BLOCKING.
 - 5. INTERIOR CARPENTRY

1.3 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NLGA: National Lumber Grades Authority.
- C. ROUGH CARPENTRY: CARPENTRY WORK NOT SPECIFIED IN OTHER SECTIONS AND NOT EXPOSED, UNLESS OTHERWISE INDICATED.

1.4 SUBMITTALS

- A. 061000_01 Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - 2. For fire-retardant treatments specified to be High-Temperature (HT) type, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
 - 3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 - 4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

5. PROVIDE PLYWOOD THAT CONTAINS NO UREA FORMALDAHYDE. SUBMIT PRODUCT DATA TO SHOW CONTENTS.

B. 061000_02 Certificate Submittals:

1. Certificates: Chain-of-custody certificates certifying that products specified to be made from certified wood comply with forest certification requirements. Include evidence that mill is certified for chain of custody by an FSC-accredited certification body.
 - a. Include statement indicating costs for each certified wood product.

C. 061000_03 Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Fire-retardant-treated wood.
2. Power-driven fasteners.
3. Expansion anchors.

1.5 QUALITY ASSURANCE

- A. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

1. Miscellaneous lumber.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
4. Provide dressed lumber, S4S, unless otherwise indicated.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood).
 - 1. Use Interior Type C, unless otherwise indicated.
- B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Application: Treat THE FOLLOWING:
 - 1. Concealed blocking.

2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Cants.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content and the following species:
 - 1. Northern species; NLGA.
- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, TYPE C, C-D Plugged, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 316 stainless steel.
- B. Power-Driven Fasteners: NES NER-272.
- C. Wood Screws: ASME B18.6.1.
- D. Lag Bolts: ASME B18.2.1.

- E. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- F. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locatenailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Do not splice structural members between supports, unless otherwise indicated.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- E. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal- thickness.
 - 2. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.
 - 3. PROVIDE FIREBLOCKING AT ALL EXISTING WALLS EXPOSED DURING CONSTRUCTION.
- F. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
2. NEW JERSEY UNIFORM CONSTRUCTION CODE.

- H. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved. **INSTALL BLOCKING WITHIN WALLS AT ALL TV & MONITOR LOCATIONS SHOWN ON PLANS. INSTALL BLOCKING WITHIN WALLS AT ALL SHELVING LOCATIONS SHOWN ON PLANS.**
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.3 DOOR HARDWARE

A. GENERAL

1. THE CONTRACTOR SHALL INSTALL ALL DOOR HARDWARE.

B. EXAMINATION

1. EXAMINE DOORS AND FRAMES, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES, LABELED FIRE DOOR ASSEMBLY CONSTRUCTION, WALL AND FLOOR CONSTRUCTION, AND OTHER CONDITIONS AFFECTING PERFORMANCE.
2. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

C. PREPARATION

1. STEEL DOORS AND FRAMES: COMPLY WITH DHI A115 SERIES.
 - a. SURFACE-APPLIED DOOR HARDWARE: DRILL AND TAP DOORS AND FRAMES ACCORDING TO SDI 107.
2. WOOD DOORS: COMPLY WITH DHI A115-W SERIES.

D. INSTALLATION

1. MOUNTING HEIGHTS: MOUNT DOOR HARDWARE UNITS AT HEIGHTS INDICATED IN FOLLOWING APPLICABLE PUBLICATIONS, UNLESS SPECIFICALLY INDICATED OR REQUIRED TO COMPLY WITH GOVERNING REGULATIONS:
 - a. STANDARD STEEL DOORS AND FRAMES: DHI'S "RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR STANDARD STEEL DOORS AND FRAMES."
 - b. CUSTOM STEEL DOORS AND FRAMES: DHI'S "RECOMMENDED LOCATIONS FOR BUILDERS' HARDWARE FOR CUSTOM STEEL DOORS AND FRAMES."
 - c. WOOD DOORS: DHI WDHS.3, "RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR WOOD FLUSH DOORS."

2. INSTALL EACH DOOR HARDWARE ITEM TO COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. WHERE CUTTING AND FITTING ARE REQUIRED TO INSTALL DOOR HARDWARE ONTO OR INTO SURFACES THAT ARE LATER TO BE PAINTED OR FINISHED IN ANOTHER WAY, COORDINATE REMOVAL, STORAGE, AND REINSTALLATION OF SURFACE PROTECTIVE TRIM UNITS WITH FINISHING WORK SPECIFIED IN DIVISION 9 SECTIONS. DO NOT INSTALL SURFACE-MOUNTED ITEMS UNTIL FINISHES HAVE BEEN COMPLETED ON SUBSTRATES INVOLVED.
 - a. SET UNITS LEVEL, PLUMB, AND TRUE TO LINE AND LOCATION. ADJUST AND REINFORCE ATTACHMENT SUBSTRATES AS NECESSARY FOR PROPER INSTALLATION AND OPERATION.
 - b. DRILL AND COUNTERSINK UNITS THAT ARE NOT FACTORY PREPARED FOR ANCHORAGE FASTENERS. SPACE FASTENERS AND ANCHORS ACCORDING TO INDUSTRY STANDARDS.
3. KEY CONTROL SYSTEM: PLACE KEYS ON MARKERS AND HOOKS IN KEY CONTROL SYSTEM CABINET, AS DETERMINED BY FINAL KEYING SCHEDULE.
4. BOXED POWER SUPPLIES: LOCATE POWER SUPPLIES AS INDICATED OR, IF NOT INDICATED, ABOVE ACCESSIBLE CEILINGS. VERIFY LOCATION WITH ARCHITECT.
 - a. CONFIGURATION: PROVIDE THE LEAST NUMBER OF POWER SUPPLIES REQUIRED TO ADEQUATELY SERVE DOORS WITH ELECTRIFIED DOOR HARDWARE.
5. THRESHOLDS: SET THRESHOLDS FOR EXTERIOR AND ACOUSTICAL DOORS IN FULL BED OF SEALANT COMPLYING WITH REQUIREMENTS SPECIFIED IN DIVISION 7 SECTION "JOINT SEALANTS."

E. ADJUSTING

1. INITIAL ADJUSTMENT: ADJUST AND CHECK EACH OPERATING ITEM OF DOOR HARDWARE AND EACH DOOR TO ENSURE PROPER OPERATION OR FUNCTION OF EVERY UNIT. REPLACE UNITS THAT CANNOT BE ADJUSTED TO OPERATE AS INTENDED. ADJUST DOOR CONTROL DEVICES TO COMPENSATE FOR FINAL OPERATION OF HEATING AND VENTILATING EQUIPMENT AND TO COMPLY WITH REFERENCED ACCESSIBILITY REQUIREMENTS.
 - a. SPRING HINGES: ADJUST TO ACHIEVE POSITIVE LATCHING WHEN DOOR IS ALLOWED TO CLOSE FREELY FROM AN OPEN POSITION OF 30 DEGREES.
 - b. ELECTRIC STRIKES: ADJUST HORIZONTAL AND VERTICAL ALIGNMENT OF KEEPER TO PROPERLY ENGAGE LOCK BOLT.
 - c. DOOR CLOSERS: ADJUST SWEEP PERIOD SO THAT, FROM AN OPEN POSITION OF 70 DEGREES, THE DOOR WILL TAKE AT LEAST 3 SECONDS TO MOVE TO A POINT 3 INCHES FROM THE LATCH, MEASURED TO THE LEADING EDGE OF THE DOOR.
2. SIX-MONTH ADJUSTMENT: APPROXIMATELY SIX MONTHS AFTER DATE OF SUBSTANTIAL COMPLETION, INSTALLER SHALL PERFORM THE FOLLOWING:
 - a. EXAMINE AND READJUST EACH ITEM OF DOOR HARDWARE AS NECESSARY TO ENSURE FUNCTION OF DOORS, DOOR HARDWARE, AND ELECTRIFIED DOOR HARDWARE.
 - b. CONSULT WITH AND INSTRUCT OWNER'S PERSONNEL ON RECOMMENDED MAINTENANCE PROCEDURES.
 - c. REPLACE DOOR HARDWARE ITEMS THAT HAVE DETERIORATED OR FAILED DUE TO FAULTY DESIGN, MATERIALS, OR INSTALLATION OF DOOR HARDWARE UNITS.

F. CLEANING AND PROTECTION

1. CLEAN ADJACENT SURFACES SOILED BY DOOR HARDWARE INSTALLATION.

2. CLEAN OPERATING ITEMS AS NECESSARY TO RESTORE PROPER FUNCTION AND FINISH.
3. PROVIDE FINAL PROTECTION AND MAINTAIN CONDITIONS THAT ENSURE DOOR HARDWARE IS WITHOUT DAMAGE OR DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION.

G. DEMONSTRATION

1. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN DOOR HARDWARE AND DOOR HARDWARE FINISHES.

3.4 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 072116 - BATT INSULATION

PART 1 - GENERAL

1.1 SUMMARY OF WORK

- A. This Section specifies mineral fiber batt and blanket thermal insulation for steel stud wall applications.

1.2 RELATED REQUIREMENTS

1.3 REFERENCE STANDARDS

- A. ASTM International (ASTM).
 - 2. ASTM C167 - [2009], Standard Test Method for Thickness and Density of Blanket or Batt Thermal Insulations.
 - 5. ASTM C518 - [2010], Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 8. ASTM C665 - [2011], Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 9. ASTM E84 - [2012b], Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 10. ASTM E136 - [2011], Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Co-ordination: Co-ordinate work of this Section with roofing or deck work and with work of other trades for proper time and sequence to avoid construction delays.
- B. Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and [one week] before starting work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.
 - 1. Comply with Section 01 31 19 - Project Meetings and co-ordinate with other similar pre-installation meetings.
 - 2. Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
 - a. Owner;
 - b. Consultant;
 - c. [Roofing] [Deck] Subcontractor;
 - d. Manufacturer's Technical Representative.
 - 3. Ensure meeting agenda includes review of methods and procedures related to insulation installation including co-ordination with related work.
 - 4. Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- A. Make submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal

Procedures.

- B. Product Data: Submit product data including manufacturer's literature for insulation materials and accessories, indicating compliance with specified requirements and material characteristics.
 - 1. Submit list on insulation manufacturer's letterhead of materials and accessories to be incorporated into Work.
 - 2. MSDS report.
 - 3. Include product name.
 - 4. Include preparation instructions and recommendations, installation methods, and storage and handling requirements.
- C. Samples:
 - 1. Submit [5.5 x 7.5] inches minimum sample of insulation in thickness used on Project.
- D. Test Reports:
 - 1. Submit evaluation service reports or other independent testing agency reports showing compliance with specified performance characteristics and physical properties.
- E. Field Reports: Submit manufacturer's field reports within 3 days of each manufacturer representative's site visit and inspection.
- F. Sustainable Design (LEED).
 - 1. LEED Submittals: In accordance with Section [01 35 21 – LEED Requirements]
 - 2. Submit verification for items as follow:
 - a. EA Credit 1: Thermal value of insulation contributing to overall energy performance of building.
 - b. MR Credits 4: Recycled content of insulation indicating percentages by weight of preconsumer and postconsumer recycled content.
 - c. MR Credits 5: Verify location where insulation is extracted, processed and manufactured.
- G. Insulation Installer Qualifications:
 - 1. Submit letter verifying insulation installer's experience with work similar to work of this Section.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Supply maintenance data for insulation materials for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- C. Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.
 - 1. List materials used in insulation work.
 - 2. Warranty: Submit warranty documents specified.

1.7 QUALITY ASSURANCE

- A. Batt and Blanket Insulation Installer Quality Assurance: Work experience of [5] years minimum with work similar to work of this Section.
- B. Sustainability Standards Certification (LEED).
 - 1. LEED submittals: In accordance with Section 01 35 21 - LEED Requirements.

1.8 DELIVERY STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:

1. Deliver material in accordance with Section 01 61 00 - Common Product Requirements.
 2. Deliver materials and accessories in insulation manufacturer's original packaging with identification labels intact and in sizes to suit project.
 3. Ensure insulation materials are not exposed to moisture during delivery.
 4. Replace wet or damaged insulation materials.
- B. Storage and Handling Requirements: Store materials off ground in dry location and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
1. Store in original packaging until installed.
- C. Packaging Waste Management:
1. Separate and recycle waste packaging materials in accordance with Section 01 74 19 - Construction Waste Management and Disposal.
 2. Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.
 3. Collect and separate for disposal paper and plastic material in appropriate on-site storage containers for recycling [in accordance with Waste Management Plan].
- 1.9 WARRANTY
- A. Project Warranty: Refer to Contract Conditions for project warranty provisions.
- B. Manufacturer's warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.
- C. Warranty period: [1] years commencing on Date of Substantial Performance of Work.

PART 2 - PRODUCTS

2.1 DESCRIPTION

- A. Non-combustible, lightweight, semi-rigid mineral wool batt insulation to ASTM C655, Type 1.

2.2 PERFORMANCE CRITERIA

- A. Batt Insulation for exterior stud walls: To ASTM C665, Type 1.
1. Fire performance:
 - a. Non-combustibility: To ASTM E136.
 - b. Surface Burning Characteristics: To ASTM E84.
 - 1) Flame spread: 0.
 - 2) Smoke developed: 0.
 2. Thermal resistance: To ASTM C518.
 3. Density: 2 lb/ft³ to ASTM C167.
 4. Recycled content: [40] [16] % minimum.

2.3 MATERIALS

- A. Non-combustible, lightweight, semi-rigid mineral wool batt insulation to ASTM C665, Type 1.
1. Size: [16.25] [24.25] x 48 inches.
 2. Thickness: [2.5] [3.5] [6] [7] [8] inches.

3. R value/1 inch at 75 °F: 4.0 h ft² °F/Btu.
4. Acceptable Material: ROCKWOOL COMFORTBAT®.

2.4 ACCESSORIES

- A. Mechanical fasteners in accordance with insulation manufacturer's written recommendations.

2.5 SOURCE QUALITY CONTROL

- A. Ensure insulation components and accessories are supplied or approved in writing by single manufacturer.

2.6 PRODUCT SUBSTITUTIONS

- A. Substitutions: [In accordance with Section 01 23 13 - Product Substitution Procedures] [No substitutions permitted].

PART 3 - EXECUTION

3.1 INSTALLERS

- A. Use only installers with [5] years minimum experience with work similar to work of this Section.

3.2 EXAMINATION

- A. Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for insulation installation in accordance with manufacturer's written recommendations.

1. Visually inspect substrate in presence of Consultant.
2. Ensure surfaces are free of snow, ice, frost, grease and other deleterious materials.
3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

- B. Start of insulation installation indicates installer's acceptance of substrate installation conditions.

3.3 INSTALLATION

- A. Install insulation in accordance with manufacturer's written recommendations.
- B. Install insulation to maintain continuity of thermal protection to building elements and spaces.
- C. Do not compress insulation to fit into spaces.
- D. Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
- F. Keep insulation minimum [3] inches from heat emitting devices such as recessed light fixtures, and minimum [2] inches from sidewalls of chimneys and vents.
- G. Do not enclose insulation until before inspection and receipt of Consultant's written approval.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Coordinate field inspection in accordance with Section [01 45 00 - Quality Control].
- B. Manufacturer's Services:
 - 1. Coordinate manufacturer's services with Section [01 45 00 - Quality Control].
 - a. Arrange for payment for manufacturer's services.
 - b. Have manufacturer review work involved in handling, installation, protection, and cleaning of insulation and accessories, and submit written reports in acceptable format to verify compliance of Work with Contract conditions.
 - 2. Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation review in accordance with manufacturer's instructions.
 - a. Report any inconsistencies from manufacturer's recommendations immediately to Consultant.
 - 3. Schedule site visits to review work at stages listed:
 - a. After delivery and storage of drainage sheet and accessories, and when preparatory work on which Work of this Section depends is complete, but before installation begins.
 - b. Twice during progress of work at 25% and 60% complete.
 - c. Upon completion of Work, after cleaning is carried out.
 - d. Obtain reports within three days of review and submit immediately to Consultant.

3.5 CLEANING

- A. Progress Cleaning: Perform cleanup as work progresses [in accordance with Section 01 74 00 - Cleaning and Waste Management].
 - 1. Leave work area clean at end of each day.
- B. Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment [in accordance with Section 01 74 00 – Cleaning and Waste Management].
- C. Waste Management:
 - 1. Co-ordinate recycling of waste materials with 01 74 19 - Construction Waste Management and Disposal.
 - 2. Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
 - 3. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

- A. Protect installed products and accessories from damage during construction.
- B. Repair damage to adjacent materials caused by insulation installation.

END OF SECTION 072116

SECTION 078410 - THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both blank openings and openings containing penetrating items.

- 1. Penetrations for passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through fire rated vertical barriers (walls and partitions), horizontal beams (floor/ceiling assemblies) and vertical service shaft walls and partitions.
- 2. Openings and penetrations in fire rated partitions or walls containing fire doors.
- 3. Openings around structural members that penetrate fire rated floors or walls.

- B. Related Sections include the following:

- 1. Division 3 – Sections specifying Cast-In-Place Concrete
- 2. Division 4 – Sections specifying Masonry Work.
- 3. Division 7 - Section "Fire-Resistive Joint Systems."
- 4. Division 9 – Sections specifying Lath and Plaster
- 5. Division 9 – Sections specifying Gypsum Drywall Systems
- 6. Division 21 – Sections specifying Fire Suppression and Supervisory Systems
- 7. Division 21 – Sections specifying Fire Protection
- 8. Division 22 – Sections specifying Plumbing
- 9. Division 23 – Sections specifying Basic Mechanical Materials and Methods
- 10. Division 23 – Sections specifying Mechanical Insulation
- 11. Division 26 – Sections specifying Basic Electrical Materials and Methods

1.3 PERFORMANCE CRITERIA

A. FIRE TEST REQUIREMENTS

- 1. American Society of Testing and Materials (ASTM):
 - a. ASTM E84 – “Surface Burning Characteristics of Building Materials”
 - b. ASTM E814 – “Fire Tests of Through Penetration Fire Stops”
 - c. ASTM E119 – “Fire Tests of Building Construction and Materials”
- 2. Underwriters Laboratories, Inc. (UL):
 - a. ANSI/ UL1479 – “Fire Tests of Through Penetration Firestops”
 - b. ANSI/ UL263 – “Fire Test of Building Construction and Materials”
 - c. ANSI/ UL723 – “Surface Burning Characteristics of Building Materials”

B. REFERENCES

1. Underwriters Laboratories (UL) of Northbrook, IL "Fire Resistance Directory"
 - a. Through Penetration Firestop Systems (XHEZ)
 - b. Fill, Void or Cavity Materials (XHHW)
 - c. Firestop Devices (XHJI)
 - d. Forming Materials (XHKU)
 - e. Wall Opening Protective Materials (CLIV)
2. All major building codes:
 - a. Uniform Building Code published by ICBO
 - b. Standard Building Code published by SBCCI
 - c. National Building Code published by BOCA
 - d. International Building Code published by ICC
 - e. (Remove codes that are not applicable)
3. National Fire Protection Association (NFPA) of Quincy, MA
 - a. NFPA 70 – National Electrical Code
 - b. NFPA 101 – Life Safety Code

C. PERFORMANCE REQUIREMENTS

1. General: For penetrations through **the following** fire-resistance-rated constructions, including both blank openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
 - a. Fire-resistance-rated LOAD AND NON-LOAD BEARING walls including **BUT NOT LIMITED TO: fire walls, fire partitions, fire barriers and smoke barriers.**
 - b. Fire-resistance-rated horizontal assemblies including **BUT NOT LIMITED TO: floors, floor/ceiling assemblies, ROOF ASSEMBLIES and, ceiling membranes of roof/ceiling assemblies.**
2. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per **ASTM E 814 or UL 1479:**
 - a. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
 - b. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
 - 1) Penetrations located outside wall cavities.
 - 2) Penetrations located outside fire-resistance-rated shaft enclosures.
 - c. L-Rated Systems: **Where through-penetration firestop systems are REQUIRED in smoke barriers, provide** through-penetration firestop systems with L-ratings **of not more than 1.0 CFM/sq. ft** at both ambient temperatures and 400 deg F.
3. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not re-emulsify, dissolve, leach or otherwise deteriorate over time when exposed to these conditions both during and after construction.

- a. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - b. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 - c. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
 - d. For penetrations involving CPVC provide through penetration firestop systems using materials that are designated FGG/BM/CZ System Compatible.
4. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes less than or equal to 15 and 15, respectively, as determined per ASTM E 84.

1.4 SUBMITTALS

- A. **078410_01** Product Data: For each type of product indicated.
- B. **078410_02** Shop Drawings: For each through-penetration firestop system, show each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences compliance with requirements for each condition indicated.
1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
 2. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.
- C. **078410_03** Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:
1. Types of penetrating items.
 2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.
 3. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.
- D. **078410_04** Qualification Data: Written documentation confirming "Installer Qualifications", including reference projects of similar scope and complexity, with current phone contacts of architects and owners for verification
- E. **078410_05** Product Certificates: Certificate of Conformance signed by manufacturers of through-penetration Firestop system products certifying that products comply with requirements

1.5 QUALITY ASSURANCE

- A. Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1, "Performance Criteria" Article:
1. Firestopping tests are performed by a qualified, testing and inspection agency. A qualified testing and inspection agency is UL, Intertek or another agency performing testing and follow-up inspection services for Firestop systems acceptable to local authorities having jurisdiction (AHJ).
 2. For those Firestop applications that exist for which no third party tested system is available, a manufacturer's engineering judgment derived from similar independently tested system designs will be submitted to local authorities having jurisdiction (AHJ) for their review and approval prior to installation. Manufacturer's engineer judgment drawings must follow requirements set forth by the International Firestop Council (IFC).
 3. Through-penetration Firestop system products bear classification marking of qualified testing and inspection agency.
- B. Installation Responsibility: CONTRACTOR SHALL assign installation of through-penetration firestop systems and fire-resistive joint systems in Project to a single qualified installer.**
- C. Installer Qualifications:
1. An Applicator that has been approved by FMG according to FM 4991, "Approved Firestop Contractor" or UL "Qualified Firestop Contractor"
 2. An Applicator experienced in installing through-penetration firestop systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. **Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements including, adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with specified requirements and methods needed for proper performance of the work in this section. Manufacturer's willingness to sell its through-penetration firestop system products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.**
 3. Applicator shall have at least three years experience in installing materials of types specified and shall have successfully completed at least three projects of similar scope and complexity.
 4. Applicator shall designate a single individual as Project Foreman who shall be on site at all times during installation
- D. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated from a single manufacturer.
- E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels

identifying product and manufacturer, date of manufacture, lot number, shelf life if applicable, qualified testing and inspecting agency's classification marking applicable to Project, curing time, and mixing instructions for multicomponent materials.

- B. Before handling, read Product Data sheets and Material Safety Data sheets. Do not use damaged or expired materials.
- C. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.
- D. Store materials in accord with manufacturer's recommendations with proper precautions to ensure fitness of material when installed.
- E. Comply with applicable provisions of Division 1

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilate through-penetration firestop systems per manufacturers written instructions by natural means or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.
- C. Schedule installation of Firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
- D. **THE CONTRACTOR SHALL RETAIN AN inspecting agency, THE CONTRACTOR SHALL NOTIFY THE INSPECTION AGENCY** at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.
- E. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by **CONTRACTOR's inspecting agency and** building inspector, if required by authorities having jurisdiction.

1.9 WARRANTY AND NOTIFY

- A. Deliver to the Architect signed copies of the following written warranties against material failure:
 - 1. Manufacturer's standard warranty covering firestop materials.
 - 2. Applicators standard warranty covering workmanship.

PART 2 - PRODUCTS

2.1 FIRESTOPPING, GENERAL

- A. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.
- B. Provide components for each through-penetration firestop system that is needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for the designated fire-resistance-rated systems.

2.2 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with through-penetration firestop systems (XHEZ) listed in Volume 2A & 2B of the UL Fire Resistance Directory, provide products of the following manufacturers as identified below:
 - 1. Tremco, Inc., Beachwood, Ohio, 800 –321 –7906 (BASIS OF DESIGN).
 - 2. Other manufacturers listed in the UL Fire Resistance Directory – Volume 2A & 2B.

2.3 MATERIALS

- A. General: Use only through-penetration firestop system products that have been tested for specific fire-resistance-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each individual instance. Fill materials are those referred to in directories of referenced testing and inspecting agencies as "Fill, Void or Cavity Material".
- B. Latex Sealants: Single component, water-based, acrylic latex firestop sealant. The following products are acceptable:
 - 1. Tremco, Inc. TREMstop IA+ Intumescent Acrylic Sealant
 - 2. Tremco, Inc. TREMstop Fyre-Caulk Intumescent Acrylic Sealant
 - 3. Tremco, Inc. TREMstop Acrylic Sealant
 - 4. Tremco, Inc. TREMstop Acrylic SP Sealant
 - 5. APPROVED EQUAL

- C. Silicone Sealants: Neutral curing, single component, elastomeric silicone sealant for horizontal (self leveling or non-sag, gun grade) or vertical (non-sag, gun grade) surfaces. The following products are acceptable:
 - 1. Tremco, Inc. TREMstop Fyre-Sil (non-sag, gun grade)
 - 2. Tremco, Inc. TREMstop Fyre-Sil S/L (self leveling)
 - 3. APPROVED EQUAL

- D. Firestop Devices: Pre-fabricated steel collar device lined with intumescent material sized to fit specific outside diameter of penetrating item. The following products are acceptable:
 - 1. Tremco, Inc. TREMstop D
 - 2. APPROVED EQUAL

- E. Wrap Strips: Flexible graphite-based intumescent wrap strips faced on both sides with a polyethylene backer. The following products are acceptable:
 - 1. Tremco, Inc. TREMstop SuperStrip
 - 2. APPROVED EQUAL

- F. Wall Opening Protective Materials: Intumescent, non-curing pads or graphite inserts for protection of electrical switch and receptacle boxes to reduce horizontal separation to less than 24". The following products are acceptable:
 - 1. Tremco, Inc. TREMstop MP (Moldable Putty Pads)
 - 2. Tremco, Inc. TREMstop Electrical Box Inserts
 - 3. APPROVED EQUAL

- G. Firestop Pillows: Re-enterable, moisture resistant, durable, dust-free, fiberglass bag filled with intumescent material. The following products are acceptable:
 - 1. Tremco, Inc. TREMstop PS (Pillow System)
 - 2. APPROVED EQUAL

- H. Mortar: Dry-mix with water at Project site, fast setting, fire resistive micro silica compound. The following products are acceptable:
 - 1. Tremco, Inc. TREMstop M (Mortar)
 - 2. APPROVED EQUAL

- I. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a neoprene gasket, and a radial extended flange attached to one end of the sleeve for fastening to concrete formwork. The following products are acceptable:
 - 1. Tremco, Inc. TREMstop CIPP Metal (for metal pipe penetrations)
 - 2. Tremco, Inc. TREMstop CIPP Plastic (for plastic or metal penetrations)
 - 3. Tremco, Inc. TREMstop CIPP Tub Box
 - 4. Tremco, Inc. TREMstop CIPP Shower Drain
 - 5. Tremco, Inc. TREMstop CIPC WC (glue in for water closet)
 - 6. APPROVED EQUAL

- J. Accessories: Provide components for each through-penetration firestop system that is needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated. **Accessories include, but are not limited to, the following items:**

1. Permanent forming/damming/backing materials, including the following:
 - a. Slag-/rock-wool-fiber/Mineral Wool insulation.
 - b. Fire-rated form board.
 - c. Fillers for sealants.
2. Temporary forming materials.
3. Substrate primers.
4. Steel sleeves.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions: Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of work.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean openings immediately before installing through-penetration firestop systems to comply with firestop system manufacturer's written instructions and with the following requirements:
 1. Clean opening and remove all loose particles.
 2. Surfaces to which Firestop materials will be applied shall be free of dirt, grease, oil, scale, laitance, rust, form-release agents, water repellants, and any other substance that may inhibit optimum adhesion.
 3. Provide masking and temporary covering to prevent soiling of adjacent surfaces by Firestopping materials.
 4. Do not proceed until unsatisfactory conditions have been corrected.
- B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

- A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and in accordance with conditions of testing and classification as specified in the published design.
- B. Manufacturer's Instructions: Comply with manufacturer's instructions for installation of through-penetration firestop materials.

1. Seal all holes or voids made by penetrations to ensure an air and water resistant seal.
2. Consult with mechanical engineer or project manager prior to installation of third party tested firestop system that might hamper the performance of fire dampers as it pertains to duct work.
3. Protect material from damage on surfaces subject to traffic.

3.4 IDENTIFICATION

- A. Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces of penetrated construction on both sides adjacent to and within 6 inches of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. For plastic labels, use self-adhering tape with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:
 1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
 2. Contractor's name, address, phone number and applicator's name
 3. Through-penetration firestop system designation of applicable testing and inspecting agency.
 4. Date of installation.
 5. Manufacturer's name for firestop materials

3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified, independent inspecting agency to inspect through-penetration firestop systems. Independent inspecting agency shall comply with ASTM E 2174 requirements including those related to qualifications, conducting inspections, and preparing test reports.
 1. The Contractor shall inform the Owner and Architect a minimum of Forty-Eight (48) hours, or Two (2) working days, in advance of the date on which inspection is needed.
- B. Where deficiencies are found, CONTRACTOR SHALL repair or replace through-penetration firestop systems so they comply with requirements AT NO ADDITIONAL COST TO THE OWNER.
- C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

3.6 CLEANING AND PROTECTING

- A. Remove equipment, materials and debris, leaving area in undamaged, clean condition.
- B. Clean excess fill materials and soiling adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-

penetration firestop system manufacturers and that do not damage materials in which openings occur.

- C. Provide final protection and maintain conditions during and after installation that ensure that through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce systems complying with specified requirements.

END OF SECTION 078410

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:

- 1. Interior joints in the following vertical surfaces and horizontal non-traffic surfaces:

- a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Vertical joints on exposed surfaces of interior unit masonry walls and partitions.
 - d. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
 - e. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - f. Other joints as indicated.

- 2. Interior joints in the following horizontal traffic surfaces:

- a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in tile flooring.
 - c. Other joints as indicated.

- B. Related Sections include the following:

- 1. Division 7 Section
 - 2. Division 9 Section "Tiling" for sealing tile joints.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

- A. 079200_01 Product Data: For each joint-sealant product indicated.
- B. 079200_02 Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

- C. 079200_03 Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- D. 079200_04 Qualification Data: For Installer.
- E. 079200_05 Preconstruction Field Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.
- F. 079200_06 Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- G. 079200_07 Field Test Report Log: For each elastomeric sealant application.
- H. 079200_08 Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.
- I. 079200_09 SEALANT SCHEDULE SIGNED BY SEALANT MANUFACTURER, INSTALLER AND CONTRACTOR OUTLINING PRODUCTS AND PRODUCT INSTALLATION LOCATIONS.
- J. 079200_10 Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 - 1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 - 2. Submit not fewer than eight (8) pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
 - 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 - 4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
 - 5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.
- D. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period preceding the Notice to Proceed with the Work.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
 2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.
 3. Test other joint sealants for compliance with requirements indicated by referencing standard specifications and test methods.
- E. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates as follows:
1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
 2. Conduct field tests for each application indicated below:
 - a. Each type of elastomeric sealant and joint substrate indicated.
 - b. Each type of nonelastomeric sealant and joint substrate indicated.
 3. Notify Architect seven days in advance of dates and times when test joints will be erected.
 4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 5. Report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
 6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.
- F. Preinstallation Conference: Conduct conference at Project site WITH SEALANT MANUFACTURER, INSTALLER AND CONTRACTOR to comply with requirements in Division 1 Section "Project Management and Coordination."
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.
 - B. Store and handle materials in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.
- 1.7 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two (2) years from date of Substantial Completion.
- C. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. URETHANE SEALANTS:
 - a. WARRANTY PERIOD: 5 YEARS FROM DATE OF SUBSTANTIAL COMPLETION.
 2. SILICONE SEALANTS:
 - a. WARRANTY PERIOD: 20 YEARS FROM DATE OF SUBSTANTIAL COMPLETION.
- D. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range FOR EACH PRODUCT.

2.3 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- C. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food; provide products that comply with 21 CFR 177.2600.
- D. Multicomponent Nonsag Urethane Sealant ES-#1: Where joint sealants of this type are indicated, provide products complying with the following:
 - 1. Products: Available products include the following:
 - a. DYmeric 240FC; Tremco.
 - b. APPROVED EQUAL
 - 2. Type and Grade: M (multicomponent) and NS (nonsag).
 - 3. Class: 50.
 - 4. Additional Movement Capability: 50 percent movement in extension and 50 percent in compression for a total of 100 percent movement.
 - 5. Use Related to Exposure: NT (nontraffic).
 - 6. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.
 - 7. Applications: FOR USE IN CONTROL JOINTS IN BLOCK MASONRY AND EXTERIOR BUILDING JOINTS WHERE NO OTHER SEALANT IS SPECIFIED. INTERIOR CONTROL AND EXPANSION JOINTS. CAN ALSO BE USED IN OTHER TRAFFIC JOINTS. COORDINATE WITH MANUFACTURER.
- E. Mildew-Resistant Silicone Sealant ES-#3: Where joint sealants of this type are indicated, provide products formulated with fungicide that are intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and temperature extremes, and that comply with the following:
 - 1. Products: Available products include the following:
 - a. Tremsil 200; Tremco.
 - b. APPROVED EQUAL
 - 2. Type and Grade: S (single component) and NS (nonsag).
 - 3. Class: A.
 - 4. Use Related to Exposure: NT (nontraffic).
 - 5. Uses Related to Joint Substrates: G,A AND O.

- a. Use O Joint Substrates: ceramic tile.
 6. Applications: FOR USE AROUND PLUMBING FIXTURES IN TOILET ROOMS AND OTHER "WET" AREAS.
- F. LOW-Modulus SINGLE COMPONENT Neutral-Curing Silicone Sealant ES-#4: Where joint sealants of this type are indicated, provide products complying with the following:
1. Products: Available products include the following:
 - a. SS6 1600 - Sealant
 - b. APPROVED EQUAL
 2. Type and Grade: S (single component) and NS (nonsag).
 3. Class: 50.
 4. Use Related to Exposure: NT (nontraffic).
 5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
 - a. Use O Joint Substrates: Coated glass.
 6. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.
- G. Single-Component Nonsag HYBRID SILICONE/ Urethane Sealant ES-#6: Where joint sealants of this type are indicated, provide products complying with the following
1. Products: Available products include the following:
 - a. Tremco; DyMonic FC.
 - b. APPROVED EQUAL.
 2. Type and Grade: S (single component) and NS (nonsag).
 3. Class: **50**.
 4. Use Related to Exposure: NT (nontraffic).
 5. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.
 - a. Use O Joint Substrates: aluminum coated with a high-performance coating AND CMU.
- H.

2.4 LATEX JOINT SEALANTS

- A. Latex Sealant LS-#1: Where joint sealants of this type are indicated, provide products complying with the following:
1. Products: Available products include the following:
 - a. Tremflex 834; Tremco.
 - b. APPROVED EQUAL
 2. Type and Grade: OP and -18C.
 3. Applications: GENERAL USE AND USE IN AREAS WHERE PAINTING WILL TAKE PLACE.

2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints ACS-#1: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:
 - 1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 2. Products: Available products include the following:
 - a. TREMCO Acoustical Sealant; TREMCO.
 - b. APPROVED EQUAL.

2.6 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), O (open-cell material), B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. APPLICATOR SHALL EXAMINE THE AREAS AND CONDITIONS UNDER WHICH WORK OF THIS SECTION WILL BE PERFORMED.
 - 1. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
 - 2. VERIFY CONFORMANCE WITH MANUFACTURER'S REQUIREMENTS;
 - 3. REPORT UNSATISFACTORY CONDITIONS IN WRITING TO THE ARCHITECT;
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. COORDINATE AS REQUIRED WITH OTHER TRADES TO ASSURE PROPER AND ADEQUATE PROVISION IN THE WORK OF THOSE TRADES FOR INTERFACE WITH THE WORK OF THIS SECTION.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide flush joint configuration per Figure 5B in ASTM C 1193.
- H. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
 - 1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
 - 2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
 - 3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.

4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.
- I. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 1. Extent of Testing: Test completed elastomeric sealant joints as follows:
 - a. Perform ten (5) tests for the first 1000 feet of joint length for each type of elastomeric sealant and joint substrate.
 - b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.
 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, Method B, Exposed Surface Finish Hand Pull Tab, Method C, Field-Applied Sealant Joint Hand Pull Flap or Method D, Water Immersion in Appendix X1 in ASTM C 1193, as appropriate for type of joint-sealant application indicated.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; do this by extending cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 3. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
 4. Inspect tested joints and report on the following:
 - a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 - b. Whether sealants filled joint cavities and are free of voids.
 - c. Whether sealant dimensions and configurations comply with specified requirements.
 5. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
 6. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other

requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Standard hollow metal **doors and frames**.

- B. Related Sections:

1. Division 08 Section "**HARDWARE**" for door hardware for hollow metal doors.
2. Division 09 Sections "**Painting**" for field painting hollow metal doors and frames.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, **fire-resistance rating**, and finishes. **SUBMIT PRODUCT DATA TO CONFIRM HOLLOW METAL DOORS AND FRAMES COMPLY WITH SPECIFIED PERFORMANCE REQUIREMENTS.**

- B. Shop Drawings: Include the following:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.

- C. Samples for Verification:

1. For the following items, prepared on Samples about **12 by 12 inches** to demonstrate compliance with requirements for quality of materials and construction:

- a. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
- b. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow metal panels and glazing if applicable.

D. Other Action Submittals:

1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.

1.5 INFORMATIONAL SUBMITTALS

- A. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.6 QUALITY ASSURANCE

- A. QUALITY ASSURANCE CERTIFICATION: SUBMIT MANUFACTURER'S CERTIFICATION THAT PRODUCTS HAVE BEEN CONSTRUCTED AND TESTED IN FULL COMPLIANCE WITH ANSI A250.8-1998/SDI 100. AS APPLICABLE, INCLUDE TEST RESPORTS FOR CORE CONSTRUCTION AND REINFORCING METHODS NOT SPECIFICALLY DESIGNATED AS ACCEPTABLE BY ANSI A250.8-1998/SDI 100.
- B. Installer Qualifications: An employer of workers trained and approved by manufacturer. INSTALLATION SHALL COMPLY WITH SDI-105 AND ANSI/DHI A115-IG.
- C. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
- D. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at **positive pressure** according to **NFPA 252 or UL 10C**.
 1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
 2. Temperature-Rise Limit: **At vertical exit enclosures and exit passageways**, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.
- E. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to **NFPA 257 or UL 9**. Label each individual glazed lite.
- F. Preinstallation Conference: Conduct conference at **Project site**.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to finish of factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Do not store in a manner that traps excess humidity.
 - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating standard steel frames without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions. ESTABLISHED DIMENSIONS SHALL BE GUARANTEED BY THE CONTRACTOR. CHANGES TO DOOR OPENINGS REQUIRED BECAUSE FRAMES DO NOT FIT SHALL BE BY CONTRACTOR AT THEIR EXPENSE.

1.9 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - 1. Steelcraft; an Ingersoll-Rand company.
 - a. WINDOW AND DOOR FRAMES: F SERIES 14 GAUGE (BASIS OF DESIGN).
 - b. INTERIOR DOORS: LW16 (BASIS OF DESIGN)
 - 2. APPROVED EQUAL.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum **A40** metallic coating.
- D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.
- G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.
- H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-development indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- I. Glazing: Comply with requirements in Division 08 Section "Glazing."
- J. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.3 STANDARD HOLLOW METAL DOORS

- A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.
 - 1. Design: **Flush panel.**
 - 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
 - 3. Vertical Edges for Single-Acting Doors: **Beveled edge.**
 - a. Beveled Edge: 1/8 inch in 2 inches.
 - 4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.

5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick, end closures or channels of same material as face sheets.
 6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. Interior Doors: 16 GUAGE Face sheets fabricated from GALVANEALD cold-rolled steel sheet. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Level 3 and Physical Performance Level A (Extra Heavy Duty), **Model 2 (Seamless)**.
- C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
1. HINGES: MINIMUM 0.123 INCH (10 GUAGE) THICK BY 1-1/2 INCHES WIDE BY 6 INCHES LONGER THAN HINGE, SECURED BY NOT LESS THAN 6 SPOT WELDS.
 2. PIVOTS: MINIMUM 0.167 INCH (7 GUAGE) THICK BY 1-1/2 INCHES WIDE BY 6 INCHES LONGER THAN HINGE, SECURED BY NOT LESS THAN 6 SPOT WELDS.
 3. LOCK FACE, **FLUSH BOLTS**, CLOSERS, AND CONCEALED HOLDERS: MINIMUM 0.093 INCH (12 GUAGE) THICK.
 4. CLOSER REINFORCEMENTS 14 GUAGE.
 5. ALL OTHER SURFACE-MOUNTED HARDWARE: MINIMUM 0.093 INCH (12 GUAGE) THICK.
 6. FABRICATE CONCEALED STIFFENERS AND HARDWARE REINFORCEMENT FROM EITHER COLD- OR HOT-ROLLED STEEL SHEET.
- D. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.4 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Interior Frames: Fabricated from **0.067-inch** thick cold-rolled GALVANEALD steel sheet (14 GUAGE): LEVEL 4 AND PHYSICAL PERFORMANCE LEVEL A MAXIMUM DUTY) for ALL SCHEDULED OPENINGS IN STYLES AND PROFILES AS SHOWN, USING CONCEALED FASTENERS AND AS FOLLOWS:
1. ALL INTERIOR STEEL DOORS.
 2. ALL INTERIOR WINDOW FRAMES.
 3. Fabricate frames with mitered or coped corners.
 4. Fabricate frames as **full profile welded** unless otherwise indicated.
- C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.
1. IN FULL COMPLIANCE WITH ANSI A250.8-1998/SDI 100 AND AS FOLLOWS:
 - a. HINGES: MINIMUM 0.123 INCH (10 GUAGE) THICK BY 1-1/2 INCHES WIDE BY 6 INCHES LONGER THAN HINGE, SECURED BY NOT LESS THAN 6 SPOT WELDS.
 - b. PIVOTS: MINIMUM 0.167 INCH (7 GUAGE) THICK BY 1-1/2 INCHES WIDE BY 6 INCHES LONGER THAN HINGE, SECURED BY NOT LESS THAN 6 SPOT WELDS.
 - c. LOCK FACE, **FLUSH BOLTS**, CLOSERS, AND CONCEALED HOLDERS: MINIMUM 0.093 INCH (12 GUAGE) THICK SECURED BY NOT LESS THAN 6 SPOT WELDS.

- d. CLOSER REINFORCEMENTS 14 GAGE- BOX MINIMUM 6" HIGH AND 20" LONG.
- e. ALL OTHER SURFACE-MOUNTED HARDWARE: MINIMUM 0.067 INCH (12 GUAGE) THICK.
- f. GALVANNEALED DOORS SHALL HAVE GALVANNEALED HARDWARE REINFORCEMENTS.

2.5 FRAME ANCHORS

A. Jamb Anchors:

- 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
- 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
- 3. MISCELLANEOUS STEEL: PROVIDE AND INSTALL STEEL STRAPS AND ANCHORS AS DETAILED ON DRAWINGS FOR SPECIFIC LOCATIONS.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:

- 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
- 2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.6 STOPS AND MOLDINGS

A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, fabricated from same material as door face sheet in which they are installed.

B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated.

C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, fabricated from same material as frames in which they are installed.

2.7 LOUVERS

A. Provide louvers for interior HOLLOW METAL doors, where indicated, that comply with SDI 111C, with blades or baffles formed of 0.020-inch- thick, cold-rolled steel sheet set into 0.032-inch- thick steel frame.

- 1. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link, and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same testing and inspecting agency that established fire-resistance rating of door assembly.

2.8 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch- wide steel.
- C. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

2.9 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in **SDI 117**.
- C. Hollow Metal Doors:
 - 1. Glazed Lites: Factory cut openings in doors.
 - 2. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
- D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 - 4. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 - 5. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 120 inches high.
 - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
 - b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.

- 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
- 5) Two anchors per head for frames above 42 inches wide and mounted in metal-stud partitions.
- c. PROVIDE ADDITIONAL ANCHORS FOR FIRE RATED DOORS AS PER NJUCC.
6. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
 1. Locate hardware as indicated, or if not indicated, according to **ANSI/SDI A250.8**.
 2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
- G. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 4. Provide loose stops and moldings on inside of hollow metal work.
 5. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.10 STEEL FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 1. Finish standard steel door and frames after assembly.
- B. Metallic-Coated Steel Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
 1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalanizing welds in steel, complying with SSPC-Paint 20.

- C. Steel Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel; comply with SSPC-SP 3, "Power Tool Cleaning," or SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- D. PRIME FINISH: APPLY MANUFACTURER'S STANDARD PRIMER IMMEDIATELY AFTER CLEANING AND PRETREATING.
 - 1. SHOP PRIMER: MANUFACTURER'S STANDARD, FAST CURING, LEAD AND CHROMATE FREE PRIMER COMPLYING WITH ANSI/SDI A250.10 ACCEPTABLE CRITERIA; RECOMMENDED BY PRIMER MANUFACTURER FOR SUBSTRATE; COMPATIBLE WITH SUBSTRATE AND FIELD APPLIED COATINGS DESPITE PROLONGED EXPOSURE.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.
- E. INSTALL HARDWARE IN COORDINATION WITH ROUGH CARPENTRY AND FINISH HARDWARE SECTIONS.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
 - 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with **ANSI/SDI A250.11**.
 - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - b. Install frames with removable glazing stops located on secure side of opening.
 - c. Install door silencers in frames before grouting.
 - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - e. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - f. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
 - 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 - 5. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
 - 6. **PROVIDE AND INSTALL ALL MISCELLANEOUS STEEL STRAPS AND FRAMING DETAILED ON DRAWINGS FOR SPECIFIC LOCATIONS.**
 - 7. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Standard Steel Doors:

- a. Jams and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
- D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.
- 1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Solid-core doors with **wood-veneer** faces.
 - 2. Positive Pressure, Category "A" FIRE RATED WOOD DOORS.
 - 3. **Factory finishing** flush wood doors.
 - 4. Factory machining for hardware.
- B. Related Requirements:
 - 1. Section 088000 "Glazing" for glass view panels in flush wood doors.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at **Project site**.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of door. Include details of core and edge construction and trim for openings. **Include factory-finishing specifications.**
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
 - 1. Dimensions and locations of blocking.
 - 2. Dimensions and locations of mortises and holes for hardware.
 - 3. Dimensions and locations of cutouts.
 - 4. Undercuts.
 - 5. Requirements for veneer matching.
 - 6. Doors to be factory finished and finish requirements.
 - 7. Fire-protection ratings for fire-rated doors.
- C. Samples for Initial Selection: For **factory-finished doors**.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.
- B. Quality Standard: Comply with **AWI's "Architectural Woodwork Quality Standards Illustrated."**
- C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to **NFPA 252**.
 - 1. APPLICABLE TESTING AND INSPECTION AGENCIES FOR CATEGORY "A" POSITIVE PRESSURE DOORS:
 - 2. UNDERWRITERS LABORATORIES OR ITS - WARNOC HERSEY
 - 3. REFER TO DRAWINGS FOR LOCATIONS AND RATINGS OF FIRE RATED WOOD DOORS.
 - 4. FIRE TEST: UL 10-C PER ASTM 2074-00
 - 5. Test Pressure: After 5 minutes into the test, the neutral pressure level in furnace shall be established at **40 inches** or less above the sill.
 - 6. Oversize, Fire-Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide oversize fire door label or certificate of inspection, from a testing and inspecting agency acceptable to authorities having jurisdiction, stating that doors comply with requirements of design, materials, and construction.
 - 7. Temperature-Rise Rating: At exit enclosures, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.
 - 8. INSURE ALL SEALS ARE INSTALLED ON FRAME TO ALLOW THE "S" LABEL (FOR SMOKE AND DRAFT CONTROL) TO BE VALIDATED.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in **cardboard cartons and wrap bundles of doors in plastic sheeting**.
- C. Mark each door on **top and** bottom rail with opening number used on Shop Drawings.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.

- b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 1. VT INDUSTRIES ARCHITECTURAL WOOD DOORS (BASIS OF DESIGN)
 2. Mohawk Doors; a Masonite company
 3. Algoma Hardwoods, Inc.
 4. Eggers Industries.
- B. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with **AWI's, AWMAC's, and WI's "Architectural Woodwork Standards.**
- B. Low-Emitting Materials: Fabricate doors with **adhesives and composite wood products** that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. WDMA I.S.1-A Performance Grade: **Extra Heavy Duty.**
- D. Particleboard-Core Doors:
 1. Particleboard: ANSI A208.1, **Grade LD-2, made with binder containing no urea-formaldehyde.**
 2. Provide doors with **structural-composite-lumber** cores instead of particleboard cores for doors indicated to receive exit devices.

2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH

- A. Interior particle-Core Doors:
 1. Grade: **Premium, with Grade AA faces.** LEAF WIDTH WILL BE 5" NOMINAL MINIMUM.
 2. Species: WHITE OAK
 3. Cut: **QUARTER SLICED**
 4. Match between Veneer Leaves: **Slip** match.

5. Assembly of Veneer Leaves on Door Faces: **Balance** match.
6. Pair and Set Match: Provide for doors hung in same opening **or separated only by mullions**.
7. Core: **Particleboard**.
8. Construction: **Five** plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering.
9. Adhesives: Type I per WDMA T.M.-6.
10. WDMA I.S.1-A Performance Grade: **Heavy Duty**.
11. Stiles: **Same species as faces**.

B. Fire-Rated Doors:

1. Construction: Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.
2. Blocking: For mineral-core doors, provide composite blocking with improved screw-holding capability approved for use in doors of fire ratings indicated **as needed to eliminate through-bolting hardware**
3. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile matching face veneer, and laminated backing at hinge stiles for improved screw-holding capability and split resistance.
4. Pairs: Provide fire-rated pairs with fire-retardant stiles matching face veneer that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals. **Provide stiles with concealed intumescent seals.**

2.4 LIGHT FRAMES AND LOUVERS

- A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.
1. Wood Species: **Same species as door faces**.
 2. Profile: **Manufacturer's standard shape**.
- B. Wood-Veneered Beads for Light Openings in Fire-Rated Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire-protection rating indicated. Include concealed metal glazing clips where required for opening size and fire-protection rating indicated.

2.5 FABRICATION

- A. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.
1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
 2. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.
- B. Openings: Factory cut and trim openings through doors.
1. Light Openings: Trim openings with moldings of material and profile indicated.

2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."
3. Louvers: Factory install louvers in prepared openings.

2.6 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on **top and** bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Transparent Finish:
 1. Grade: **Premium.**
 2. Finish: AWI's, AWMAC's, and WI's "Architectural Woodwork Standards".
 3. Staining: **As selected by Architect from manufacturer's full range.**
 4. Effect: **Semifilled** finish.
 5. Sheen: **Satin.**

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
 1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see **Section 087100 "Door Hardware."**
- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
 1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.
- C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
- D. CLEARANCES:
 1. CLEARANCE BETWEEN DOOR EDGE AND HEAD: 1/8 INCH.

2. CLEARANCE BETWEEN DOOR EDGE AND JAMB: 1/8 INCH.
3. CLEARANCE BETWEEN DOOR BOTTOM EDGE AND FINISHED FLOOR OR THRESHOLD: 1/4 INCH.
4. CLEARANCE BETWEEN DOOR BOTTOM EDGE AND FLOOR COVERING SURFACE OR FINISH (WHERE THRESHOLD IS NOT INDICATED): 1/4 INCH.
5. CLEARANCE BETWEEN MEETING EDGES OF PAIRS OF DOORS: 1/8 INCH.
6. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

- E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Access doors and frames for walls and ceilings.
 - 2. Floor access doors and frames.
- B. Related Sections include the following:
 - 1. "SUPPLEMENTARY GENERAL CONDITIONS FOR MECHANICAL/ ELECTRICAL WORK".
 - 2. Division 03 Section "Cast-in-Place Concrete" for blocking out openings for access doors and frames in concrete.
 - 3. Division 04 Section "CONCRETE Unit Masonry" for anchoring and grouting access door frames set in masonry construction.
 - 4. Division 08 Section "Gypsum Board.
 - 5. DIVISION 9 FOR METAL STUDS
 - 6. Division 09 Section "Acoustical Panel Ceilings" for suspended acoustical tile ceilings.

1.3 SUBMITTALS

- A. Product Data: For each type of access door and frame indicated. Include construction details, **fire ratings**, materials, individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each door face material, at least 3 by 5 inches in size, in specified finish.
- D. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.
- E. Ceiling Coordination Drawings: Reflected ceiling plans, drawn to scale, on which ceiling-mounted items including access doors and frames, lighting fixtures, diffusers, grilles, speakers, and special trim are shown and coordinated with each other.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain **each type of** access door(s) and frame(s) through one source from a single manufacturer.
- B. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics per the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. **NFPA 252 or UL 10B** for vertical access doors and frames.
 - 2. **ASTM E 119 or UL 263** for horizontal access doors and frames.
- C. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

- A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

PART 2 - PRODUCTS

2.1 STEEL MATERIALS

- A. Steel Finishes: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.5 mils. Prepare, treat, and coat metal to comply with resin manufacturer's written instructions.

2.2 STAINLESS-STEEL MATERIALS

- A. Rolled-Stainless-Steel Floor Plate: ASTM A 793, manufacturer's standard finish.
- B. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type **304**. Remove tool and die marks and stretch lines or blend into finish.
 - 1. Finish: **Directional Satin Finish, No. 4**.

2.3 ALUMINUM MATERIALS

- A. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.
 - 1. Mill finish, AA-M10 (Mechanical Finish: as fabricated, unspecified).
- B. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T6.

1. Mill finish, AA-M10 (Mechanical Finish: as fabricated, unspecified).

2.4 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Nystrom, Inc.
 2. APPROVED EQUAL.
- B. NON FIRE RATED Flush Access Doors and TRIMLESS Frame with: Fabricated from **steel** sheet.
 1. Locations: MASONRY, GYPSUM BOARD, METAL surfaces AND GYPSUM BOARD CEILING SURFACES.
 2. PRODUCT/MANUFACTURER: "GFRR/GFRS"; NYSTROM BUILDING PRODUCTS OR APPROVED EQUAL.
 - a. TYPE: CONCEALED HINGED ACCESS DOOR
 - b. SIZE: COORDINATE SIZES AS REQUIRED FOR ACCESS TO ITEMS IN WALLS.
 3. Door: Minimum 14 GAUGE GALVANIZED COLD ROLLED STEEL sheet metal, set flush with exposed face flange of frame.
 4. Frame: Minimum 16 GAUGE GALVANIZED COLD ROLLED STEEL with 1 INCH- wide, ROLLED FLANGE FRAME
 5. Hinges: **Continuous piano hinge** WITH STAINLESS STEEL PIN.
 6. Lock: **Key-operated cylinder lock**.
 7. FINISH: PHOSPHATE DIPPED AND PRIME COATED.
 8. PROVIDE ALL REQUIRED ADDITIONAL METAL FRAMING FOR INSTALLATION IN WALL & CEILING PANELS.
- C. Fire-Rated, Insulated, Flush Access Doors and Frames with Exposed Trim: Fabricated from **steel** sheet. COORDINATE WITH "SUPPLEMENTARY GENERAL CONDITIONS FOR MECHANICAL/ ELECTRICAL WORK".
 1. Locations: FIRE RATED **Masonry** AND GYPSUM BOARD **wall** and GYPSUM BOARD CEILING surfaces.
 2. PRODUCT/MANUFACTURER: "IT"; NYSTROM BUILDING PRODUCTS OR APPROVED EQUAL.
 - a. TYPE: INSULATED FLUSH DOOR PANEL WITH EXPOSED FLUSH FRAME.
 - b. SIZE: COORDINATE SIZES AS REQUIRED FOR ACCESS TO ITEMS IN WALLS.
 3. Fire-Resistance Rating: **1 1/2** hour MINIMUM.
 4. Temperature Rise Rating: 250 deg F at the end of 30 minutes.
 5. Door: Flush panel with a 2" core of mineral-fiber insulation enclosed in 20 GAUGE GALVANIZED COLD ROLLED STEEL.
 6. Frame: Minimum 16 GAUGE GALVANIZED COLD ROLLED STEEL sheet metal with **1-inch-** wide, surface-mounted trim, ROLLED FLANGE FRAME.
 7. Hinges: FLUSH **Continuous piano hinge**.
 8. Automatic Closer: Spring type.
 9. Latch: Self-latching bolt operated by **key** with interior release.
 10. FINISH: PHOSPHATE DIPPED AND PRIME COATED.

2.5 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
 - 1. Exposed Flanges: **As indicated.**
 - 2. Provide mounting holes in frames for attachment of units to metal or wood framing.
 - 3. Provide mounting holes in frame for attachment of masonry anchors. **Furnish adjustable metal masonry anchors.**
- D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
 - 1. For cylinder lock, furnish two keys per lock and key all locks alike.
- E. Extruded Aluminum: After fabrication, apply manufacturer's standard protective coating on aluminum that will come in contact with concrete.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.
- C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.
- D. COORDINATE LOCATION OF ACCESS DOORS WITH MECHANICAL CONTRACTOR AND MECHANICAL DRAWINGS. PROVIDE ADDITIONAL FRAMING AT ACCESS DOORS IN ALL WALL, CEILINGS AND PARTITION TYPES FOR FULL PERIMETER SUPPORT OF ACCESS DOOR FRAME.

3.2 ADJUSTING AND CLEANING

- A. Adjust doors and hardware after installation for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 084110 ALUMINUM-FRAMED ENTRANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes: Aluminum FRAMED Entrances, glass and glazing, and door hardware and components.
- B. Related Sections:
 - 1. 4. Division 084413 "Glazed Aluminum Curtain Walls"
 - 2. 6. Division 085113 "Aluminum Windows"
 - 3. 8. Division 087100 "Finish Hardware"
 - 4. 9. Division 088000 "Glazing"
 - 5. 10. Division 280000 "Electronic Safety and Security"

1.3 DEFINITIONS

- A. ADA/ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disability Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."
- B. NJUCC BARRIER FREE SUBCODE

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Aluminum-framed ENTRANCE systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
 - 1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 - 2. Dimensional tolerances of building frame and other adjacent construction.
 - 3. Failure includes the following:
 - a. Deflection exceeding specified limits.
 - b. Thermal stresses transferring to building structure.
 - c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
 - d. Noise or vibration created by wind and by thermal and structural movements.
 - e. Loosening or weakening of fasteners, attachments, and other components.
 - f. Sealant failure.
 - g. Failure of operating units.

- B. Delegated Design: Design aluminum-framed ENTRANCE systems, including THE CONTRACTOR SUBMITTING A comprehensive engineering analysis CALCULATIONS AND DRAWINGS SIGNED AND SEALED by a qualified NJ LICENSED professional engineer.
- C. Entrance Performance Requirements:
 - 1. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 6.24 psf for single doors and 1.567 psf for pairs of doors. A single 3'0" x 7'0" entrance door and frame shall not exceed 0.50 cfm per square foot. A pair of 6'0" x 7'0" entrance doors and frame shall not exceed 1.0 cfm per square foot.
 - 2. Structural: Corner strength shall be tested per the MANUFACTURER'S dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity.

1.5 SUBMITTALS

- A. **084110_01** General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
- B. **084110_02** Quality Assurance/Control Submittals:
 - 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.
- C. **084110_03** Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.
- D. **084110_04** Shop Drawings: For aluminum-framed ENTRANCE systems. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
- E. **084110_05** Samples for Initial Selection: For units with factory-applied color finishes.
- F. **084110_06** Delegated-Design Submittal: For aluminum-framed ENTRANCE systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified NJ LICENSED professional engineer responsible for their preparation.
 - 1. Detail fabrication and assembly of aluminum-framed systems.
 - 2. Include design calculations.
- G. **084110_07** Qualification Data: For qualified Installer.
- H. **084110_08** Seismic Qualification Certificates: For aluminum-framed systems, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
- I. **084110_09** Welding certificates.

- J. **084110_10** Maintenance Data: For aluminum-framed systems to include in maintenance manuals.
- K. **084110_11** Warranties: Sample of special warranties.

1.6 WARRANTY

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for entrance system as follows:
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by MANUFACTURER. In addition, welded door corner construction shall be supported with a limited lifetime warranty for the life of the door under normal use.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

1.8 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 - 2. Manufacturer Qualifications: Manufacturer capable of providing structural calculations, applicable independent product test reports, installation instructions, a review of the application method, customer approval and periodic field service representation during construction.
 - 3. On access control installations, all wiring to be coordinated with a licensed electrical installer.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle entrance doors and components to avoid damage. Protect entrance doors against

damage from elements, construction activities, and other hazards before, during and after entrance installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS (ACCEPTABLE MANUFACTURERS/PRODUCTS)

A. Acceptable Manufacturers:

1. Kawneer Company, Inc, 555 Guthridge Court, Technology Park/Atlanta, Norcross, GA 30092, Telephone: 770 449 5555 Fax: 770 734 1560
 - a. System(s): Kawneer Aluminum Entrances.
 - 1) Series: 350 Swing Doors
 - 2) Finish/Color: (See 2.6 Finishes) TO MATCH CURTAINWALL
2. APPROVED EQUAL.

2.2 MATERIALS

A. Aluminum (Entrances and Components):

1. Material Standard: ASTM B 221; 6063-T6 alloy and temper.
2. Major portions of the door members to be 0.125" nominal in thickness and glazing molding to be 0.05" thick.
3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data, published by The Aluminum Association.

B. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomeric.

C. Provide adjustable glass jacks to help center the glass in the door opening.

2.3 ACCESSORIES

A. Fasteners: Where exposed, shall be aluminum, stainless steel or plated steel.

B. Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

C. Entrance Hardware

1. REFER TO SPECIFICATION SECTION 087100.

2.4 RELATED MATERIALS

A. Sealants: Refer to Joint Treatment (Sealants) Section

B. Glass: Refer to Glass and Glazing Section

2.5 FABRICATION

A. Entrance System Fabrication:

1. Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" (29) long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
 3. Prepare components with internal reinforcement for door hardware.
 4. Arrange fasteners and attachments to conceal from view.
 5. Reinforce doors as required for installing entrance door hardware.
- B. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- C. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.6 FINISHES

- A. Factory Finishing:
1. Kawneer PermCOAT® AA-M12C22A41, AAMA 611, Architectural Class I POWDERCOATING Coating.

2.7 SOURCE QUALITY CONTROL

- A. Source Quality: Provide aluminum entrances specified herein from a single source.
1. Building Enclosure System: When aluminum entrances are part of a building enclosure system, including storefront framing, windows, curtain wall system and related products, provide building enclosure system products from a single source manufacturer.
- B. Fabrication Tolerances: Fabricate aluminum entrances in accordance with entrance manufacturer's prescribed tolerances.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive entrance system and sill plate is level in accordance with manufacturer's acceptable tolerances.
1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.2 INSTALLATION

- A. General: Install entrance system in accordance with manufacturer's instructions and AAMA storefront and entrance guide specifications manual.

1. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
 2. Provide alignment attachments and shims to permanently fasten system to building structure.
 3. Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.
 4. Set thresholds in bed of mastic and secure.
 5. Adjusting: Adjust operating hardware for smooth operation.
- B. Related Products Installation Requirements:
1. Sealants (Perimeter): Refer to Joint Treatment (Sealants) Section.
 2. Glass: Refer to Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.
- C. Metal Protection:
1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- D. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
- E. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" to produce weathertight installation.
- F. Install components plumb and true in alignment with established lines and grades, and without warp or rack.
- G. Install glazing as specified in Division 8 Section "Glazing."
- H. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.
1. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.
- I. Install perimeter joint sealants as specified in Division 7 Section "Joint Sealants" to produce weathertight installation.
- 3.3 ERECTION TOLERANCES
- A. Install aluminum-framed systems to comply with the following maximum erection tolerances:
1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
 2. Alignment:
 - a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
 - b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
- B. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

3.4 ADJUSTING

- A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.

3.5 CLEANING AND PROTECTION

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- B. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum entrances from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants. Remove and replace damaged aluminum entrances at no extra cost.

END OF SECTION 084110

SECTION 084113- ALUMINUM-FRAMED STOREFRONT

PART 1 - GENERAL

1.1

Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2

Summary

- A. Section Includes: Kawneer Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
1. Types of Kawneer Aluminum Storefront Systems include:
 - a. Trifab™ VG 601 Framing – 2" x 6" (50.8 mm x 152.4 mm) nominal dimension; Thermal; Center Plane, Screw Spline Fabrication.
- B. Related Sections:
1. 79200 "Joint Sealants"
 2. 084113 "Aluminum-Framed Entrances and Storefronts"
 3. 88000 "Glazing"

1.3

Definitions

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Aluminum-framed ENTRANCE systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 2. Dimensional tolerances of building frame and other adjacent construction.
 3. Failure includes the following:
 - a. Deflection exceeding specified limits.
 - b. Thermal stresses transferring to building structure.
 - c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.

- d. Noise or vibration created by wind and by thermal and structural movements.
- e. Loosening or weakening of fasteners, attachments, and other components.
- f. Sealant failure.
- g. Failure of operating units.

- B. Delegated Design: Design aluminum-framed ENTRANCE systems, including THE CONTRACTOR SUBMITTING A comprehensive engineering analysis CALCULATIONS AND DRAWINGS SIGNED AND SEALED by a qualified NJ LICENSED professional engineer.

Submittals

- A. **084113_01** General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
- B. **084113_02** Quality Assurance/Control Submittals:
 - 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.
- C. **084113_03** Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.
- D. **084113_04** Shop Drawings: For aluminum-framed ENTRANCE systems. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
- E. **084113_05** Samples for Initial Selection: For units with factory-applied color finishes.
- F. **084113_06** Delegated-Design Submittal: For aluminum-framed ENTRANCE systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified NJ LICENSED professional engineer responsible for their preparation.
 - 1. Detail fabrication and assembly of aluminum-framed systems.
 - 2. Include design calculations.
- G. **084113_07** Qualification Data: For qualified Installer.
- H. **084113_08** Seismic Qualification Certificates: For aluminum-framed systems, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
- I. **084113_09** Welding certificates.
- J. **084113_10** Maintenance Data: For aluminum-framed systems to include in maintenance manuals.
- K. **084113_11** Warranties: Sample of special warranties.
- L. Other Action Submittals:

1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.5 Quality Assurance

- A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of providing aluminum framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
- C. Source Limitations: Obtain aluminum-framed storefront system through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Build mockup for type(s) of storefront elevation(s) indicated, in location(s) shown on Drawings.
- F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".

1.6 Project Conditions

- A. Field Measurements: Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.7 Warranty

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 - PRODUCTS

2.1

Manufacturers

A.

Basis-of-Design Product:

1. Kawneer Company Inc.
2. Trifab™ VG601 Framing
3. System Dimensions: 2" x 6" (50.8 mm x 152.4 mm)
4. Class: Center Plane

2.2

Materials

A.

Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.

B.

Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim hardware, anchors, and other components.

C.

Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

D.

Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

E.

Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

F.

Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of

2.3

Storefront Framing System

A.

Thermal Barrier (Trifab™ VERSAGLAZE 601):

1. Kawneer DUAL Isolock™ Thermal Break with two (2) 1/4" (6.4 mm) separations consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
 - a. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
- D. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- E. Backing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- F. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.4

Glazing Systems

- A. Glazing: As specified in Division 08 Section "Glazing".
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.
- E. Glazing Sealants: As recommended by manufacturer for joint type, and as follows:
 - 1. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.

2.5

Entrance Door Systems

- A. Entrance Doors: As specified in Division 084113 Section "Aluminum-Framed Entrances and Storefronts".
- B. Entrance Door Hardware: As specified in Division 084113 Section "Door Hardware".

2.6

Fabrication

- A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
 2. Accurately fit joints; make joints flush, hairline and weatherproof.
 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 4. Physical and thermal isolation of glazing from framing members.
 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 6. Provisions for field replacement of glazing.
 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- C. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.
- D. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.
- E. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.7

Aluminum Finishes

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
1. Kawneer Permacoat™ AAMA 2604, Powder Coating ARCHITECT TO SELECT FROM FULL RANGE OF MANUFACTURER'S OFFERINGS

EXECUTION

2.8

Examination

A.

Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight aluminum-framed storefront installation.

1.

Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.

2.

Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76 mm) of opening.

3.

Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.

4.

Proceed with installation only after unsatisfactory conditions have been corrected.

2.9

Installation

A.

Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed storefront system, accessories, and other components.

B.

Install aluminum-framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C.

Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.

D.

Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront system to the exterior.

E.

Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

2.10

Field Quality Control

A.

Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.

- B. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

2.11

Adjusting, Cleaning, and Protection

- A. Clean aluminum surfaces immediately after installing aluminum framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 084113

SECTION 087100 - FINISH HARDWARE

A. PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes furnishing, installation, and commissioning of mechanical and electro-mechanical door hardware for doors specified in "Hardware Sets" and required by actual conditions: including screws, bolts, expansion shields, electrified door hardware, and other devices including access and security requirements for proper application of hardware.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Divisions:
 - 1. Division 03 Concrete
 - 2. Division 06 Rough & Finish Carpentry
 - 3. Division 07 Joint Sealants
 - 4. Division 08 Openings
 - 5. Division 09 Finishes
 - 6. Division 26 Electrical
 - 7. Division 28 Electronic Safety And Security

1.02 REFERENCES

- A. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI):
 - 1. ANSI/BHMA A156.1 Butts & Hinges (2016)
 - 2. ANSI/BHMA A156.2 Bored & Preassembled Locks & Latches (2011)
 - 3. ANSI/BHMA A156.3 Exit Devices (2014)
 - 4. ANSI/BHMA A156.4 Door Controls – Closers (2013)
 - 5. ANSI/BHMA A156.5 Cylinders and Input Devices for Locks (2014)
 - 6. ANSI/BHMA A156.6 Architectural Door Trim (2015)
 - 7. ANSI/BHMA A156.7 Template Hinge Dimensions (2016)
 - 8. ANSI/BHMA A156.13 Mortise Locks & Latches (2012)
 - 9. ANSI/BHMA A156.15 Closer Holder Release Devices (2015)
 - 10. ANSI/BHMA A156.16 Auxiliary Hardware (2013)
 - 11. ANSI/BHMA A156.18 Materials & Finishes (2016)
 - 12. ANSI/BHMA A156.19 Power Assist & Low Energy Power Operated Doors (2013)
 - 13. ANSI/BHMA A156.21 Thresholds (2014)
 - 14. ANSI/BHMA A156.22 Door Gasketing Systems (2012)
 - 15. ANSI/BHMA A156.25 Electrified Locks (2013)
 - 16. ANSI/BHMA A156.26 Continuous Hinges (2012)
 - 17. ANSI/BHMA A156.28 Keying Systems (2013)
 - 18. ANSI/BHMA A156.36 Auxiliary Locks (2016)
 - 19. ANSI/BHMA A156.115 Hardware Preparation in Steel Doors and Steel Frames (2014)
- B. International Code Council/American National Standards Institute (ICC/ANSI)/ADA:
 - 1. ICC/ANSI A117.1 Standards for Accessible and Usable Buildings and Facilities 2017.
- C. Underwriters Laboratories, Inc. (UL):
 - 1. UL 10C Positive Pressure Fire Test of Door Assemblies.
 - 2. UL 1784 Air Leakage Test of Door Assemblies.
 - 3. UL 294 Access Control System Units
- D. Door and Hardware Institute (DHI):
 - 1. DHI Publications – Keying Systems and Nomenclature (1989).

2. DHI Publication – Abbreviations and Symbols.
3. DHI Publication – Installation Guide for Doors and Hardware.
4. DHI Publication – Sequence and Format of Hardware Schedule (1996).

E. National Fire Protection Agency (NFPA):

1. NFPA 70 National Electrical Code 2017.
2. NFPA 80 Standard for Fire Doors and Other Opening Protectives 2016.
3. NFPA 101 Life Safety Code 2018.
4. NFPA 105 Standard for the Installation of Smoke Door Assemblies 2016.

1.03 SUBMITTALS

A. Submit in accordance with Conditions of the Contract and Division 1 Administrative Requirements and Submittal Procedures Section.

B. Shop Drawings:

1. Organize hardware schedule in vertical format as illustrated in DHI Publications Sequence and Formatting for the Hardware Schedule. Include abbreviations and symbols page according to DHI Publications Abbreviations and Symbols. Complete nomenclature of items required for each door opening as indicated.
2. Coordinate final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of hardware.
3. Architectural Hardware Consultant (AHC), as certified by DHI, who will affix seal attesting to completeness and correctness, including the review of the hardware schedule prior to submittal.

C. Submit manufacturer's catalog sheet on design, grade, and function of items listed in hardware schedule. Identify specific hardware item per sheet, provide an index, and cover sheet.

D. Templates:

1. Upon final approval of the architectural hardware schedules, submit one set of complete templates for each hardware item to the door manufacturers, frame manufacturers, and the installers. Date and index these 8-1/2 inch x 11 inch papers in a three ring binder, including detailed lists of the hardware location requirements for mortised and surface applied hardware within fourteen days of receiving approved door hardware submittals.

E. Electrified Hardware: Provide electrical information to include voltage and amperage requirements for electrified door hardware and description of operation.

1. Description of operation for each electrified opening to include description of component functions including location, sequence of operation and interface with other building control systems.
2. Wiring Diagrams: Detail wiring for power, signal, and control system and differentiate between manufacturers installed and field-installed wiring. Include the following:
 - a. System schematic.
 - b. Point to point wiring diagram.
 - c. Riser diagram.
 - d. Elevation of each door.
3. Detail interface between electrified door hardware, fire alarm and building control systems.
4. Provide junction boxes, relays and terminal blocks as needed for proper door operations and connections.

F. Upon door hardware submittal approval, furnish for each electrified opening, three copies of point to point diagrams.

G. Closeout Submittals: Submit to Owner in a three-ring binder or CD if requested.

1. Warranties.

2. Maintenance and operating manual.
3. Maintenance service agreement.
4. Record documents.
5. Copy of approved hardware schedule.
6. Copy of approved keying schedule with bitting list.
7. Door hardware supplier name, phone number, and fax number.

1.04 QUALITY ASSURANCE

- A. Listed and Labeled electrified door hardware as defined in NFPA 70, Article 100, by a testing agency acceptable to authority having jurisdiction.
- B. Hardware supplier will employ an Architectural Hardware Consultant (AHC) as certified by DHI and a member of the seal program who will be available at reasonable times during course of work for Project hardware consultation.
 1. Electrified Door Hardware Supplier Qualifications: Experienced door hardware supplier who has completed projects with electrified door hardware similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Door hardware conforming to ICC/ANSI A117.1: Handles pulls, latches locks and operating devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
- D. Fire Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and/or labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL 10C, unless otherwise indicated.
- E. Fire Door Inspection: Prior to receiving certificate of occupancy have fire rated doors inspected by an independent Certified Fire and Egress Door Assembly Inspector (FDAI), as certified by Intertek (ITS), a written report be submitted to Owner and Contractor. Doors failing inspection must be adjusted, replaced or modified to be within appropriate code requirements.
- F. Smoke and Draft Control Door Assemblies: Where smoke and draft control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
- G. Door hardware certified to ANSI/BHMA standards as noted, participate and be listed in BHMA Certified Products Directory.
- H. Substitution request: create a comparison chart that includes the testing information as well as the warranty for both the specified product and the proposed substitution. Include the reason for requesting the substitution, clear catalog copy highlighting the proposed product and options, compliance statement, technical data, product warranty and lead time, to show how the proposed can meet or exceed established level of design, function, and quality. Approval of request is at the discretion of the owner, architect, and their designated consultants and will be addressed via addendum prior to bid date.
- I. Meetings: Comply with requirements in Division 1 Section "Project Meetings."
 1. Low-voltage Coordination Meeting
 - a. Prior to furnishing door hardware submittals, convene a low-voltage coordination meeting. Participants required to attend: Contractor, installer, material supplier, manufacturer representatives, electrical contractor and fire alarm consultant.
 - b. Review sequence of operation for each opening with electrified hardware to ensure that every opening functions in the proper manner for the Owner's use.

- c. Discuss the types of electrified door hardware, inspection, and electrical roughing-in and other preparatory work performed by other trades.
 - d. Verify wire quantities, wire types, wire sizes, conduit sizes, and locations including if the power supplies will be centrally located or if they will be located near each opening.
 - e. Coordinate the door hardware, power supplies, back-up power requirements, access control components, fire alarm interfaces, elevator controls, and related building systems have all proper and necessary components to interface and operate correctly.
2. Keying Meeting
 - a. Owner Provided keying system.
 3. Pre-installation Meeting
 - a. Convene meeting within fourteen days of receipt of approved door hardware submittals. Participants required to attend: Contractor, installer, material supplier, manufacturer representatives, electrical contractor and fire alarm consultant.
 - b. Include in-conference decisions regarding proper installation methods and procedures for receiving and handling hardware.
 - c. Review all system, elevation, and point-to-point drawings to ensure that all necessary components are provided and detailed.
 - d. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
- J. Installer Qualifications: Specialized in performing installation of this Section and have five years minimum documented experience.
1. Electrified Door Hardware Supplier Qualifications: Experienced door hardware installer who has installed projects with electrified door hardware similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- K. Hardware listed in 3.07 – Hardware Schedule is intended to establish minimum level of design, type, function and grade of hardware to be used.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide clean, dry and secure room for hardware delivered to Project but not yet installed. Shelf hardware off of the floor and with larger items of hardware being stored on wooden pallets. Arrange locksets and keyed cylinders by opening number. Organize the balance of hardware by brand, model of hardware, and hardware set number. Leave the door markings of the hardware visible for installers.
- B. Furnish hardware that is not bulk packed with each unit marked and numbered in accordance with approved finish hardware schedule. Include architect's opening number, hardware set number, and item number for each type of hardware. Include keyset symbols and corresponding hardware component for keyed products.
- C. Pack each item complete with necessary parts and fasteners in manufacturer's original packaging.
- D. Deliver architectural hardware to the job site according to the phasing agreed upon in the pre-installation meeting. Inventory the delivery with the supplier's assistance. Immediately note shortages and damages on the shipping receipts and bill of lading. Coordinate replacement or repair with the supplier.
- E. Deliver accessories directly to Owner via registered mail or overnight package service.
- F. Waste Management and Disposal: Separate waste materials for use or recycling in accordance with Division 1.

1.06 WARRANTY

- A. General Warranty: Owner may have under provisions of the Contract Documents and be an addition and run concurrently with other warranties made by Contractor under requirements of the Contract documents.
- B. Special Warranty: Warranties specified in this article will not deprive Owner of other rights.
 - 1. Ten years for manual door closers.
 - 2. Five years for mortise, auxiliary and bored locks.
 - 3. Five years for exit devices.
 - 4. One year for electromechanical door hardware.
- C. Replace or repair defective products during warranty period in accordance with manufacturer's warranty at no cost to Owner. There is no warranty against defects due to improper installation, abuse, and failure to exercise normal maintenance.
- D. Maintenance Tool and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, removal, and replacement of door hardware.

1.07 MAINTENANCE

- A. Furnish a contract for service that will cover the period starting with the first expected activation of each system for installation and test that will continue for an initial period of two (2) years. A partial-year extension will be acquired to cover the period to the end of the two year warranty and will be handled such that a smooth transition to a customer maintenance agreement can be achieved with no lapse in coverage.
- B. Service response time is required to be within 2 hours of the initial request for service; the response may be by phone or remote VPN access into the system. This service should be provided during the warranty period at no added cost. This will be a 24 hour per day, 7 days per week, and inclusive of all holidays.
- C. Service requests will be reported via phone call to a designated service number provided in service contract, or via a service web site or e-mail account as designated by the service contract.

A. PART 2 – PRODUCTS

2.01 HINGES

- A. Hinges and electric hinges of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Products to be certified and listed by the following:
 - 1. Butts and Hinges: ANSI/BHMA A156.1.
 - 2. Template Hinge Dimensions: ANSI/BHMA A156.7.
- C. Butt Hinges:
 - 1. Hinge weight and size unless otherwise indicated in hardware sets:
 - a. Doors up to 36" wide and up to 1-3/4" thick provide hinges with a minimum thickness of .134" and a minimum of 4-1/2" in height.
 - b. Doors from 36" wide up to 42" wide and up to 1-3/4" thick provide hinges with a minimum thickness of .145" and a minimum of 4-1/2" in height.
 - c. For doors from 42" wide up to 48" wide and up to 1-3/4" thick provide hinges with a minimum thickness of .180" and a minimum of 5" in height.

- d. Doors greater than 1-3/4" thick provide hinges with a minimum thickness of .180" and a minimum of 5" in height.
- e. Width of hinge is to be minimum required to clear surrounding trim.
- 2. Base material unless otherwise indicated in hardware sets:
 - a. Exterior Doors: 304 Stainless Steel, Brass or Bronze material.
 - b. Interior Doors: Steel material.
 - c. Fire Rated Doors: Steel or 304 Stainless Steel materials.
 - d. Stainless Steel ball bearing hinges to have stainless steel ball bearings. Steel ball bearings are unacceptable.
- 3. Quantity of hinges per door unless otherwise stated in hardware sets:
 - a. Doors up to 60" in height provide 2 hinges.
 - b. Doors 60" up to 90" in height provide 3 hinges.
 - c. Doors 90" up to 120" in height provide 4 hinges.
- 4. Hinge design and options unless otherwise indicated in hardware sets:
 - a. Hinges are to be of a square corner five-knuckle design, flat button tips and have ball bearings unless otherwise indicated in hardware sets.
 - b. Out-swinging exterior and out-swinging access controlled doors are required to have Non-Removable Pins (NRP) to prevent removal of pin while door is in closed position.
 - c. When full width of opening is required, use hinges that are designed to swing door completely from opening when door is opened to 95 degrees.
 - d. Electric Through-Wire (ETW) to have appropriate number of wires to transfer power through door frame to door for proper connection of finish hardware and certified to handle an amperage rating of 3.5AMPS/continuous duty with 16.0AMPS/intermittent duty.
 - e. Provide mortar boxes for frames that require any electrically modified hinges if not an integral part of frame.
 - f. When shims are necessary to correct frame or door irregularities, provide metal shims only.
- 5. Acceptable Manufacturers:

	Standard Weight	Heavy Weight
Hager	BB1279	BB1168
Bommer		
McKinney		

2.02 CONTINUOUS HINGES

- A. Continuous hinges of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Products to be certified and listed by ANSI/BHMA A156.26 Grade 1.
- C. Continuous Geared Hinges:
 - 1. Determine model number by door and frame application, door thickness, frequency of use, and fire rating requirements according to manufacturer's recommendations.
 - a. Size length of hinge to equal the actual door height unless otherwise stated in hardware sets.
- D. Material and Design:
 - 1. Base material: Anodized aluminum manufactured from 6063-T6 material; unexposed working metal surfaces be coated with TFE dry lubricant.
 - 2. Bearings:
 - a. Vertical loads be carried on Lubriloy RL bearings for non-fire rated doors.
 - b. Continuous hinges are to have a minimum spacing between bearings of 2-9/16". Typical door from 80" to 84" in height to have a minimum of 32 bearings.
 - 3. Options:

- a. Hinges to have Rounded Back Cover Channel (RBCC).
- b. When full width of opening is required, use hinges that are designed to swing door completely from opening when door is opened to 95 degrees.
- c. At fire rated openings provide hinges that carry a UL certification, up to and including 90-minute applications for wood doors and up to 3-hour applications for metal doors.

E. Acceptable Manufacturers:

	Heavy Duty
Hager	780-112HD
Bommer	
Zero	

2.03 LOCKS AND LATCHES

- A. Locks and latches of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Product to be certified and listed by following:
 - 1. ANSI/BHMA A156.2 Series 4000 Certified to Grade 1.
 - 2. UL/cUL Labeled and listed for functions up to 3 hours for single doors up to 48" in width and up to 96" in height.
 - 3. UL10C/UBC 7-2 Positive Pressure Rated.
 - 4. ICC/ANSI A1117.1
- C. Lock and latch function numbers and descriptions of manufacturer's series as listed in hardware sets.
- D. Material and Design:
 - 1. Lock and latch chassis to be zinc dichromate for corrosion resistance.
 - 2. Keyed functions to be of a freewheeling design to help resist against vandalism.
 - 3. Non-handed, field reversible.
 - 4. Thru-bolt mounting with no exposed screws.
 - 5. Levers, zinc cast and plated to match finished designation in hardware sets.
 - 6. Roses wrought brass or stainless steel material.
- E. Latch and Strike:
 - 1. Stainless Steel latch bolt with minimum of 1/2" throw and deadlocking for keyed and exterior functions. Provide 3/4" latch bolt for pairs of fire-rated doors where required by door manufacturer. Standard backset to be 2-3/4" and adjustable faceplate to accommodate a square edge door or a standard 1/8" beveled edge door.
 - 2. Strike is to fit a standard ANSI A115 prep measuring 1-1/4" x 4-7/8" with proper lip length to protect surrounding trim.
- F. Options:
 - 1. Provide knurled levers on entry side of doors that are potentially dangerous to visually impaired persons.

G. Acceptable manufacturers:

Hager	3400 Series
Schlage	
Best	

2.04 LOCKS AND LATCHES

- A. Locks and latches of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Product to be certified and listed by following:
 1. ANSI/BHMA A156.13 Series 1000 Certified to Grade 1 for Operational and Security.
 2. UL/cUL Labeled and listed up to 3 hours for single doors up to 48" in width and up to 96" in height.
 3. UL10C/UBC 7-2 Positive Pressure Rated.
 4. ICC/ANSI A117.1.
- C. Lock and latch function numbers and descriptions of manufacturer's series as listed in hardware sets.
- D. Material and Design:
 1. Lock cases from fully wrapped, 12 gauge steel, zinc dichromate for corrosion resistance.
 2. Non-handed, field reversible without opening lock case.
 3. Break-away spindles to prevent unlocking during forced entry or vandalism.
 4. Levers, zinc cast, forged brass or stainless steel and plated to match finish designation in hardware sets.
 5. Sectional Roses, solid brass or stainless steel material and have a minimum diameter of 2-7/16".
 6. Armor fronts, self-adjusting to accommodate a square edge door or a standard 1/8" beveled edge door.
- E. Latch and Strike:
 1. Stainless steel latch bolt with minimum of 3/4" throw and deadlocking for keyed and exterior functions.
 2. Strike is to fit a standard ANSI A115 prep measuring 1-1/4" x 4-7/8" with proper lip length to protect surrounding trim.
 3. Deadbolts to be 1-3/4" total length with a minimum of a 1" throw and 3/4" internal engagement when fully extended and made of stainless steel material.
- F. Options:
 1. Provide knurled levers on entry side of doors that are potentially dangerous to visually impaired persons.
- G. Acceptable Manufacturers:

Hager	3800 Series
Best	
Schlage	

2.05 EXIT DEVICES

- A. Exit Devices of one manufacturer as listed for continuity of design and consideration of warranty. Touchpad type, finish to match balance of door hardware.
- B. Standards: Manufacturer to be certified and/or listed by the following:
 1. BHMA Certified ANSI A156.3 Grade 1.
 2. UL/cUL Listed for up to 3 hours for "A" labeled doors.
 3. UL10C/UBC 7-2 Positive Pressure Rated.
 4. UL10B Neutral Pressure Rated.
 5. UL 305 Listed for Panic Hardware.
- C. Material and Design:
 1. Provide exit devices with actuators that extend a minimum of one-half of door width.

- 2. Where trim is indicated in hardware sets provide the lever design to match design of lock levers.
 - 3. Exit device to mount flush with door OR RECESSED AT DOORS #301,302,401
 - 4. Latchbolts:
 - a. Rim device – 3/4” throw, Pullman type with automatic dead-latching, stainless steel
 - b. Concealed, surface vertical rod device – Top 1/2” throw, Pullman type with automatic dead-latching, stainless steel. Bottom 1/2” throw, Pullman type, held retracted during door swing, stainless steel.
 - 5. Fasteners: Wood screws, machine screws, and thru-bolts.
- D. Lock and Latch Functions: Function numbers and descriptions of manufacturer’s series and lever styles indicated in door hardware sets.

E. Acceptable Manufactures:

Hager	4500 Series	4700 Series
Von Duprin	9447 /9547 AT DOORS #301,302,401	
Sargent		

- F. Electric Modifications:
- 1. Motorized Latch Retraction (MLR): An electric motor retracts the latch bolt for momentary or maintained periods of time.

2.06 CYLINDERS AND KEYING

- A. Cylinders of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Products to be certified and listed by the following:
 - 1. Auxiliary Locks: ANSI/BHMA A156.5
- C. Cylinders:
 - 1. Provide cylinders matched to the types required for hardware that has a locking function and for keyed electronic functions. Furnish with appropriate collars, cams, and tailpieces to fit and operate associated hardware. Stacking collars is not acceptable, a single collar of proper size is required.
 - 2. Best seven-pin small format interchangeable core (SFIC).
- D. Keying:
 - 1. Cores and keying by Owner

E. Acceptable Manufacturers:

Best Locking Systems-No Substitute

2.07 PUSH/PULL PLATES AND BARS

- A. Push/Pull plates and bars of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Manufacturer to be certified by the following:
 - 1. Architectural Door Trim: ANSI/BHMA A156.6.
 - 2. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

- C. Push plates: .050" thick, square corner and beveled edges with countersunk screw holes. Width and height as stated in hardware sets.

- D. Acceptable Manufacturers:

Hager	30S
Rockwood	
Trimco	

- E. Pull Plates: .050" thick, square corner and beveled edges. Width and height as stated in hardware sets, 1" diameter pull, with clearance of 3" from face of door.

- F. Acceptable Manufacturers:

Hager	H34J
Rockwood	
Trimco	

2.08 CLOSERS

- A. Closers of one manufacturer as listed for continuity of design and consideration of warranty. Unless otherwise indicated on hardware schedule, comply with manufacturer's recommendations for size of closer, depending on width of door, frequency of use, atmospheric pressure, ADAAG requirements, and fire rating.
- B. Standards: Manufacturer to be certified by the following:
1. BHMA Certified ANSI A156.4 Grade 1.
 2. ADA Complaint ANSI A117.1.
 3. UL/cUL Listed up to 3 hours.
 4. UL10C Positive Pressure Rated.
 5. UL10B Neutral Pressure Rated.
- C. Material and Design:
1. Provide aluminum non-handed bodies with full plastic covers.
 2. Closers will have separate staked adjustable valve screws for latch speed, sweep speed, and backcheck.
 3. Provide Tri-Pack arms and brackets for regular arm, top jamb, and parallel arm mounting.
 4. Double heat-treated steel, tempered springs.
 5. Precision machined heat-treated steel piston.
 6. Triple heat-treated steel spindle.
 7. Full rack and pinion operation.
- D. Mounting:
1. Out-swing doors surface parallel arm mount closers except where noted on hardware schedule.
 2. In-swing doors surface regular arm mount closers except where noted on hardware schedule.
 3. Provide brackets and shoe supports for aluminum doors and frames to mount fifth screw.
 4. Furnish drop plates where top rail conditions on door do not allow for mounting of closer and where backside of closer is exposed through glass.
- E. Size closers in compliance with requirements for accessibility (ADAAG). Comply with following maximum opening force requirements.
1. Interior hinged openings: 5.0 lbs.
 2. Fire-rated and exterior openings are to be adjusted to have minimum opening force allowable by authority having jurisdiction.
- F. Fasteners: Provide self-reaming, self-tapping wood and machine screws, and sex nuts and bolts for each closer.

G. Acceptable manufacturers:

Hager	5200 Series	5300 Series
Norton		
Sargent		

2.09 LOW ENERGY POWER OPERATORS

A. Low energy power operators of one manufacturer as listed for continuity of design and consideration of warranty.

B. Products to be certified and listed by the following:

1. Power Assist and Low Energy Power Operated Doors: ANSI/BHMA A156.19.
2. ADA Complaint ANSI A117.1.

C. Materials and Design:

1. Self-contained electrical control unit, including necessary transformers, relays, rectifiers, and other electronic components for proper operation, switching and control of door up to 350 lbs. and also include time delay for normal cycle.
2. On pairs of doors, either door to be opened manually without the other door opening.
3. Operates as a mechanical closer if power is disconnected. Forces consistent with ANSI A117.1 and ANSI A156.19.
4. Provide delay switches for motor activation, exit device latch retraction interfacing and hold open times. Hold open times to be adjustable from 1 second to continuous seconds.
5. Adjustable vestibule sequencing input for operation of two or more units. Specify 2-659-0240.
6. Adjustable powered swing degree from 80 degrees to 110 degrees.
7. Integral obstruction detection for closing and opening cycle.
8. Adjustable built-in stop, set from 80 degrees maximum to 180 degrees manual swing.
9. When in "blow open" operation for smoke ventilation, operator will stay in the open position when loss of power.
10. Boost to close selectable on/off switch.

D. Signage: Provide signage in according to the requirements of ANSI/BHMA A156.19.

E. Acceptable Manufacturers:

Hager	8300 Series
LCN	
Norton	

F. Actuators:

1. Opening cycle activated by pressing switches with international symbol of accessibility and "PUSH TO OPEN" engraved on faceplate.
2. Switches installed in standard 2-gang electrical wall box and placed in a location in compliance with ANSI A117.1.
3. Wireless actuators optional.

G. Acceptable Manufacturers:

Hager
MS Sedco
SDC

2.10 PROTECTIVE TRIM

- A. Protective trim of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Size of protection plate: single doors, size two inches less door width (LDW) on push side of door, and one inch less door width on pull side of door. For pairs of doors, size one inch less door width (LDW) on push side of door, and 1/2 inch on pull side of door. Adjust sizes to accommodate accompanying hardware, such as, edge guards, astragals, and others.
 - 1. Kick Plates 10" high or sized to door bottom rail height.
 - 2. Mop Plates 4" high.
- C. Products to be certified and listed by the following:
 - 1. Architectural Door Trim: ANSI/BHMA A156.6.
 - 2. UL.
- D. Material and Design:
 - 1. 0.050" gage stainless steel.
 - 2. Corners square, lines or dominant direction of surface pattern so they run across door width of plate.
 - 3. Bevel top, bottom, and sides uniformly leaving no sharp edges.
 - 4. Countersink holes for screws. Space screw holes so they are no more than eight inches CTC, along a centerline not over 1/2" in from edge around plate. End screws maximum of 0.53" from corners.
- E. UL label stamp required on protection plates when top of plate is more than 16 inches above bottom of door on fire rated openings. Verify door manufacturer's UL listing for maximum height and width of protection plate to be used.
- F. Acceptable Manufacturers:

Hager	190S
Trimco	
Burns	

2.11 STOPS

- A. Stops of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Wall Stops: Provide door stops wherever necessary to prevent door or hardware from striking an adjacent partition or obstruction. Provide wall stops when possible. Door stops and holders mounted in concrete floor or masonry walls have stainless steel machine screws and lead expansion shields.
- C. Products to be certified and listed by the following:
 - 1. Auxiliary Hardware: ANSI/BHMA A156.16.
- D. Acceptable Manufacturers:

	Convex	Concave
Hager	232W	236W
Rockwood		
Burns		

2.12 ELECTROMAGNETIC HOLDERS

- A. Electromagnetic holders of one manufacturer as listed for continuity of design and consideration of warranty.

- B. Products to be certified and listed by the following:
 1. ANSI A156.15 Grade 1.
 2. UL/ULC Listed.
 3. California State Fire Marshall listed (CSFM).
 4. City of New York MEA approved.
- C. Material and Design:
 1. Provide electromagnetic holders where self-closing fire doors and smoke barrier doors are required to be held open. Electromagnetic holders to be fail-safe: when electrical current is interrupted, doors release to close automatically. Holding force 25-40 lbs.

D. Acceptable Manufacturers:

Hager	380 Series
LCN	
Rixson	

2.13 KEY SWITCHES

- A. Key switches of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Material and Design:
 1. Single gang, wall mounted, recessed mortise cylinder.
 2. Tamper-resistant spanner screws.
 3. 20 gauge stainless steel faceplate.
- C. Functions:
 1. Momentary (MO).
 2. Timed actuation (1-60 seconds).
 3. Alternate action (on/off) (AA).
- D. Options:
 1. Anti-tamper switch (ATS).
 2. One (1) green Led (LEDG).
 3. One (1) red LED (LEDR).
 4. One (1) green LED and one (1) red LED (2.LED).

E. Acceptable Manufacturers:

	(AA) DPDT
Hager	29KS ADD
SDC	
RCI	

2.14 MODULAR ACCESS CONTROL POWER SUPPLIES

- A. Power supplies of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Products to be certified and listed by the following:
 1. UL Listed.
- C. Design:
 1. Use with modular access control systems.
 2. Field selectable filtered and regulated 12 VDC or 24 VDC constant voltage.

3. 1, 2, 4, and 6 AMP load capacities. Match the power supply amperage to the total load of the opening /system plus an additional thirty percent to cover line drop, as well as possible expansion.
 4. Circuit breaker protected AC input voltage; secondary output PTC protected.
 5. Fire alarm input provides simultaneous release of fail-safe locks and holders.
 6. Interface relay.
 7. LED status indicators provide information regarding AC input, DC output, and battery backup status.
 8. Separate inputs for activation switch on entry and egress and ingress side of opening.
 9. 5 amp hour battery backup.
 10. Input 115 VAC (230 VAC optional).
 11. Optional dual 12 VDC or 24 VDC output.
 12. Optional power supply monitor module to monitor power supply status, A/C power, and D/C output and battery Status
- D. Include optional modules as required to properly interface, control, and sequence the hardware with the access control system.

E. Acceptable Manufacturer:

Hager	2908	1 Amp
	2909	2 Amp
	2910	4 Amp
	2911	6 Amp

2.15 THRESHOLDS

- A. Thresholds of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Set thresholds for exterior and acoustical openings in full bed of sealant with lead expansion shields and stainless steel machine screws complying with requirements specified in Division 7 Section "Joint Sealants: Notched in field to fit frame by hardware installer. Refer to Drawings for special details.
- C. Standards: Manufacturer to be certified by the following:
 1. Thresholds: ANSI/BHMA A156.21.
 2. American with Disabilities Act Accessibility Guidelines (ADAAG).

D. Acceptable Manufacturers:

Hager	413S
K.N. Crowder	
Reese	

2.16 DOOR GASKETING AND WEATHERSTRIP

- A. Door gasketing and weatherstrip of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing where indicated on hardware schedule. Provide noncorrosive fasteners for exterior applications.
 1. Perimeter gasketing: Apply to head and jamb, forming seal between door and frame.
 2. Door bottoms: Apply to bottom of door, forming seal with threshold or floor when door is in closed position.
- C. Products to be certified and listed by the following:

1. Door Gasketing and Edge Seal Systems: ANSI/BHMA A156.22.
 2. BHMA certified for door sweeps, automatic door bottoms, and adhesive applied gasketing.
- D. Smoke-Labeled Gasketing: Comply with NFPA 105 listed, labeled, and acceptable to Authorities Having Jurisdiction, for smoke control indicated.
1. Provide smoke-labeled gasketing on 20 minute rated doors and on smoke rated doors.
- E. Fire-Rated Gasketing: Comply with NFPA 80 listed, labeled, and acceptable to Authorities Having Jurisdiction, for fire ratings indicated.
- F. Refer to Section 08 1416 Wood Doors for Category A or Category B. Comply with UBC 7-2 and UL10C positive pressure where frame applied intumescent seals are required.

G. Acceptable Manufacturers:

1. Perimeter Gasketing:

	Adhesive Applied
Hager	726
K.N. Crowder	
Reese	

2. Door Bottom Sweeps:

Hager	750S
K.N. Crowder	
Reese	

2.17 SILENCERS

- A. Where smoke, light, or weather seal are not required, provide three silencers per single door frame, two per double door frame and four per Dutch door frame.
- B. Products to be certified and listed by the following:
1. Auxiliary Hardware: ANSI/BHMA A156.16

C. Acceptable Manufacturers:

	Hollow Metal Frame
Hager	307D
Rockwood	
Trimco	

2.18 FINISHES

- A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if within range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved samples.
- B. Comply with base material and finish requirements indicated by ANSI/BHMA A156.18 designations in hardware schedule.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine doors and frames, with Installers present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation. Examine pathway elements intended for cables. Check raceways and other elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation.
- C. Notify Architect via a prepared written report and endorsed by Installer of any discrepancies between the door schedule, door types, drawings, and scheduled hardware. Report will have a list of conditions detrimental to application, to the proper and timely completion of the work and performance of the hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.02 INSTALLATION

- A. Install hardware using manufactures recommended fasteners and installation instructions, at height locations and clearance tolerances that comply with:
 - 1. NFPA 80
 - 2. NFPA 105
 - 3. ICC/ANSI A117.1
 - 4. ANSI/BHMA A156.115 Hardware Preparation in Steel Doors and Steel Frames
 - 5. DHI Publication – Installation Guide for Doors and Hardware
 - 6. Approved shop drawings
 - 7. Approved finish hardware schedule
- B. Install soffit mounted gaskets prior other soffit mounted hardware to provide a continuous seal around the perimeter of the opening without cutting or notching.
- C. Install door closers so they are on the interior of the room side of the door. Stairwell doors will have closers mounted on the stair side and exterior doors will be mounted on the interior side of the building.
- D. In drywall applications provide blocking material of sufficient type and size for hardware items that mount directly to the wall.
- E. Locate wall mounted bumper to contact the trim of the operating trim.
- F. Mount mop and kick plates flush with the bottom of the door and centered horizontally on the door.
- G. Set thresholds for exterior, and acoustical doors at sound control openings in full bed of sealant complying with requirements specified in Division 07 Section “Joint Sealants” forming a tight seal between threshold and surface to which set.
- H. Anchor all components firmly into position and use anchoring devices furnished with the hardware item, unless otherwise specified.
- I. Do not install surface mounted items until finishes have been completed on substrates involved. Set unit level, plumb and true to line location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- J. Power Supplies: locate power supplies as indicated and verified in the low-voltage coordination meeting.

- K. Install cables and wiring according to requirements in Division 28 Section "Conductors and Cables for Electronic Safety and Security" and with Division 26 Section "Grounding and Bonding for Electrical Systems." Cable installation shall comply with NECA 1, "Good Workmanship in Electrical Contracting" EIA/TIA-569, "Commercial Building Standard for Telecommunications Pathways and Spaces."
1. Electromechanical Hardware: Install appropriate number of conductor pairs, in the wire gage (AWG) recommended by manufacturer, corresponding to the electronic locking functions specified, amperage drawn and distances covered between the power supplies, transfer hinges, electrified hardware and access control equipment.
 2. Wiring color to be distinct and specific to the system. Coordinate cable colors with all other vendors to ensure color is not duplicated.
 3. Install wiring in raceway and cable tray except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Use NRTL-listed plenum cable in environmental air spaces, including plenum ceilings. Conceal raceway and cables except in unfinished spaces.
 4. Install LAN cables using techniques, practices, and methods that are consistent with Category 5E rating of components and that ensure Category 5E performance of completed and linked signal paths, end to end.
 5. Install cables without damaging conductors, shield, or jacket.
 6. Boxes and enclosures containing security system components or cabling, and which are easily accessible to employees or to the public, shall be provided with a lock. Boxes above ceiling level in occupied areas of the building will not be considered to be accessible. Junction boxes and small device enclosures below ceiling level and easily accessible to employees or the public will be covered with a suitable cover plate and secured with tamperproof screws.

3.03 FIELD QUALITY CONTROL

- A. Material supplier to schedule final walk through to inspect hardware installation ten (10) business days before final acceptance of Owner. Material supplier will provide a written report detailing discrepancies of each opening to General Contractor within seven (7) calendar days of walk through.

3.04 ADJUSTMENT, CLEANING, AND DEMONSTRATING

- A. Adjustment: Adjust and check each opening to ensure proper operation of each item of finish hardware. Replace items that cannot be adjusted to operate freely and smoothly or as intended for application at no cost to Owner.
- B. Cleaning: Clean adjacent surfaces soiled by hardware installation. Clean finish hardware per manufacturer's instructions after final adjustments have been made. Replace items that cannot be cleaned to manufacturer's level of finish quality at no cost to Owner.
- C. Conduct a training class for building maintenance personnel demonstrating the adjustment, operation of mechanical and electrical hardware. Special tools for finish hardware to be turned over and explained usage at the meeting. Record all training and provide to the Owner for future reference.

3.05 PROTECTION

- A. Leave manufacturer's protective film intact and provide proper protection for all other finish hardware items that do not have protective material from the manufacture until Owner accepts project as complete.

3.06 HARDWARE SET SCHEDULE

- A. Intent of Hardware Groups
 1. Should items of hardware not specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
 2. Where items of hardware aren't correctly specified and are required for completion of the Work, a written statement of such omission, error, or other discrepancy is required to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.
- B. Guide: Door hardware items have been placed in sets which are intended to be a guide of design, grade, quality, function, operation, performance, exposure, and like characteristics of door hardware, and may not be complete. Provide door hardware required to make each set complete and operational.
- C. Hardware schedule does not reflect handing, backset, method of fastening, and like characteristics of door hardware and door operation.
- D. Review door hardware sets with door types, frames, sizes, and details on drawings. Verify suitability and adaptability of items specified in relation to details and surrounding conditions.

3.07 HARDWARE SCHEDULE

Hardware Sets

SET #1

Doors: 504

2 Hinge(s)	BB1168 4 1/2 X 4 1/2 NRP	US10B	HA
1 Full Mortise Hinge	BB1168 4 1/2 X 4 1/2 NRP ETW	US10B	HA
1 Rim Exit Device	4501 RIM F MLR	US32D	HA
1 Exit Device Trim	45CE WTN	US10B	HA
1 Mortise Cylinder	3902 SFIC x LAR	US10B	HA
1 IC Core	IC CORE (By Owner)	US4	BYOT
1 Single Operator	8318 PUSH	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Weatherstrip	726 x LAR	B	HA
2 Actuator	2-659-0358	US32D	HA
1 Key Switch	29KS ADD RED/GREEN LED'S	US32D	HA
1 Power Supply	2908/2909/2910/2911 As Required	No Finish	HA
1 Wiring Diagram(s)	RISER/POINT TO POINT		BYOT

Description of Operation:

During business hours:

Door normally closed and unlocked.

Free entry and egress is allowed, either manually or pressing actuator will open the door.

Upon loss of power or activation of the fire alarm the doors will close and lock.

After business hours:

Door normally closed and locked. Entry by key

Free egress always, either manually or pressing actuator will open the door.

Upon loss of power or activation of the fire alarm the doors remain closed and locked.

Key switch is used to lock (indicated by red LED) and unlock the doors (indicated by green LED) and to enable/disable actuators.

SET #2

Doors: 401

8 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
2 Exit Device	9447 CLB F LBR W/FIRE BOLT	US10B	VD
2 Closer	5200 x TRK x DENHOTA	DBZ	HA
2 Mag Holder	380	L2	HA
1 Smoke Seal	726 x LAR	B	HA
1 Wiring Diagram(s)	RISER/POINT TO POINT		BYOT

Description of Operation:

Doors held by magnetic hold opens that are connected to the fire alarm system.

Fire alarm activation or loss of power releases the magnets allowing doors to close and latch.

Free egress always.

Doors may be manually released from magnets.

SET #3

Doors: 301, 302

8 Hinge(s)	BB1279 4 1/2 x 4 1/2 NRP	US10B	HA
2 Exit Device	9447 CLB F LBR W/FIRE BOLT	US10B	VD
2 Exit Device Trim	45CE WTN	US10B	HA
2 Mortise Cylinder	3902 SFIC x LAR	US10B	HA
2 IC Core	IC CORE (BY OWNER)	US4	BYOT
2 Closer	5200 HD	DBZ	HA
2 Kick Plate	190S 10" x 2" LDW	US10B	HA
2 Mag Holder	380	L2	HA
1 Smoke Seal	726 x LAR	B	HA
1 Wiring Diagram(s)	RISER/POINT TO POINT		BYOT

Description of Operation:

Doors held by magnetic hold opens that are connected to the fire alarm system.

Fire alarm activation or loss of power releases the magnets allowing doors to close and latch.

Free egress always.

Doors may be manually released from magnets.

SET #4

Doors: 407

3 Hinge(s)	BB1279 4 1/2 x 4 1/2 NRP	US10B	HA
1 Exit Device	4501 RIM F	US10B	HA
1 Exit Device Trim	45CE WTN	US10B	HA
1 Mortise Cylinder	3902 SFIC x LAR	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200 PAR	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Mag Holder	380	L2	HA
1 Smoke Seal	726 x LAR	B	HA
1 Wiring Diagram(s)	RISER/POINT TO POINT		BYOT

Description of Operation:

Door held by magnetic hold open that is connected to the fire alarm system.

Fire alarm activation or loss of power releases the magnet allowing door to close and latch.

Free egress always.

Door may be manually released from magnet.

SET #5

Doors: 408

3 Hinge(s)	BB1168 4 1/2 X 4 1/2 NRP	US10B	HA
1 Exit Device	4501 RIM F	US10B	HA
1 Exit Device Trim	45CE WTN	US10B	HA
1 Mortise Cylinder	3902 SFIC x LAR	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200 HD	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Wall Stop(s)	232W	US10B	HA
1 Smoke Seal	726 x LAR	B	HA

SET #6

Doors: 503

1 Continuous Hinge	780-112HD x LAR x RBCC	DBA	HA
1 Exit Device	4501 RIM	US10B	HA
1 Exit Device Trim	45CE WTN	US10B	HA
1 Mortise Cylinder	3902 SFIC x LAR	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200 HD	DBZ	HA
1 Wall Stop(s)	232W	US10B	HA
1 Perimeter Gaskets	Gaskets by frame mfr.		BYOT

SET #7

Doors: 403

3 Hinge(s)	BB1279 4 1/2 x 4 1/2 NRP	US10B	HA
1 Storeroom Lock	3480 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200 PAR	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Wall Stop(s)	232W	US10B	HA
3 Silencer(s)	307D	GREY	HA

SET #8

Doors: 304, 305, 605

3 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
1 Storeroom Lock	3480 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Wall Stop(s)	232W	US10B	HA
3 Silencer(s)	307D	GREY	HA

SET #9

Doors: 409

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3 Hinge(s)	BB1279 4 1/2 x 4 1/2 NRP	US10B	HA
1 Storeroom Lock	3480 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
2 Hinge Pin Stop	1512	613	DJ
3 Silencer(s)	307D	GREY	HA

SET #10

Doors: 101

1 Continuous Hinge	780-112HD x LAR x RBCC	DBA	HA
1 Classroom Lock	3470 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200 HDCS	DBZ	HA
1 Perimeter Gaskets	Gaskets by frame mfr.		BYOT

SET #11

Doors: 306

3 Hinge(s)	BB1279 4 1/2 x 4 1/2 NRP	US10B	HA
1 Classroom Lock	3470 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200 PAR	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Wall Stop(s)	232W	US10B	HA
3 Silencer(s)	307D	GREY	HA

SET #12

Doors: 406

4 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
1 Classroom Lock	3470 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200 TRK NHOTA	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Smoke Seal	726 x LAR	B	HA

SET #13

Doors: 602

1 Continuous Hinge	780-112HD x LAR x RBCC	DBA	HA
1 Classroom Lock	3470 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Wall Stop(s)	232W	US10B	HA
1 Perimeter Gaskets	Gaskets by frame mfr.		BYOT

SET #14

Doors: 303

3 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
1 Classroom Lock	3470 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT

1 Closer	5200 TRK NHOTA	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
3 Silencer(s)	307D	GREY	HA

SET #15

Doors: 404

3 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
1 Classroom Lock	3470 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Closer	5200 HD	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Wall Stop	232W	US10B	HA
3 Silencer(s)	307D	GREY	HA

SET #16

Doors: 501, 502

3 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
1 Office Lock	3450 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Wall Stop	236W	US10B	HA
1 Perimeter Gasket	Gasket by frame mfr.		BYOT

SET #17

Doors: 405

3 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
1 Office Lock	3450 WTN SFIC	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
1 Wall Stop(s)	236W	US10B	HA
3 Silencer(s)	307D	GREY	HA

SET #18

Doors: 201

3 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
1 Passage Set	3410 WTN	US10B	HA
2 Hinge Pin Stop	1512	613	DJ
3 Silencer(s)	307D	GREY	HA

SET #19

Doors: 601

3 Hinge(s)	BB1279 4 1/2 X 4 1/2	US10B	HA
1 Lockset	3880 SECT WTN	US10B	HA
	*Less outside trim		
1 Closer	5200	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Wall Stop	232W	US10B	HA
1 Seal	726 x LAR	B	HA

SET #20

Doors: 102, 103

3 Hinge(s)	BB1168 4 1/2 X 4 1/2	US10B	HA
1 Push Plate	30S 6 X 16	US10B	HA
1 Door Pull	H 34J 4 X 16	US19	HA
1 Closer	5200 TRK NHOTA	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Mop Plate	190S 4" x 1" LDW	US10B	HA
3 Silencer(s)	307D	GREY	HA

SET #21

Doors: 603, 604

3 Hinge(s)	BB1168 4 1/2 X 4 1/2	US10B	HA
1 Push Plate	30S 6 X 16	US10B	HA
1 Door Pull	H 34J 4 X 16	US10B	HA
1 Closer	5200 HD	DBZ	HA
1 Kick Plate	190S 10" x 2" LDW	US10B	HA
1 Mop Plate	190S 4" x 1" LDW	US10B	HA
1 Wall Stop(s)	232W	US10B	HA
3 Silencer(s)	307D	GREY	HA

SET #22 - Temp Pair

Doors: 1

6 Full Mortise Hinge	1279 4 1/2 x 4 1/2 NRP	L2	HA
2 Exit Device	4701 SVR LBR	DBZ	HA
1 Exit Trim	47CE WTN	DBZ	HA
2 Closer	5300 PAR	DBZ	HA
1 Mortise Cylinder	3902 SFIC x LAR	US10B	HA
1 IC Core	IC CORE (BY OWNER)	US4	BYOT
2 Wall Stop(s)	232W	US10B	HA
2 Silencer(s)	307D	GREY	HA

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Doors.
 - 2. Storefront framing.
 - 3. Glazed entrances.
 - 4. Interior borrowed lites.
- B. Related Sections:
 - 1. Division 8 Section "ALUMINUM-FRAMED ENTRANCES"
 - 2. DIVISION 8 SECTION "HOLLOW METAL DOORS AND FRAMES"

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. Interspace: Space between lites of an insulating-glass unit.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Delegated Design: Design glass, including SUBMISSION OF A comprehensive, SIGNED AND SEALED engineering analysis according to **ASTM E 1300** by a qualified NJ LICENSED professional engineer, using the following design criteria:
 - 1. Design Wind Pressures: As indicated on Drawings.
 - 2. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
 - a. Wind Design Data: As indicated on Drawings.

3. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.
 4. Glass Type Factors for Wired, Patterned, and Sandblasted Glass:
 - a. Short-Duration Glass Type Factor for Wired Glass: 0.5.
 - b. Long-Duration Glass Type Factor for Wired Glass: 0.3.
 5. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
 6. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

1.5 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
1. Testing will not be required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
 2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 3. Test no fewer than **eight** Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
 4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.6 SUBMITTALS

- A. **088000_01** Product Data: For each glass product and glazing material indicated.
- B. **088000_02** Glass Samples: For each type of **the following products**; 4 inches square.
1. Wired glass.
 2. Insulating glass.
 3. Laminated Etched Glass
- C. **088000_03** Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- D. **088000_04** Qualification Data: For installers, manufacturers of insulating-glass units with sputter-coated, low-e coatings, glass testing agency and sealant testing agency.

- E. **088000_05** Product Certificates: For glass and glazing products, from manufacturer.
- F. **088000_06** Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for **tinted glass, coated glass, glazing sealants and] glazing gaskets.**
 - 1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.
- G. **088000_07** reconstruction adhesion and compatibility test report.
- H. **0878000_08** Warranties: Sample of special warranties.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved **and certified** by coated-glass manufacturer.
- B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- E. Source Limitations for Glass: Obtain **tinted float glass, coated float glass and insulating glass** from single source from single manufacturer for each glass type.
- F. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.
- G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: **GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."**
 - 2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR-A7, "Sloped Glazing Guidelines."
 - 3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
 - 4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- H. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of **the SGCC or another certification agency acceptable to authorities having jurisdiction.** Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- I. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

- J. Preinstallation Conference: Conduct conference at **Project site**.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review temporary protection requirements for glazing during and after installation.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written recommendations for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 40 deg F.

1.10 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
 - 1. Warranty Period: **10** years from date of Substantial Completion.
- B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
 - 1. Warranty Period: **10** years from date of Substantial Completion.
- C. WEATHERTIGHT WARRANTY: WRITTEN WARRANTY, MADE OUT TO OWNER AND SIGNED BY INSTALLER AND CONTRACTOR AGREEING TO FURNISH REPLACEMENTS FOR THOSE GLAZING UNITS THAT DETERIORATE AS DEFINED IN "DEFINITIONS" ARTICLE, F.O.B. THE NEAREST SHIPPING POINT TO PROJECT SITE, WITHIN SPECIFIED WARRANTY PERIOD INDICATED BELOW.
 - 1. WARRANTY PERIOD: 10 YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass **as needed to comply with "Performance Requirements" Article**. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass **as needed to comply with "Performance Requirements" Article**. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- B. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For monolithic-glass lites, properties are based on units with lites **of thickness indicated**.
 2. For laminated-glass lites, properties are based on products of construction indicated.
 3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
 5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.2 GLASS PRODUCTS, GENERAL

- A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
- B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.
1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
 2. For uncoated glass, comply with requirements for Condition A.
 3. For coated vision glass, comply with requirements for Condition C (other coated glass).
- C. Uncoated Tinted Float Glass: Class 2, complying with other requirements specified.

2.3 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.
1. Sealing System: Dual seal, with **manufacturer's standard** primary and secondary.
 2. Spacer: **Manufacturer's standard spacer material and construction**
 3. Desiccant: Molecular sieve or silica gel, or blend of both.
- B. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Insulating-Glass Types" Article.

2.4 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from[**one of**] the following:
1. Neoprene complying with ASTM C 864.
 2. EPDM complying with ASTM C 864.
 3. Silicone complying with ASTM C 1115.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned **EPDM OR silicone** gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.
- C. Lock-Strip Gaskets: Neoprene extrusions in size and shape indicated, fabricated into frames with molded corner units and zipper lock-strips, complying with ASTM C 542, black.

2.5 GLAZING SEALANTS

- A. General:
1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. VOC Content: For sealants used inside of the weatherproofing system, not more than 250 g/L when calculated according to 40 CFR 59, Subpart D.
 4. Colors of Exposed Glazing Sealants: **As selected by Architect from manufacturer's full range.**
- B. Elastomeric Glazing Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
1. SEE SPECIFICATION SECTION 079200 FOR SEALANTS TO BE USED WITH GLAZING.

2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.
 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- G. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- B. Grind smooth and polish exposed glass edges and corners.

2.9 FULLY TEMPERED GLASS AND FIRE-RATED / SAFETY-RATED GLAZING SCHEDULE

- A. Glass Type: TEMPERED:
 1. Products: Available products include the following:
 - a. FULLY TEMPERED FLOAT GLASS, BY GUARDIAN INDUSTRIES OR APPROVED EQUAL.

2. Overall Unit Thickness and Thickness of Each Lite: 1/4 INCH AND 3/16"
 - a. **1/4 AND 3/16" INCH- Kind FT (fully tempered).**
 - b. Class 1 (clear).
3. Visible Light Transmittance: 89 %.
4. Winter Nighttime U-Value: 1.09.
5. Summer Daytime U-Value: 1.04.
6. Solar Heat Gain Coefficient: 206
7. Outdoor Visible Reflectance: 8 %.
8. PROVIDE SAFETY GLAZING LABELING

2.10 INSULATING-GLASS TYPES

- A. GL-1 Glass Type: Low-e-coated, insulating.
 1. Overall Unit Thickness: **1 inch.**
 2. Thickness of Each Glass Lite: **1/4"**
 3. Outboard Lite: **Fully tempered float glass.**
 4. Interspace Content: **Air.**
 5. Inboard Lite: **Fully tempered float glass.**
 6. Low-E Coating: **Sputtered on second** surface.
 - a. **SUNGUARD SUPERNEUTRAL 68(#2) BY GUARDIAN INDUSTRIES**
 - b. **APPROVED EQUAL.**
 7. Visible Light Transmittance: 68 percent minimum.
 8. REFLECTANCE:
 - a. **INDOOR: 12%**
 - b. **OUTDOOR: 11%**
 9. U-Factor: Winter Nighttime 0.29 maximum.
U-Factor: Summer Daytime 0.28 maximum
 10. Solar Heat Gain Coefficient: 0.28 maximum.
 11. **SHADING COEFFICIENT: .43**
 12. **SOLAR HEAT GAIN COEFFICIENT: .38**
 13. Provide safety glazing labeling.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 2. Presence and functioning of weep systems.
 3. Minimum required face and edge clearances.
 4. Effective sealing between joints of glass-framing members.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

- K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

- E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 LOCK-STRIP GASKET GLAZING

- A. Comply with ASTM C 716 and gasket manufacturer's written instructions. Provide supplementary wet seal and weep system unless otherwise indicated.

3.8 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
- E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
 - 2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.

- B. Related Requirements:

- 1. Section 054000 "Cold-Formed Metal Framing" for exterior and interior load-bearing and exterior non-load-bearing wall studs; floor joists; roof rafters and ceiling joists; and roof trusses.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For **dimpled steel studs and runners AND firestop tracks**, from ICC-ES.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
 2. Protective Coating: **ASTM A 653/A 653M, G60**, hot-dip galvanized unless otherwise indicated.
- B. Studs and Runners: ASTM C 645. **Use either steel studs and runners or dimpled steel studs and runners.**
1. Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness AND Depth: MINIMUM 20 GAUGE, COORDINATE REQUIRED GAUGES, SPACING AND REINFORCEMENT WITH METAL STUD MANUFACTURER. COORDINATE WITH PARTITION TYPES ON DRAWINGS FOR DEPTHS AND OTHER REQUIRED GAUGES.
 2. Dimpled Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness AND Depth: MINIMUM 20 GAUGE EQUIVALENT, PROPERLY DOCUMENTED BY METAL STUD MANUFACTURER. COORDINATE REQUIRED GAUGES, SPACING AND REINFORCEMENT WITH METAL STUD MANUFACTURER. COORDINATE WITH PARTITION TYPES ON DRAWINGS FOR DEPTHS AND OTHER REQUIRED GAUGES.
- C. Slip-Type Head Joints: Where indicated, provide **one of** the following:
1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
 - a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) MARINOWARE DEFLECTION TRACK (DT).
 - 2) APPROVED EQUAL.
 2. Slotted Track: ASTM E 119, ASTM 3 814, ASTM E 1966, ULCS115-M95 used at the head of wall. 1" total vertical movement providing positive attachment for wall framing. Slotted track is formed from prime steel.
 - a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) MARINOWARE SLOTTED TRACK.
 - 2) APPROVED EQUAL.
 3. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
 - a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) DIETRICH METAL FRAMING (OT/TR SERIES).
 - 2) APPROVED EQUAL.
 4. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

- a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Superior Metal Trim; Superior Flex Track System (SFT).
 - 2) APPROVED EQUAL.

- D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
 1. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. Fire Trak Corp.; Fire Trak System **attached to studs with Fire Trak Posi Klip.**
 - b. APPROVED EQUAL.

- E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
 1. Minimum Base-Metal Thickness: **0.033 inch.**

- F. Cold-Rolled Channel Bridging: Steel, 0.053-inch minimum base-metal thickness, with minimum 1/2-inch- wide flanges.
 1. Depth: **1-1/2 inches.**
 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.

- G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 1. Minimum Base-Metal Thickness: **0.033 inch.**
 2. Depth: **1-1/2 inches AND AS INDICATED ON DRAWINGS.**

- H. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.
 1. Configuration: **Asymmetrical or hat shaped.**

- I. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges.
 1. Depth: **3/4 inch.**
 2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum uncoated-steel thickness of 0.033 inch.
 3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

- J. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 3/4 inch, minimum uncoated-metal thickness of 0.018 inch, and depth required to fit insulation thickness indicated.
 - a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) MARINOWARE Z-FURRING CHANNEL (ZF).
 - 2) APPROVED EQUAL.

2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.
- B. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.
- C. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch and minimum 1/2-inch- wide flanges.
 - 1. Depth: **2-1/2 inches.**
- D. Grid Suspension System for Gypsum Board Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
 - 1. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. Armstrong World Industries, Inc.; Drywall Grid Systems.
 - b. Chicago Metallic Corporation; Drywall Grid System.
 - c. USG Corporation; Drywall Suspension System.

2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide **one of** the following:
 - 1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
 - 2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently. COORDINATE ALL WALL FURRING WITH EXISTING EXPANSION JOINTS AND NEW EXPANSION JOINT COVERS.
- E. EXTEND ALL VERTICAL CEILING AND SOFFIT SUPPORTING STRUCTURE AND SUSPENSION SYSTEM SUPPORTS TO EXISTING STRUCTURE ABOVE.

3.3 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 1. Single-Layer Application: **16 inches** o.c., COORDINATE WITH DRAWINGS.
 2. Multilayer Application: **16 inches** o.c., COORDINATE WITH DRAWINGS.
 3. Tile backing panels: **16 inches** o.c., COORDINATE WITH DRAWINGS.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb MINIMUM. COORDINATE WITH DOOR MANUFACTURER.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

- a. Firestop Track: AT ALL RATED PARTITIONS, install to maintain continuity of fire-resistance-rated assembly indicated.
5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- E. Direct Furring:
 1. Screw to wood framing.
 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- F. Z-Furring Members:
 1. Erect insulation specified in Section 072100 "Thermal Insulation" vertically and hold in place with Z-furring members spaced **24 inches** o.c.
 2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
 3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.
- G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.4 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 1. Hangers: **48 inches** o.c. COORDINATE WITH DRAWINGS.
 2. Carrying Channels (Main Runners): **48 inches** o.c. COORDINATE WITH DRAWINGS.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within **performance limits established by referenced installation standards**.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 4. Do not attach hangers to steel roof deck.
 5. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
 6. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Seismic Bracing: Sway-brace suspension systems **with hangers used for support**.
- F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
- G. Installation Tolerances: Install suspension systems that are level to within **1/8 inch in 12 feet** measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Interior gypsum board.
2. TILE BACKER BOARD

- B. Related Requirements:

1. Section 092216 "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.
2. Division 09 painting Sections for primers applied to gypsum board surfaces.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned. **ANY GYPSUM BOARD THAT BECOMES WET DURING CONSTRUCTION SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.**
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.6 COORDINATION

- A. LIGHT FIXTURES. COORDINATE SIZE OF OPENINGS REQUIRED FOR LIGHT FIXTURES IN GYPSUM BOARD CEILINGS WITH ELECTRICAL CONTRACTOR AND ADJUST CEILING GRIDS TO ACCOMMODATE FIXTURES.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. Low Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 GYPSUM BOARD, GENERAL

- A. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent. Provide gypsum panel products with 100% recycled content FOR FACE AND LINER PAPERS
- B. Regional Materials: Gypsum panel products shall be manufactured within 500 miles of Project site.
- C. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 1. USG Corporation (BASIS OF DESIGN)
 2. Lafarge North America Inc.
 3. National Gypsum Company.
- B. Gypsum Wallboard (NON-RATED GENERAL WALLS AND CEILINGS): ASTM C 1396/C 1396M.
 1. Thickness: 5/8 inch COORDINATE WITH DRAWINGS.
 2. Long Edges: **Tapered.**
 3. MANUFACTURER:
 - a. USG "SHEETROCK BRAND GYPSUM PANELS"

b. APPROVED EQUAL

C. Gypsum Board, Type X (WALLS AND CEILINGS IN RATED ASSEMBLIES):
ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch COORDINATE WITH DRAWINGS.
2. Long Edges: **Tapered.**
3. MANUFACTURER:
 - a. USG "SHEETROCK BRAND GYPSUM PANELS, FIRECODE CORE"
 - b. APPROVED EQUAL

D. Moisture- and Mold-Resistant Gypsum Board (TOILET ROOM CEILINGS):
ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: **5/8 inch, Type X.**
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10.
4. MANUFACTURER:
 - a. USG "MOLD TOUGH AR"
 - b. APPROVED EQUAL

2.4 TILE BACKING PANELS

A. Water-Resistant Gypsum Backing Board (WALLS IN TOILET ROOMS):
ASTM C 1396/C 1396M, with manufacturer's standard edges.

1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. USG Corporation "FIBEROCK AQUA TOUGH INTERIOR PANELS.
 - b. APPROVED EQUAL.
2. Core: **5/8 inch, Type X.**

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: **Galvanized or aluminum-coated steel sheet or rolled zinc** OR PAPER TAPE LAMINATED TO A RUST-RESISTANT METAL FORM
2. Shapes:
 - a. Bullnose CORNER Bead: 3/4" PAPER FACED BULLNOSE TAPE ON BEAD. Use **at ALL outside corners.**
 - 1) USG: SHEETROCK BRAND PAPER FACED TAPE ON DRYWALL BEAD AND TRIM. MODEL SLOC
 - 2) APPROVED EQUAL.
 - b. J-TRIM: J-shaped; TAPE-ON TRIM WITH SPACKLE EDGE exposed long flange receives joint compound; use **at exposed panel edges**
 - 1) USG: B9
 - 2) APPROVED EQUAL.

- c. L-TRIM: L-shaped; TAPE ON TRIM WITH SPACKLE EDGE exposed long leg receives joint compound; use AT EXPOSED PANEL EDGES AND AT ALL WINDOW AND DOOR JAMBS.
 - 1) USG: B4 SERIES
 - 2) APPROVED EQUAL.
- d. Expansion (Control) Joint: Use AT ARCHITECT APPROVED LOCATIONS, AT MAXIMUM SPACING AS RECOMMENDED BY MANUFACTURER.
 - 1) USG: ZINC CONTROL JOINT NO. 93.
 - 2) APPROVED EQUAL.

2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Board: Paper.
 - 2. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints, **rounded or beveled panel edges**, and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use **setting-type taping** compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 - 3. Fill Coat: For second coat, use **setting-type, sandable topping** compound.
 - 4. Finish Coat: For third coat, use **setting-type, sandable topping** compound.
- D. Joint Compound for Tile Backing Panels:
 - 1. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.

2.7 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- D. Sound Attenuation Blankets: As specified in Division 7 Section "Building Insulation".
- E. Acoustical Sealant: As specified in Division 7 Section "Joint Sealants."

- F. Thermal Insulation: As specified in Division 7 Section "Building Insulation".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Type X: **AT ALL FIRERATED PARTITIONS AND CEILINGS FOR Vertical AND HORIZONTAL surfaces.**
- B. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels **vertically (parallel to framing)** unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - 3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
 - 4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- C. Multilayer Application:
 - 1. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
 - 2. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
 - 3. Fastening Methods: **Fasten base layers and face layers separately to supports with screws.**

3.4 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Interior Trim: Install in the following locations:
 - 1. Install AS INDICATED IN ARTICLE 2.4.

3.5 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, **rounded or beveled edges**, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape. **SPACKLE ALL EDGE TRIM**

- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
1. Level 2: **Panels that are substrate for tile.**
 2. Level 4: **At panel surfaces that will be exposed to view unless otherwise indicated.**
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.6 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Ceramic tile.
2. Porcelain tile
3. Stone thresholds.
4. Waterproof membrane.
5. Crack Isolation membrane
6. Metal edge strips

- B. Related Sections:

1. Division 07 Section "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
2. Division 09 Section "Gypsum Board" for **water-resistant backer board**.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
1. Level Surfaces: Minimum 0.6.
 2. Step Treads: Minimum 0.6.

3. Ramp Surfaces: Minimum 0.8.

1.5 ACTION SUBMITTALS

- A. Product Data: **093000_01**: For each type of product indicated.
- B. Samples for Initial Selection: **093000_02**: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Certificates: For each type of product, signed by product manufacturer.
- C. Material Test Reports: For each tile-setting and -grouting product.

1.7 MATERIALS MAINTENANCE SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Tile and Trim Units: **Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.**
 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain ALL **tile** from one source or producer.
 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
 1. Stone thresholds.
 2. Waterproof membrane.
 3. Joint sealants.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.
- B. PROVIDE VENTILATION AND PROTECTION OF ENVIRONMENT AS RECOMMENDED BY MANUFACTURER.
- C. PREVENT CARBON DIOXIDE DAMAGE TO INSTALLATION MORTARS, ADHESIVES, GROUTS, AND CERAMIC TILE BY VENTING TEMPORARY HEATERS TO THE EXTERIOR.
- D. MAINTAIN AMBIENT TEMPERATURES NOT LESS THAN 50 F (10 C) OR MORE THAN 100 F (38 C) DURING INSTALLATION AND FOR A MINIMUM OF SEVEN (7) DAYS AFTER COMPLETION. SETTING OF PORTLAND CEMENT IS RETARDED BY LOW TEMPERATURES. PROTECT WORK FOR EXTENDED PERIOD OF TIME AND FROM DAMAGE BY OTHER TRADES. INSTALLATION WITH LATEX PORTLAND CEMENT MORTARS REQUIRES SUBSTRATE, AMBIENT AND MATERIAL TEMPERATURES AT LEAST 37° F/3° C. THERE SHOULD BE NO ICE IN SLAB. FREEZING AFTER INSTALLATION WILL NOT DAMAGE LATEX PORTLAND CEMENT MORTARS. PROTECT PORTLAND CEMENT BASED MORTARS AND GROUTS FROM DIRECT SUNLIGHT, RADIANT HEAT, FORCED VENTILATION (HEAT & COLD), AND DRAFTS UNTIL CURED TO PREVENT PREMATURE EVAPORATION OF MOISTURE. EPOXY MORTARS AND GROUTS REQUIRE SURFACE TEMPERATURES BETWEEN 60F/16C AND 90F/32C AT TIME OF INSTALLATION. IT IS THE GENERAL CONTRACTORS RESPONSIBILITY TO MAINTAIN TEMPERATURE CONTROL.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.

- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.
- D. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
 - 1. Where tile is indicated for installation **in wet areas**, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.
- F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.2 TILE PRODUCTS

- A. Tile Type **CT-1: Glazed wall tile.**
 - 1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. DAL TILE, AVIANO GLAZED CERAMIC WALL TILE
 - b. APPROVED EQUAL.
 - 2. Module Size: **10 by 14 inches.**
 - 3. Thickness: 5/16 inch.
 - 4. Face: **textured with cushion edges.**
 - 5. Finish: **Bright, opaque** glaze.
 - 6. Tile Color and Pattern: WALL TILES: AV60 VERONA WHITE. HORIZONTALLY ORIENTED STACK BOND PATTERN
 - 7. Grout Color: **As selected by Architect from manufacturer's full range.**
 - 8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable **and matching characteristics of adjoining flat tile.** Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. External Corners for Thin-Set Mortar Installations: 12" Jolly, same size as adjoining flat tile.
 - b. Internal Corners: Field-buttet square corners.
 - c. Base for Thin-Set Mortar Installations: Straight, module size **10x14 inches.**
 - d. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.
- B. Tile Type **CT-2: Colorbody Porcelain Floor Tile**
 - 1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. DAL TILE, PORCEALTO COLORBODY PORCELAIN FLOOR TILE

b. APPROVED EQUAL.

2. Composition: **Porcelain.**
3. Module Size: **12" X 12" inches.**
4. Thickness: 5/16".
5. Face: **UNPOLISHED**
6. Surface: **Smooth, without** abrasive admixture.
7. Tile Color and Pattern: VERDE Alghero CD07 in a Running bond pattern
8. Grout Color: **As selected by Architect from manufacturer's full range.**
9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable **and matching characteristics of adjoining flat tile**

2.3 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of **12** per ASTM C 1353 or ASTM C 241 and with honed finish. **INSTALL AT ALL TOILET ROOMS. ½" HIGH MAXIMUM IN COMPLIANCE WITH BARRIER FREE REQUIREMENTS. THRESHOLD TO BE MINIMUM 6" WIDE AND SHALL BE BEVELED TO MEET ADJACENT FINISHES.**

2.4 WATERPROOF MEMBRANE

- A. General: Manufacturer's standard product, **selected from the following**, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Fabric-Reinforced, Fluid-Applied Membrane: System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.
 1. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. Custom Building Products; REDGARD OR 9240 Waterproofing and Anti-Fracture Membrane.
 - b. MAPEI Corporation; **Mapelastic L (PRP M19).**
 - c. APPROVED EQUAL.
- C. Latex-Portland Cement Product: Flexible mortar consisting of cement-based mix and acrylic-latex additive.
 1. Available Products:
 - a. MAPEI Corporation; Mapei Kerabond / Keralastic System
 - b. **CUSTOM BUILDING PRODUCTS; Master Blend w Custom Flex ultra strength additive.**
 - c. APPROVED EQUAL.

2.5 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
 - 1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. MAPEI Corporation: ULTRA/FLEX3.
 - b. CUSTOM BUILDING PRODUCTS; **FlexBond / or MegaFlex**
 - c. APPROVED EQUAL.
 - 2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
 - 3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.6 GROUT MATERIALS

- A. Polymer-Modified Tile Grout: ANSI A118.7.
 - 1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - 2. Polymer Type: LATEX ADDITIVE, in dry, redispersible form, prepackaged with other dry ingredients.
 - a. Sanded grout mixture for joints 1/8 inch and wider.
 - 1) MAPEI CORPORATION: ULTRACOLOR
 - 2) CUSTOM BUILDING PRODUCTS; **Prism Sure Color Grout**
 - 3) APPROVED EQUAL.

2.7 ELASTOMERIC SEALANTS

- A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the applicable requirements in Division 07 Section "Joint Sealants."

2.8 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Temporary Protective Coating: **Either product** indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.

- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Grout Sealer: Manufacturer's standard[**silicone**] product for sealing grout joints and that does not change color or appearance of grout.
 - 1. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. Custom Building Products; **Surfaceguard Grout Sealer.**
 - b. MAPEI Corporation; **004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.**

2.9 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with **thin-set mortar** comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with **thin-set mortar** with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2. of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- E. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. CERAMIC Wall Tile: 1/16 inch.
 - 2. PORCELAIN FLOOR TILE: ¼ Inch
- F. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
 - 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

- G. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
 - 1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).
 - 2. Do not extend **waterproofing/crack isolation membrane** under thresholds set in **latex-portland cement** mortar. Fill joints between such thresholds and adjoining tile set on **waterproofing/ crack isolation membrane** with elastomeric sealant.
- H. Grout Sealer: Apply grout sealer to grout joints **in tile floors** according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 TILE BACKING PANEL PREPARATION

- A. Install PANELS and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. **Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.**

3.5 WATERPROOFING INSTALLATION

- A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.6 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove **epoxy and latex-portland cement** grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 - 3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.
- B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.7 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Tile Installation F122: Thin-set mortar on waterproof membrane; TCA F122.
 - a. Tile Type: COLORBODY PORCELAIN FLOOR TILE
 - b. Thin-Set Mortar: **Latex**-portland cement mortar.
 - c. Grout: Polymer-modified **sanded** grout.
 - d. **INSTALL ALL FLOOR TILE OVER WATERPROOF MEMBRANE**

B. Interior Wall Installations, Masonry or Concrete:

1. Tile Installation W202: Thin-set mortar; TCA W202.
 - a. Tile Type: GLAZED WALL TILES.
 - b. Thin-Set Mortar: **Latex**-Portland cement mortar.
 - c. Grout: **Polymer-modified sanded** grout.

C. Interior Wall Installations, Metal Studs or Furring:

1. Tile Installation W243: Thin-set mortar on gypsum board; TCA W243.
 - a. Tile Type: GLAZED WALL TILES.
 - b. Thin-Set Mortar: **Latex**-portland cement mortar.
 - c. Grout: **Polymer-modified sanded** grout.

END OF SECTION 093000

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes acoustical panels and exposed suspension systems for ceilings Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.
- B. Related Sections include the following:
 - 1. STEEL FRAMING: ELSEWHERE IN DIVISION 5
 - 2. ACCESS DOORS: ELSEWHERE IN DIVISION 8
 - 3. METAL TORSION SPRING CEILING: ELSEWHERE IN DIVISION 9

1.3 DEFINITIONS

- A. AC: Articulation Class.
- B. CAC: Ceiling Attenuation Class.
- C. LR: Light Reflectance coefficient.
- D. NRC: Noise Reduction Coefficient.

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - 3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
 - 4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
 - 5. ASTM C 635 Standard Specifications for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
 - 6. ASTM C 636 Recommended Practices for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
 - 7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 8. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation between Rooms Sharing a Common Ceiling Plenum.
 - 9. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.

10. ASTM E 1264 Classification for Acoustical Ceiling Products.
11. ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
12. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
13. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

- B. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
- C. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components
- D. International Code Council-Evaluation Services - Evaluation Report, ESR-1308, Fire- and Nonfire-Resistance-Rated Suspended Ceiling Framing Systems
- E. ASCE 7 Standard - American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
- F. CISCA 0-2 - Ceilings and Interior Systems Construction Association Recommendations for Direct-Hung Acoustical Tile and Lay-In Panel Ceilings, Seismic Zones 0-2

1.5 SUBMITTALS

- A. **095113_01** Product Data: For each type of product indicated.
- B. **095113_02** Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 1. Ceiling suspension system members.
 2. Method of attaching hangers to building structure.
 3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
 4. Minimum Drawing Scale: **1/4 inch = 1 foot.**
- C. **095113_03** Samples for Initial Selection: For components with factory-applied color finishes.
 1. Acoustical Panel: Set of **6-inch-** Samples of each type, color, pattern, and texture.
 2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch- long Samples of each type, finish, and color.
- D. **095113_04** Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.
- E. **095113_05** Research/Evaluation Reports: For each acoustical panel ceiling and components and anchor and fastener type.
- F. **095113_06** Maintenance Data: For finishes to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.

- B. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
 - 1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
 - 2. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."
 - 3. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies--Seismic Zones 3 & 4."
 - 4. UBC Standard 25-2, "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings."
 - 5. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."
- C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

1.9 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.10 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Panels: Full-size panels equal to **2.0** percent of quantity installed.
2. Suspension System Components: Quantity of each exposed component equal to **2.0** percent of quantity installed.
3. Hold-Down Clips: Equal to **2.0** percent of quantity installed.

1.11 WARRANTY

- A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:
 1. Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.
 2. Grid System: Rusting and manufacturer's defects
 3. Acoustical Panels with Bio-Block Plus or designated as inherently resistive to the growth of micro-organisms installed with Armstrong suspension systems: Visible sag and will resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
- B. Warranty Period:
 1. Acoustical panels: One (1) year from date of substantial completion.
 2. Grid: Ten years from date of substantial completion.
- C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANELS, GENERAL

- A. Recycled Content: Provide acoustical panels with recycled content such that postconsumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 61% TO 78% percent by weight.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectance, unless otherwise indicated.
 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.
- C. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
 1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.
- D. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold,

mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21. Provide Custom Color for Ground Floor Metal Ceiling System

E. CEILING TYPES

Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:

1. ACT-1 – ARMSTRONG OPTIMA PB 24"x24" WITH 9/16" SUPRAFINE GRID
2. ACT-2 – PAINTED GYPSUM BOARD SUSPENDED CEILING
3. ACT-3- ARMSTRONG OPTIMA PB SQUARE TEGULAR 24"x72" WITH 9/16" SUPRAFINE GRID
4. ACT-4- ARMSTRONG METAL WORKS TORSION SPRING CEILING PANELS WITH SLOTTED 15/16" GRID. PANEL SIZES: MODULE A:24"x72" MODULE B:17.5"x72" MODULE C: 6 1/2"x 2'-5 1/2" POWDERCOATED RAL 6003, Olivgrün
5. ACT-6- ARMSTRONG OPTIMA PB SQUARE TEGULAR 24" x96" WITH 9/16" SUPRAFINE GRID.

2.2 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING #ACT-1:

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 1. ARMSTRONG WORLD INDUSTRIES, INC.; "ARMSTRONG OPTIMA PB 24"X24" 2251PB" (BASIS OF DESIGN)
 2. USG
 3. APPROVED EQUAL
- B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern.
- C. Color: WHITE
- D. Size: As shown on reflected ceiling plan
- E. Edge Profile: SQUARE TEGULAR
- F. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.55
- G. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 38
- H. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
- I. Flame Spread: ASTM E 1264; Fire Resistive
- J. Color: White (LR): ASTM E 1477; White Panel: Light Reflectance: 0.82

- K. Dimensional Stability: Standard -Space is enclosed, weatherproofed, HVAC systems operating.
- L. Antimicrobial Protection: BioBlock Plus - Resistance against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.

2.3 CEILING #ACT-2:

- A. GYPSUM BOARD SUSPENDED CEILING

2.4 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING #ACT-3:

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ARMSTRONG WORLD INDUSTRIES, INC.; "ARMSTRONG OPTIMA PB 24"X72" 3261PB" (BASIS OF DESIGN)
 - 2. USG
 - 3. APPROVED EQUAL
- B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern.
- C. Color: WHITE
- D. Size: As shown on reflected ceiling plan
- E. Edge Profile: SQUARE TEGULAR
- F. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.55
- G. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 38
- H. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
- I. Flame Spread: ASTM E 1264; Fire Resistive
- J. Color: White (LR): ASTM E 1477; White Panel: Light Reflectance: 0.82
- K. Dimensional Stability: Standard -Space is enclosed, weatherproofed, HVAC systems operating.
- L. Antimicrobial Protection: BioBlock Plus - Resistance against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.

2.5 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING #ACT-4:

- A. Surface Texture: Fine
- B. Composition: METAL CEILING

- C. Color: RAL COLOR 6003, Olivgrün
- D. Size: AS SHOWN ON REFLECTED CEILING PLANS
- E. PERFORATION: AS SHOWN ON REFLECTED CEILING PLANS
- F. Edge Profile: SQUARE
- G. Flame Spread: ASTM E 1264; Class A (FM)
- H. Light Reflectance (LR): ASTM E 1477; Panel: Light Reflectance: 0.77.
- I. Dimensional Stability: Standard.
- J. BASIS OF DESIGN: METALWORKS TORSION SPRING PERFORATED METAL CEILING PANELS as manufactured by Armstrong World Industries or approved equal

2.6 CEILING TYPE #ACT-5

- A. PREPARE EXISTING SURFACE IN ACCORDANCE WITH SSP SP-2 SCRAPE AND CLEAN SUBSTRATE PRIOR TO PAINTING.

2.7 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING #ACT-6

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ARMSTRONG WORLD INDUSTRIES, INC.; "ARMSTRONG OPTIMA PB 24"X96" 3262PB" (BASIS OF DESIGN)
 - 2. USG
 - 3. APPROVED EQUAL
- B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern.
- C. Color: WHITE
- D. Size: As shown on reflected ceiling plan
- E. Edge Profile: SQUARE TEGULAR
- F. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.55
- G. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 38
- H. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
- I. Flame Spread: ASTM E 1264; Fire Resistive
- J. Color: White (LR): ASTM E 1477; White Panel: Light Reflectance: 0.82

- K. Dimensional Stability: Standard -Space is enclosed, weatherproofed, HVAC systems operating.
- L. Antimicrobial Protection: BioBlock Plus - Resistance against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
- M. COORDINATE CEILING INSTALLTION WITH USAI LIGHTING FIXTURES AND PROVIDE PRE-CUT CEILING PANELS FOR TRIMLESS USAI LIGHTING FIXTURE INSTALLATION.

2.8 METAL SUSPENSION SYSTEMS, GENERAL

- A. Recycled Content: Provide products made from steel sheet with average recycled content such that postconsumer recycled content plus one-half of pre-consumer recycled content is not less than **25** percent.
- B. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
- C. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
- D. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
 - 1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to **five** times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
 - a. Type: **Postinstalled expansion** anchors.
 - b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.
 - c. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Group 1 Alloy 304 or 316 for bolts; Alloy 304 or 316 for anchor.
 - 2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to **10** times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.
- E. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304, nonmagnetic.
 - 3. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than **0.135-inch-** diameter wire.
- F. **Hanger Rods OR Flat Hangers:** Mild steel, zinc coated or protected with rust-inhibitive paint.

- G. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch- thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.
- H. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- I. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.
- J. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in-place.
- K. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches O.C. on all cross tees.
- L. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.
- M. Wind uplift clips: For exterior ceilings, provide manufacturer's standard wind uplift clip system designed to withstand wind forces of the building's zone.

2.4 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILINGS

MS1 & MS1R- FOR USE WITH ACT 1& 1R, ACT-2

Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Components: Main beams and cross tees In accordance with the International Building Code, Section 1621 for Category C as described in ESR-1308.

- 1. Structural Classification: ASTM C 635, (Intermediate Duty) (Heavy Duty).
 - 2. Color: White FOR ALL CEILINGS EXCEPT ACT-4. CHARCOAL FOR ACT-4
 - 3. Represented Systems: Prelude XL 15/16" Exposed Tee System as manufactured by Armstrong World Industries OR APPROVED EQUAL, ACT-1R to use 15/16" Prelude XL fireguard
- B. Attachment Devices: In accordance with the International Building Code, Section 1621 for Category C.
 - C. Wire for Hangers and Ties: In accordance with the International Building Code, Section 1621.
 - D. Wall Moldings: In accordance with the International Building Code, Section 1621 for Category C or method as described in ESR-1308.
 - 1. Nominal 7/8 inch x 7/8 inch hemmed, pre-finished angle molding (7800) (7802) (7803) (780036) (HD7801)
 - 2. Nominal 15/16 inch x 15/16 inch hemmed, pre-finished angle molding (7809)
 - 3. Nominal 3/4 inch x 15/16 inch x 3/4 inch hemmed, pre-finished shadow molding (7871)
 - 4. Nominal 9/16 inch x 15/16 inch x 3/8 inch hemmed, pre-finished shadow molding (7873)

5. Nominal 9/16 inch x 15/16 inch x 1/4 inch hemmed, pre-finished shadow molding (7874)
6. Nominal 3/4 inch x 15/16 inch x 1/2 inch hemmed, pre-finished shadow molding (7875)

E. Accessories:

1. BERC - Beam End Retaining Clip, 0.034 inch thick, hot-dipped galvanized cold-rolled steel ASTM A568 - used to join main beam or cross tee to wall molding.
2. BERC2 - 2 inch Beam End Retaining Clip, 0.034 inch thick, hot-dipped galvanized cold-rolled steel per ASTM A568 - used to join main beam or cross tee to wall molding.
3. MANUFACTURER'S STANDARD HOLD DOWN CLIPS TO ACCOMMODATE EXTERIOR WIND UPLIFT LOADS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Armstrong World Industries, Inc.; "SUPRAFINE XL 9/16" EXPOSED TEE GRID SYSTEM"
2. USE ARMSTRONG WORLD INDUSTRIES, INC. 15/16" SLOTTED GRID FOR ACT-4
2. APPROVED EQUAL

B. Components: Main beams and cross tees in accordance with the international Building Code Section 1621 for Category C as described in ESR-1308.

1. Structural Classification: ASTM C 635, (Intermediate Duty) (Heavy Duty).
2. Color: Cream and match the actual color of the selected ceiling tile, unless noted otherwise.
3. Represented System: "Exposed Tee System as manufactured by Armstrong World Industries.

C. Attachment Devices: In accordance with the International Building Code, Section 1621 for Category C .

D. Wire for Hangers and Ties: In accordance with the International Building Code, Section 1621.

E. Wall Moldings: In accordance with the International Building Code, Section 1621 for Category C or method as described in ESR-1308.

F. Accessories:

1. BERC2 – 2 inch Beam End Retaining Clip 0.034 inch thick, hot-dipped galvanized cold-rolled steel per ASTM A568 – used to join main beam or cross tee to wall molding.

2.5 METAL EDGE MOLDINGS AND TRIM

N. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. USG.
2. Armstrong World Industries, Inc.
3. APPROVED EQUAL
4. PROVIDE CUSTOM DIMENSION TRIM AT ACT-4 PERIMETER AS SHOWN ON A111 & A500 SERIES DRAWINGS. PERIMETER TRIM TO BE POWDERCOATED TO MATCH CEILING PANEL. RAL 6003 FOR TRIM TO MATCH METAL CEILING.

- O. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard AND CUSTOM moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
 - 1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
 - 2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
 - 3. PROVIDE CUSTOM DIMENSION TRIM AT ACT-4 PERIMETER AS SHOWN ON A111 & A500 SERIES DRAWINGS. PERIMETER TRIM TO BE POWDERCOATED TO MATCH CEILING PANEL. RAL 6003 FOR TRIM TO MATCH METAL CEILING.
 - 4.

2.6 ACOUSTICAL SEALANT

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant[, **with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24)**, complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90. COORDINATE WITH SPECIFICATION SECTION 07920.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. Install suspension system and panels in accordance with the International Building Code, Section 1621, except as noted in Section 4.4.3.2 of ESR-1308, and with the authorities having jurisdiction.
- B. ESR-1308, Section 4.4.3.2, Seismic Design Category C Installation:

1. Terminal ends of the runners are secured by attaching the BERC-2 clip to the wall molding and attaching the runners to the BERC-2 clip. The runners have zero clearance at the perimeter on two adjacent walls and with 3/8-inch clearance on the opposite walls. The clip is attached to the wall molding by sliding the locking lances over the hem of the vertical leg of the wall molding. BERC-2 clips installed in this manner are an acceptable means of preventing runners from spreading, in lieu of spacer bars required in CISCA 0-2, which is referenced in ASCE 7, Section 9.6.2.6.2.1, which is referenced in IBC Section 1621. Except for the use of the BERC-2 clip as noted above, installation of the ceiling system must be as prescribed by the applicable code. Maximum ceiling weight permitted is 1.20 pounds per square foot. This construction is equivalent to that required by CISCA 0-2, which is referenced in ASCE-7, Section 9.2.6.2.1, and which is referenced in IBC Section 1621.
- C. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.
- D. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.
- E. Suspend ceiling hangers from building's structural members and as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 7. Do not attach hangers to steel deck tabs.
 8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 9. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 11. INSTALL SUSPENSION SYSTEM SO THAT FINISHED CEILING IS AT HEIGHT INDICATED ON DRAWINGS.
 12. PROVIDE ADDITIONAL REINFORCMENT AT LOCATIONS OF ACCESS DOORS.
- F. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

- G. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 - 1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 - 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 - 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- H. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- I. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
 - 1. Arrange acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.
 - 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 - 3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 - 4. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

- A. Tests and Inspections: Testing and inspecting of completed installations of acoustical panel ceiling hangers and anchors and fasteners shall take place in successive stages, in areas of extent and using methods as follows. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations of acoustical panel ceiling hangers show compliance with requirements.
 - 1. Extent of Each Test Area: When installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.
 - a. Within each test area, testing agency will select 1 of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every 2 postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
 - b. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.
- B. Remove and replace acoustical panel ceiling hangers and anchors and fasteners that do not pass tests and inspections and retest as specified above.

3.5 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 095133 – METAL PANEL CEILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Section Includes

Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section

1.2 SUMMARY

A. Section Includes

1. Acoustical metal ceiling panels
2. Exposed grid suspension system
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
4. Perimeter Trim

B. Related Sections:

1. DIVISION 9 Plaster and Gypsum Board
2. DIVISION 9 ACOUSTICAL PANEL CEILINGS
3. Divisions 23 - HVAC Air Distribution
4. Division 26 - Electrical

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process

4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings

6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels

7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials

9. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint

10. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems

11. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum

12. ASTM E 1264 Classification for Acoustical Ceiling Products

B. International Building Code

C. ASHRAE Standard 62.1-2004 Ventilation for Acceptable Indoor Air Quality

D. NFPA 70 National Electrical Code

E. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

F. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

G. International Code Council-Evaluation Services Report - Seismic Engineer Report

1. ESR 1308 - Armstrong Suspension Systems

H. International Association of Plumbing and Mechanical Officials - Seismic Engineer Report

1. 0244 - Armstrong Single Span Suspension System

I. California Department of Public Health CDPH/EHLB Emission Standard Method Version 1.1 2010

J. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings

K. International Well Building Standard

L. Mindful Materials

M. Living Building Challenge

N. U.S. Department of Agriculture BioPreferred program (USDA BioPreferred).

1.4 SYSTEM DESCRIPTION

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Minimum 12 inch x 12" sample of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of ceilings show locations of items that are to be coordinated with, or supported by the ceilings, including interface with metal panel fascia, sprinkler heads, lighting, security cameras & HVAC diffusers. Show profiles of perimeter trim pieces. Shop drawings are to note all locations of cut panels. Shop drawings to submit cut panel details and perimeter trim details in accordance with drawings.

D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

5. End of Life Programs/Recycling: Where applicable, manufacturers that provide the option for recycling of their products into new products at end-of-life through take-back programs will be preferred.

1.7 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

a. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.

C. Acoustic Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.

D. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.9 PROJECT CONDITIONS

A. Space Enclosure:

Building areas to receive ceilings shall be free of construction dust and debris.

1.11 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:

1. Acoustical Panels: Sagging and warping

2. Grid System: Rusting and manufacturer's defects

B. Warranty Period:

1. Acoustical Metal panels: One (1) year from date of substantial completion
2. Grid: Ten (10) years from date of substantial completion

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.12 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Metal Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Metal Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

1. Armstrong World Industries, Inc.

C. Aluminum Custom Trims:

1. Armstrong World Industries, Inc.

2.2.1 ACOUSTICAL CEILING UNITS

A. Acoustical Panels Type ACT-4

1. Acoustical Panels Type ACT-4

- a. Surface Texture: Smooth
- b. Composition: Metal
- c. Color: RAL 6003, Olivgrün
- d. Size: SEE A111, A111A & A500 series drawings.

Module A Panel Size: 24"x72". Basis of Design Size Armstrong #7211

Module B Panel Size: 17½" x 72"

Module C Panel Size: 6 ½"x 29.5"

e. THICKNESS.090" THICK ALUMINUM

f. Edge Profile: Square 15/16 in for interface with PRELUDE XL 15/16"
slotted for Torsion spring.

Tee grid.

g. Perforation Option: Custom perforation. See drawing A111A

h. Noise Reduction Coefficient (NRC):

i. Ceiling Attenuation Class (CAC):

j. Sabin: N/A

k. Articulation Class (AC):

l. Flame Spread: ASTM E 1264; Class A.

m. Light Reflectance (LR) White Panel: ASTM E 1477; 0.75.

n. Dimensional Stability: Standard

o. Recycle Content: Post-Consumer - Pre-Consumer -

p. Acceptable Product: METALWORKS Torsion Spring, 7211 with custom perforation. No added formaldehyde as manufactured by Armstrong World Industries

2. Metal Panel Accessories:

- a. Spreader Hold down 7126 for cut panels
- b. BioAcoustic Infill Panel 5823

2.3.1 METAL SUSPENSION SYSTEMS

A. Components:

Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically

cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.

a. Structural Classification: ASTM C 635 Intermediate Duty

b. Color: BLACK

e. Acceptable Product: PRELUDE XL 15/16" slotted for Torsion Spring as manufactured by Armstrong World Industries

B. Attachment Devices:

Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties:

ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Edge Moldings and Trim:

E. Accessories:

2.4.1 ALUMINUM CUSTOM TRIM – EXTRUDED OR FORMED TO PROFILES AND LEG LENGTHS SHOWN ON A111 & A500 series drawings

Product/Manufacturer: Axiom Trim Channel: 8in Axiom Interlude Straight Armstrong World Industries, Incorporated

A. Commercial quality extruded aluminum alloy 6063 trim channel, factory finished in baked polyester paint. Commercial quality galvanized steel unfinished T-bar connection clips; galvanized steel splice plates.

1. Color: RAL to Match Ceiling Panel

2. Size: 120 in X 6 in

4. Acceptable Product: AXIOM & VECTOR & Custom profiles as shown on drawings, 8in Axiom Interlude Straight as manufactured by Armstrong World Industries

B. Axiom Trim Channel:

8in Axiom Interlude Straight

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

A. Follow manufacturer installation instructions

B. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.

D. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

E. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

F. Install acoustical panels in coordination with suspended system. Cut and fit panels neatly against abutting surfaces only when panel layout is off module and as noted within drawings.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095133

SECTION 096340 STONE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Interior stone flooring.
2. Stone thresholds.

B. Related Sections:

1. Division 07 Section for sealing control and expansion joints in stonework with elastomeric sealants.
- 2.

1.2 DEFINITIONS

A. Definitions contained in ASTM C 119 apply to this Section.

B. Metric Conversions: The following metric conversions shall apply where English measurements are indicated in the text:

1. 13/16 inch (20 mm)

1.3 REFERENCES

- A. ASTM C 97-02: Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
- B. ASTM C 119-04: Terminology Relating to Dimension Stone
- C. ASTM C 170-90 (1999): Test Method for Compressive Strength of Dimension Stone
- D. ASTM C 615-03: Specification for Granite Dimension Stone
- E. ASTM C 880-98: Test Method for Flexural Strength of Dimensional Stone

1.4 SUBMITTALS

A. **096340_01** Product Data: For each stone type and each manufactured product shown on Drawings or specified.

1. For each stone variety used on Project, include physical property data.

B. **096340_02** Shop Drawings: Show fabrication and installation details for stone:

1. Include dimensions and profiles of stone units.

C. **096340_03** Samples: Submit samples for each stone type required, exhibiting the full range of color characteristics expected.

1. Submit a minimum of 2 each, 12 inches x 12 inches in size, in each color and finish specified.

2. In the case of more variegated stones, color photos shall be submitted in addition to the number of samples to show the full range of color and markings to be expected.
3. Mortar Samples: Full range of exposed color and texture.
4. Sealant Samples: For each type and color of joint sealant required.

D. **096340_04** Quality Assurance/Control Submittals:

1. Sealant Compatibility Test Report: Submit test report from sealant manufacturer, in accordance with Division 07 Section "Joint Sealants" stating that sealants will not stain stone.
2. Material Test Reports: From a qualified independent testing agency, provide reports for each stone type.
3. Qualification Data: Submit qualification data as specified under Article, "Quality Assurance" for the following:
- 4.

1.5 QUALITY ASSURANCE

- A. Source Limitations for Stone: Obtain each stone variety from a single quarry.
 1. Make quarried blocks available for examination by Architect.
- B. Installer Qualifications: Engage experienced installer that has completed stone installation similar in material, design, and extent to that indicated for the project.
- C. Fabricator Qualifications: Engage experienced fabricator that has completed stone fabrication similar in material, design, and extent to that indicated for the project.
- D. Preconstruction Stone Testing: Engage an independent testing agency to perform the following testing for each stone variety:
 1. Furnish test specimens that are representative of materials.
 2. Physical Property Tests: ASTM standards specified for stone type.
 3. Flexural Strength Tests: ASTM C 880
- E. Mockups: Build mockup of typical areas as shown on Drawings.
 1. Size:
 - a. 48 inches x 48 inches
 2. Color consistency: demonstrate color consistency with mockup; color range shall not exceed range of color established by samples.
 3. Include sealant joints installed as required by Division 07 Section "Joint Sealants."
 4. Mockups may become part of the completed Work if approved at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
- B. Store stone on pallets with nonstaining separators and nonstaining, waterproof covers. Ventilate under covers to prevent condensation.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

1.7 PROJECT CONDITIONS

- A. Cold-Weather Requirements: Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 STONE SOURCE

- A. Varieties and Source: Subject to compliance with requirements, provide stone from the following source:
 - 1. Granite Source: Coldspring
- B. Each color of stone shall come from a single quarry, with sufficient reserves to satisfy the requirements of the project. The granite supplier shall have the capabilities to cut and finish the stone without delaying the project.
- C. Stone Source Examination: Make quarried blocks available for examination by Architect.

2.2 STONE MATERIAL

- A. Granite: ASTM C 615.
- B. Cut stone from one block or contiguous, matched blocks in which natural markings occur.
- C. Match Architect's samples.
- D. Granite Type GR-1
 - 1. Stone Variety: Iridian by Coldspring.
 - 2. Location: Stone Flooring
 - 3. Finish: Rub and Sand – CONTRACTOR TO HAVE MANUFACTURER'S REPRESENTATIVE VISIT THE SITE TO VERIFY FINISH/ TEXTURE OF EXISTING. NEW STONE TO MATCH EXISTING.
 - 4. Thickness: Not less than the following:
 - a. 13/16 inch (+1/8" -1/16")] 20 mm
- E. Granite Type GR-2
 - 1. Stone Variety: Radiant Red by Coldspring.
 - 2. Location: Stone Flooring
 - 3. Finish: Polished
 - 4. Thickness: Not less than the following:
 - a. 13/16 inch (+1/8" -1/16")] 20 mm
- F. Granite Type GR-3
 - 1. Stone Variety: Mesabi Black by Coldspring.
 - 2. Location: Stone Flooring
 - 3. Finish: Polished
 - 4. Thickness: Not less than the following:

a. 13/16 inch (+1/8" -1/16")] 20 mm

G. Granite Type GR-4

1. Stone Variety: Mountain Green by Coldspring.
2. Location: Stone fascia at Passport & Elections Offices greeting desk casework
3. Finish: Diamond 8
4. Thickness: Not less than the following:
 - a. ¼" thick mounted to aluminum honeycomb substrate as part of StonePanels, Inc. system. Manufacturer:Stonepanels.com

2.3 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or Type II, except Type III may be used for cold-weather construction.
- B. Hydrated Lime: ASTM C 207.
- C. Portland Cement-Lime Mix: ASTM C 150, Type I or Type III, and ASTM C 207.
- D. Colored Portland Cement-Lime Mix: ASTM C 150, Type I or Type III; ASTM C 207; and mortar pigments.
- E. Aggregate: ASTM C 144.
- F. Mortar Pigments: Natural and synthetic iron oxides. Use only pigments with a record of satisfactory performance in mortar and containing no carbon black.
- G. Latex Additive: Acrylic-resin water emulsion recommended by additive manufacturer for use with field-mixed portland cement mortar bed.
- H. Thin-Set Mortar: Latex-Portland Cement Mortar: ANSI A118.4. Provide products by one of the following:
- I. Water: Potable.

2.4 GROUT

- A. Grout Colors:
 1. Match stone
- B. Polymer Modified Cement Grout: ANSI A118.7.
 1. Polymer Type: Acrylic resin in liquid-latex form for addition to prepackaged dry-grout mix.

2.5 ACCESSORIES

- A. Cleavage Membrane: Polyethylene sheeting, ASTM D 4397, 4.0 mils thick.
- B. Reinforcing Wire: ASTM A 185 and ASTM A 82 except for minimum wire size.
- C. Cork Joint Filler: Preformed strips, ASTM D 1752, Type II.

- D. Cleaner: As recommended by stone producer.

2.6 MORTAR AND GROUT MIXES

- A. Mortar: Comply with referenced standards and with manufacturers' written instructions.
 - 1. Do not use admixtures. Do not use calcium chloride.
 - 2. Combine mortar materials and mix thoroughly. Discard mortar when it has reached initial set.
- B. Latex-Modified Portland Cement Setting Mortar: Proportion and mix portland cement, aggregate, and latex additive to comply with manufacturer's written instructions.
- C. Mortar-Bed Bond Coat: Mix neat cement and latex additive to a creamy consistency.
- D. Latex-Modified Portland Cement Bond Coat: Proportion and mix portland cement, aggregate, and latex additive to comply with manufacturer's written instructions.
- E. Cement-Paste Bond Coat: Mix either neat cement or cement and sand with water to a consistency similar to that of thick cream.
- F. Joint Grout: Comply with mixing requirements in referenced ANSI standards and with manufacturer's written instructions.

2.7 STONE FABRICATION

- A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.
- B. Fabricate stone to comply with requirements indicated and with the following references:
 - 1. Granite: NBGQA's "Specifications for Architectural Granite."
- C. Cut stone to produce pieces of thickness, size, and shape indicated, including details on Drawings and Shop Drawings.
 - 1. Pattern: As indicated on Drawings.
 - 2. Joint Width: As indicated on Drawings
- D. Fabricate stone stair treads in sizes and profiles indicated. Cut grooves about 1/8 inch wide by 1/16 inch deep in stair treads as indicated.
- E. Carefully inspect finished stone units at fabrication plant for compliance with requirements. Replace defective units. Clean backs of stones to remove rust stains and iron particles.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces indicated to receive stone.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.
- B. Remove substances from concrete substrates that could impair mortar bond.
- C. Clean dirty or stained stone surfaces before setting.
 - 1. Scrub with fiber brushes; drench with clear water.
 - 2. Use mild cleaning compounds.

3.3 INSTALLATION, GENERAL

- A. Do necessary field cutting as stone is set. Cut lines straight and true and finish field-cut edges to match shop-cut edges.
 - 1. Use power saws with diamond blades to cut stone.
- B. Set stone to comply with Drawings and Shop Drawings.
- C. Scribe and field-cut stone as necessary to fit at obstructions. Produce neat joints of size specified or indicated.
- D. Expansion- and Control-Joint Installation: Locate and install according to Drawings and Shop Drawings.

3.4 INSTALLATION TOLERANCES

- A. Variation in Line: Do not exceed 1/8 inch in 96 inches maximum.
- B. Variation in Joint Width: Do not vary joint thickness more than 1/16 inch or 1/4 of nominal joint width, whichever is less.
- C. Variation in Surface Plane: Do not exceed 1/8 inch in 10 feet, 1 maximum from level or slope indicated.
- D. Variation in Plane between Adjacent Units (Lipping): Do not exceed 1/32-inch difference between planes of adjacent units.

3.5 INSTALLATION OF STONE DIRECTLY OVER CONCRETE

- A. Saturate concrete with clean water several hours before placing setting bed. Remove surface water about one hour before placing setting bed.
- B. Apply mortar-bed bond coat to damp concrete and broom to provide an even coating that completely covers the concrete. Do not exceed 1/16-inch thickness. Limit area of mortar-bed bond coat to avoid its drying out before placing setting bed.
 - 1. Place reinforcing wire mesh over concrete, lapped at joints by at least one full mesh and supported so mesh becomes embedded in middle of setting bed. Hold edges back from vertical surfaces about 1/2 inch.
- C. Apply mortar bed to finished elevations indicated immediately after applying mortar-bed bond coat.

- D. Mix and place only that amount of mortar bed that can be covered with stone before initial set. Cut back, bevel edge, and discard material that has reached initial set before stone can be placed.
- E. Place stone before initial set of mortar occurs. Immediately before placing stone on setting bed, apply uniform 1/16-inch- thick bond coat to bed or to back of each stone unit.
- F. Tamp and beat stone with a wooden block or rubber mallet.
 - 1. Set each unit in a single operation before initial set of mortar; do not return to areas already set.
- G. Rake out joints to depth required to receive grout or pointing mortar as units are set.
- H. Point joints after setting.

3.6 INSTALLATION OF STONE OVER MEMBRANE

- A. Place cleavage membrane over substrates, lapped at least 4 inches at joints.
- B. See Division 7 waterproofing Section for installation of waterproofing.
 - 1. Carefully place stone and setting materials over waterproofing. Replace protection materials that become displaced and arrange for repair of damaged waterproofing before covering with stone.
 - 2. Provide cork joint filler, where indicated.
- C. Place reinforcing wire fabric over membrane protection board, lapped at least one full mesh at joints and supported so mesh becomes embedded in middle of setting bed. Hold edges back from vertical surfaces about 1/2 inch.
- D. Place mortar bed over membrane protection board to uniform thickness at elevations required with reinforcing wire fabric fully embedded in middle of mortar bed.
- E. Mix and place only that amount of mortar bed that can be covered with stone before initial set.
- F. Apply uniform 1/16-inch- thick bond coat to bed or to back of each stone unit then place stone before initial set of mortar occurs.
- G. Tamp and beat stone with a wooden block or rubber mallet. Set each unit in a single operation before initial set of mortar.
- H. Rake out joints to depth required to receive grout as units are set.
- I. Point joints after setting.

3.7 STONE STAIR INSTALLATION

- A. Stone Stair Treads and Risers: "Installation of Stone Directly over Concrete".
- B. Thin-Set, Latex-Portland Cement Mortar: ANSI A108.5.

3.8 GROUTING

- A. Polymer-Modified Cement Grout for Stone Joints: ANSI A108.10 and manufacturer's written instructions.
 - 1. Do not use sanded grout for polished stone.
 - 2. Grout joints as soon as possible after initial set of setting bed. Finish joints by tooling to produce a slightly concave polished joint, free of drying cracks.
 - 3. Maintain grout in damp condition for seven days.

3.9 ADJUSTING AND CLEANING

- A. Remove and replace damaged stone and supports. Repair stone using methods recommended by stone producer.
- B. Remove and replace defective joints.
- C. Remove and replace stone not matching final samples and mockups.
- D. Remove and replace stone not complying with requirements.
- E. Replace non-complying stone to match final samples and mockups, comply with specified requirements. Replacement stone shall show no evidence of replacement.
- F. In-Progress Cleaning: Clean stone as work progresses. Remove mortar and stains before tooling joints.
- G. Final Cleaning: Clean stone as recommended by fabricator or stone producer.

3.10 PROTECTION

- A. Prohibit traffic from installed stone for a minimum of 72 hours.
- B. Protect during construction with non-staining kraft paper, and cover with a layer of untreated plywood where adjoining areas require construction work access.

END OF SECTION 096340

SECTION 096510 - RESILIENT FLOOR TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Vinyl composition tile (VCT).
- B. Related Sections include the following:
 - 1. Division 9 Section "Resilient Wall Base and Accessories" for resilient wall base, reducer strips, and other accessories installed with resilient floor tile.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated.

1.4 QUALITY ASSURANCE

- A. **INSTALLER QUALIFICATIONS:** ENGAGE AN EXPERIENCED INSTALLER TO PERFORM WORK OF THIS SECTION WHO HAS SPECIALIZED IN INSTALLING RESILIENT PRODUCTS SIMILAR TO THOSE REQUIRED FOR THIS PROJECT AND WITH A RECORD OF SUCCESSFUL IN-SERVICE PERFORMANCE.
- B. **SOURCE LIMITATIONS:** OBTAIN EACH TYPE, COLOR, AND PATTERN OF PRODUCT SPECIFIED FROM ONE SOURCE WITH RESOURCES TO PROVIDE PRODUCTS OF CONSISTENT QUALITY IN APPEARANCE AND PHYSICAL PROPERTIES WITHOUT DELAYING THE WORK.
- C. **Fire-Test-Response Characteristics:** Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. **CRITICAL RADIANT FLUX:** 0.45 W/SQ. CM OR GREATER WHEN TESTED PER ASTM E 648.
 - 2. **SMOKE DENSITY:** MAXIMUM SPECIFIC OPTICAL DENSITY OF 450 OR LESS WHEN TESTED PER ASTM E 662.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store tiles on flat surfaces.

1.6 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than **70 deg F** or more than **95 deg F**, in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than **55 deg F** or more than **95 deg F**.
- C. Close spaces to traffic during floor covering installation.
- D. Close spaces to traffic for 48 hours after floor covering installation.
- E. Install resilient products after other finishing operations, including painting, have been completed.
- F. DO NOT INSTALL FLOORING OVER CONCRETE SLABS UNTIL SLABS HAVE CURED AND ARE SUFFICIENTLY DRY TO BOND WITH ADHESIVE, AS DETERMINED BY FLOORING MANUFACTURER'S RECOMMENDED BOND AND MOISTURE TEST.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish 1 box for every **50** boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products listed in other Part 2 articles.

2.2 VINYL COMPOSITION TILE

- A. Vinyl Composition Tile (VCT): ASTM F 1066.
 - 1. MANUFACTURERS:
 - a. ARMSTRONG PREMIUM EXCELON CROWN TEXTURE.
 - b. APPROVED EQUAL.
 - 2. PROPERTIES AND CHARACTERISTICS:
 - a. VINYL COMPOSITION TILE: FS SS-T-312, TYPE IV.
 - b. CLASS 1- SOLID COLOR TILE
 - c. COMPOSITION 1: FREE OF ASBESTOS
 - d. Colors: As selected by Architect from manufacturer's full PRICE range of colors and patterns produced for tile complying with requirements indicated.
 - e. Wearing Surface: Smooth.
 - f. Thickness: 1/8 inch
 - g. Size: 12 by 12 inches.
 - h. CLASS A FLAME SPREAD.
 - i. Fire-Test-Response Characteristics:
 - 1) Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E 648.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
- C. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of tiles, and in maximum available lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 3. Moisture Testing:
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft.** in 24 hours.
 - b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.
- E. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
- F. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 - 1. Do not install resilient products until they are same temperature as space where they are to be installed.
- G. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 TILE INSTALLATION

- A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay VCT tiles: IN COLORS AS SELECTED BY ARCHITECT FROM FULL RANGE.

- B. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles with grain direction alternating in adjacent tiles (basket-weave pattern).
COORDINATE WITH ARCHITECT.
- C. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.
- D. Extend tiles into toe spaces, door reveals, closets, and similar openings.
- E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
- F. Install tiles on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of tile installed on covers. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- G. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
 - a. Do not wash surfaces until after time period recommended by manufacturer.
- B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
 - 1. Apply protective floor polish to horizontal surfaces that are free from soil, visible adhesive and surface blemishes if recommended in writing by manufacturer.
 - a. Use commercially available product acceptable to manufacturer.
 - b. Coordinate selection of floor polish with Owner's maintenance service.
 - 2. Cover products installed on horizontal surfaces with undyed, untreated building paper until Substantial Completion.

3. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 096510

SECTION 096513 - RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Wall base.
 - 2. Molding accessories.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated.
- C. SCHEDULE OUTLINING PRODUCTS TO BE USED AND THEIR LOCATIONS.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide resilient stair accessories with a critical radiant flux classification of Class I, not less than 0.45 W/sq. cm, as determined by testing identical products per ASTM E 648 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than **50 deg F** or more than 90 deg F.

1.6 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than **70 deg F** or more than **95 deg F**, in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.

2. During installation.
 3. 48 hours after installation.
- B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than **55 deg F** or more than **95 deg F**.
- C. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Furnish not less than **10 linear feet** for every **500 linear feet** or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

2.2 COLORS AND PATTERNS.

- A. Colors and Patterns: As selected by Architect from manufacturer's full range.

2.3 RESILIENT WALL BASE

- A. Wall Base: ASTM F 1861.
1. Roppe Corporation; 700 SERIES.
 2. JOHNSONITE; CB
 3. APPROVED EQUAL
- B. Type (Material Requirement): **TV (vinyl) WITH 2% - 8% RUBBER CONTENT.**
- C. Group (Manufacturing Method): **II (layered).**
- D. Style: Cove (with top-set toe).
- E. Minimum Thickness: **0.125 inch.**

- F. Height: **4 inches.**
- G. Lengths: **Cut lengths 48 inches long or coils in manufacturer's standard length.**
- H. Outside Corners: **Premolded.**
- I. Inside Corners: **Premolded.**
- J. Surface: Smooth.

2.4 RESILIENT STAIR ACCESSORIES

- A. Treads: FS RR-T-650.
 - 1. Roppe Corporation; #96 VANTAGE PROFILE WITH RISER.
 - 2. Johnsonite; RTR
 - 3. APPROVED EQUAL
- B. Material: **Rubber, Composition A.**
- C. Surface Design: Type **2 design (designed).**
 - 1. Type 2 Design: **Raised-disc pattern WITH ABRASIVE STRIPS**
- D. Nosing Style: **Square, adjustable to cover angles between 60 and 90 degrees.**
- E. Nosing Height: **1-1/2 inches.**
- F. Thickness: 0.125 INCHES.
- G. Size: Lengths and depths to fit each stair tread **in one piece.**
- H. Risers: Smooth, flat, INTEGRAL (ONE PIECE) WITH treads.
 - 1. Thickness: **0.125 inch.**

2.5 RESILIENT MOLDING ACCESSORY

- A. Description: **Cap for cove resilient sheet floor covering, Nosing for resilient floor covering, Reducer strip for resilient floor covering AND ANY OTHER ACCESSORY REQUIRED TO TRANSITION BETWEEN MATERIALS OLD AND NEW.**
 - 1. Roppe Corporation
 - 2. JOHNSONITE
 - 3. APPROVED EQUAL.
- B. Material: **Rubber.**

- C. Profile and Dimensions: **As REQUIRED** TO TRANSITION BETWEEN VCT AND EXISTING FINISHES, RUBBER STAIR LANDING MATERIALS AND ADJACENT FINISHES AND ANYWHERE TWO DIFFERENT MATERIALS MEET.
- D. COLORS: AS SELECTED FROM MANUFACTURERS FULL RANGE OF STANDARD COLORS

2.6 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturers for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
- C. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. Concrete Substrates for Stair Accessories: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 3. Moisture Testing:

- a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft.** in 24 hours.
 - b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
- E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
1. Do not install resilient products until they are the same temperature as the space where they are to be installed.
- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 RESILIENT WALL BASE INSTALLATION

- A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- D. Do not stretch wall base during installation.
- E. On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.
- F. Premolded Corners: Install premolded corners before installing straight pieces.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Resilient Stair Accessories:
 1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
 2. Tightly adhere to substrates throughout length of each piece.

- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
 - a. Do not wash surfaces until after time period recommended by manufacturer.
- B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
 - 1. Apply protective floor polish to stair accessory surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.
 - a. Use commercially available product acceptable to manufacturer.
 - b. Coordinate selection of floor polish with Owner's maintenance service.
 - 2. Cover stair accessory products with undyed, untreated building paper until Substantial Completion.
 - 3. Do not move heavy and sharp objects directly over stair accessories. Place plywood or hardboard panels over surfaces and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 09653

SECTION 096900 – CARPET TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Carpet removal, new carpet and accessories for direct glue down installation.

B. Alternates or Substitutions: Approval of alternate or substitute products will be considered only under the terms and conditions as outlined below:

Whenever a particular make of material or trade name is specified herein, it shall be regarded as being indicative of the standards required. Regardless of format of specifications, any product other than those named in Part 2 -Products, item number 2.1, must proceed as an alternate or substitute. A bidder who proposes to quote on the basis of an alternate or substitute material or system shall submit to the architect, at least 14 days prior to the scheduled bid date, the following information:

1. Written application for approval of alternate or substitute to include specifications of alternate or substitute carpet on company letterhead and signed by company officer.
2. "24" x "24" sample of the proposed alternate or substitute with recommended backing technology.
3. A complete sample representation of colors available.
4. Copies of warranties for proposed alternate or substitute.
5. List of a minimum of three (3) jobs, one of which must be in use for at least ten (10) years, where alternate or substitute is/was used under similar conditions. These jobs shall be located within one hundred (100) miles of the owner's office. Each job shall be available for inspection by the owner's representatives.
6. List of approved alternates or substitutes will be issued to all bidders prior to bid opening.

C. General: The following publications of the issues listed below, but referred to hereinafter by basic designation, form a part of this specification to the extent as if bound herein:

American Society for Testing and Materials (ASTM):

1. E648 – Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
2. E662 – Test Method for Smoke Density
3. AATCC 16E- Color Fastness to Light
4. AATCC 129- Color Fastness to Ozone and Gas
5. AATCC 134- Static Generation of Fiber
6. AATCC 175- Red 40 Stain Test
7. DOC-FF-1-70- Pill Test
8. Moisture Penetration by Impact

1.2 SUBMITTALS

- A. **096900_01 Product Data:**
- B. **096900_02 Layout Drawings:** Show layout of each carpet type installation, at 1/8" scale.
- C. **096900_03 Samples:** Submit for verification purposes, 9" x 9" samples of each carpet required. Samples shall be accompanied by manufacturer's technical specification for each carpet required using terminology characteristics as listed in this specification. Also include a complete representation in sample form of all available colorations.
- D. **0969000_04 Warranty:** Submit for verification purposes a sample warranty
- E. **0969000_05 Maintenance Data:** Submit manufacturer's printed maintenance recommendations for the care, cleaning, and maintenance of the carpet, including detailed instructions pertaining to hot water extraction methods.

1.4 QUALITY ASSURANCE

- A. Flooring Contractor's Qualifications: Firm with not less than 5 consecutive years of experience in installation of commercial carpeting of type, quantity and installation methods similar to work of this section. FLOORING CONTRACTOR SHALL SUBMIT WITH BID PROPOSAL WRITTEN CERTIFICATION FROM CARPET MANUFACTURER THAT CERTIFIES FIRM AS AN APPROVED INSTALLER FOR THIS PROJECT.
- B. Manufacturer's Qualifications: Firm (carpet mill) with not less than 5 consecutive years of production experience with carpet similar to type specified in this section; whose published product literature clearly indicates general compliance of products with requirements of this section. Manufacturer must be ISO 14001 certified.
- C. Measurement Verification: Dimensions shown on drawings are approximate. It is the Flooring Contractor's responsibility to verify all dimensions and job site conditions; order sufficient yardage to fully carpet areas as indicated and to fill overage requirements as specified. No substitutions shall be permitted to make up for any shortage of material in overage or in carpet to be installed.
- D. Flooring Contractor shall be totally responsible for the accuracy of his measurements of total yardage, individual floor yardage, and dye lot yardage requirements; no additional compensation shall be allowed for shortage of materials.
- E. Dye Lots: All carpet of the same type in continuous areas shall be from the same dye lots. Carpets that are piece dyed and are limited to dye batch sizes must be approved by the owner. Transition from one dye lot to another shall be detailed on shop drawings and approved by owner.
- F. Owner reserves the right to test carpet at their expense to verify that the delivered carpet is as specified. If carpet does not meet specifications, manufacturer will reimburse owner the testing expense and the carpet may be rejected.

1.5 PRODUCT DELIVERY, STORAGE & HANDLING

- A. Deliver carpeting materials in original mill protective wrapping with mill register numbers and tags attached. Maintain wrappers and protective covers in place until carpet is ready for installation. Store inside, in well-ventilated area, protected from weather, moisture and soiling.
- B. Deliver all required overages and maintenance stock to owner's specified location prior to beginning installation.

1.6 JOB CONDITIONS

- A. Environmental Conditions: Maintain temperatures in space in accordance with carpet or adhesive manufacturer's recommendations, but in no case less than 65 degrees F for 24 hours prior to, during and after installation. Subfloor temperature should be a minimum 65 degrees F for 24 hours prior to and after installation.
- B. Precondition: All of the carpet shall be spread in a room on site 24 hours prior to actual installation with the room preconditioned at a minimum of 65 degrees F with humidity between 10% to 65%.
- C. Moisture: A calcium chloride test should be performed on the concrete to detect the presence of moisture. Acceptable results require that moisture content does not exceed 8 lbs. per 1,000 square feet per 24 hours. One calcium chloride test should be performed for every 300 yards of carpet. Relative Humidity ASTM-F-2170 test method maybe be used in place of calcium chloride test. Acceptable moisture levels are 85% maximum relative humidity. Alkalinity tests must also be performed. PH should register between 5 and 9. All test should be documented and results saved.

1.7 EXTRA STOCK

- A. General: Furnish 5% additional yardage of each carpet type required; extra yardage is over and above any overage provided by manufacturer. Normal manufacturing overage not to exceed 10% for under 1000 yards, not to exceed 5% for over 1000 yards. Deliver to the Owner uncut in clearly marked dust-proof packages **prior to commencement of work**; store where directed.

PART 2 - PRODUCTS

2.1 CARPET

- A. Carpet Type CPT-1 BASIS OF DESIGN:
MANUFACTURER: SHAW CONTRACT CARPETING
COLLECTION: OPEN WORK
STYLE: MESH TILE 5T044
COLOR: GILD 93111
INSTALLATION METHOD: ASHLAR & MONOLITHIC

Carpet shall meet the following minimum requirements:

Construction:	MULTI-LEVEL PATTERN LOOP
Face Fiber:	ECO SOLUTION Q NYLON
Dye Method:	57% SOLUTION DYED/ 43% YARN DYED
Gauge:	1/10 IN
Stitches Per Inch:	10 PER INCH
Pile Thickness:	.131"
Tufted Yarn Weight:	22 OZ/ YARD 2
Soil Retardant	DuraTech by Invista
Stain Resistance	XGuard with 15 Year Limited Warranty Against Staining
Bleach Resistance	ColorSafe with 15 Year Limited Warranty Against Color Loss from Bleach Spills
Primary Backing:	100% Woven Synthetic
Primary Precoat:	High Performance Precoa

RECOMMENDED ADHESIVE: SHAW 5000, SHAW 5100, SHAW 4151, SHAW 3800, SHAW 5036

Secondary Backing: Infinity™ Modular Reinforced Vinyl Composite Closed Cell Polymer

Recycled Content: Approximately 15% Pre-Consumer

Size: 24 x 24

Fiber Modification Ratio: < 1.5; To estimate the Modification Ratio of a fiber shape, the size of the outer circle's circumference of the fiber is compared to the size of the inner circle's circumference. The smaller the number, the less likely the fiber shape will trap and hold soil and be subject to premature crushing and matting.

Static Control: < 3.0 KV when tested under AATCC 134

Flammability:

a. DOC-FF-1-70 Pill Test: Passes.

b. Floor Radiant Panel: Meets NFPA Class 1 when tested per ASTM-E-648 glue down.

c. NBS Smoke Chamber Less than 450 Flaming Mode. Per ASTM-E-662

Color Fastness:

a. Lightfastness - AATCC 16E-1982 - Dark color: Gray scale rating of 4 or better after 160 standard fading hours as compared to AATCC Gray Scale for evaluation change in color.

b. Ozone and Gas - AATCC 129-1981 - Rating 3 or better per color AATCC transference scale.

Moisture Barrier: Passes Moisture Impact at 10,000 cycles.

Passes British Spill Test

Indoor Air Quality: Manufacturer must demonstrate that carpet is certified under the CRI Green Label Plus Program.

NSF 140 Certification: SCS Sustainable Choice Gold

Carpet Manufacturers: Subject to compliance with specifications, the following manufacturer is approved. SHAW CONTRTRACT CARPETING : 1800-257-7429

Pattern and Color: Understanding the importance of pattern and color for aesthetics, as well as appearance retention and maintainability, owner reserves the right to reject any product or manufacturer based solely on pattern and color considerations.

B. WARRANTIES

1. Definition of Lifetime: Lifetime is defined as the period from which materials are installed until the date in which the owner removes them from service.
2. Manufacturer's Lifetime Warranty, non-prorated, against product failure covering all costs including freight, labor, and material for the following:
 - Edge Ravel
 - Back delamination
 - Superior tuft bind in high traffic environments, wet or dry
 - Static protection as stated above
 - Moisture Barrier-Pre-Coat and Backing
 - Wear - No more than 10% Face Yarn Loss
 - Adhesive failure

C. CATIONIC STAIN RESISTANCE

1. Stain resistant properties must be permanent and not removable by commercial cleanings or abrasive wear. Under GSA requirements stain resistant carpets must score no less than 8.0 (10.0 is the best) on the AATCC Red 40 Stain Scale. Test sample must first be exposed to 100 revolutions on the Taber Abrader (1,000-gram weight per H-18 wheel) and then abraded area must be stain tested using AATCC test method 175. Topical stain resistant

treatments will not be acceptable. Stain resistant properties must be inherent and warranted for 15 years.

D. BLEACH RESISTANT

1. Will resist color loss from diluted bleach applications for a period of fifteen years from the date of original installation. Diluted bleach applications means spills or splashes on the carpet of diluted bleach solutions (10% or less) of the type normally used for cleaning or disinfecting purposes.

E. ENVIRONMENTAL ATTRIBUTES – LEED Criteria

1. Carpet tile must be 100% recyclable
2. Carpet tile must meet the NSF 140 standard SCS Sustainable Choice-Gold/EPP, California Gold.
3. Recycled Content: Carpet tile must contain 15% pre-consumer recycled content based on total weight.
4. Carpet mill must be ISO 14001 certified.
5. Carpet Face Yarn: In accordance with Executive Order 13101, carpet face yarn must be third party certified as an Environmentally Preferred Product (EPP).
6. Low Emitting Materials: Carpet and adhesives, must meet the *Low Emitting Materials* standards as outlined in U.S. Green Building Council LEED criteria. Adhesives must meet VOC emissions standards per South Coast Air Quality Management District Rule #1168, and CRI's Green Label Plus
7. End of Life Reclamation: Carpet tile must have an existing methodology actively in place to achieve landfill diversion. Refer to Section 3.03 of this section for specific requirements for reclamation of material.

2.2 ACCESSORIES

- A. Adhesives: Waterproof, non-flammable carpet adhesive recommended and approved by carpet manufacturer in writing for compatibility with carpet backing; have no calculated VOC's, be non-flammable, and meet the criteria of the CRI Green Label Plus Certification Program, SCAQMD Rule 1168 and CHPS 1350. MSDS and samples required on product used. Adhesive must have Lifetime Bond Warranty from manufacturer
- B. Miscellaneous Materials: As recommended and approved in writing by manufacturer of carpet, and selected by Flooring Contractor to meet project circumstance and requirements.
- C. Protection Paper: Fortifiber Corporation "Seekure 892", or approved heavy, reinforced, non-staining kraft laminated paper.

PART 3 - EXECUTION

3.1 CARPET REMOVAL

- A. Remove and dispose of all existing carpet and materials to make subfloor acceptable for installation if applicable. INSTALL SELF LEVELER AS REQUIRED TO ATTAIN SUBSTRATE CONDITIONS DEEMED ACCEPTABLE TO MANUFACTURER'S REPRESENTATIVE.

3.2 INSPECTION

- A. General: Do not start work until works of other trades are substantially completed. Inspect surfaces to receive carpet and verify that all such work is complete to the point where this installation may properly commence. In the event of discrepancy, notify ARCHTIECT. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved. Start of

carpet installation indicates acceptance of subfloor conditions and full responsibility for completed work.

3.3 CARPET RECLAMATION – Carpet Reclamation program shall be through carpet manufacturer's recycling program.

A. SUBMITTALS

1. Proposed dust-control measures.
2. Proposed packing and transportation measures.
3. Schedule of carpet reclamation activities indicating the following:
 - a. Detailed sequence of removal work.
 - b. Inventory of items to be removed and recycled.
4. Reclamation agency records indicating receipt and disposition of used carpet.

B. QUALITY ASSURANCE

2. Carpet Remover: Firm [or designated agent firm] providing carpet removal services through carpet manufacturer's recycling program.
3. Regulatory Requirements: Comply with governing regulations. Comply with hauling and disposal regulations of authorities having jurisdiction.
4. Record off-site removal of debris and materials and provide the following information regarding the removed materials. Time and Date of Removal; Type of Material; Weight and Quantity of Materials; Final Destination of Materials.
5. Certification: Reclamation Agency and Carpet Remover shall certify in writing that used carpet was removed and recycled to assure carpet is not landfilled.
6. Removed carpet and associated materials shall not be removed and placed in a landfill.

C. PREPARATION

1. Vacuum used carpet before removal.

D. CARPET REMOVAL

1. Remove used carpet in large pieces, roll tightly, and pack neatly in container. [Include carpet scrap and waste from new installation.] For used carpet tile remove and stack face to face and back to back. Immediately remove from Site and place in container or trailer.
2. Deposit only clean, dry used carpets in containers. Clean shall be defined as carpet free from demolition debris or asbestos contamination, garbage, and tack strips.

E. CONTAINER DISPOSAL

1. Place corrugated sleeve around 40" x 48" pallet. Containers will hold up to 150-200 yards / 800-1,000 lbs.
2. Carpet removal: Cut carpet in 4-foot strips using National #581 Just Push Cutter.
3. Roll carpet up and place standing up in containers. Place lid on containers when full. Place plastic sleeve over containers and stack two high.
4. Store containers until project is complete or you have a full trailer load. A typical trailer can hold 50-52 containers of 40,000 lbs.

3.4 INSTALLATION, GENERAL

- A. General: Comply with manufacturer's instructions and recommendations for installation of this type of carpet by the full glue down method.
- B. Prepare the subfloor to insure a successful installation.
- C. Carpeting shall be installed with pile lying in the STAGGERED AND IN THE same direction (ASHLAR PATTERN), unless another specified method is recommended by the manufacture or at owner's approval. Cut carpet tile evenly and accurately to fit neatly at walls, columns, and

projections. Extend carpet under open-bottomed and raised-bottom obstructions, and under removable flanges of obstructions.

- D. Installed carpet tiles shall be free from ripples, ravel, frays, and puckers. All loop pile carpets will demonstrate some fuzzy edges due to normal manufacturing conditions.
- E. Expansion Joints: Do not bridge building expansion joints with continuous carpeting, provide for movement.

3.5 CLEANING AND PROTECTION

- A. Remove and dispose of debris and unusable scraps.
- B. Vacuum carpet using two motor, top loading, upright commercial machine with brush-only element, utilizing a high filtration dust bag. Remove spots in accordance with carpet manufacturer's guidelines and replace carpet where spots cannot be removed. Remove any protruding face yarn using sharp scissors. Be certain to trim any loose yarns or fibers at all seams.
- C. Following cleaning and vacuum carefully protect the carpeting from soiling and damage until final acceptance. Protection shall be accomplished by using approved protection paper. Edges shall be lapped 6 inches and secured with non-asphaltic tape. Covering shall be kept in repair and damaged portions replaced during the construction and move-in period.
- D. Maintenance Materials: Deliver usable scraps to Owner's designated storage space, properly packaged and identified. Dispose of smaller pieces as construction waste.

END OF SECTION 096900

SECTION 097200 - WALL COVERINGS

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Vinyl wall covering.
 - 2. Heavy-duty, synthetic, textile wall covering.
 - 3. Wallpaper.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at **[Project site]** <Insert location>.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include data on physical characteristics, durability, fade resistance, and fire-test-response characteristics.
- B. Sustainable Design Submittals:
- C. Shop Drawings: Show location and extent of each wall-covering type. Indicate pattern placement, seams and termination points.
- D. Samples: For each type of wall covering and for each color, pattern, texture, and finish specified, full width by 36-inch long in size.
 - 1. Wall-Covering Sample: From same production run to be used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of fabric.
- E. Samples for Initial Selection: For each type of wall covering.
- F. Product Schedule: For wall coverings. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Product Test Reports: For each wall covering, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Wall-Covering Materials: For each type, color, texture, and finish, full width by length to equal to 5 percent of amount installed.

1.8 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for installation.
 - 1. Build mockups for each type of wall covering on each substrate required. Comply with requirements in ASTM F 1141 for appearance shading characteristics.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for occupants after Project completion during the remainder of the construction period.
- B. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion is provided on the surfaces to receive wall covering.
- C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates according to test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.

2. Fire-Growth Contribution: No flashover and heat and smoke release according to [NFPA 265]

2.2 VINYL WALL COVERING

A.

B. Description: Provide mildew-resistant products in rolls from same production run and complying with the following:

1. [FS CCC-W-408D and]CFFA-W-101-D for Type II, Medium, type III, Heavy-Duty products.
2. ASTM F 793 for WALL coverings.

a. Category: VI, Type III, Commercial Serviceability

C. Width: 54 inches

D. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range.

2.3 WALLCOVERING: See A602

A. Test Responses:

1. Colorfastness to Wet and Dry Crocking: Passes AATCC 8, Class 3, minimum.
2. Colorfastness to Light: Passes AATCC 16 Test Option 1 or 3, Class 4, minimum, at 40 hours.

B. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range

2.4 ACCESSORIES

A. Adhesive: Mildew-resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.

B. Primer/Sealer: Mildew resistant, complying with requirements in [Section 099123 "Interior Painting"] and recommended in writing by primer/sealer and wall-covering manufacturers for intended substrate.

C. Metal Primer: Interior ferrous metal primer complying with [Section 099123 "Interior Painting"] and recommended in writing by primer and wall-covering manufacturers for intended substrate.

D. Wall Liner: Nonwoven, synthetic underlayment and adhesive as recommended in writing by wall-covering manufacturer.

E. Seam Tape: As recommended in writing by wall-covering manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumbness, maximum moisture content, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, mildew, and incompatible primers.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
 - 1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
 - 2. Plaster: Allow new plaster to cure. Neutralize areas of high alkalinity. Prime with primer recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 3. Metals: If not factory primed, clean and apply primer recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 4. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 5. Painted Surfaces: Treat areas susceptible to pigment bleeding.
- D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finish with fine sandpaper.
- E. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- F. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 WALL LINER INSTALLATION

- A. Install wall liner, without gaps or overlaps. Form smooth wrinkle-free surface for finished installation. Do not begin wall-covering installation until wall liner has dried.

3.4 WALL-COVERING INSTALLATION

- A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.
- B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.

- C. Install strips in same order as cut from roll.
 - 1. For solid-color, even-texture, or random-match wall coverings, reverse every other strip.
- D. Install wall covering without lifted or curling edges and without visible shrinkage.
- E. Match pattern 72 inches above the finish floor.
- F. Install seams vertical and plumb at least 6 inches (150 mm) from outside corners and **3 inches** from inside corners unless a change of pattern or color exists at corner. Horizontal seams are not permitted.
- G. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.
- H. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.5 CLEANING

- A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended in writing by wall-covering manufacturer.
- C. Replace strips that cannot be cleaned.
- D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 097200

SECTION 099120 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes surface preparation and field painting of exposed **interior** items and surfaces.
 - 1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish, TOUCH-UP OF FACTORY APPLIED FINISHES AS REQUIRED.
- C. **Do not paint** pre-finished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Pre-finished items include the following factory-finished components:
 - a. Architectural woodwork.
 - b. Light fixtures.
 - 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Foundation spaces.
 - b. Furred areas.
 - c. Ceiling plenums- NOTE FRAMING & CEILING WITHIN PLENUM ABOVE ACT-4 IS TO BE PAINTED.
 - d. Utility tunnels.
 - e. Pipe spaces.
 - f. Duct shafts.
 - 3. Finished metal surfaces include the following:

- a. Anodized & powdercoated aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper and copper alloys.
 - e. Bronze and brass.
4. Operating parts include moving parts of operating equipment and the following:
- a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- D. Related Sections include the following:
1. Division 5 Section "Metal Fabrications" for shop priming ferrous metal.
 2. Division 8 Section "Steel Doors and Frames" for factory priming steel doors and frames.
 3. Division 9 Section "Gypsum Board Assemblies" for surface preparation of gypsum board.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 3. Semi-gloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's technical data sheets for each coating.
1. Material analysis including vehicle type and percentage by weight and by volume of vehicle, resin, and pigment.
 2. Application instructions including mixing, surface preparation, compatible primers and topcoats, recommended wet and dry film thickness, recommended application methods.
- B. Color and Texture Samples:
1. Provide for each coating system, color, and texture and applied to representative substrate samples.

1.5 QUALITY ASSURANCE

- A. ALL MATERIALS SHALL BE VOC COMPLIANT AND CONFORM TO N.J. STATE AND UNIFORM CONSTRUCTION CODE REQUIREMENTS.
- B. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- C. Source Limitations: Obtain **primers** for each coating system from the same manufacturer as the finish coats.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Manufacturer's stock number and date of manufacture.
 - 4. Contents by volume, for pigment and vehicle constituents.
 - 5. Thinning instructions.
 - 6. Application instructions.
 - 7. Color name and number.
 - 8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. **MAINTAIN A SERVICEABLE ABC TYPE FIRE EXTINGUISHER WITHIN THE CONFINES OF THE PAINT STORAGE AREA.**

1.7 PROJECT CONDITIONS

- A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.
- B. **DO NOT APPLY ANY PAINT, PRIMERS OR COATINGS UNTIL BUILDING IS WEATHER TIGHT WITH PERMANENT H.V.A.C. EQUIPMENT INSTALLED AND OPERATIONAL.**
- C. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.
- D. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds **75** percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

- E. Do not apply coatings during inclement weather except within enclosed, conditioned spaces.
 - 1. Provide temporary lighting to achieve a well-lit surface with a level of at least 80 foot-candles measured mid-height. PAINTING CONTRACTOR SHALL PROVIDE ADDITIONAL TEMPORARY LIGHTING REQUIRED TO PAINT SPACES.
 - 2. Provide continuous ventilation and heating to prevent accumulation of hazardous fumes and to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and for 48 hours after application of finishes, or longer if required to obtain fuel cure as indicated by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Sherwin-Williams Co. (Sherwin-Williams).
 - 2. APPROVED EQUAL.

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions AS PER THE "OR EQUAL" REQUIREMENTS IN DIVISION 1.
- C. Colors: As selected by Architect from manufacturer's full range. .

2.3 INTERIOR PRIMERS

- A. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.

1. Sherwin-Williams; ProGreen 200 Interior Latex Primer, B28W651 : Applied at a dry film thickness of not less than 1.6 mils.
 2. APPROVED EQUAL.
- B. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive Acrylic-based metal primer.
1. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Waterbased Primer, B66-310: Applied at a dry film thickness of not less than 2.0-4.0 mils.
 2. APPROVED EQUAL
- C. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.
1. Sherwin-Williams; primer not required over this substrate EXCEPT Sherwin-Williams over galvanized metal surfaces under Acrylic finishes.
 - a. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Waterbased Primer, B66-310: Applied at a dry film thickness of not less than 2.0-4.0 mils.
 - b. APPROVED EQUAL.

2.4 INTERIOR FINISH COATS

- A. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel (For: Gypsum board walls and ceiling areas)
1. Sherwin-Williams; ProGreen 200 Interior Latex Eg-Shel, B20W651 Series: Applied at a dry film thickness of not less than 1.6 mils.
 2. APPROVED EQUAL.
- B. Interior Semi-gloss ACRYLIC Enamel: Factory-formulated semi-gloss acrylic enamel for interior application
1. Sherwin-Williams; Pro Industrial O VOC Acrylic, Semi-Gloss, B66: Applied at a dry film thickness of not less than 1.7 mils
 2. APPROVED EQUAL.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil, DIRT, METAL FINES, SPACKLE AND SAW DUST and grease before Painting.
 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturers written instructions for each particular substrate condition and as specified.
 1. Provide barrier coats over incompatible primers or remove and reprime.
 2. Cementitious & Existing Materials: Prepare plaster ceiling, concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast-cleaning methods / hand or machine scraping as recommended by paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
 - c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
 3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
 - a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush; clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.

4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Material Preparation: Mix and prepare paint materials according to manufacturers written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 7. Paint backsides of access panels and removable or hinged covers to match exposed surfaces.
 8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 9. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions sand between applications.
 2. Omit primer over metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required. IF SPRAY EQUIPMENT IS USED, ADJACENT AREAS ARE TO BE PROTECTED FROM OVERSPRAY. AREAS WHERE SPRAY EQUIPMENT IS TO BE USED SHALL BE SEALED OFF TO PREVENT PAINT MIST FROM TRAVELLING AND STAINING OTHER AREAS OF THE BUILDING. OPEN DUCTWORK, DIFFUSERS, RETURNS ARE TO BE COVERED WHETHER ACTIVE OR INACTIVE TO PREVENT PAINT MIST FROM ENTERING SUCH SYSTEMS.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.
- E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces. PAINTING SHOULD NOT AFFECT THE OPERATION OF MECHANICAL COMPONENTS OR THE CONDUCTIVITY OF ELECTRICAL COMPONENTS.
- F. Mechanical items to be painted include, but are not limited to, the following:
1. Uninsulated metal piping.
 2. Uninsulated plastic piping.
 3. Pipe hangers and supports.
 4. Tanks that do not have factory-applied final finishes.
 5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.

7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
- G. Electrical items to be painted include, but are not limited to, the following:
 1. Switchgear.
 2. Panelboard.
 3. Electrical equipment that is indicated to have a factory-primed finish for field painting.
- H. PROVIDE ADDITIONAL PAINT COATS REQUIRED FOR COMPLETE COVERAGE AT ALL HOLLOW METAL FRAMES.
- I. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:
 1. Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
 2. Testing agency will perform appropriate tests for the following characteristics as required by Owner:
 - a. VOC COMPLIANCE
 3. Owner may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove noncomplying paint from Project site, pay for testing, and repaint surfaces previously coated with the noncomplying paint. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
 1. Full-Gloss Modified Acrylic-Enamel Finish: **Two finish coats** over a rust-inhibitive primer.
 - a. Primer: Exterior ferrous-metal primer. S-W Pro-Cryl Universal WB Primer, B66-300
 - b. (2) Finish Coats: Exterior full-gloss ACRYLIC-alkyd enamel. S-W WATERBASED INDUSTRIAL ENAMEL, B53-300.
- B. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:
 1. Full-Gloss Modified Acrylic-Enamel Finish: **Two finish coats** over a galvanized metal primer.
 - a. Primer: Exterior galvanized metal OR ALUMINUM primer. S-W Pro-Cryl Universal WB Primer, B66-310
 - b. (2) Finish Coats: Exterior full-gloss ACRYLIC-alkyd enamel. SW: WATERBASED INDUSTRIAL ENAMEL, B53-300.

3.8 INTERIOR PAINT SCHEDULE

- A. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
 1. WALLS / Gypsum Board & Plaster Ceilings , Latex, eggshell . Two finish coats over a primer.
 - a. Primer: Gypsum wallboard/plaster/masonry (except CMU) primer. SW: ProGreen 200 Interior Latex Primer, B28W600.
 - b. (2) Finish coats: interior eggshell acrylic latex enamel. S-W: ProGreen 200 Interior Latex Eg-Shel, B20W651.

- B. Ferrous Metal: HM DOOR FRAMES AND RAILINGS. Provide the following finish systems over ferrous metal:
1. Semi-gloss ACRYLIC-Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior ferrous-metal primer. S-W: Pro-Cryl Universal WB Primer, B66-310
 - b. (2) Finish Coats: S-W: ProClassic Acrylic Semi-Gloss Enamel, B31
- C. Interior WATERBASED- or Polyurethane-Based Clear Satin Varnish: Factory-formulated alkyd- or polyurethane-based clear varnish.
1. Sherwin-Williams; Wood Classics WATERBORNE POLYURETHANE VARNISH, SATIN A68 Series.
 2. Approved equal

END OF SECTION 099120

SECTION 102113 – TOILET COMPARTMENTS

PART 1 - GENERALGENERAL

SECTION INCLUDES

Solid plastic toilet compartments including the following: (Eclipse)

- 1.1 Floor mounted overhead-braced toilet compartments.

RELATED SECTIONS

Section 06 10 00 - Rough Carpentry.

REFERENCES

ASTM International (ASTM):

- 1.2 ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- 1.3 ASTM B 85 - Standard Specification for Aluminum-Alloy Die Castings.
- 1.4 ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

SUBMITTALS

Submit under provisions of Section 01 30 00 - Administrative Requirements.

Product Data: Manufacturer's data sheets on each product to be used, including:

- 1.5 Preparation instructions and recommendations.
- 1.6 Storage and handling requirements and recommendations.
- 1.7 Installation methods.

Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.

Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns

QUALITY ASSURANCE

Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.

Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience

Performance Requirements:

- 1.8 Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:
 - A. Class A flame spread/smoke developed rating, tested to ASTM E84.
 - B. National Fire Protection Association (NFPA) 286: Pass.

DELIVERY, STORAGE, AND HANDLING

Store products in manufacturer's unopened packaging until ready for installation.

SCHEDULE 1 - PROJECT CONDITIONS

Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

SCHEDULE 2 - WARRANTY

Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. (Labor not included in warranty.)

PART 2 - PRODUCTS

Acceptable Manufacturer: Scranton Products, which is located at: 801 E. Corey St.; Scranton, PA 18505; Toll Free Tel: 800-445-5148; Fax: 855-376-6161; Email:[request info \(info@scrantonproducts.com\)](mailto:requestinfo@scrantonproducts.com); Web:<http://www.scrantonproducts.com>

MATERIAL

Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface;

- 2.1 Fire-resistance Rating: Class A.
- 2.2 Fire-resistance Rating: NFPA 266.
- 2.3 Recycled Content (Post Industrial): 25 %.
- 2.4 Recycled Content (Post Industrial): 100 %.
- 2.5 Recycled Content (Post Consumer): 100 %.

Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.

Aluminum Die Castings: ASTM B85, A380 alloy.

Stainless Steel Castings: ASTM A167, Type 304.

Rubber: Abrasion resistant Styrene Butadiene Rubber, 65 to 80 Shore A durometer, black

SOLID PLASTIC TOILET COMPARTMENTS AND SCREENS

Basis of Design: Eclipse Toilet Partitions as manufactured by and supplied by Scranton Products.

- 2.6 Style: Floor mounted overhead-braced toilet compartments.

Doors and Panels: High density polyethylene (HDPE), fabricated from SEQ CHAPTER 1 extruded polymer resins, forming single thickness panel.

- 2.7 Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
- 2.8 Thickness: 1 inch (25 mm).
- 2.9 Edges: Shiplap.

PRODUCT DATA SHEET 1 - Panel Color: Traditional Series:

- 2.1 White - Orange Peel.

Doors and Dividing Panels:

2.2 Extra Privacy:

- A. Height: 71-1/2 inches (1816 mm) high and mounted at 4 inches (102 mm) above the finished floor.

Metal Posts: 82.75 inches (2102 mm) high, heavy duty extruded aluminum, clear anodized finish, fastened to foot with stainless steel tamper resistant screw.

Hidden Shoe (Foot): One-piece molded polyethylene invisible shoe inserted into metal post and secured to metal post with stainless steel tamper resistant screw.

Headrail Cap and Corner Cap: One-piece molded polyethylene secured to metal post with stainless steel tamper resistant screw; adjustable to level headrail to finished floor.

Wall Brackets: Continuous heavy duty extruded aluminum, clear anodized finish, inserted into slotted panel and fastened to panels with stainless steel tamper resistant screws.

2.3 Type: Single Ear bracket aluminum.

2.4 Length: 71 inches (1803 mm).

Headrail: Heavy duty extruded aluminum, designer anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant screw and to headrail cap or corner cap with stainless steel tamper resistant screw.

2.5 Headrail Brackets: Heavy duty extruded aluminum, clear anodized finish, secured to wall with stainless steel tamper screws.

Door Hardware:

2.6 Hinges:

- A. Edge-mounted helix style stainless steel continuous hinge.
 - 1. Closing degree: 5 degrees.
 - 2. Comes to a full close on its own weight

2.7 Occupancy Indicator Latch and Housing:

- A. Material: Satin stainless steel.
- B. Occupancy indicators: Green for occupied and red not occupied.
- C. Slide bolt and button.

2.8 Coat Hook and Door Bumper Combination:

- A. Material: Chrome plated Zamak
- B. Handicap Door: Equip with second door pull and door stop.

2.9 Door Pulls: Chrome plated Zamak

PART 3 - EXECUTION

EXAMINATION

Do not begin installation until substrates have been properly prepared.

If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

PREPARATION

Clean surfaces thoroughly prior to installation.

Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

INSTALLATION

Install in accordance with manufacturer's instructions and approved Shop Drawings.

Install partitions rigid, straight, plumb, and level

Locate bottom edge of doors and panels ___ inches above finished floor.

Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5 mm).

No evidence of cutting, drilling, and/or patching shall be visible on the finished work.

Finished surfaces shall be cleaned after installation and be left free of imperfections.

ADJUSTING

Adjust doors and latches to operate correctly.

PROTECTION

Protect installed products until completion of project.

PART 4 - Touch-up, repair or replace damaged products before Substantial Completion

END OF SECTION 102113

SECTION 102800 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Public-use washroom accessories.
 - 2. Warm-air dryers.
 - 3. Under-lavatory guards.
 - 4. Custodial accessories.
- B. Related Sections:
 - 1. DIVISION 6, "ROUGH CARPENTRY" FOR BLOCKING.
 - 2. Division 9 Section "Ceramic Tile".

1.3 SUBMITTALS

- A. **102800_01** Product Data: For each type of product indicated. Include the following:
 - 1. Construction details and dimensions.
 - 2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Material and finish descriptions.
 - 4. Features that will be included for Project.
 - 5. Manufacturer's warranty.
- B. **102800_02** Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated.
 - 2. Identify products using designations indicated.
- C. **102800_03** Maintenance Data: For toilet and bath accessories to include in maintenance manuals.
- D. **102800_04** Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.5 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.6 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: **15** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.
- B. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch minimum nominal thickness.
- C. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 hot-dip zinc coating.
- D. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- E. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- F. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- G. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 TOILET ROOM ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**

1. A & J Washroom Accessories, Inc.
2. Bradley Corporation was the basis-of-design manufacture of most items as shown on the toilet accessory schedule on architectural drawings
3. APPROVED EQUAL.

REFER TO DRAWINGS FOR TOILET ROOM ACCESSORIES TO BE PROVIDED BY CONTRACTOR. **NOTE: CONTRACTOR SHALL ALSO INSTALL OWNER SUPPLIED ITEMS**

2.3 WARM-AIR DRYERS

- A. Warm-Air Dryer:

1. Basis-of-Design Product: BOBRICK WASHBAR. SEE PLUMBING DRAWINGS
2. Electrical Requirements: **115 V, 15 A, 1200 W** FOR EACH SINK / FAUCET LOCATION

2.4 UNDERLAVATORY GUARDS

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**

1. Plumberex Specialty Products, Inc.
2. Truebro by IPS Corporation.
3. APPROVED EQUAL.

2.5 CUSTODIAL ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**

1. BOBRICK Corporation.
2. APPROVED EQUAL.

2.6 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

- B. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.
- C. Recessed Toilet Accessories: Unless otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors and access panels with full-length, stainless steel hinge. Provide anchorage that is fully concealed when unit is closed.
- D. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
- E. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of **six** keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws. Set units level, plumb, and square at locations indicated, according to manufacturer's written instructions for substrate indicated.
- C. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.
- D. PROVIDE ALL REQUIRED BLOCKING IN WALLS FOR SUPPORT OF ACCESSORIES. WHETHER SUPPLIED BY CONTRACTOR OR OWNER.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

3.3 TOILET ACCESSORY SCHEDULE

- A. SEE SCHEDULE ON ARCHITECTURAL DRAWINGS.

END OF SECTION 102800

SECTION 104300 – DIMENSIONAL LETTERING

1 GENERAL

1.1 SUMMARY

- A. Related Documents: Provisions established within the General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.
- B. Section Includes:
 - 1. Interior/exterior dimensional letters of pressure sensitive, adhesive applied, digitally cut, vinyl composition.
 - 2. Interior dimensional letters of light weight fabricated metal construction.
- C. Related Sections:

1.2 QUALITY ASSURANCE

- A. Supplier: Obtain all products in this section from a single supplier.
- B. Regulatory Requirements: Products shall meet requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and local amendments and modifications.
- C. Installer: Installation shall be performed by installer specialized and experienced in work similar to that required for this project.

1.3 SUBMITTALS

- A. Submit in accordance with requirements of Division 1.
- B. **104300_01** Product Data: Submit product data for specified products. Include material details for each sign specified.
- C. **104300_02** Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including dimensions, anchorage, and accessories.
- D. **104300_03** Samples: Submit supplier's standard color chart for selection purposes and selected colors for verification purposes.
- E. **104300_04** Installation: Submit supplier's installation instructions.
- F. **104300_05** Closeout Submittals:
 - 1. Submit operation and maintenance data for installed products, including precautions against harmful cleaning materials and methods.
 - 2. Submit warranty documents specified herein.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Division 1.
 - 1. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
 - 2. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.

3. Store products protected from weather, temperature, and other harmful conditions as recommended by supplier.
4. Handle products in accordance with manufacturer's instructions.

1.5 WARRANTY

- A. Project Warranty: Comply with requirements of Division 1.
- B. Manufacturer's Warranty: Submit manufacturer's standard warranty document executed by authorized company official.
 1. Warranty Period: One (1) year from CERTIFICATE OF OCCUPANCY. Warranty specifically excludes letter mounting substrate.

2 PRODUCTS

2.1 SIGNAGE SYSTEMS

- A. Acceptable Manufacturers:
 1. ASI, 3860 W. Northwest Highway, Suite 350, Dallas, TX 75220; (214) 352-9140 telephone;
- B. FABRICATED METAL DIMENSIONAL LETTERS
- C. METAL LETTER MATERIAL
20 CHARACTERS. REFER TO DRAWINGS FOR LOCATIONS
 1. Letter Material: Aluminum in Satin Anodized finish to resemble Brass
- D. Fabricated Letters:
 1. Height: 4"
 2. Depth: 1.5"
 3. Letter style: HELVETICA
- E. Mounting Method: Stud Mount from base of each letter

2.2 FABRICATION - GENERAL

- A. General: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- B. Design, fabricate, and install sign assemblies to prevent buckling, opening up of joints, and over-stressing of welds and fasteners.
- C. Mill joints to a tight, hairline fit. Form joints exposed to the weather to exclude water penetration.
- D. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
- E. Create signage to required sizes and layout. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.

2.3 FABRICATION - GENERAL

- A. General: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- B. Design, fabricate, and install sign assemblies to prevent buckling, opening up of joints, and over-stressing of welds and fasteners.
- C. Mill joints to a tight, hairline fit. Form joints exposed to the weather to exclude water penetration.
- D. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

- E. Create signage to required sizes and layout. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.

3 EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions: Verify installation conditions previously established under other sections are acceptable for product installation in accordance with manufacturer's instructions.
- B. Scheduling of installation by Owner or its representative implies that substrate and conditions are prepared and ready for product installation. Proceeding with installation implies installer's acceptance of substrate and conditions.

3.2 INSTALLATION

- A. Install product in accordance with supplier's instructions.
- B. Install product in locations indicated using mounting methods recommended by sign manufacturer and free from distortion, warp, or defect adversely affecting appearance.
- C. Install product level, plumb, and at heights indicated.
- D. Install product at heights to conform to Americans with Disabilities Act Accessibility Guidelines (ADAAG) and applicable local amendments and regulations.
- E. Install signs within the following tolerances and in accordance with manufacturer's recommendations:
 - 1. Interior Signs: Within 1/4 inch vertically and horizontally of intended location.

3.3 CLEANING, PROTECTION, AND REPAIR

- A. Repair scratches and other damage which might have occurred during installation. Replace components where repairs were made but are still visible to the unaided eye from a distance of 10 feet.
- B. Remove temporary coverings and protection to adjacent work areas. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project in accordance with provisions in Division 1.

3.4 LOCATION

Schedule:

- A. Entrance to Map viewing area to read: "MAP VIEWING" (10 Letters).
- B. Entrance to Elections Corridor to read: "ELECTIONS" (9 Letters)
- C. Wall Mounted Letters 1/2" deep at Entrance to Elections Corridor to read: "COUNTY CLERK OFFICES" Include dimensional arrow of dimensions to match letters. (18 letters + 1 Symbol)
- D. Entrance to Clerks Office to read: "COUNTY CLERK" (11 Letters)
- E. Entrance to Passport offices to read: "PASSPORT" (8 letters)
- F. Entrance to Records Room to read: "RECORDS ROOM" (11 Letters)

END OF SECTION 104300

SECTION 104310 - CAST PLAQUES

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Documents: Provisions established within the General and Supplementary Conditions of the Contract, Division 1 - General Requirements and the Drawings are collectively applicable to this Section.
- B. Section Includes:
 - 1. INTERIOR PLAQUES OF CAST METAL CONSTRUCTION. APPLICABLE TO 30"X36" DEDICATION PLAQUE
- C. Allowances: Work of this section is affected by allowances. Refer to Division 1 for allowance amounts and requirements.

1.2 QUALITY ASSURANCE

- A. Supplier: Obtain all products in this section from a single supplier.
- B. Regulatory Requirements: Products shall meet requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and local amendments and modifications.
- C. Installer: Installation shall be performed by installer specialized and experienced in work similar to that required for this project.

1.3 SUBMITTALS

- A. **104310_01** Submit in accordance with requirements of Division 1.
- B. **104310_02** Product Data: Submit product data for specified products. Include material details for each sign specified.
- C. **104310_03** Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including dimensions, anchorage, and accessories.
- D. **104310_04** Samples: Submit PHYSICAL SAMPLE of supplier's standard color chart for selection purposes and selected colors for verification purposes.
- E. **104310_05** Installation: Submit supplier's installation instructions.
- F. **104310_06** Closeout Submittals:
 - 1. Submit operation and maintenance data for installed products, including precautions against harmful cleaning materials and methods.
 - 2. Submit warranty documents specified herein.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Division 1.
 - 1. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
 - 2. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
 - 3. Store products protected from weather, temperature, and other harmful conditions as recommended by supplier.
 - 4. Handle products in accordance with manufacturer's instructions.

1.5 WARRANTY

- A. Project Warranty: Comply with requirements of Division 1.

- B. Manufacturer's Warranty: Submit manufacturer's standard warranty document executed by authorized company official.
 - 1. Warranty Period: One (1) year from product ship date. Warranty specifically excludes letter mounting substrate.
 - 2.

2 PRODUCTS

2.1 SIGNAGE SYSTEMS

- A. BASIS OF DESIGN: ASI SIGNAGE CAST METAL PLAQUE.
- B. Material: Cast Bronze in Satin Oxidized Dark
- C. Fabricated Letters:
 - 1. Letterstyle: ARIAL ,FUTURA
 - 2. Letter Cap Height: VARIES
 - 3. Letter Depth: VARIES.
- D. Mounting Method: CONCEALED STUDS

2.2 FABRICATION - GENERAL

- A. General: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- B. Design, fabricate, and install sign assemblies to prevent buckling, opening up of joints, and over-stressing of welds and fasteners.
- C. Mill joints to a tight, hairline fit. Form joints exposed to the weather to exclude water penetration.
- D. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
- E. Create signage to required sizes and layout. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.

3 EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions: Verify installation conditions previously established under other sections are acceptable for product installation in accordance with manufacturer's instructions.
- B. Scheduling of installation by Owner or it's representative implies that substrate and conditions are prepared and ready for product installation. Proceeding with installation implies installer's acceptance of substrate and conditions.

3.2 INSTALLATION

- A. Install product in accordance with supplier's instructions.
- B. Install product in locations indicated using mounting methods recommended by sign manufacturer and free from distortion, warp, or defect adversely affecting appearance.
- C. Install product level, plumb, and at heights indicated.
- D. Install product at heights to conform to Americans with Disabilities Act Accessibility Guidelines (ADAAG) and applicable local amendments and regulations.
- E. Install signs within the following tolerances and in accordance with manufacturer's recommendations:
 - 1. Interior Signs: Within 1/4 inch vertically and horizontally of intended location.
 - 2. Exterior Signs: Within 1 inch vertically and horizontally of intended location.

3.3 CLEANING, PROTECTION, AND REPAIR

- A. Repair scratches and other damage which might have occurred during installation. Replace components where repairs were made but are still visible to the unaided eye from a distance of 10 feet.
- B. Remove temporary coverings and protection to adjacent work areas. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project in accordance with provisions in Division 1.

END OF SECTION 104310

SECTION 104400 – INTERIOR MODULAR COMPONENT SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Interior Room Panel signs.
 - 2. Unframed egress signage with photo chemically etched face
 - 3. Signage accessories.
- B. Related Sections include the following:
 - 1. Division 1
 - 2. Division 15 Section "Mechanical Identification" for labels, tags, and nameplates for mechanical equipment.
 - 3. Division 16 Section "Electrical Identification" for labels, tags, and nameplates for electrical equipment.
 - 4. Division 16 Section "Interior Lighting" for illuminated exit signs.

1.3 SUBMITTALS

- A. **104400_01** Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.
- B. **104400_02** Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
 - 1. Provide message list for each sign, including large-scale details of wording, lettering, and braille layout.
- C. **104400_03** Samples for Initial Selection: For each type of sign material indicated that involves color selection.
- D. **104400_04** Qualification Data: For Installer.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of signage manufacturer for installation and maintenance of units required for this Project.

- B. Source Limitations: Obtain each sign type through one source from a single manufacturer.
- C. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.
 - 1. Interior Code Signage: Provide signage as required by accessibility regulations and requirements of authorities having jurisdiction.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Where dimensions of surfaces on which they are installed determine sizes of signs, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.6 COORDINATION

- A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

2.2 PANEL SIGNS

- A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction. .
 - 1. Produce smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally.
- B. Manufacturers:
 - 1. ASI Sign Systems, Inc. (BASIS OF DESIGN)
 - 2. I-SIGN.
 - 3. Mohawk Sign Systems.
 - 4. APPROVED EQUAL.

- C. Plaque material shall consist of melamine plastic laminate, approximately 1/8" thick (1/4" thick for Slot signs), with core painted a contrasting color and rated non-static, fire-retardant and self-extinguishing. Plastic laminate will be impervious to most acids, alkalies, alcohol, solvents, abrasives and boiling water.
 - 1. Color: As selected by Architect from manufacturer's full range.
- D. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished to comply with the following requirements:
 - 1. Edge Condition: **SQUARE CORNER.**
 - 2. Corner Condition: **NO RADIUS.**
- E. Graphic Content and Style: Provide sign copy that complies with requirements indicated in SECTION 2.3 for size, style, spacing, content, mounting height and location, material, finishes, and colors of signage.
- F. Tactile and Braille Copy: Manufacturer's standard process for producing copy complying with ADA Accessibility Guidelines and ICC/ANSI A117.1. Text shall be accompanied by Grade 2 braille. Produce precisely formed characters with square cut edges free from burrs and cut marks.
 - 1. Raised-Copy Thickness: Not less than 1/32 inch.

2.3 PANEL SIGN TYPES

- A. Room Signs:
 - 1. Material: **Plastic laminate.** BACKING PLATE OF SAME MATERIAL FOR ALL SIGNAGE PLACED ON GLASS WALLS
 - 2. Perimeter: **Unframed.**
 - 3. Copy: **Tactile and braille.**
 - 4. Character Style: **Helvetica and Helvetica Light**
 - 5. Text: **As SELECTED BY ARCHITECT**
 - 6. Message: **FIXED TEXT AND SLOTTED CLEAR WINDOW FOR OFFICES. REMOVABLE NAMEPLATE OF SIMILAR MATERIAL FOR SLOTTED WINDOW INSERTION. FIXED TEXT FOR ALL OTHER ROOMS.**
 - 7. Sizes:
 - a. Sign: 8" x 8".
 - b. Character: Minimum **5/8"** high characters.
 - 8. Colors:
 - a. Character: **AS SELECTED BY ARCHITECT TO MATCH EXISTING SIGNS. OWNER WILL PROVIDE PANTONE COLOR**
 - b. Background: **AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF STANDARD COLORS.**
 - 9. **LOCATION: AT ALL INTERIOR DOORS TO ALL INTERIOR ROOMS INCLUDING: OFFICES, JANITOR CLOSETS, MECHANICAL SPACES, STORAGE, ETC. WITHIN THE ROOM FINISH SCHEDULE**

B. Toilet Room Signs:

1. Material: **Plastic laminate.**
2. Perimeter: **Unframed.**
3. Copy: **Raised.**
4. Character Style: **Helvetica and Helvetica Light**
5. Text: **According to requirements in the ADA or of authorities having jurisdiction, whichever are more stringent.**
6. Message: **Fixed.**
7. Sizes:
 - a. Sign: 8" x 8".
 - b. Character: Minimum **5/8"**- high characters.
8. Colors:
 - a. Character: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS.
 - b. Background: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS.
9. LOCATION:
 - a. ALL DOORS

C. EGRESS SIGNAGE: NOTE THESE SIGNS MAY BE LARGER TO ACCOMMODATE AN EXITING PLAN. (ARCHITECT WILL PROVIDE EXITING PATH OF TRAVEL) PROVIDE 4 ZINC EGRESS SIGNS, EACH OF WHICH ARE SPECIFIC TO THEIR LOCATION. ARCHITECT TO PROVIDE EGRESS PATH IMAGERY AS A .DXF file for fabrication.

1.1 SIGNAGE SYSTEMS

- A. Acceptable Manufacturers:
 1. ASI, 3860 W. Northwest Highway, Suite 350, Dallas, TX 75220; (214) 352- 9140
 2. Substitutions: Submit in accordance with Section 01600.
- B. Acceptable Product: Sign Etch™ 1 ADA –Ready™ Sign System with requirements indicated for materials, thickness, finish colors, designs, shapes, sizes and details.

1.2 SIGN MATERIALS

- A. Base Material: Zinc, **.153** inch thickness.
- B. Paint: Primer and urethane based color coat, of type standard with manufacturer.

1.3 FABRICATION OPTIONS

- A. Tactile Graphics and Text:
 1. Fabrication process: Provide tactile copy and grade 2 Braille raised 1/32 inch minimum from plaque first surface by manufacturer's photochemical etching.
 2. Provide lettering and graphics precisely formed, uniformly opaque to comply with relevant ADA regulations and requirements indicated for size, style, spacing, content, position, and colors.
- B. Edge Detail: **Square**

- C. Edge Finish: **Brushed**
- D. Overall panel size: 12" X 12"
- E. Raised text and graphic finishes:
 - 1. Electroplated Finishes:
 - a) Satin finish nickel
- F. Recessed Graphics Color Options:
 - a) Select from manufacturer's standard colors.
- G. Recessed Area Texture Options:
 - 1. Sandstone
- H. Letter style[s], 5/8" HELVETICA TEXT WITH GRAPHIC FLOORPLAN LAYOUT DEPICTING LOCATION, DIRECTION ARROW, AND "YOU ARE HERE" TEXT

1.4 INSTALLATION METHOD

- A. System SA, silicone adhesive.

1.5 FABRICATION - GENERAL

- A. General: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- B. Preassemble signs in the shop to the greatest extent possible to minimize field assembly. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in a location not exposed to view after final assembly.
- C. Conceal fasteners if possible; otherwise, locate fasteners to appear inconspicuous.
- D. Form panels to required size and shape. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.
- E. Coordinate dimensions and attachment methods to produce message panels with closely fitting joints. Align edges and surfaces with one another in the relationship indicated.

2.4 ACCESSORIES

- A. Vinyl Film: Provide opaque **reflective** vinyl film, 0.0035-inch minimum thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.
- B. Mounting Methods: Use **concealed fasteners** fabricated from materials that are not corrosive to sign material and mounting surface.
- C. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.5 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

- B. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Verify that items, **including anchor inserts**, provided under other sections of Work are sized and located to accommodate signs.
- C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
 - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
- B. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using methods indicated below:
 - 1. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

3.3 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION 104310

SECTION 104413 - FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire-protection cabinets for the following:
 - a. Portable fire extinguishers.

- B. Related Requirements:
 - 1. Section 104416 "Fire Extinguishers."

1.3 PREINSTALLATION CONFERENCE

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to fire-protection cabinets including, but not limited to, the following:
 - a. Schedules and coordination requirements.

1.4 ACTION SUBMITTALS

- A. **104413_01** Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed and relationships of box and trim to surrounding construction.
- B. **104413_02** Shop Drawings: For fire-protection cabinets. Include plans, elevations, sections, details, and attachments to other work.
- C. **104413_03** Samples: For each type of exposed finish required.
- D. **104413_04** Samples for Initial Selection: For each type of exposed finish required.
- E. **104413_05** Samples for Verification: For each type of exposed finish required, prepared on Samples 6 by 6 inches (150 by 150 mm) square.

- F. **104413_06** Product Schedule: For fire-protection cabinets. Indicate whether recessed mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.5 CLOSEOUT SUBMITTALS

- A. **104413_07** Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.6 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

2.2 FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher. Potter Roemer Fire Pro model 7225 (steel)/Recessed 12" x 27" x 8". Overall frame dimensions: 14-3/4" x 29-3/4", Wall opening dimensions: 13" width x 28" height x 8-1/4" depth, trim=5/8"
- B. Cabinet Construction: Nonrated.
- C. Cabinet Material: Cold-rolled steel sheet
 - 1. Shelf: Same metal and finish as cabinet.
- D. Recessed Cabinet:
 - 1. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
- E. Cabinet Trim Material: Steel sheet
- F. Door Style: Duo-Vertical Panel with window
- G. Door Glazing: Clear tempered safety glass
 - 1. Acrylic Sheet Color: 1/8" Clear transparent acrylic sheet.

- H. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
- I. Accessories:
 - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
 - 2. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle
 - 3. Identification: No lettering on the fire protection cabinets.
- J. Materials:
 - 1. Cold-Rolled Steel: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
 - a. Finish: Baked enamel or powder coat.
 - b. Color: White
 - 2. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, [Class 1 (clear)] [Class 2 (tinted, heat absorbing, and light reducing), bronze tint].
 - 3. Transparent Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), 1/8" thick,

2.3 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 - 1. Weld joints and grind smooth.
 - 2. Provide factory-drilled mounting holes.
 - 3. Prepare doors and frames to receive locks.
 - 4. Install door locks at factory.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
 - 1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
 - 2. Fabricate door frames of one-piece construction with edges flanged.
 - 3. Miter and weld perimeter door frames.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.4 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare recesses for recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

- A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights indicated below:
 - 1. Fire-Protection Cabinets: [54 inches (1372 mm) above finished floor to top of cabinet.
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.
 - 2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

3.4 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

SECTION 105230 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes portable, **hand-carried** fire extinguishers
- B. Related Sections:
 - 1. DIVISION 9: FOR METAL STUDS AND GYPSUM BOARD.
 - 2. Section 104413 "Fire Protection Cabinets"

1.3 SUBMITTALS

- A. **105230_01** Product Data: For each type of product indicated. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher **and mounting brackets**.
- B. **105230_02** Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.
- C. **105230_03** Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
 - 1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.5 COORDINATION

- A. COORDINATE INSTALLATION LOCATIONS, MOUNTING HEIGHTS, FIRE EXTINGUISHER TYPE WITH LOCAL FIRE OFFICIAL. CONTRACTOR TO PROVIDE FIRE EXTINGUISHERS AT ALL LOCATIONS INDICATED ON DRAWINGS.

- B. COORDINATE FIRE EXTINGUISHER BRACKETS WITH WALL TYPE ONTO WHICH IT WILL BE INSTALLED. ATTACH AS PER MANUFACTURER REQUIREMENTS.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: **Six** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each **mounting bracket**.
 - 1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. Larsen's Manufacturing Company: MP SERIES.
 - b. APPROVED EQUAL.
 - 2. Valves: **Manufacturer's standard.**
 - 3. Handles and Levers: **Manufacturer's standard.**
 - 4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B **and bar coding for documenting fire extinguisher location, inspections, maintenance, and recharging.**
- B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated **4-A: 60-B: C, 10-lb** nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.2 MOUNTING BRACKETS – FOR FIRE EXTINGUISHERS

- A. Mounting Brackets: Manufacturer's standard **galvanized** steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or **red** baked-enamel finish.
 - 1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**

- a. Larsen's Manufacturing Company.
 - b. APPROVED EQUAL
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
- C. Refer to Section 104413 "Fire Protection Cabinets" for description of the cabinets and their mounting requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
 - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. PROVIDE CONCEALED BLOCKING REQUIRED FOR INSTALLING NEW BRACKETS AND CABINETS ON NEW PARTITIONS. CONFIRM SUITABILITY OF WALL CONSTRUCTION AT EXISTING WALLS TO RECEIVE NEW CABINETS OR FIRE EXTINGUISHER BRACKETS.

3.3 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection specialties are installed, unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 105230

SECTION 122413-WINDOW ROLLER SHADES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Roller shades for manual operation and accessories.
- B. Shade fabric.

1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry: Wood blocking and grounds for mounting roller shades and accessories.
- B. Section 09 21 16 - Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.
- C. Section 09 51 00 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- B. Cradle to Cradle Products Innovation Institute (C2C):
 - 1. C2C (DIR) - C2C Certified Products Registry.
- C. National Fire Protection Association (NFPA):
 - 1. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
 - 2. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.
- D. Underwriters Laboratories (UL):
 - 1. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.
- E. Window Covering Manufacturers Association (WCMA):
 - 1. WCMA A100.1 - Safety of Window Covering Products; 2018.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to provide rough-in of electrical wiring as required for installation of hardwired motorized shades.
- B. Preinstallation Meeting: One week prior to commencing work related to this section. Require attendance of all affected installers.
- C. Sequencing:
 - 1. Do not fabricate shades until field dimensions for each opening have been taken with finished conditions in place. "Hold to" dimensions are not acceptable.
 - 2. Do not install shades until final surface finishes and painting are complete.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's catalog pages and data sheets for products specified including materials, finishes, dimensions, profiles, mountings, and accessories.
 - 1. Preparation instructions and recommendations.
 - 2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes, accessories, and operating instructions.
 - 3. Storage and handling requirements and recommendations.
 - 4. Mounting details and installation methods.
 - 5. Manufacturer's Instructions: Include storage, handling, protection, examination, preparation, and installation.
 - 6. Project Record Documents: Record actual locations of control system components and show interconnecting wiring.
 - 7. Operation and Maintenance Data: Component list with part numbers, and operation and maintenance instructions.
- B. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.
 - 1. Prepare shop drawings on AutoCad or MicroStation format using base sheets provided electronically by the Architect.
- C. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.
- D. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements.
 - 1. Shadecloth Sample: Mark face of material to indicate interior faces.
 - a. Test reports indicating compliance with specified fabric properties.
 - b. Verification Samples: 6 inches (150 mm) square, representing actual materials, color and pattern.
- E. Maintenance Data: Bill of materials for all components with part numbers. Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
- F. Warranty: Provide manufacturer's warranty documents as specified in this Section.
- G. Warranty: Manufacturer's warranty documents as specified in this Section.

1.6 QUALITY ASSURANCE

- A. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.
- B. Manufacturer Qualifications: Obtain roller shades system through one source from a single manufacturer with a minimum of ten years experience and minimum of five projects of similar scope and size in manufacturing products comparable to those specified in this section.
- C. Installer for Roller Shade System - Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section.

- D. Product Listing Organization Qualifications: Organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.
- E. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.
- F. Shadecloth Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC9644, ATCC9645.
- G. Environmental Certification: Submit written certification from the manufacturer, including third party evaluation, recycling characteristics, and perpetual use certification as specified. Initial submittals, which do not include the Environmental Certification will be rejected. Materials that are simply 'PVC free' without identifying their inputs shall not qualify as meeting the intent of this specification and shall be rejected.
- H. Third Party Evaluation: Provide documentation stating the shade cloth has undergone third party evaluation for all chemical inputs, down to a scale of 100 parts per million, that have been evaluated for human and environmental safety. Identify any and all inputs, which are known to be carcinogenic, mutagenic, teratogenic, reproductively toxic, or endocrine disrupting. Also identify items that are toxic to aquatic systems, contain heavy metals, or organohalogens. The material shall contain no inputs that are known problems to human or environmental health per the above major criteria, except for an input that is required to meet local fire codes.
- I. Recycling Characteristics: Provide documentation that the shade cloth can, and is part of a closed loop of perpetual use and not be required to be down cycled, incinerated or otherwise thrown away. Scrap material can be sent back to the mill for reprocessing and recycling into the same quality yarn and woven into new material, without down cycling. Certify that this process is currently underway and will be utilized for this project.
- J. Perpetual Use Certification: Certify that at the end of the useful life of the shade cloth, that the material can be sent back to the manufacturer for recapture as part of a closed loop of perpetual use and that the material can and will be reconstituted into new yarn, for weaving into new shade cloth. Provide information on each shade band indicating that the shade band can be sent back to the manufacturer for this purpose.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in Window Treatment Schedule.
- B. Store and handle products per manufacturer's recommendations.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.9 WARRANTY

- A. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating warranty for interior shading.
 - 1. Shade Hardware: 10 years unless otherwise indicated. Mecho/5
 - 2. Ecoveil Shadecloth: Manufacturer's standard ten year warranty.
 - 3. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas, which are deemed owner's responsibility.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Mecho, which is located at: 42-03 35th St.; Long Island City, NY 11101; ASD Tel: 718-729-2020; Fax: 718-729-2941; Email: marketing@mechoshade.com; Web: www.mechoshade.com.
- B. Substitutions: Not permitted.

2.2 ROLLER SHADES, MANUAL OPERATION AND ACCESSORIES

- A. Shade System; General:
 - 1. Components capable of being removed or adjusted without removing mounted shade brackets, or cassette support channel.
 - 2. Smooth operation raising or lowering shades.
 - 3. Cradle-to-Cradle certified for the complete shade system including operating hardware and shadecloth. Listed in C2C (DIR).
- B. Basis of Design: Mecho/5 System as manufactured by Mecho.
 - 1. Description: Manually operated fabric window shades.
 - a. Shade Type: Single Roller.
 - b. Universal drive capability to offset drive chain for reverse or regular roll shades.
 - c. Drop Position: Regular roll.
 - d. Mounting: Ceiling mounted.
 - e. Mounting: Recessed in ceiling pocket.
 - f. Size (WxH): _7'-6"W x 8'-0"H Contractor to verify in the field.
 - g. Fabric: EcoVeil 1350
 - 2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting indicated and to accommodate shade fabric roll-up size and weight.
 - a. Material: Steel, 1/8 inch (3 mm) thick.
 - b. Radiused Center Support Brackets: Provide brackets and connectors for radiused window applications.
 - 1) Maximum Offset: Eight degrees on each side for a 16 degree total offset.
 - 3. Roller Tubes:
 - a. Material: Extruded aluminum.
 - b. Size: As recommended by manufacturer; selected for suitability for installation conditions, span, and weight of shades.
 - c. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge. Shade band to be removable and replaceable without removing roller tube from brackets or inserting spline from the side of the roller tube.
 - d. Roller tubes to be capable of being removed and reinstalled without affecting roller shade limit adjustments.

4. Hembars: Designed to maintain bottom of shade straight and flat.
 - a. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.
 - b. Style: Exposed aluminum bottom bar with matching finials.
 - 1) Profile: Rectangular.
 - 2) Color: Manufacturer's standard color coordinated with shade fabric selected.
5. Clutch Operator: Manufacturer's standard material and design integrated with bracket/brake assembly.
 - a. Heavy-duty, 1/8" steel mounting bracket and integrated steel brake, clutch and sprocket assembly rigidly affix the shade support and user control to the building structure fully independent of the roller tube components.
 - b. Permanently lubricated maintenance-free brake assembly employs an oil-impregnated steel hub with wrapped spring clutch.
 - c. Brake must withstand minimum pull force of 50 pounds (22.7 kg) in the stopped position.
 - d. Direct drive clutch requires no interstitial gear stages or plastic parts between the building structure and clutch ensuring reliable operation across the full range of shade sizes.
 - e. Maximum shade hanging weight of 18 pounds (8.2 kg).
6. Drive Chain: Continuous loop stainless steel beaded ball chain, 100 pound (45 kg) minimum breaking strength. Provide upper and lower limit stops.
 - a. Chain Retainer: Chain tensioning device complying with WCMA A100.1.
 - b. Limit stops: Bead stops affixed to the chain maintain consistent shadeband alignment at the top and bottom of shade travel across multiple shades, and help prevent shade damage resulting from unmanaged user control.
7. Accessories:
 - a. Fascia: Removable extruded aluminum fascia, size as required to conceal shade mounting, attachable to brackets without exposed fasteners.
 - 1) Finish: Baked enamel.
 - a) Color: White.
 - 2) Single Fascia: Accommodate reverse roll shades.
 - 3) Profile: Square.
 - 4) Configuration: Captured, fascia stops at captured bracket end.

2.3 ROLLER SHADE FABRICATION

- A. Field measure finished openings prior to ordering or fabrication.
- B. Dimensional Tolerances: Fabricate shades to fit openings within specified tolerances.
 1. Vertical Dimensions: Fill Opening from Head to Sill: 1/2 inch (13 mm) space between bottom bar and window stool.
 2. Horizontal Dimensions: Inside Mounting.
 - a. Symmetrical Light Gaps on Both Sides of Shade: 3/4 inch (19.05 mm) total.

2.4 SHADE FABRIC

- A. Basis of Design: Shade fabric as manufactured by Mecho.
 1. Solar Shade cloths:
 - a. Fabric: EcoVeil Screens: 1350 series. TPO Cradle to Cradle Certified, fabric, non-PVC, 1 X 1, basket-weave pattern at 5 percent open. Colors match 0950 (1 percent open) and 1550 (3 percent open).
 2. Fabrication:

- a. Fabric Orientation: Railroaded, fabric is turned 90 degrees off the roll.
- b. Battens: Manufacturer's standard material, full width of shade, and enclosed in welded shade fabric pocket; locate as indicated on drawings.
- c. Seams for Railroaded Fabric: Manufacturer's standard sewn seam; locate as indicated on drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Start of installation shall be considered acceptance of substrates.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.
- C. Coordinate with window installation and placement of concealed blocking to support shades.

3.3 INSTALLATION

- A. Install shades level, plumb, square, and true per manufacturer's instructions and approved shop drawings. Locate so shade band is at least 2 inches (51 mm) from interior face of glass. Allow proper clearances for window operation hardware. Use mounting devices as indicated.
- B. Replace shades exceeding specified tolerances at no extra cost to Owner.
- C. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range. Adjust level, projection, and shade centering from mounting bracket. Verify there is no telescoping of shade fabric.
- D. Clean roller shade surfaces after installation, per manufacturer's written instructions.
- E. Demonstrate operation and maintenance of window shade system to Owner's personnel.

3.4 PROTECTION AND CLEANING

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.
 - 1. Clean soiled shades and exposed components as recommended by manufacturer.
 - 2. Replace shades that cannot be cleaned to "like new" condition.

END OF SECTION 122413

SECTION 123560- GENERAL CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. MEDIUM DENSITY Laminate cabinets.
2. Solid-surfacing-material countertops.
3. Stone Fascia & countertop
4. Metal Panel Fascia

- B. Related Sections include the following:

1. Division 6 Section "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
2. Division 5 Decorative Metal
3. Division 9 Metal Panel Ceilings
4. Division 9 Stone Flooring

1.3 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.4 REFERENCES

- A. ANSI A208.1 - American National Standard for Particleboard; 1999.
- B. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2002.
- C. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2004.
- D. AWI/AWMAC (QSI) - Quality Standard Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2003.

- E. PS 1 - Construction and Industrial Plywood; 1995.
- F. WI (MAN) - Manual of Millwork; Woodwork Institute; 2003.

1.5 SUBMITTALS

- A. **064023_01** Product Data: For panel products, solid-surfacing material, cabinet hardware and accessories.
- B. **064023_02** Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for **plumbing fixtures, faucets and other items** installed in architectural woodwork.
- C. **062023_03** Samples for Initial Selection:
 - 1. WOOD PANELS.
 - 2. LAMINATE PANELS
 - 3. SOLID SURFACE PANELS
 - 4. STONE PANELS
 - 5. METAL PANELS

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.
- B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneer.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
- D. SUBMIT PRODUCT TEST DATA IN ACCORDANCE WITH ANSI A161.1-1980, NEMA LD3-1991, AND GENERAL STATIC LOAD TESTING AS FOLLOWS:
 - 1. BASE CABINET RACKING TEST: 800 LBS.
 - 2. CABINET FRONT JOINT LOAD TEST: 425 LBS.
 - 3. DRAWER FRONT JOINT LOADING TEST: 600 LBS.
 - 4. DRAWER CONSTRUCTION / STATIC LOAD TEST: 635 LBS.
 - 5. CABINET ADJUSTABLE SHELF SUPPORT DEVICE / STATIC LOAD TEST: 300 LBS.
 - 6. CABINET PANEL SCREW HOLDING POWER: 300 LBS.

- E. Forest Certification: Provide interior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
 - 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, CONTRACTOR HAS THE OPTION TO establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions. ALL COSTS ASSOCIATED WITH THIS OPTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.9 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.
- B. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR ALL CONFIGURATIONS AND DIMENSIONS. PROVIDE ADDITIONAL BLOCKING AND BRACING REQUIRED FOR STRUCTURAL STABILITY. PROVIDE ¾" PLYWOOD SUBTOP AT CUTOUT FOR SINK. PROVIDE ADDITIONAL SUPPORTS FOR HDPE TOP WHERE SPAN EXCEEDS HDPE PRODUCT LIMITS.
- C. COORDINATE CABINETS WITH ALL PLUMBING PIPING. CONTRACTOR SHALL PROVIDE EXTENDED COUNTERS TO CREATE CHASE BEHIND CABINETS OR SHALL FURR OUT AND SHEETROCK ENTIRE WALL THAT PLUMBING IS ON TO AVOID CONDITION WHERE PLUMBING PIPING TRAVELS THROUGH MULTIPLE CABINETS. COORDINATE WITH ARCHITECT.

1.10 WARRANTY

- A. MANUFACTURER'S STANDARD FIVE (5) YEAR WARRANTY FROM DATE OF SUBSTANTIAL COMPLETION GUARANTEEING PRODUCTS ARE FREE FROM ANY MATERIAL AND MANUFACTURING DEFECTS WHICH WOULD RENDER THE PRODUCTS UNSUITABLE FOR USE BY THE OWNER, SIGNED BY MANUFACTURER AND INSTALLER.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide materials that comply with requirements of **AWI's** quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Products: Comply with the following: FAS Quartersawn Northern White Oak.
1. OR APPROVED EQUAL:
 2. WATER RESISTANT PLYWOOD: PRESSURE TREATED A/C PLYWOOD, $\frac{3}{4}$ " THICKNESS, WITH NO UREA FORMALDAHYDE, AT CABINET BASES AND BELOW SINKS.

2.2 SOLID SURFACE COUNTERTOP MATERIALS

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ICPA SS-1.
1. Type: Provide Standard type or Veneer type made from material complying with requirements for Standard type, as indicated unless Special Purpose type is indicated.
 2. CORIAN TERRAZZO, AGGREGATE LINES
 3. Colors and Patterns: As selected by Architect from manufacturer's full range of product offerings

2.3 Plastic Laminate: .030-INCH THICKNESS, High-pressure decorative laminate complying with NEMA LD 3 LATEST ADDITION Grade VGS. NUMEROUS DIFFERENT COLORS TO BE SELECTED ON PROJECT BY ARCHITECT.

1. PVC Edge Molding: Rigid PVC extrusions, through color with satin finish, 3 mm thick at doors and drawer fronts, and 1 mm thick elsewhere. Match finish of the plastic laminate.

2.4 STONE FASCIA MATERIAL

- A. Utilize GR-4 stone as specified in Division 9 "Stone Flooring" Mountain Green in Diamond 8 Finish by Cold Spring Stone. Stone is to be laminated to aluminum Honeycomb substrate as part of a Stone Panel System. Stonepanels.com. PRODUCT IS TO BE Natural Stone Honeycomb Reinforced Wall Panel System(s):
1. Material Standard: Natural stone bonded to lightweight (aircraft quality) aluminum honeycomb having epoxy impregnated glass cloth skins.
 2. Facing: $\frac{3}{16}$ " (4.8mm) +- $\frac{1}{16}$ " (1.6 mm) natural stone
 3. Reinforcing: $\frac{3}{4}$ " (19mm) or $\frac{3}{8}$ " (10mm) aluminum honeycomb bonded by high strength epoxy impregnated reinforced glass cloth.
4. CONTRACTOR TO SUBMIT SAMPLES AND DETAILS OF FASCIA AND COUNTERTOP DETAILS AS PART OF CASEWORK SUBMITTAL PROCESS.

5. CONTRACTOR PROVIDE AND SUBMIT CONNECTION DETAILS AND ANCHORAGE HARDWARE, INCLUDING ANCHOR PLATES, Z SECTIONS ANGLE CLIPS AND THREADED INSERTS.

2.5 METAL FASCIA MATERIAL

- A. REFER TO DIVISION 5 SPECIFICATION SECTION 05700 DECORATIVE METAL. BASIS OF DESIGN HAT CHANNEL PANEL SYSTEM BY MOZ & ARMSTRONG WORLD INDUSTRIES. METAL FASCIA FINISH TO MATCH POWDERCOAT OF ACT-4 METAL CEILING. AT CASEWORK IN MAP VIEWING AREA, METAL PANEL FASCIA TO BE PERFORATED TO MATCH ACT-4 AS SHOWN ON A111. AT CASEWORK AT CLERK'S OFFICES ENTRANCE, METAL PANEL FASCIA TO MATCH POWDERCOAT OF ACT-4 BUT SHALL NOT BE PERFORATED.

2.6 HARDWARE

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, AS LISTED BELOW UNLESS OTHERWISE NOTED ON DRAWINGS.
- B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, **170** degrees of opening, **self-closing**.
- C. Wire Pulls: Back mounted, solid **metal, 4 inches long, 5/16 inch in diameter**.
- D. DRAWER AND DOOR PULLS: MOCKETT & COMPANY INC, 800-523-1269, DP-18 SATIN NICKEL OR APPROVED EQUAL.
- E. Catches: **Push-in magnetic catches, BHMA A156.9, B03131**.
- F. Shelf Rests: BHMA A156.9, B04013; PROVIDE INJECTION MOLDED POLYCARBONATE SUPPORTS, CLEAR IN COLOR, FRICTION FIT INTO PREDRILLED HOLES ON 1 ¼ " CENTERS, WITH 2 INTEGRAL 5 MM SUPPORT PINS TO PREVENT ROTATION, AT 1,040 LB LOADING CAPACITY.
- G. Drawer Slides: BHMA A156.9, B05091.
 - 1. Heavy Duty (Grade 1HD-200): Side mounted; **full-extension** type; zinc-plated steel ball-bearing slides.
 - 2. File Drawer Slides: **1HD-200**; for drawers more than 6 inches high or 24 inches wide.
- H. Door Locks: BHMA A156.11, E07121.
- I. Drawer Locks: BHMA A156.11, E07041.
- J. Grommets for Cable Passage through Countertops: **2-inch** OD, **black**, molded-plastic grommets and matching plastic caps with slot for wire passage.
 - 1. Product: Subject to compliance with requirements, provide "**OG** OR **SG** series" by Doug Mockett & Company, Inc.
- K. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 - 1. Satin Chromium Plated: BHMA 652 for steel base.

- L. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.7 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: AS PER SPECIFICATION SECTION 061000.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
- C. Adhesives, General: Do not use adhesives that contain urea formaldehyde.
- D. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Wood Glues: 30 g/L.
 - 2. Contact Adhesive: 250 g/L.

2.8 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Unless otherwise indicated, provide interior woodwork complying with referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- D. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of Cabinets and Edges of MDF Members and Rails: **1/8 inch**.
- E. Complete fabrication, including assembly, **finishing**, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - 1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
- F. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of openings in countertops with a coat of varnish.

2.9 LAMINATE CABINETS

- A. AWI Type of Cabinet Construction: **Flush overlay**.
- B. ALL CORE MATERIAL IS $\frac{3}{4}$ " THICK MDF. ALL CABINET SURFACES SHALL HAVE FACTORY APPLIED LAMINATE VENEER
- C. PROVIDE ALL BASE AND FULL HEIGHT CABINETS WITH A 4" HIGH, FACTORY APPLIED BASE MADE OF $\frac{3}{4}$ " WATER RESISTANT PLYWOOD.
- D. PROVIDE FULL $\frac{3}{4}$ " WATER RESISTANT EXTERIOR GRADE PLYWOOD SUB-TOP WITH CONCEALED FASTENING AT ALL BASE CABINET SINKS.
- E. PROVIDE $\frac{3}{4}$ " THICK MELIMINE COATED SHELVING UP TO 30" WIDE, 1" THICK SHELVING OVER 30" WIDE.
- F. ALL EXPOSED AND SEMI EXPOSED EDGES OF BASIC CABINET COMPONENTS SHALL HAVE FACTORY EDGES EASED TO 1/8" RADIUS.
- G. Exposed Cabinet Ends: 3MM PVC EDGEBANDING.
- H. Cabinet Ends: 3MM PVC EDGEBANDING.
- I. Cabinet Tops and Bottoms: 3/4-inch- thick particle board with laminate, fully supported by and secured in rabbets in end panels, front frame, and back rail.
- J. Base Unit Back Panels: 3/4-inch- thick particle board with laminate fastened to rear edge of end panels and to top and bottom rails.
- K. Joinery: Rabbet backs flush into end panels and secure with concealed mechanical fasteners. Connect tops and bottoms of wall cabinets and bottoms and stretchers of base cabinets to ends and dividers with mechanical fasteners. Rabbet tops, bottoms, and backs into end panels.
- L. ADJUSTABLE CABINETS LEGS:
 1. PROVIDE MODEL AND MANUFACTURER AS INDICATED ON DRAWINGS, OR APPROVED EQUAL.

2.10 SOLID SURFACE COUNTERTOP MATERIALS

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ICPA SS-1.
 1. Type: Provide Standard type or Veneer type made from material complying with requirements for Standard type, as indicated unless Special Purpose type is indicated.
 2. CORIAN TERRAZZO, AGGREGATE LINES
 3. Colors and Patterns: As selected by Architect from manufacturer's full range of product offerings
- B. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
- C. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

2.11 COUNTERTOP FABRICATION

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
 - 1. Grade: Custom.
- B. Configuration:
 - 1. Front: Straight, slightly eased at top at restrooms or bullnose at other areas and with radius shown on drawings.
 - 2. Backsplash: Straight, slightly eased at corner at classrooms.
 - 3. End Splash: Matching backsplash.
- C. Countertops: 1/2-inch- (12.7-mm-) solid surface material laminated to 3/4 inch thick plywood
- D. Backsplashes: 1/2-inch- (12.7-mm-) thick, solid surface material.
- E. Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.
- F. Joints: Fabricate countertops without joints.
- G. Joints: Fabricate countertops in sections for joining in field.
 - 1. Joint Locations: Not within 18 inches (450 mm) of a sink and not where a countertop section less than 36 inches (900 mm) long would result, unless unavoidable.
 - 2. Splined Joints: Accurately cut kerfs in edges at joints for insertion of metal splines to maintain alignment of surfaces at joints. Make width of cuts slightly more than thickness of splines to provide snug fit.
- H. Cutouts and Holes:
 - 1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch (5 mm) into fixture opening.
 - 2. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
 - 3. Fittings: Drill countertops in shop for plumbing fittings and similar items.

2.12 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by solid surface material manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine **finishing screws** for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. INTO SOLID BLOCKING BEHIND GYPSUM BOARD PREVIOUSLY INSTALLED BY G.C. with **No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips**. COORDINATE REQUIRED BLOCKING LOCATIONS WITH G.C
- G. PROVIDE TOP AND BOTTOM CLOSURE PIECES AT ALL FILLER PIECES. PROVIDE FILLER PANEL AT ENDS OF RUNS.
- H. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 - 2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.

3. Caulk space between backsplash and wall with sealant specified in Division 7 Section "Joint Sealants."

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 123560



April 16, 2020

Via Email: nsm@themusialgroup.com

Mr. Noel Musial, A.I.A., NCARB
Principal
The Musial Group, P.A.
191 Mill Lane
Mountainside, New Jersey 07092

**RE: Results of Selective Asbestos Identification Survey
Discussion Regarding Potential Lead-Based Paint
Union County Courthouse
Office of County Clerk Renovations
2 Broad Street
Elizabeth, Union County, New Jersey
T&M Project No. TMGA-00001**

Dear Mr. Musial:

Representatives of T&M Associates (T&M) visited the subject site on April 1, 2020 for the purpose of gathering bulk material samples of suspect asbestos-containing building materials in anticipation of the planned renovations to the Office of the County Clerk spaces at the Union County Courthouse Complex in Elizabeth, Union County, New Jersey.

The goal of the selective asbestos identification survey was the identification of asbestos-containing materials (ACMs), as well as the classification of other suspect materials as non-asbestos-containing, at the specific building structure spaces surveyed. A further goal of the survey was the recommendation of appropriate response actions, especially relative to the renovations planned for the Office of the County Clerk spaces at the subject building structure.

The specific spaces and equipment to be impacted by the Office of the County Clerk Renovations are contained in schematic drawing documents prepared by The Musial Group, P.A. (dated January 2020). Please note that the selective building spaces that were investigated as part of this overall survey were in the following building spaces:

- Majority of the Clerk's Office overall space – First Floor; 7-Story Building Wing
- Partial Clerk's Office space – First Floor; 4-Story Building Wing
- Partial Record's Room – First Floor; 9-Story Building Wing



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TMGA-00001

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Union County Courthouse
Office of County Clerk Renovations
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Please also note that Mandell Lead Inspectors, Inc. was retained as a subcontractor to T&M on this project for the purpose of performing X-ray Fluorescence (XRF) testing of suspect lead-based paint applications associated with the Office of the County Clerk spaces. Please note, however, based on the recent Covid-19 Pandemic, this effort will need to be rescheduled at a time when Mandell Lead Inspectors feel more comfortable completing the survey. Note that attached to this report is an Appendix B which contains general information gathered at the site from previous historic inspections conducted by T&M.

WALK THROUGH INSPECTION

Visual observation of the specific building structure spaces (as detailed by the drawings and a pre-proposal walk-through) and bulk material sampling were conducted concurrently during the walk-through inspections. During the walk-through inspection, physical observations were recorded by the inspectors, including; (i) the presence of suspect or “presumed” (PACMs), as well as salient information relative to assessment of suspect ACMs; (ii) a catalog of materials not considered to be suspect ACM; and, (iii) information relative to limitations on the survey.

Accessible building spaces and interior building elements were accessed by the inspectors. These spaces included the space above any suspended tile ceilings and above and behind other interior architectural finishes where access was available. The scope of the survey included selective encroachment through interior architectural enclosures, but not dismantlement of mechanical equipment. The inspectors did attempt to investigate through field observations and extrapolate regarding the quantities of concealed portions of ACM identified, such as insulation concealed behind interior architectural finishes or materials assumed present within boiler components.

Sixty-two (62) bulk material samples of the suspect material were gathered by Mr. Kevin Burns and Mr. Daniel Schaefer of T&M. These personnel are United States Environmental Protection Agency (USEPA)-accredited Building Inspectors (Accreditation No. NAETI 56130 and NAETI 56785, respectfully).

BULK MATERIAL SAMPLING ANALYSIS

The material samples that were gathered were analyzed for asbestos-content in accordance with the USEPA-approved petrographic method utilizing polarized light microscopy (PLM) with dispersion staining (EPA Method for Determination of Asbestos in Bulk Building Materials, EPA 600/R-93/116). Asphaltic and polymeric samples were dissolved with tetrahydrofuran to aid in separating particulate components from their matrices. Certain non-friable organically bound (NOB) materials (if applicable) that were found to be non-asbestos-containing via PLM analysis were subject to further analysis by Transmission Electron Microscopy (TEM) as a matter of Code.

Samples were analyzed in the laboratory of AmeriSci, NY (AmeriSci). AmeriSci’s laboratory is accredited for Bulk Asbestos Fiber Analysis through the National Institute of Standards and Technology and National Voluntary Laboratory Accreditation Program (NIST/NVLAP, laboratory accreditation # 200546).



The results of the analyses are as follows:

Union County Courthouse – Office of County Clerk’s Renovations

T&M SAMPLE ID#	MATERIAL DESCRIPTION (HOMOGENEOUS ID#)	SAMPLE LOCATION	ASBESTOS CONTENT
<u>7-Story Building Wing</u>			
TMGA-00001-040120-01	White sheetrock wallboard (H01)	County Clerk’s Office; Elections Room 113	ND
TMGA-00001-040120-02	White joint compound associated with white sheetrock wallboard (H02)	County Clerk’s Office; Elections Room 113	ND
TMGA-00001-040120-03	White 2’x4’ “pitted” suspended ceiling tile (H03)	County Clerk’s Office; Elections Room 113	ND
TMGA-00001-040120-04	White 2’x4’ “pitted and recessed” suspended ceiling tile (H04)	County Clerk’s Office; Hallway outside Elections Room 113	ND
TMGA-00001-040120-05	White veneer layer of the plaster wall/ceiling system (H05)	County Clerk’s Office; Conference Room across from Room 114 (wall)	ND
TMGA-00001-040120-06	Brown undercoat layer of the plaster wall/ceiling system (H06)	County Clerk’s Office; Conference Room across from Room 114 (wall)	ND
TMGA-00001-040120-07	White 2’x4’ “pitted” suspended ceiling tile (H03)	County Clerk’s Office; Room 114 Business Division	ND
TMGA-00001-040120-08	Brown linoleum floor covering (H07)	County Clerk’s Office; Ms. Rajoppi Office (below carpeting)	ND**
TMGA-00001-040120-09	Brown linoleum floor covering (H07)	County Clerk’s Office; Ms. Rajoppi Office (below carpeting)	ND



T&M SAMPLE ID#	MATERIAL DESCRIPTION (HOMOGENEOUS ID#)	SAMPLE LOCATION	ASBESTOS CONTENT
TMGA-00001-040120-10	White 2'x4' "pitted and recessed" suspended ceiling tile (H04)	County Clerk's Office; Ms. Rajoppi Office	ND
TMGA-00001-040120-11	White veneer layer of the plaster wall/ceiling system (H05)	County Clerk's Office; Ms. Rajoppi Office (ceiling)	ND
TMGA-00001-040120-12	Brown undercoat layer of the plaster wall/ceiling system (H06)	County Clerk's Office; Ms. Rajoppi Office (ceiling)	ND
TMGA-00001-040120-13	Black asphaltic mastic associated with non-suspect cork pipe insulation (H08)	County Clerk's Office; Clerk's Staff Area	ND**
TMGA-00001-040120-14	Black asphaltic mastic associated with non-suspect cork pipe insulation (H08)	County Clerk's Office; Clerk's Staff Area	ND
TMGA-00001-040120-15	White veneer layer of the plaster wall/ceiling system (H05)	County Clerk's Office; Clerk's Staff Area (ceiling)	ND
TMGA-00001-040120-16	Brown undercoat layer of the plaster wall/ceiling system (H06)	County Clerk's Office; Clerk's Staff Area (ceiling)	ND
TMGA-00001-040120-17	White veneer layer of the plaster wall/ceiling system (H05)	County Clerk's Office; Clerk's Staff Area (ceiling)	ND
TMGA-00001-040120-18	Brown undercoat layer of the plaster wall/ceiling system (H06)	County Clerk's Office; Clerk's Staff Area (ceiling)	ND
TMGA-00001-040120-19	White matrix block pipe insulation (H09)	County Clerk's Office; Clerk's Staff Area	10.0% Chrysotile



T&M SAMPLE ID#	MATERIAL DESCRIPTION (HOMOGENEOUS ID#)	SAMPLE LOCATION	ASBESTOS CONTENT
TMGA-00001-040120-20	White matrix block pipe insulation (H09)	County Clerk's Office; Clerk's Staff Area	NA/PS
TMGA-00001-040120-21	Brown aircell pipe insulation (H10)	County Clerk's Office; Clerk's Staff Area	50.0% Chrysotile
TMGA-00001-040120-22	Brown aircell pipe insulation (H10)	County Clerk's Office; Clerk's Staff Area	NA/PS
TMGA-00001-040120-23	White veneer layer of the plaster wall/ceiling system (H05)	County Clerk's Office; Clerk's Staff Area (wall)	ND
TMGA-00001-040120-24	Brown undercoat layer of the plaster wall/ceiling system (H06)	County Clerk's Office; Clerk's Staff Area (wall)	ND
TMGA-00001-040120-25	White veneer layer of the plaster wall/ceiling system (H05)	County Clerk's Office; Clerk's Staff Area (wall)	ND
TMGA-00001-040120-26	Brown undercoat layer of the plaster wall/ceiling system (H06)	County Clerk's Office; Clerk's Staff Area (wall)	ND
TMGA-00001-040120-27	White sheetrock wallboard (H01)	County Clerk's Office; Clerk's Staff Area	ND
TMGA-00001-040120-28	White joint compound associated with white sheetrock wallboard (H02)	County Clerk's Office; Clerk's Staff Area	ND
TMGA-00001-040120-29	White sheetrock wallboard (H01)	County Clerk's Office; Clerk's Storage Room adjacent to Server Room	ND
TMGA-00001-040120-30	White joint compound associated with white sheetrock wallboard (H02)	County Clerk's Office; Clerk's Storage Room adjacent to Server Room	ND



T&M SAMPLE ID#	MATERIAL DESCRIPTION (HOMOGENEOUS ID#)	SAMPLE LOCATION	ASBESTOS CONTENT
TMGA-00001-040120-31	Peach 12"x12" floor tile (H11)	County Clerk's Office; Clerk's Storage Room adjacent to Server Room	ND**
TMGA-00001-040120-32	Black asphaltic mastic associated with peach 12"x12" floor tile (H12)	County Clerk's Office; Clerk's Storage Room adjacent to Server Room	ND**
TMGA-00001-040120-33	Peach 12"x12" floor tile (H11)	County Clerk's Office; Clerk's Storage Room adjacent to Server Room	ND
TMGA-00001-040120-34	Black asphaltic mastic associated with peach 12"x12" floor tile (H12)	County Clerk's Office; Clerk's Storage Room adjacent to Server Room	ND
TMGA-00001-040120-35	White veneer layer of the plaster wall/ceiling system (H05)	County Clerk's Office; Clerk's Storage Room adjacent to Server Room (wall)	ND
TMGA-00001-040120-36	Brown undercoat layer of the plaster wall/ceiling system (H06)	County Clerk's Office; Clerk's Storage Room adjacent to Server Room (wall)	ND
TMGA-00001-040120-37	White 2'x2' "textured and recessed" suspended ceiling tile (H13)	County Clerk's Office; Main Hallway outside Elections Room 113	ND
TMGA-00001-040120-38	White 2'x2' "textured and recessed" suspended ceiling tile (H13)	County Clerk's Office; Main Hallway outside Elections Room 113	ND
TMGA-00001-040120-39	Red and grey patterned ceramic floor tile (H14)	Records Room	ND
TMGA-00001-040120-40	Grey grout associated with red and grey patterned linoleum (H15)	Records Room	ND



T&M SAMPLE ID#	MATERIAL DESCRIPTION (HOMOGENEOUS ID#)	SAMPLE LOCATION	ASBESTOS CONTENT
<u>4-Story Building Wing</u>			
TMGA-00001-040120-41	White sheetrock wallboard (H16)	County Clerk's Office; Clerk's Staff Area	ND
TMGA-00001-040120-42	White joint compound associated with white sheetrock wallboard (H17)	County Clerk's Office; Clerk's Staff Area	ND
TMGA-00001-040120-43	Light grey speckled 12"x12" floor tile (H18)	County Clerk's Office; Clerk's Storage Room	ND**
TMGA-00001-040120-44	Black asphaltic mastic associated with light grey speckled 12"x12" floor tile (H19)	County Clerk's Office; Clerk's Storage Room	ND**
TMGA-00001-040120-45	Light grey speckled 12"x12" floor tile (H18)	County Clerk's Office; Clerk's Storage Room	ND
TMGA-00001-040120-46	Black asphaltic mastic associated with light grey speckled 12"x12" floor tile (H19)	County Clerk's Office; Clerk's Storage Room	ND
TMGA-00001-040120-47	Red and grey patterned ceramic floor tile (H14)	Records Room	ND
TMGA-00001-040120-48	Grey grout associated with red and grey patterned linoleum (H15)	Records Room	ND
TMGA-00001-040120-49	White veneer layer of the plaster wall/ceiling system (H20)	Records Room (wall)	ND
TMGA-00001-040120-50	Brown undercoat layer of the plaster wall/ceiling system (H21)	Records Room (wall)	ND



T&M SAMPLE ID#	MATERIAL DESCRIPTION (HOMOGENEOUS ID#)	SAMPLE LOCATION	ASBESTOS CONTENT
TMGA-00001-040120-51	White veneer layer of the plaster wall/ceiling system (H20)	Records Room (wall)	ND
TMGA-00001-040120-52	Brown undercoat layer of the plaster wall/ceiling system (H21)	Records Room (wall)	ND
TMGA-00001-040120-53	White sheetrock wallboard (H16)	Break Room	ND
TMGA-00001-040120-54	White joint compound associated with white sheetrock wallboard (H17)	Break Room	ND
TMGA-00001-040120-55	White veneer layer of the plaster wall/ceiling system (H20)	Break Room (wall)	ND
TMGA-00001-040120-56	Brown undercoat layer of the plaster wall/ceiling system (H21)	Break Room (wall)	ND
<u>9-Story Building Wing</u>			
TMGA-00001-040120-57	White veneer layer of the plaster wall/ceiling system (H22)	Records Room (column wall)	ND
TMGA-00001-040120-58	Brown undercoat layer of the plaster wall/ceiling system (H23)	Records Room (column wall)	ND
TMGA-00001-040120-59	White veneer layer of the plaster wall/ceiling system (H22)	Records Room (column wall)	ND
TMGA-00001-040120-60	Brown undercoat layer of the plaster wall/ceiling system (H23)	Records Room (column wall)	ND



T&M SAMPLE ID#	MATERIAL DESCRIPTION (HOMOGENEOUS ID#)	SAMPLE LOCATION	ASBESTOS CONTENT
TMGA-00001-040120-61	White veneer layer of the plaster wall/ceiling system (H22)	Records Room; Storage Room (wall)	ND
TMGA-00001-040120-62	Brown undercoat layer of the plaster wall/ceiling system (H23)	Records Room; Storage Room (wall)	ND

Note: "Chrysotile" = Chrysotile asbestos
"ND" = No Asbestos Detected in Sample
"NA/PS" = Not Analyzed/Positive Stop. Laboratory was instructed to stop analysis after the first positive result in any homogeneous group of samples is recorded. In accordance with USEPA protocol, a positive result indicates that the homogeneous group is considered to be asbestos-containing, and further analysis is not necessary.

The criterion used to determine the status of a suspect material as "asbestos-containing" is the EPA criterion that the material is determined to contain greater than 1.0% of actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite asbestiform fibers (40 CFR 61, Subpart M).

The analyses performed on the abovementioned samples indicated that the white matrix block pipe insulation and the brown corrugated aircell pipe in the Clerk's Staff Area are asbestos-containing materials in accordance with USEPA Criterion.

Please note that the cementitious pipe fitting insulation associated with the asbestos-containing white matrix block pipe insulation and the brown corrugated aircell was assumed to be asbestos-containing, as such material is normally determined to be asbestos-containing when occurring with asbestos-containing pipe insulation.

**COMMENTS REGARDING MATERIALS NOT CONSIDERED TO BE PACM
AND COMMENTS ON GENERAL OBSERVATIONS**

Union County Courthouse – Office of County Clerk's Renovations

The spaces to be impacted were generally observed to be comprised of plaster and/or sheetrock walls with plaster ceilings and suspended ceiling tile elements. Concrete floors were primarily observed below carpeting with some applications of non-suspect newer-appearing ceramic floors and walls in the Women's Restroom within the Clerk's Staff Area. Some non-suspect Pergo-type flooring was also observed in the Kitchenette Area of the Clerk's Staff Area. Typical domestic-type plumbing and fixtures were also observed throughout with uninsulated and fibrous glass insulated duct work located above some suspended ceiling tile locations.



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Please note that limited applications of asbestos-containing pipe insulation was observed in the Clerk's Staff Area, but the piping runs associated with the Women's Restroom to be demolished (both in the chases and in the Carpentry Shop and HVAC Room below on the Ground Floor) were observed to be uninsulated or insulated with non-suspect fibrous glass pipe insulation and non-asbestos-containing PVC pipe fitting insulation.

We would recommend that if the renovations within the Clerk's Staff Area (specifically in the location of the new Restrooms – Phase 2A Renovations) will ultimately impact the asbestos-containing white matrix block pipe insulation and/or the brown corrugated aircell pipe insulation (noted to be in satisfactory condition), then a New Jersey-licensed ASCM firm (like T&M) and a New Jersey-licensed Asbestos Abatement Contractor would need to aid in the process of removal as required by applicable Codes.

REGARDING RENOVATION PLANS

Actions taken in regards to the ACM should be in compliance with any applicable federal, state, and local regulations or codes that may apply to handling, disposal, and contracting. Presently, general renovation and disposal operations at both publicly and privately owned and operated facilities in New Jersey are regulated by the federal USEPA's National Emission Standard for Hazardous Air Pollutants (NESHAP) Asbestos Standard (40 CFR 61, Subpart M) and the New Jersey Department of Environmental Protection (NJDEP) waste hauling and disposal regulations (N.J.A.C. 7:26-1, et.seq.). Furthermore, the New Jersey Administrative Code promulgated pursuant to the New Jersey Asbestos Licenses and Permits regulations (N.J.A.C. 8:60 and 12:120) requires that only contractors licensed by the Department of Labor be retained to perform asbestos abatement work. Private contractors who may be retained by a private building owner and the building owner itself, are under jurisdiction of the Occupational Safety and Health Administration (OSHA) asbestos regulations (29 CFR 1910.1001 and 29 CFR 1926.1101, for the general and construction industries, respectively). New Jersey public employers are subject to substantially the same OSHA standard by virtue of its inclusion and expansion as part of the New Jersey Public Employees Occupational Safety and Health (PEOSH) regulations.

Because the subject building is owned by a New Jersey County government, asbestos abatement activities at these sites are regulated by the New Jersey Asbestos Hazard Abatement Subcode (N.J.A.C. 5:23-8, the "Subcode"). The Subcode imposes procedural and organizational requirements on asbestos abatement projects. Among these are the requirements that each abatement project be designed, reviewed and monitored by an authorized Asbestos Safety Control Monitor (ASCM) firm (such as T&M) in accordance with Subcode requirements.

Based upon our understanding of the renovations planned for the subject building spaces, and the bulk material sampling results to date, we would expect that the asbestos-containing pipe insulations previously identified in this report may need to be removed and disposed of as noted above. As stated earlier, this would need to be performed by a New Jersey-licensed Asbestos Abatement Contractor while being monitored by an ASCM Firm like T&M.



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Office of County Clerk Renovations

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Please also note that additional ACM may be located in other spaces at the overall building structures not specifically addressed by this investigation.

Attached in Appendix A is a table indicating the asbestos-containing materials identified to exist at the subject building spaces addressed by this investigation.

Also attached is Appendix B which contains our discussion regarding the potential for Lead-Based Paint associated with building elements (based on historic inspections by T&M) to be impacted by the renovations. As previously noted, based on the recent Covid-19 Pandemic, the Lead-Based Paint Identification Survey will need to be rescheduled at a time when Mandell Lead Inspectors feel more comfortable completing the survey.

LIMITATIONS

1. The survey did not address potential underground structures (such as drainage piping, etc.) that could be associated with the building structure(s).
2. As discussed, it should be understood, although considered unlikely, that suspect materials such as refractory paste, gaskets, and insulation may exist built into any mechanical equipment at the site.
3. Although the survey sought to address the potential presence of concealed suspect materials, the survey could not address localized, incidental suspect material (e.g. a patch plaster installed during a repair or renovation) if such material indeed exists.
4. An invasive survey where holes are made into all wall/ceiling cavities was not performed during this investigation. Therefore, additional asbestos-containing materials (such as pipe/fitting insulation, foundation mastic, exterior wall mastic, etc.) may, although considered unlikely, be uncovered during renovation/demolition activities which would require removal following the appropriate regulations.

Thank you for the opportunity to have been of service. If you have any questions, please contact our office.

Sincerely,

T&M ASSOCIATES

Kevin Burns

Supervising Environmental Scientist

Enclosures

G:\Projects\TMGA\00001\Calculations & Reports\TMGA-00001-LR-Bulk Sample Results and LBP-UCCH-Clerk's Office Renovations-041320.docx

CC: Mr. Noel S. Musial, A.I.A., PP, NCARB, Principal; nsmusial@themusialgroup.com



APPENDIX A

**TABLE 1:
INVENTORY OF ASBESTOS-CONTAINING MATERIAL (ACM)
IDENTIFIED BY LOCATION**

Notes: sf = square feet (of surfacing material)
lf = linear feet (of rope gasketing, pipe insulation, etc.)
ACM = confirmed asbestos-containing via sampling

Union County Courthouse – Office of County Clerk’s Renovations

HOMOGENEOUS ID #	TYPE OF ACM/PACM	LOCATION	APPROXIMATE AMOUNT
H09	White matrix block pipe insulation and associated pipe fitting insulation	County Clerk’s Office; Clerk’s Staff Area in sheetrock column chase at new Restrooms location	15 lf (estimated)
H10	Brown aircell pipe insulation and associated pipe fitting insulation	County Clerk’s Office; Clerk’s Staff Area (above ceiling tile level) at new Restrooms location	60 lf
		County Clerk’s Office; Clerk’s Staff Area in plaster column chases at new Restrooms location	40 lf (estimated)



PLM Bulk Asbestos Report

T&M Associates
Attn: Kevin Burns
11 Tindall Road

Middletown, NJ 07748

Date Received 04/03/20 **AmeriSci Job #** 220041122
Date Examined 04/04/20 **P.O. #**
Page 1 of 13
RE: TMGA-00001; The Musial Group Architects; UCCH Clerk's
Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 TMGA-00001-040120-01 Location: Election Room 113 - White Sheetrock/Wall Board	220041122-01	No	NAD ¹ (by CVES) by Bo Sun on 04/04/20
Analyst Description: Brown/Grey, Heterogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 15 %, Non-fibrous 85 %			
2 TMGA-00001-040120-02 Location: Election Room 113 - White Joint Compound Associated With White Sheetrock/Wall Board	220041122-02	No	NAD (by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
3 TMGA-00001-040120-03 Location: Election Room 113 - White 2 x 4 Pitted Suspended Ceiling Tile	220041122-03	No	NAD (by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 30 %, Fibrous glass 5 %, Non-fibrous 65 %			
4 TMGA-00001-040120-04 Location: Hallway Outside Elections Room 113 - White 2 x 2 Pitted And Recessed Suspended Ceiling Tile	220041122-04	No	NAD (by CVES) by Bo Sun on 04/05/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 40 %, Fibrous glass 10 %, Non-fibrous 50 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
5 TMGA-00001-040120-05	220041122-05	No	NAD
Location: Conference Room Across From Room 114 - White Veneer Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
6 TMGA-00001-040120-06	220041122-06	No	NAD
Location: Conference Room Across From Room 114 - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
3 TMGA-00001-040120-07	220041122-07	No	NAD
Location: Room 114 Business Division - White 2 x 4 Pitted Suspended Ceiling Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 30 %, Fibrous glass 15 %, Non-fibrous 55 %			
7 TMGA-00001-040120-08	220041122-08	No	NAD
Location: Rajoppi Office - Brown Linoleum Floor Covering			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
7 TMGA-00001-040120-09	220041122-09	No	NAD
Location: Rajoppi Office - Brown Linoleum Floor Covering			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
4 TMGA-00001-040120-10	220041122-10	No	NAD
Location: Rajoppi Office - White 2 x 4 Pitted Suspended Ceiling Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 40 %, Fibrous glass 15 %, Non-fibrous 45 %			
5 TMGA-00001-040120-11	220041122-11	No	NAD
Location: Rajoppi Office - White Veneer Layer Of Wall/Ceiling Plaster System Ceiling			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
6 TMGA-00001-040120-12	220041122-12	No	NAD
Location: Rajoppi Office - Brown Undercoat Layer Of Wall/Ceiling Plaster System Ceiling			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Cellulose Trace, Non-fibrous 100 %			
8 TMGA-00001-040120-13	220041122-13	No	NAD
Location: Clerk's Staff Area - Black Asphaltic Mastic Associated With Cork Pipe Insulation			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
8 TMGA-00001-040120-14	220041122-14	No	NAD
Location: Clerk's Staff Area - Black Asphaltic Mastic Associated With Cork Pipe Insulation			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
 Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
5 TMGA-00001-040120-15	220041122-15	No	NAD
Location: Clerk's Staff Area - White Veneer Layer Of Wall/Ceiling Plaster System Ceiling			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
6 TMGA-00001-040120-16	220041122-16	No	NAD
Location: Clerk's Staff Area - Brown Undercoat Layer Of Wall/Ceiling Plaster System Ceiling			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
5 TMGA-00001-040120-17	220041122-17	No	NAD
Location: Clerk's Staff Area - White Veneer Layer Of Wall/Ceiling Plaster System Ceiling			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
6 TMGA-00001-040120-18	220041122-18	No	NAD
Location: Clerk's Staff Area - Brown Undercoat Layer Of Wall/Ceiling Plaster System Ceiling			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
9 TMGA-00001-040120-19	220041122-19	Yes	10 %
Location: Clerk's Staff Area - White Matrix Block Pipe Insulation			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Fibrous, Bulk Material Asbestos Types: Chrysotile 10.0 % Other Material: Cellulose 5 %, Non-fibrous 85 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
 Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
TMGA-00001-040120-20 9	220041122-20		NA/PS
Location: Clerk's Staff Area - White Matrix Block Pipe Insulation			
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
TMGA-00001-040120-21 10	220041122-21	Yes	50 % (by CVES) by Bo Sun on 04/05/20
Location: Clerk's Staff Area - Brown Aircell Pipe Insulation			
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types: Chrysotile 50.0 %			
Other Material: Cellulose 30 %, Non-fibrous 20 %			
TMGA-00001-040120-22 10	220041122-22		NA/PS
Location: Clerk's Staff Area - Brown Aircell Pipe Insulation			
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
TMGA-00001-040120-23 5	220041122-23	No	NAD (by CVES) by Bo Sun on 04/05/20
Location: Clerk's Staff Area - White Veneer Layer Of Wall/Ceiling Plaster System Wall			
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
TMGA-00001-040120-24 6	220041122-24	No	NAD (by CVES) by Bo Sun on 04/05/20
Location: Clerk's Staff Area - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall			
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
5 TMGA-00001-040120-25	220041122-25	No	NAD
Location: Clerk's Staff Area - White Veneer Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
6 TMGA-00001-040120-26	220041122-26	No	NAD
Location: Clerk's Staff Area - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
1 TMGA-00001-040120-27	220041122-27	No	NAD
Location: Clerk's Staff Area - White Sheetrock/Wall Board			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown/White, Heterogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 15 %, Non-fibrous 85 %			
2 TMGA-00001-040120-28	220041122-28	No	NAD
Location: Clerk's Staff Area - White Joint Compound Associated With White Sheetrock/Wall Board			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
1 TMGA-00001-040120-29	220041122-29	No	NAD
Location: Clerk's Storage Room Adjacent To Server Room - White Sheetrock/Wall Board			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown/White, Heterogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 15 %, Non-fibrous 85 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
2 TMGA-00001-040120-30	220041122-30	No	NAD
Location: Clerk's Storage Room Adjacent To Server Room - White Joint Compound Associated With White Sheetrock/Wall Board			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
11 TMGA-00001-040120-31	220041122-31	No	NAD
Location: Clerk's Storage Room Adjacent To Server Room - Peach 12 x 12 Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Peach, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
12 TMGA-00001-040120-32	220041122-32	No	NAD
Location: Clerk's Storage Room Adjacent To Server Room - Black Asphaltic Mastic Associated With Peach 12 x 12 Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
11 TMGA-00001-040120-33	220041122-33	No	NAD
Location: Clerk's Storage Room Adjacent To Server Room - Peach 12 x 12 Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Peach, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
12 TMGA-00001-040120-34	220041122-34	No	NAD
Location: Clerk's Storage Room Adjacent To Server Room - Black Asphaltic Mastic Associated With Peach 12 x 12 Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
5 TMGA-00001-040120-35	220041122-35	No	NAD
Location: Clerk's Storage Room Adjacent To Server Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
6 TMGA-00001-040120-36	220041122-36	No	NAD
Location: Clerk's Storage Room Adjacent To Server Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
13 TMGA-00001-040120-37	220041122-37	No	NAD
Location: Main Hall Outside Room 113 - White 2 x 2 Textured And Recessed Suspended Ceiling Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Fibrous glass 80 %, Non-fibrous 20 %			
13 TMGA-00001-040120-38	220041122-38	No	NAD
Location: Main Hall Outside Room 113 - White 2 x 2 Textured And Recessed Suspended Ceiling Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Fibrous glass 70 %, Non-fibrous 30 %			
14 TMGA-00001-040120-39	220041122-39	No	NAD
Location: Records Room - Red And Grey Pattern Ceramic Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Red/Grey, Heterogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			

Client Name: T&M Associates

PLM Bulk Asbestos ReportTMGA-00001; The Musial Group Architects; UCCH Clerk's
Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
15 TMGA-00001-040120-40	220041122-40	No	NAD
Location: Records Room - Grey Grout Associated With Red And Grey Pattern Ceramic Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
16 TMGA-00001-040120-41	220041122-41	No	NAD
Location: 4 Story Bldg Clerk's Staff Area - White Sheetrock/Wall Board			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown/White, Heterogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 10 %, Non-fibrous 90 %			
17 TMGA-00001-040120-42	220041122-42	No	NAD
Location: 4 Story Bldg Clerk's Staff Area - White Joint Compound Associated With White Sheetrock/Wall Board			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
18 TMGA-00001-040120-43	220041122-43	No	NAD
Location: 4 Story Bldg Clerk's Storage Room - Light Grey Speckled 12 x 12 Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Light Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
19 TMGA-00001-040120-44	220041122-44	No	NAD
Location: 4 Story Bldg Clerk's Storage Room - Black Asphaltic Mastic Associated With Light Grey Speckled 12 x 12 Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
 Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
18 TMGA-00001-040120-45	220041122-45	No	NAD
Location: 4 Story Bldg Clerk's Storage Room - Light Grey Speckled 12 x 12 Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Light Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
19 TMGA-00001-040120-46	220041122-46	No	NAD
Location: 4 Story Bldg Clerk's Storage Room - Black Asphaltic Mastic Associated With Light Grey Speckled 12 x 12 Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 2 %, Non-fibrous 98 %			
14 TMGA-00001-040120-47	220041122-47	No	NAD
Location: 4 Story Bldg Records Room - Red And Grey Pattern Ceramic Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Red/Grey, Heterogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
15 TMGA-00001-040120-48	220041122-48	No	NAD
Location: 4 Story Bldg Records Room - Grey Grout Associated With Red And Grey Pattern Ceramic Floor Tile			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
20 TMGA-00001-040120-49	220041122-49	No	NAD
Location: 4 Story Bldg Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
 Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
21 TMGA-00001-040120-50 Location: 4 Story Bldg Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall	220041122-50	No	NAD (by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
20 TMGA-00001-040120-51 Location: 4 Story Bldg Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall	220041122-51	No	NAD (by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
21 TMGA-00001-040120-52 Location: 4 Story Bldg Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall	220041122-52	No	NAD (by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			
16 TMGA-00001-040120-53 Location: 4 Story Building Break Room - White Sheetrock/Wall Board	220041122-53	No	NAD (by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown/Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 5 %, Non-fibrous 95 %			
17 TMGA-00001-040120-54 Location: 4 Story Building Break Room - White Joint Compound Associated With White Sheetrock/Wall Board	220041122-54	No	NAD (by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %			

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
 Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20 Location: 4 Story Building Break Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %	TMGA-00001-040120-55 220041122-55	No	NAD (by CVES) by Bo Sun on 04/05/20
21 Location: 4 Story Building Break Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %	TMGA-00001-040120-56 220041122-56	No	NAD (by CVES) by Bo Sun on 04/05/20
22 Location: 9 Story Building Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Column Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %	TMGA-00001-040120-57 220041122-57	No	NAD (by CVES) by Bo Sun on 04/05/20
23 Location: 9 Story Building Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Column Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %	TMGA-00001-040120-58 220041122-58	No	NAD (by CVES) by Bo Sun on 04/05/20
22 Location: 9 Story Building Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100 %	TMGA-00001-040120-59 220041122-59	No	NAD (by CVES) by Bo Sun on 04/05/20

PLM Bulk Asbestos Report

TMGA-00001; The Musial Group Architects; UCCH Clerk's
Office Renovations

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
23 TMGA-00001-040120-60	220041122-60	No	NAD
Location: 9 Story Building Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Animal hair Trace, Non-fibrous 100 %			
22 TMGA-00001-040120-61	220041122-61	No	NAD
Location: 9 Story Building Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100 %			
23 TMGA-00001-040120-62	220041122-62	No	NAD
Location: 9 Story Building Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall			(by CVES) by Bo Sun on 04/05/20
Analyst Description: Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Animal hair Trace, Non-fibrous 100 %			

Reporting Notes:

(1) This PLM job was analyzed using Motic BA310 Pol Scope S/N 1190000538

Analyzed by: Bo Sun Bo Sun

*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis by Appd E to Subpt E, 40 CFR 763 (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite or ELAP 198.6 for NOB samples or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note:PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab. This PLM report relates ONLY to the items tested. AIHA-LAP, LLC Lab ID 102843, RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054.

Reviewed By:  END OF REPORT _____

Client Name: T&M Associates

Table I
Summary of Bulk Asbestos Analysis Results
 TMGA-00001; The Musial Group Architects; UCCH Clerk's Office Renovations

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	TMGA-00001-040120-01	1	----	----	----	----	NAD	NA
	Location: Election Room 113 - White Sheetrock/Wall Board							
02	TMGA-00001-040120-02	2	----	----	----	----	NAD	NA
	Location: Election Room 113 - White Joint Compound Associated With White Sheetrock/Wall Board							
03	TMGA-00001-040120-03	3	----	----	----	----	NAD	NA
	Location: Election Room 113 - White 2 x 4 Pitted Suspended Ceiling Tile							
04	TMGA-00001-040120-04	4	----	----	----	----	NAD	NA
	Location: Hallway Outside Elections Room 113 - White 2 x 2 Pitted And Recessed Suspended Ceiling Tile							
05	TMGA-00001-040120-05	5	----	----	----	----	NAD	NA
	Location: Conference Room Across From Room 114 - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
06	TMGA-00001-040120-06	6	----	----	----	----	NAD	NA
	Location: Conference Room Across From Room 114 - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							
07	TMGA-00001-040120-07	3	----	----	----	----	NAD	NA
	Location: Room 114 Business Division - White 2 x 4 Pitted Suspended Ceiling Tile							
08	TMGA-00001-040120-08	7	0.150	72.9	6.7	20.4	NAD	NAD
	Location: Rajoppi Office - Brown Linoleum Floor Covering							
09	TMGA-00001-040120-09	7	----	----	----	----	NAD	NA
	Location: Rajoppi Office - Brown Linoleum Floor Covering							
10	TMGA-00001-040120-10	4	----	----	----	----	NAD	NA
	Location: Rajoppi Office - White 2 x 4 Pitted Suspended Ceiling Tile							
11	TMGA-00001-040120-11	5	----	----	----	----	NAD	NA
	Location: Rajoppi Office - White Veneer Layer Of Wall/Ceiling Plaster System Ceiling							
12	TMGA-00001-040120-12	6	----	----	----	----	NAD	NA
	Location: Rajoppi Office - Brown Undercoat Layer Of Wall/Ceiling Plaster System Ceiling							
13	TMGA-00001-040120-13	8	0.074	98.0	0.9	1.1	NAD	NAD
	Location: Clerk's Staff Area - Black Asphaltic Mastic Associated With Cork Pipe Insulation							
14	TMGA-00001-040120-14	8	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - Black Asphaltic Mastic Associated With Cork Pipe Insulation							
15	TMGA-00001-040120-15	5	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - White Veneer Layer Of Wall/Ceiling Plaster System Ceiling							
16	TMGA-00001-040120-16	6	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - Brown Undercoat Layer Of Wall/Ceiling Plaster System Ceiling							

See Reporting notes on last page

Client Name: T&M Associates

Table I
Summary of Bulk Asbestos Analysis Results
 TMGA-00001; The Musial Group Architects; UCCH Clerk's Office Renovations

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
17	TMGA-00001-040120-17	5	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - White Veneer Layer Of Wall/Ceiling Plaster System Ceiling							
18	TMGA-00001-040120-18	6	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - Brown Undercoat Layer Of Wall/Ceiling Plaster System Ceiling							
19	TMGA-00001-040120-19	9	----	----	----	----	Chrysotile 10.0	NA
	Location: Clerk's Staff Area - White Matrix Block Pipe Insulation							
20	TMGA-00001-040120-20	9	----	----	----	----	NA/PS	NA
	Location: Clerk's Staff Area - White Matrix Block Pipe Insulation							
21	TMGA-00001-040120-21	10	----	----	----	----	Chrysotile 50.0	NA
	Location: Clerk's Staff Area - Brown Aircell Pipe Insulation							
22	TMGA-00001-040120-22	10	----	----	----	----	NA/PS	NA
	Location: Clerk's Staff Area - Brown Aircell Pipe Insulation							
23	TMGA-00001-040120-23	5	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
24	TMGA-00001-040120-24	6	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							
25	TMGA-00001-040120-25	5	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
26	TMGA-00001-040120-26	6	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							
27	TMGA-00001-040120-27	1	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - White Sheetrock/Wall Board							
28	TMGA-00001-040120-28	2	----	----	----	----	NAD	NA
	Location: Clerk's Staff Area - White Joint Compound Associated With White Sheetrock/Wall Board							
29	TMGA-00001-040120-29	1	----	----	----	----	NAD	NA
	Location: Clerk's Storage Room Adjacent To Server Room - White Sheetrock/Wall Board							
30	TMGA-00001-040120-30	2	----	----	----	----	NAD	NA
	Location: Clerk's Storage Room Adjacent To Server Room - White Joint Compound Associated With White Sheetrock/Wall Board							
31	TMGA-00001-040120-31	11	0.211	23.3	49.6	27.0	NAD	NAD
	Location: Clerk's Storage Room Adjacent To Server Room - Peach 12 x 12 Floor Tile							
32	TMGA-00001-040120-32	12	0.117	81.1	12.5	6.4	NAD	NAD
	Location: Clerk's Storage Room Adjacent To Server Room - Black Asphaltic Mastic Associated With Peach 12 x 12 Floor Tile							

See Reporting notes on last page

Client Name: T&M Associates

Table I
Summary of Bulk Asbestos Analysis Results
 TMGA-00001; The Musial Group Architects; UCCH Clerk's Office Renovations

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
33	TMGA-00001-040120-33	11	----	----	----	----	NAD	NA
	Location: Clerk's Storage Room Adjacent To Server Room - Peach 12 x 12 Floor Tile							
34	TMGA-00001-040120-34	12	----	----	----	----	NAD	NA
	Location: Clerk's Storage Room Adjacent To Server Room - Black Asphaltic Mastic Associated With Peach 12 x 12 Floor Tile							
35	TMGA-00001-040120-35	5	----	----	----	----	NAD	NA
	Location: Clerk's Storage Room Adjacent To Server Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
36	TMGA-00001-040120-36	6	----	----	----	----	NAD	NA
	Location: Clerk's Storage Room Adjacent To Server Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							
37	TMGA-00001-040120-37	13	----	----	----	----	NAD	NA
	Location: Main Hall Outside Room 113 - White 2 x 2 Textured And Recessed Suspended Ceiling Tile							
38	TMGA-00001-040120-38	13	----	----	----	----	NAD	NA
	Location: Main Hall Outside Room 113 - White 2 x 2 Textured And Recessed Suspended Ceiling Tile							
39	TMGA-00001-040120-39	14	----	----	----	----	NAD	NA
	Location: Records Room - Red And Grey Pattern Ceramic Floor Tile							
40	TMGA-00001-040120-40	15	----	----	----	----	NAD	NA
	Location: Records Room - Grey Grout Associated With Red And Grey Pattern Ceramic Floor Tile							
41	TMGA-00001-040120-41	16	----	----	----	----	NAD	NA
	Location: 4 Story Bldg Clerk's Staff Area - White Sheetrock/Wall Board							
42	TMGA-00001-040120-42	17	----	----	----	----	NAD	NA
	Location: 4 Story Bldg Clerk's Staff Area - White Joint Compound Associated With White Sheetrock/Wall Board							
43	TMGA-00001-040120-43	18	0.216	17.5	81.4	1.0	NAD	NAD
	Location: 4 Story Bldg Clerk's Storage Room - Light Grey Speckled 12 x 12 Floor Tile							
44	TMGA-00001-040120-44	19	0.073	55.5	35.7	8.8	NAD	NAD
	Location: 4 Story Bldg Clerk's Storage Room - Black Asphaltic Mastic Associated With Light Grey Speckled 12 x 12 Floor Tile							
45	TMGA-00001-040120-45	18	----	----	----	----	NAD	NA
	Location: 4 Story Bldg Clerk's Storage Room - Light Grey Speckled 12 x 12 Floor Tile							
46	TMGA-00001-040120-46	19	----	----	----	----	NAD	NA
	Location: 4 Story Bldg Clerk's Storage Room - Black Asphaltic Mastic Associated With Light Grey Speckled 12 x 12 Floor Tile							
47	TMGA-00001-040120-47	14	----	----	----	----	NAD	NA
	Location: 4 Story Bldg Records Room - Red And Grey Pattern Ceramic Floor Tile							
48	TMGA-00001-040120-48	15	----	----	----	----	NAD	NA
	Location: 4 Story Bldg Records Room - Grey Grout Associated With Red And Grey Pattern Ceramic Floor Tile							

See Reporting notes on last page

Client Name: T&M Associates

Table I
Summary of Bulk Asbestos Analysis Results
 TMGA-00001; The Musial Group Architects; UCCH Clerk's Office Renovations

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
49	TMGA-00001-040120-49	20	---	---	---	---	NAD	NA
	Location: 4 Story Bldg Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
50	TMGA-00001-040120-50	21	---	---	---	---	NAD	NA
	Location: 4 Story Bldg Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							
51	TMGA-00001-040120-51	20	---	---	---	---	NAD	NA
	Location: 4 Story Bldg Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
52	TMGA-00001-040120-52	21	---	---	---	---	NAD	NA
	Location: 4 Story Bldg Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							
53	TMGA-00001-040120-53	16	---	---	---	---	NAD	NA
	Location: 4 Story Building Break Room - White Sheetrock/Wall Board							
54	TMGA-00001-040120-54	17	---	---	---	---	NAD	NA
	Location: 4 Story Building Break Room - White Joint Compound Associated With White Sheetrock/Wall Board							
55	TMGA-00001-040120-55	20	---	---	---	---	NAD	NA
	Location: 4 Story Building Break Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
56	TMGA-00001-040120-56	21	---	---	---	---	NAD	NA
	Location: 4 Story Building Break Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							
57	TMGA-00001-040120-57	22	---	---	---	---	NAD	NA
	Location: 9 Story Building Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Column							
58	TMGA-00001-040120-58	23	---	---	---	---	NAD	NA
	Location: 9 Story Building Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Column							
59	TMGA-00001-040120-59	22	---	---	---	---	NAD	NA
	Location: 9 Story Building Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
60	TMGA-00001-040120-60	23	---	---	---	---	NAD	NA
	Location: 9 Story Building Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							
61	TMGA-00001-040120-61	22	---	---	---	---	NAD	NA
	Location: 9 Story Building Records Room - White Veneer Layer Of Wall/Ceiling Plaster System Wall							
62	TMGA-00001-040120-62	23	---	---	---	---	NAD	NA
	Location: 9 Story Building Records Room - Brown Undercoat Layer Of Wall/Ceiling Plaster System Wall							

Client Name: T&M Associates

Table I
Summary of Bulk Asbestos Analysis Results
 TMGA-00001; The Musial Group Architects; UCCH Clerk's Office Renovations

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
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Analyzed by: Paul J. Mucha ; Date Analyzed 4/6/2020

**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples); NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses); NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, AIHA-LAP, LLC (PLM) Lab ID 102843.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

Reviewed By: 



YOUR GOALS. OUR MISSION.

220041122

ASBESTOS LABORATORY WORK ORDER/CHAIN OF CUSTODY

DATE: 4/2/2020

In accordance with the Subcontractor Analytical Services Agreement between AmeriSci (Subcontractor), and T&M Associates, this Work Order describes the Scope of Services, Time Schedule, Charges and Payment Conditions for the Project described below.

CLIENT The Musial Group Architects PROJECT # TMGA-00001
PROJECT NAME UCCH Clerk's Office Renovations WORK ORDER #

HEREIN FIND THE FOLLOWING SAMPLES:

- Bulk Samples
Air Sample Cassettes
Paint Chip Samples
Other
PCM
TEM

SAMPLE NOS.

TMGA-00001-040120-01 THROUGH 62

TURNAROUND TIME:

- Rush
6 Hours
12 Hours
24 Hours
48 Hours
Other 5 DAY

TO BE ANALYZED FOR ASBESTOS CONTENT BY THE FOLLOWING METHOD:

- Polarized Light Microscopy with Dispersion Staining
ELAP Protocol, TEM
Lead content analysis (percentage)
NYS Stratified Point Count
PLM N.O.B. Analysis (EPA)-N.J. Samples
Phase Contrast Microscopy
Transmission Electron Microscopy
Screening Analysis (Fiber Count)
Quantative (Local Area Diffraction)
AHERA Protocol
Other Stop at First Positive of any Homo ID#. TEM one Homo ID# of any <1.0% or ND NOB. No TEM of ceiling tiles (NJ Samples)

REPORTING:

Report initial results to: KBurns@tandmassociates.com

Send final report to: Mark Worthington

TAKE THE FOLLOWING ACTION WITH SAMPLES:

- Return to T&M - Use Transmittal
Retain indefinitely
Retain until notified otherwise
Dispose of.

CHAIN OF CUSTODY: If enclosures are not as noted, please inform us immediately.

T&M Packaged by: KB Date: 4/1/2020
Transmitted by: UPS Date: 4/2/2020
Method of Transmittal: UPS Date: 4/2/2020

LABORATORY:

Received by Lab: Sealed Package Damaged and Inventoried
Handled by: J. Byrne Date: 4/3/20 0958
Sample Preparation: Date:
Sample Analysis: BO Sme Date: 4-5-20 15230
Packaged by: Date:

G:\Projects\TMGA\00001\Correspondence\TMGA-00001-ASBESTOS LABORATORY WORK ORDER-COC-040120.docx



220041122

Date 4/1/20
 Client The Musical Group
 Project WCCIT Clerk's Office
 Project # TMGA-00001

Sample No.

Material Description

HID#

Sample Location

Results

Sample No.	Material Description	HID#	Sample Location	Results
01	White sheetrock/wall board	#01	Electing Room 113	
02	white joint compound associated with #01	#02	" " "	
03	white 2x4 pitted suspended ceiling tile	#03	" " "	
04	white 2x2 pitted and recessed suspended ceiling tile	#04	Hallway outside electing Room 113	
05	white lower layer of wall/ceiling plaster system wall	#05	conference room across from Room 114	
06	Brown undercoat layer of wall/ceiling plaster system wall	#06	" " "	
07	Same as #03	#03	Room 114 Post Business Division	
08	Brown Linoleum floor covering	#07	near Rajoppi office	
09	Same as #08	#07	" "	
10	Same as #04	#04	" "	
11	Same as #05 ceiling	#05	" "	
12	Same as #06 ceiling	#06	" "	
13	black asphaltic mastic associated with cork pipe insulation	#08	Clerk's Staff area	
14	Same as #11	#05	" " "	
15	Same as #05 ceiling	#05	" " "	
16	Same as #06 ceiling	#06	" " "	
17	Same as #05 ceiling	#05	" " "	
18	Same as #06 ceiling	#06	" " "	
19	white matrix block pipe insulation	#09	" " "	



Date 4/1/20
 Client The Musical Group
 Project HCCIT Clerk's office
 Project # TMA-0001

220041122

Sample No.

Material Description

HID#

Sample Location

Results

20	Same as #19	H09	Clerk's staff arch	
21	Brown oil cell pipe insulation	H10	CL CL CL	
22	Same as #21	H10	CL CL CL	
23	Same as #05 wall	H05	CL CL CL	
24	Same as #06 wall	H06	CL CL CL	
25	Same as #05 wall	H05	CL CL CL	
26	Same as #06 wall	H06	CL CL CL	
27	Same as #01	H01	CL CL	
28	Same as #02	H02	CL CL	
29	Same as #01	H01	Clerk's Storage Room adjacent to Server Room	
30	Same as #02	H02	CL CL CL	
31	Black Peach 12x12 Floor tile	H11	CL CL CL	
32	Black asphaltic mastic associated with #31	H12	CL CL CL	
33	Same as #31	H11	CL CL CL	
34	Same as #32	H12	CL CL CL	
35	Same as #05	H05	CL CL CL	
36	Same as #06	H06	CL CL CL	
37	White 2x2 textured acoustic recessed suspended ceiling tile	H13	Main Hall adjacent Room 113	
38	Same as #37	H13	CL CL CL	



220041122

Date 4/1/20
 Client The Musical Group
 Project UCLH Clerk's Office
 Project # TmGA-0001

Sample No.

Material Description

HID#

Sample Location

Results

Sample No.	Material Description	HID#	Sample Location	Results
39	Red and grey pattern ceramic floor tile	H 14	records room	
40	Grey grout associated with #39	H 15	" "	
41	white sheetrock/wallboard	H 16	Clerk's Office 4 story Bldg. Clerk's staff area	
42	white joint compound associated with #41	H 17	" " " "	
43	light grey speckled 12x12 Floor tile	H 18	4 story Bldg. Clerk's Storage Room	
44	Black asphaltic mastic associated with #43	H 19	" " " "	
45	Same as #43	H 18	" " " "	
46	Same as #44	H 19	" " " "	
47	Same as #39	H 14	4 story Records Bldg. Records Room	
48	Same as #40	H 15	" " " "	
49	white veneer layer of wall/ceiling plaster system	H 20	" " " "	
50	Brown undercoat layer of wall/ceiling plaster system	H 21	" " " "	
51	Same as #49 wall	H 20	" " " "	
52	Same as #50 wall	H 21	" " " "	
53	Same as #41	H 16	4 story Building Break Room	
54	Same as #42	H 17	" " " "	
55	Same as #49 wall	H 20	" " " "	
56	Same as #50 wall	H 21	" " " "	



APPENDIX B

DISCUSSION REGARDING POTENTIAL LEAD-BASED PAINT



REGARDING THE DISTRIBUTION OF POTENTIAL LEAD BASED PAINT

It would not have been the intent of the LBP survey to develop an exhaustive catalog of lead-based paint (LBP) at the subject building structure spaces, but rather to gain an understanding of the overall distribution of potential LBP at the subject building structure spaces relative to planning for LBP management that may be necessary during any planned renovations/demolition at the subject building structure spaces. Consideration of any future testing data may indicate that the following surfaces may contain LBP, with LBP defined as a painted surface tested to contain 1.0 milligrams/square centimeter (mg/cm^2) of surface lead-content:

Union County Courthouse – Office of County Clerk’s Renovations

LBP may be associated with the following building elements addressed by any future investigation (and based on historic inspections by T&M) at the various Union County Courthouse spaces as it relates to the Office of the County Clerk Renovations:

- (i) the various plaster wall/ceiling elements, the various sheetrock wall elements, the metal door and window frame elements, the wooden and/or metal door elements and the metal stairwell elements (this would include the 7-Story Building Wing, 4-Story Building Wing and the 9-Story Building Wing).

3.0 LBP MANAGEMENT ASSOCIATED WITH PLANNED DEMOLITION

Actions taken in regards to all lead-containing materials should be in compliance with any applicable federal, state, and local regulations or codes that may apply to handling, disposal, and contracting. Presently, general renovation and disposal operations that may be undertaken by a privately-owned contractor at the site are subject to the Occupational Safety and Health Administration's Lead Construction Standard (29 CFR 1926.62). This is a "contractor-burden" regulation which specifically addresses potential exposure to lead as a result of demolition/renovation activities, but otherwise does not promulgate specific LBP-management and abatement criteria, especially for LBP to be maintained in-place.

Incidental handling of LBP as part of a demolition project, when the objective of such handling itself is not meant as “mitigation of permanent elimination” of a LBP hazard, is not considered to constitute “lead abatement” pursuant to the New Jersey Uniform Construction Code (see N.J.A.C. 5:23-1.4). T&M understands that the demolition activities to be undertaken are not subject to the requirements of the promulgated New Jersey Lead Hazard Evaluation and Abatement Code (N.J.A.C. 5:17) and the New Jersey Standards for Lead Certification (N.J.A.C. 8:62).

Rather, given the assumption above, any contractor may undertake LBP-handling activities while undertaking work for which it is otherwise qualified, as long as the contractor acts in a prudent manner. Please note that personnel from each contractor may directly disturb LBP (via cutting into the paint’s substrate, changing a component, demolition of paint surfaces, etc.), as long as effective methods are utilized to protect workers from undue exposure to the LBP pursuant to the OSHA Lead Construction Standard.



April 16, 2020

TMGA-00001

The Musial Group, P.A.

Union County Courthouse

Office of County Clerk Renovations

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Concentrated LBP waste that may be generated by stripping or scraping abatement operations would likely be classified as hazardous waste under current federal and state code, requiring its specialized containerization and disposal. LBP associated with plaster wall and ceiling surfaces to be demolished is often not handled as hazardous waste, as mixed waste usually does not “fail” the TCLP (Toxic Characteristic Leachate Procedure) test for classifying characteristic hazardous waste. This being the case, it is our understanding that state and federal agencies currently do not consider the presence of routine LBP applied to general construction waste to classify that waste in a manner to increase its disposal cost [see EPA document 747-R-93-006, Applicability of Federal Resource Conservation and Recovery Act (RCRA) Disposal Requirements to Lead-Based Paint Abatement Wastes].

The United States Environmental Protection Agency (USEPA) has proposed regulations which would eliminate the requirement for the abovementioned TCLP testing and allow for the disposal of LBP debris in construction and demolition (C&D) landfills. Although we expect that demolition debris from the planned demolition activities at the subject building structures would not be classified as hazardous waste under the current regulatory environment, the proposed regulations would ensure this scenario.

Handling of the building components to be demolished as part of any scheduled renovation/demolition project would require dust suppression and control relative to OSHA compliance and good industry practice to prevent fugitive dust exposure to personnel in adjacent areas. Specific waste handling is not expected to be necessary on this project.



August 14, 2020

Via Email: nsm@themusialgroup.com

Mr. Noel Musial, A.I.A., NCARB
Principal
The Musial Group, P.A.
191 Mill Lane
Mountainside, New Jersey 07092

**Re: Supplementary General Conditions and Technical Specifications
Related to the Office of County Clerk Renovations
Asbestos Abatement at the Union County Courthouse
Elizabeth, Union County, New Jersey
T&M Project No. TMGA-00001**

Dear Mr. Musial:

Enclosed are the Supplementary General Conditions and Technical Specifications for the Asbestos Abatement related to the renovations planned in the Office of the County Clerk within the First Floor spaces at the Union County Courthouse in Elizabeth, New Jersey. These documents were prepared to accompany the other general construction documents being prepared for the overall project by your office (Sections 00800 and 02085).

The Asbestos Abatement Work will be completed over one distinct weekend (a Friday evening through a Sunday evening) during the overall Phase 2A Demolition period in order to complete the work. This time period will need to be determined.

Please note that these specifications do not address any restoration issues (i.e., new plaster/plasterboard, ceiling tile, pipe insulation, etc.). These specifications include that in addition to the asbestos abatement work, the Asbestos Abatement Contractor shall be required to remove and dispose of any fibrous glass duct and/or pipe insulation within the work area that is not protected throughout the work area. The removed materials (i.e., fibrous glass duct and pipe insulation, asbestos-containing pipe insulation, etc.) will all be disposed of as asbestos-containing waste.

Please also note that these specification sections assume that any furniture and all movable objects within the vicinity of the work area will be completed by others prior to the start of the Asbestos Abatement activities.

Preparation of these documents follows a walk-thru inspection, asbestos identification survey of impacted spaces and several phone meetings attended by both T&M Associates (T&M) and The Musial Group, P.A. Please note that we understand that the County of Union will make arrangements for the proper shutting down of any HVAC supply and return ductwork within the work area (if necessary) prior to the commencement of the work in those spaces. This will be coordinated with the County of Union.



At the appropriate time, please contact our office regarding confirming scheduling requirements and any other coordination issues.

We have also attached a general Lead-Based Paint Management specification section (02087) for your use if needed. Please note that due to the on-going Covid-19 Pandemic during the survey activities Phase, no specific Lead-Based Paint Identification Survey was conducted at the specific spaces to be impacted by the overall renovations. Previous historic inspections, however, conducted by T&M and Mandell Lead Inspectors, LLC have indicated lead-containing painted surfaces are present throughout various areas of the overall Courthouse complex. We would, therefore, recommend that the additional attached general Lead-Based Paint Management specification section (02087) be included in the overall contract documents so the General Contractor is aware that potential lead-based paint (LBP) is present and that they must take all appropriate precautions as defined in the OSHA Lead Construction Standard (29 CFR 1926.62) to protect both building occupants and their workers.

Should you have any questions, please contact our office.

Respectfully,

T&M Associates

Kevin Burns
Supervising Environmental Scientist

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Enclosure

PART 1 - GENERAL

1.1 SUPPLEMENTARY GENERAL CONDITIONS

- A. This Section contains changes and additions to the Instructions to Bidders and General Conditions. Where any part of the Instructions to Bidders or General Conditions is not modified or voided by the Supplementary General Conditions, the unaltered provisions shall remain in effect.

1.2 BASIC CONDITIONS

- A. "Asbestos Abatement Work": shall be defined as that Work which encompasses the specified removal or any other treatment of asbestos-containing materials, all preparatory and cleaning activities associated with or otherwise motivated by the removal activities, and the handling, transportation, disposal of asbestos-containing and asbestos-contaminated materials and removal and disposal of any metal grid work, lighting components and/or plaster/substrate materials not identified as asbestos-containing as general construction debris. The term "Work" may be utilized in this Section, and in Section 02085 - "Asbestos Abatement", to refer to Asbestos Abatement Work.
- B. "Contractor": as used in this Section and Section 02085 shall refer to the contractor duly licensed by the New Jersey State Department of Labor to perform Asbestos Abatement Work, whether that be the prime contractor as referred to elsewhere in the Contract Documents or a Subcontractor.

1.3 OWNER'S RIGHT TO CARRY OUT THE ASBESTOS ABATEMENT WORK

- A. If the Contractor defaults or neglects to carry out the activities applicable to the Asbestos Abatement Work in accordance with the Contract Documents and fails within a 24 hour period after receipt of a written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness (collectively the "deficiencies"), the Owner may, without prejudice to other remedies the Owner may have, act to correct such deficiencies.
- B. If the Contractor conducts the Work in a manner which would cause endangerment to public health or safety, the Owner may, without written notice, or prejudice to other remedies the Owner may have, require the Contractor to remedy the situation, or the Owner may act to correct same at the Contractor's expense.
- C. In the above cases an appropriate Change Order or Construction Change Directive shall be issued deducting from payments then or thereafter due the Contractor the most of correcting such deficiencies, including compensation for the Engineer's additional services and expenses made necessary by such deficiencies. Such action by the Owner and amounts charged to the Contractor are both subject to prior direction and approval of the Engineer. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

1.4 LIQUIDATED DAMAGES

- A. Inasmuch as the damage and loss to the Owner which will result from a failure by the Contractor to complete the Work within the period herein specified, including any extensions thereof fixed and approved as hereinafter provided, may include interest on monies borrowed for construction, loss from the inability of the Owner to utilize the new Work, additional costs for inspection fees

and other expenses and damages, the damages of the Owner for delay in the case of such failure or failures on the part of the Contractor shall be liquidated according to the following schedule:

- B. For failure to comply with any "Asbestos Abatement Deadline" defined elsewhere in these contract documents:

\$750.00 per calendar day.

1.5 OWNER EXPENSE BACKCHARGES

- A. The Contractor shall bear the cost of analysis of all clearance air samples that indicate non-compliance with the promulgated clearance air sample standard appropriate to each subject work area and/or specified enclosure. The backcharge cost shall not exceed \$20.00 for each sample analyzed utilizing Phase Contrast Microscopy (PCM) and \$150.00 for each sample analyzed utilizing Transmission Electron Microscopy (TEM). The Contractor shall bear the cost of the Owner's and Owner's consultant's response to re-sampling any work areas and/or enclosures that indicate non-compliance with the promulgated clearance air sample standards. The backcharge cost for the Owner's asbestos management consultant shall not exceed \$128.00 per hour for Asbestos Safety Technician straight time and \$192.00 per hour for Asbestos Safety Technician overtime for conducting the additional sampling.
- B. The Contractor shall bear the cost of the Owner's and the Owner's consultant's response to release of contamination during the Asbestos Abatement Work. The backcharge cost for the Owner's asbestos management consultant shall not exceed \$165.00 per hour for Project Monitor time or \$192.00 for Project Monitor overtime, and those rates listed in Subparagraph 1.5(A) for air sample analysis.
- C. Should the Contractor exceed the one (1) overall off-hour weekend schedule (utilizing no more than nine-hour workshifts) for the Asbestos Abatement Work anticipated in the overall Phase 2A Demolition work, then the Contractor shall reimburse the Owner at a rate of \$128.00 per hour of AST straight time and \$192.00 per hour of AST overtime for any time the Contractor spends on-site in excess of nine hours in any one shift, or any time on a holiday not specified or anticipated.
- D. The backcharges shall be processed as deduct change orders to the Contractor's account.

1.6 LIABILITY FOR DELAYS ASSOCIATED WITH INSUFFICIENT WORK SCOPE

- A. It is the Contractor's sole responsibility to arrange for the Asbestos Abatement Work scope to be completed in an expeditious and cost effective manner. A critical consideration is the definition of the Work to be sufficient to allow for all Asbestos Abatement Work to be completed as part of one mobilization for each Phase prior to the start of other Work on this contract. The Owner shall not be held responsible for delays and duplicative costs associated with the possible eventuality that the Contractor needs to arrange for some Asbestos Abatement Work to be completed at a time following the initial Asbestos Abatement Work due to the Contractor's failure to properly define and execute the Asbestos Abatement Work as part of that first mobilization. Rather, the Contractor shall bear the costs incurred by the Owner for the Owner to arrange for its consultants to participate in arrangement and monitoring of Asbestos Abatement Work conducted to remedy improper initial definition of the Asbestos Abatement Work scope.

1.7 INSURANCE - ASBESTOS ABATEMENT

Add this new section to any other insurance requirements in these documents:

- A. In addition to the insurance requirements in the General Conditions, the Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project site is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contractor and for which the Contractor may be legally liable, whether such operations be by the Contractor or by anyone directly employed by any of them, or by anyone for whose acts any of them may be liable:
 - 1. Contractor's asbestos abatement liability insurance in the occurrence form, \$1,000,000.00 per occurrence, \$1,000,000.00 aggregate.
- B. The existence of the above insurance shall in no way relieve any Contractor or Subcontractor of any responsibility for which they are liable in excess of the amount recoverable under the insurance provided above.
- C. Any increase of limits of liability of any type of insurance not described above that any Contractor may require for its protection or on account of statute, shall be its own responsibility and at its own expense. Any policy covering any Contractor's own equipment against loss by physical damage shall include an endorsement providing that the underwriters waive their right of subrogation against the Owner, Architects, Construction Managers, Consultants, other Contractors or Subcontractors, (or replacement or renewal thereof with respect to the Project).
- D. All insurance required by this Section or any other insurance required by the Contract Documents shall be provided by insurers acceptable to the Owner.
- E. All insurance required by this Section or any other insurance required by the Contract Documents shall identify the Owner, The Musial Group, P.A., and T&M Associates each as an "additional insured".

END OF SECTION 00800

PART 1 - GENERAL

1.1 ABATEMENT

- A. This section covers the abatement of potential hazards relating to materials previously determined to be asbestos-containing materials (ACMs) pursuant to applicable regulations associated with the structure described in these specifications.

1.2 RELATED DOCUMENTS

- A. Read this section as part of the overall contract documents. Special attention is brought to all drawings and other specification sections that refer to any work related to the components of the existing building.

1.3 DESCRIPTION OF WORK

- A. The Contractor shall furnish all labor, materials, services, training, insurance, and equipment as needed to complete removal of asbestos-containing and asbestos-contaminated materials identified. The Contractor shall follow all Federal, State and local ordinances, regulations and rules pertaining to asbestos, including its storage, transportation, and disposal.
- B. Attached Drawings AA-1 through AA-2 are made part of the overall technical specifications.
 - 1. Work Scope: The Asbestos Abatement Contractor shall remove the following asbestos-containing materials:

Notes: sf = square feet
lf = linear feet
ACM = Asbestos-containing material

Union County Courthouse – Office of County Clerk’s Renovations

TYPE OF ACM	LOCATION	APPROXIMATE AMOUNT
White matrix block pipe insulation and associated pipe fitting insulation	County Clerk’s Office; Clerk’s Staff Area in sheetrock column chase at new Restrooms location	15 lf (estimated)
Brown aircell pipe insulation and associated pipe fitting insulation	County Clerk’s Office; Clerk’s Staff Area (above ceiling tile level) at new Restrooms location	60 lf
	County Clerk’s Office; Clerk’s Staff Area in plaster column chases at new Restrooms location	40 lf (estimated)

- C. The “Approximate Amount(s)” of ACM listed above are offered merely to provide a general and relative frame of reference. No attempt has been made to quantify the exact amount of ACM, non-ACM and contaminated non-ACM in the above-mentioned locations, nor elsewhere. The Contractor is expected to have acquainted itself with the spaces involved, and to have investigated

the location and amount of all identified materials. The Approximate Amounts or lack of an amount approximation, shall not in any way be construed or applied so as to limit the Contractor's obligation to remove and dispose of, or otherwise treat as specified, all ACM, non-ACM and contaminated non-ACM so identified, nor to form the basis for any change of the Contract Sum or Time.

- D. The General Contractor shall be responsible for the pre-abatement removal of any suspended ceiling tile, associated metal grid work and/or lighting in the vicinity of the overall Asbestos Abatement Work area to be established during the Phase 2A Demolition phase. The General Contractor shall also be required to remove and/or relocate all movable furniture, files, etc. not addressed by the County of Union in order to allow for the Asbestos Abatement Work for this Phase to commence as necessary.

1.4 SCHEDULING

- A. Coordinate, phase, and schedule the Asbestos Abatement Work specified herein in conjunction with the remainder of the work of this contract.
1. Complete the Asbestos Abatement Work specified over one (1) weekend period (utilizing a Friday pm shift, a Saturday shift, and a Sunday breakdown shift) to be determined during the Phase 2A Demolition period. The end of the third day of this period shall be referred to as the "Asbestos Abatement Deadline."
 2. The start of the one (1) weekend period shall be determined by a two-week Notice-to-Proceed to be issued by the Owner.
 3. Complete all restoration Work specified herein or otherwise necessary to restore damage or loss of value caused by the Contractor's activities by the end of the fifth (5th) business-day following completion of Asbestos Abatement. The end of this fifth (5th) business-day of this period shall be referred to as the "Restoration Deadline".
 4. Weekend and overtime work is expected for this project and will require no specific Owner's approval except for dates of anticipated work.

1.5 DOCUMENTS

The current issue of each document incorporated by reference herein shall govern. Where conflict among requirements or with the specification exists, the more stringent requirements shall apply.

- A. OSHA regulations: Provide special attention the following:
1. CFR 1910 (general industry)
 2. CFR 1910.134 (respiratory protection)
 3. CFR 1910.141 (sanitation)
 4. CFR 1910.300-399 (electrical)
 5. CFR 1910.1001 (asbestos)
 6. CFR 1910.1200 (hard communication)
 7. CFR 1926 (construction safety)
 8. CFR 1926.52 (noise)
 9. CFR 1926.62 (lead)
 10. CFR 1926.1101 (asbestos)
 11. CFR 1926.59 (hazard communication)

12. CFR 1926.40-449 (electrical)
13. CFR 1926.450-452 (ladders and scaffolding)

B. EPA regulations; Provide special attention to the following:

1. NESHAP - National Emission Standards for Hazardous Air Pollutants. 40 CFR 61, Subparts A (General Provisions, Sections 01-10) and M (Asbestos, Sections 140-157).
2. AHERA - Asbestos-Containing Materials in School Rule 40 CFR 763, Subpart E.

C. DOT regulations; Provide special attention to the Hazardous Materials Regulations, 49 CFR 171-180, in particular:

1. 49 CFR 171.14(b)(4) (placarding)
2. 49 CFR 172.300-308, 324 (marking)
3. 49 CFR 174.400, 466 (labeling)
4. 49 CFR 172.500, 504, 560 (placarding)

D. Other Standards

1. American National Standards Institute
 - a. ANSI Standard Z9.2 Fundamentals Governing the Design and Operation of Local Exhaust Systems.
 - b. ANSI Standard A40.8 National Plumbing Code.
2. National Fire Protection Association
3. NFPA 70 National Electrical Code
4. NFPA 70E Standard for Electrical Safety Requirements for Employee Workplaces.

E. New Jersey Regulations

- 12:120 and N.J.A.C. 8:60 (licensing).
7:26-1 et.seq. (waste transport).
N.J.A.C. 5:23-8 (New Jersey Asbestos Hazard Abatement Subcode).

1.6 DEFINITIONS

- A. The definitions utilized in this Section of these Specifications are verbatim with those of the New Jersey Asbestos Hazard Abatement Subcode of the New Jersey Uniform Construction Code, otherwise referred to as "Subchapter 8" or the "Subcode" (N.J.A.C. 5:23-8).

1.7 SUBMITTALS

Approval by the ASCM of the following submittals is required before initiation of any work of this section:

- A. Work schedule and plan identifying firm start and end dates, the hours to be worked on a daily basis, and the Contractor's plans for complete the Work, including:

1. Scope of Work; Defined in written and graphic form.
 2. Sequencing; Sequencing of asbestos work.
 3. Shifts; Length and projected times of day of work shifts.
 4. Interfacing; Interface of trades involved in the work.
 5. Special procedures; A detailed description of any proposed methods of special asbestos abatement procedures, such as glovebag work, mechanical flooring removal, etc., where used. Submit manufacturer's technical specifications and product description literature for the methods and equipment used.
- B. Copies of all notifications as required by these Specifications including identification of the Contractor's waste hauler, the hauler's NJDEP identification number, and the intended disposal site of the contaminated wastes, and all applicable permits.
- C. Copies of the Contractor's New Jersey Asbestos "A" license and respiratory protection program.
- D. The name of the testing laboratory providing the Contractor's OSHA compliance monitoring.
- E. The name and qualifications of the individual who will act as the project supervisor during the asbestos abatement portion of this Project.
- F. Information, including copies of applicable certificates and licenses from training agencies and/or manufacturers, concerning the qualifications of the Contractor, and Subcontractor, either's personnel, relative to their ability to execute the electrical, plumbing, and mechanical installation or dismantlement directly specified or otherwise necessary to complete the specified Work.
- G. Material Safety Data sheets for all hazardous chemicals to be used on the Project.
- H. Obtain any required building permits from the local enforcement agency and submit all required notifications, including but not necessarily limited to those required by N.J.A.C. 5:23-8.5, 40 CFR 61, N.J.A.C. 7:26-2.12 and N.J.A.C. 12:120.7 and 8:60.7. The Contractor shall provide copies of all permits and/or notification submissions to the Owner and the Owner's consultant prior to the commencement of the Work. The Contractor shall bear the costs of any and all permits, notifications and amendments.**
- I. The Contractor shall also submit any required paperwork to the Construction Official for any Temporary Certificates of Occupancy/Approval or Final Certificates of Occupancy/Approval as it relates to Asbestos Abatement at no additional cost to the Owner.**

1.8 PERFORMANCE REQUIREMENTS

- A. Project/site conditions
1. Restore the Work area(s) and auxiliary areas utilized during abatement to conditions equal to or better than original. Any damages or loss of value caused during the performance of asbestos abatement or other activities shall be repaired by the Contractor to the satisfaction of the Owner within ten (10) business days after completion of any Phase and at no additional expenses to the Owner.

PART 2 - PRODUCTS

2.1 PRODUCTS - GENERAL

- A. Deliver all materials in the original packages, containers, or bundles, bearing the name of the manufacturer, the brand name and any Material Safety Data Sheets which pertain to the materials.
- B. Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.
- C. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Materials that become contaminated with asbestos shall be disposed of in accordance with applicable regulations.
- D. No materials, equipment or tools belonging to the Owner shall be used by the Contractor, except in case of an emergency and upon explicit authorization by the Owner.

2.2 MATERIALS

- A. All materials on this Project must meet the requirements of the Subcode.
- B. For work area preparation, utilize materials (e.g., polyethylene sheeting, lumber, etc.) rated to be fire retardant, as tested by ASTM Standard E-84. Additionally, utilize polyethylene sheeting conforming to the requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Firms.

2.3 TOOLS AND EQUIPMENT

- A. Utilize tools and equipment meeting the requirements of the Subcode.

PART 3 - EXECUTION

3.1 WORK AREA PREPARATION - GENERAL

- A. Provide for adequate lighting during all phases of the set up, abatement, clearance and following the work. The Contractor shall provide an adequate quality and quantity of "string"-type lighting for use during all work herein.
- B. Post adequate warning signs denoting the potential danger of airborne asbestos at designated entrances to work areas including, as a minimum, those described in N.J.A.C. 5:23-8 the New Jersey Asbestos Hazard Abatement Subcode, and State occupational safety and health and fire safety regulations (where applicable), and shall prevent access to posted areas by unauthorized or inadequately protected persons.
- C. Maintain adequate portable fire extinguisher equipment within the work area meeting at least the requirements of 29 CFR 1910.157 and State occupational safety and health regulations and fire safety regulations.
- D. Clean surfaces of contaminated containers and equipment by wet sponging and/or HEPA vacuuming before moving them to uncontaminated areas.

- E. The Contractor shall bear the cost of any and all Variances to the Subcode if deemed required by the NJDCA (i.e., electrical, polyethylene sheeting requirements, etc.). The variance fee shall be \$571.00 for each variance if applicable. The ASCM shall submit any variance on behalf of the Contractor and Owner if requested.

3.2 DISPOSAL AND WASTE TRANSPORT

- A. Provide a copy of the waste manifest indicating the chain of custody, final disposal site and date to the Owner for each waste container or truck containing asbestos-containing or asbestos-contaminated waste within 15 days from when the container or truck leaves the worksite.
- B. Promptly containerize debris. Maintain waste in a secure waste container location arranged with the Owner.

3.3 WORK AREA ISOLATION AND PROCEDURES

- A. Complete the asbestos abatement removal specified for the Asbestos Abatement Work in the Lobby areas utilizing the glovebag removal method in accordance with N.J.A.C. 5:23-8.17 “Limited Containment Removals”, N.J.A.C. 5:23-8.19 “Abatement in Occupied Buildings” and the Specifications. Utilize no more than two (2) tent enclosures to complete the asbestos abatement removal specified.
- B. HVAC units within or servicing the work area(s) shall be shut-down for the duration of the work,
- C. During any occupied abatement work, the AST shall gather 1 air sample/10,000 square feet of occupied building space. The AST shall also gather 1 air sample within each work area enclosure during removal activities as part of this project.
- D. A letter identifying the asbestos abatement project shall be provided to building occupants twenty (20) days prior to the asbestos abatement start. This 20-Day Occupant Notice shall be posted 7 days prior to abatement.

3.4 NEGATIVE AIR FILTRATION UNIT INSTALLATION AND OPERATION

- A. Exhaust all negative air filtration units to the exterior of the building utilizing a form fitting manifold.
- B. At least one negative air filtration unit of minimum rated 1800 CFM capacity shall be installed in the work area enclosure as a back-up unit.
- C. During occupied abatement work, maintain negative pressure differential and 0.05 in W.C. within the work area enclosure in accordance with N.J.A.C. 5:23-8.19. Pressure differential shall be monitored at the decontamination units and at any interior make-up air locations by digital monometers with continuous printout.
- D. Maintain a minimum of four air changes per hour within the work area. Air changes to be verified and field tested by the AST.

3.5 INSTALLATION OF SEPARATION BARRIERS – OCCUPIED ABATEMENT WORK

- A. Where the Drawings or these Specifications indicate a separation barrier is to be installed, construct the separation barriers in compliance with the following requirements.
- B. Utilize minimally ½" plywood sheeting for all separation barriers constructed as part of this Project. Install plywood over a framework of 2" x 4" lumber studding.
- C. Install lumber studs horizontally across the top (i.e., at ceiling level) and bottom (i.e., at floor level) of the span to be sealed. Install additional studding shall be installed vertically across the span at 16" on center, except as necessary to leave a minimally 3' x 6' opening in the framework per (D).
- D. Fasten the plywood sheeting to the lumber framework, sized to minimize seams. If the Drawings or Specifications specify that the barrier be installed with a "kick-out" hatch, cover the hatch with a single piece of plywood sheeting. Attach the kick-out hatch to the framework in a manner which will permit the hatch to be forcibly removed in the event that emergency egress is needed from the work site (e.g., utilize duct tape to hold the plywood in place).
- E. Utilize silicone caulk to seal all of the seams of the barrier with the exception of the kick-out hatch seams.
- F. Install two independently affixed layers of polyethylene sheeting on both sides of the separation barrier (i.e., four sheets of polyethylene). Utilize spray paint to mark the location of the kick-out hatch on the work site side of the separation barrier. In any location where a barrier is constructed to the exterior to the building, the outer layer of polyethylene sheeting shall be reinforced.
- G. In those locations where the Drawings or these Specifications indicate a separation barrier with a lockable door, modify the barrier specified as follows:
- H. Omit the opening within the framework for the kick-out hatch and leave an opening large enough to construct a plywood door.
- I. Install the door with commercially-available hardware installed from the work site side of the barrier. Provide a lock and hasp to enable the door to be locked at all times that the Contractor is not in the work area.
- J. Prepare the side of the door opening facing the work area with three sheets of interlocking polyethylene sheeting flaps, weighted to close.

3.6 FREESTANDING LUMBER AND POLYETHYLENE WALL CONSTRUCTION (IF APPLICABLE)

- A. Wherever these Specifications or the Drawings indicate a freestanding lumber and polyethylene wall, install in accordance with the following requirements.
- B. Utilize minimally 1" x 3" lumber studding or furring strips to construct a framework for the wall.
- C. Install horizontal lumber at floor level along the entire interface of the lumber framework with the floor.

- D. Install vertical studding, as necessary to construct the framework, with a vertical lumber stud at each end of the lumber framework. Install this studding so as to extend the upper surface of the horizontal studding at the top of the framework to the ceiling level.
- E. Staple a single layer of six mil polyethylene sheeting to the exterior (i.e., furthest from the work site) of the lumber frame, covering the entirety of the frame. Staple a single layer of six mil polyethylene sheeting to the interior side of the frame, also covering the entirety of the frame. Tape this sheeting to the floor and walls of the opening being sealed, cover with duct tape. During the preparation of any full work area enclosure, install a third sheet of six mil polyethylene sheeting over the framework as the layer of wall sheeting required by N.J.A.C. 5:23-8.14.

3.7 GLOBEBAG PROCEDURES – PHASE 2A DEMOLITION PERIOD -NEW RESTROOM AREA – OCCUPIED ABATEMENT WORK

- A. Provide the following preparatory procedures prior to undertaking the glovebag removal in the Office of County Clerks spaces:
- B. Install a local tent enclosure a minimum of five feet from the pipe insulation to be removed. Construct tent enclosure of a minimum of 1 layer of 6 mil polyethylene sheeting and extend from the floor to the ceiling. Then install two independently affixed layers of polyethylene sheeting, on the floor, extending up the wall polyethylene sheeting with the required 12” and 24” overlaps as defined in the Subcode.
- C. **The tent enclosure shall be fitted with the appropriate amount and sized negative air filtration units (HEPA units), as necessary, to ensure a minimum of four (4) air changes per hour and a negative pressure differential of 0.05 W.C. as defined in the Subcode during the removal activities.**
- D. Provide a dedicated shower facility at the Project site for daily use by workers.
- E. Cooperate with the on-site AST so that each of the Contractor's crews that will be performing the glovebag technique may be observed by the AST during the entire preparation, removal, and cleanup of the first glovebag operation they conduct on the project. The AST reserves the right to select the area where this initial operation is to take place, and to witness more than one glovebag procedure.
- F. Provide a sufficient quantity of smoke tubes to smoke test each glovebag within which removal of ACM shall be performed during this Project. Coordinate Work to allow the AST to personally observe each smoke test performed on every glovebag utilized during this Project. If any worker is observed removing ACM within a glovebag which the on-site AST did not personally observe the smoke test, that worker may be immediately ejected from the work site for the duration of the Project at the AST’s discretion.
- G. The AST will observe the operation in order to verify that the proper procedures are being followed, and that the personnel demonstrate knowledge and competence in the glovebag operation. If the observation proves to be satisfactory, the personnel observed will be considered pre-qualified to conduct the glovebag operation. Only personnel pre-qualified in accordance with these procedures will be allowed to conduct the glovebag operation on this Project.

- H. The AST shall have the right to inspect any or all glovebags prior to the removal of any asbestos-containing materials.
- I. Complete removal, work area cleaning, bag-out activities (during times of least occupancy), encapsulation and closeout activities.

3.8 WORK PROCEDURES – LIVE ELECTRICAL EQUIPMENT

- A. The Contractor shall Post the \$571.00 fee for acquisition of a variation to allow live electrical equipment/conduit within the work area if deemed necessary.**
- B. The ASCM firm, T&M Associates (T&M), shall prepare and submit the variation request to the New Jersey Department of Community Affairs (NJDCA).
- C. Prior to the commencement of the project, provide a licensed electrician to identify and label all live electrical boxes, conduit, equipment, etc. within the work area. Any electrical hazards (open boxes, etc.) shall be repaired at this time.
- D. All live electrical conduit, cables, etc., within the work area shall be prepared with critical barriers.
- E. Utilize extreme care when working adjacent to live electrical equipment, and use water sparingly.
- F. All workers shall wear rubber gloves and boots while working in close proximity to live electrical equipment.
- G. Utilize only fiberglass or wood ladders; do not utilize aluminum ladders.

3.9 CONTAMINATION CONTINGENCY PLAN (DURING OCCUPIED ABATEMENT WORK)

- A. If the pressure differential drops below 0.05 inches W.C., the following procedures shall be implemented:
 - 1. The Asbestos Safety Technician and the contractor shall investigate and evaluate the engineering controls to determine the source of the pressure loss.
 - 2. The contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction, changing of exhaust unit filters, adjustment of make-up air, operation of additional exhaust units or other necessary measures to reestablish acceptable pressure differential.
- B. If the pressure differential drops below 0.01 inches W.C., the following procedures shall be implemented:
 - 1. The contractor shall cease abatement activity in the work area.
 - 2. The asbestos safety control monitor shall notify the Owner to evacuate the pressurized space(s). The pressurized space(s) shall include all space outside the work area which is pressurized to maintain the required pressure differential relative to the work area and is isolated from the rest of the building in terms of air flow. The pressurized space may include the entire building in terms of air flow. The pressurized space may include the

entire building exclusive of the work area or any part of the building that is pressurized to isolate it from the work area.

3. The asbestos safety technician and the contractor supervisor shall investigate and evaluate the engineering controls and determine the source of the pressure loss.
 4. The contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction changing of exhaust units or other necessary measures to reestablish an acceptable pressure differential.
 5. Reoccupancy shall not be permitted in any area unless a pressure differential of 0.05 inches w.c. or greater is reestablished.
 6. If a pressure differential of 0.05 inches w.c. or greater is not reestablished within 24 hours of the first reading below 0.01 inches w.c., than the building shall be evacuated.
- C. If air levels exceed 0.010 f/cc, the following procedures shall be implemented:
1. The asbestos safety technician and the contractor supervisor shall investigate and evaluate the engineering controls to determine the source of the high air level.
 2. An additional / second PCM air sample shall be taken at each place at which a high air level was obtained. The additional / second PCM sample may be split, and if the result of the air sample is less than or equal to 0.010 f/cc the contingency plan is terminated. If the result of the air sample exceeds 0.010 f/cc, the contractor, in consultation with the asbestos safety control monitor, shall choose the option of cleaning and retesting by PCM analysis or analyzing the split sample by TEM analysis. If the result of the TEM analysis exceeds 0.010 f/cc, than cleaning shall be undertaken.
 3. The decision as to the timing of the cleaning activity shall be made by the asbestos safety control monitor firm in consultation with the Owner and the contractor.
 4. Cleaning shall include, but not be limited to, wet wiping and misting the air. Cleaning the affected areas shall be continued outside of containment and PCM sampling shall also be continued until the result in the area is equal to or less than 0.010 f/cc by either PCM or TEM analysis.
 5. If laboratory analysis of air samples does not yield a reading less than or equal to 0.010 f/cc within 24 hours of receipt of the first test result above 0.010 f/cc, then the building shall be evacuated.
 6. Reoccupancy shall not be permitted in any area where PCM analysis reveals results greater than 0.010 f/cc, unless TEM results indicate asbestos fibers are equal to or less than 0.010 f/cc. In the case of reoccupancy, all air samples used to make the determination to allow reentry shall be analyzed by an accredited laboratory.
- D. If a power outage occurs during active abatement work, the building occupants shall be evacuated until the air samples determine that the occupied spaces are safe, and power has been restored. If a power outage occurs when the building is unoccupied, occupancy will not be permitted until air samples determine that the spaces to be occupied are safe and power has been restored.

3.15 AIR MONITORING – SUBCODE REQUIREMENTS

- A. These Specifications adhere to the progress and clearance air sampling requirements of the Subcode (N.J.A.C. 5:23-8.21 et.seq.).
 - 1. The removal work areas shall be subject to the Subcode’s progress air sampling protocols utilizing Phase Contrast Microscopy (PCM).
 - 2. Transmission Electron Microscopy (TEM) and/or PCM shall be utilized by the ASCM for clearance sampling in the work area enclosure as determined by Code.
- B. During occupied abatement work, the AST shall also perform additional progress air sampling on the waste route. Certified Asbestos Analyst Registry (AAR) personnel shall analyze all occupied samples collected as part of this project.
- C. During occupied abatement work, in addition to progress sampling at the work area perimeters, the AST will be conducting air tests in occupied areas of the building during the abatement activities and within the work area(s). “Occupied” air samples will be initiated at the start of the work each day with results available within four hours of the start of each sample set pursuant to N.J.A.C. 5:23-8.19.4. The contractor shall be prepared to respond immediately to unacceptable results.
- D. Respond to unacceptable progress and clearance air sample results obtained by ASCM during any portion of this Work as required by the Subcode.

3.16 SPECIAL PRECAUTIONS – REQUIREMENTS RELATED TO N.J.A.C. 5:23-8.15 (1) 1

- A. The following section of the New Jersey Asbestos Hazard Abatement Subcode (N.J.A.C. 5:23-8, the “Subcode”) will be addressed further in this Section as a matter of Code:
 - (i) Special precautions shall be implemented, where appropriate, including, but not limited to, the following examples:
 - 1. Asbestos abatement projects involving ceiling tile and T-grid components, elevators, carpet, contaminated soil and projects in tunnels, crawl spaces, plumbing access panels, and/or involving live electrical panels or live steam lines are likely to present unique conditions that will require special precautions in addition to the procedures described in this section. In instances where special precautions need to be instituted, they shall be described in plans and specifications.
- B. Complete work area preparation below any acoustical ceiling plaster, ceiling plaster and suspended ceiling tile location to be removed as part of this project in accordance with the Subcode.
- C. Polyethylene sheeting shall not be required on any ceiling system that exhibits asbestos-containing materials and will be removed as part of this Project. However, the following additional requirements will need to be implemented prior to and as part of the asbestos abatement procedures:
- D. Upon completion of work area preparations, including but not limited to separation barrier installation, critical barriers installation, wall polyethylene sheeting, floor polyethylene

- sheeting, negative air filtration installation, monometer installation, etc. the Contractor shall do the following upon the issuance of a pre-commencement Notice to Proceed issued by the on-site AST:
- E. The Contractor shall begin with the limited dismantlement of any acoustical ceiling plaster systems, ceiling plaster systems and/or suspended ceiling tile systems (all applications and associated wire/wooden lathe and/or metal supporting elements) along perimeter locations only at this time. All components removed at this time, utilizing appropriate wet methods, shall be disposed of as asbestos-containing waste. Any metal that can be cleaned, can be at this time and disposed of as general construction debris.
 - F. The Contractor, with the assistance of the on-site AST, shall determine at this time if any additional wall polyethylene sheeting and/or critical barriers need to be installed above any of the acoustical ceiling plaster systems, ceiling plaster systems and/or suspended ceiling tile systems and will do so if necessary at this time.
 - G. Once any additional wall polyethylene sheeting and/or critical barriers are installed, the Contractor may commence with complete removal of any acoustical ceiling plaster systems, ceiling plaster systems and/or suspended ceiling tile systems.
 - H. Complete removal of any asbestos-containing pipe insulation and/or duct insulation uncovered at this time. All fibrous glass pipe insulation and fibrous glass duct insulation shall also be removed and disposed of as asbestos-containing waste in the same manner as the asbestos-containing pipe insulation/pipe fitting insulation if present in the work areas.
 - I. Complete work area cleaning and bag-out activities as detailed in the Subcode and the Asbestos Abatement Specifications.
 - J. The entirety of the work area surfaces, including the spaces above the previously removed acoustical ceiling plaster systems, ceiling plaster systems and/or suspended ceiling tile systems, shall be encapsulated as required by the Subcode, the Asbestos Abatement Specifications and this Section.

END OF SECTION 02085

**Approved and Released by
Accredited AHERA Project Designer
Kevin Burns**












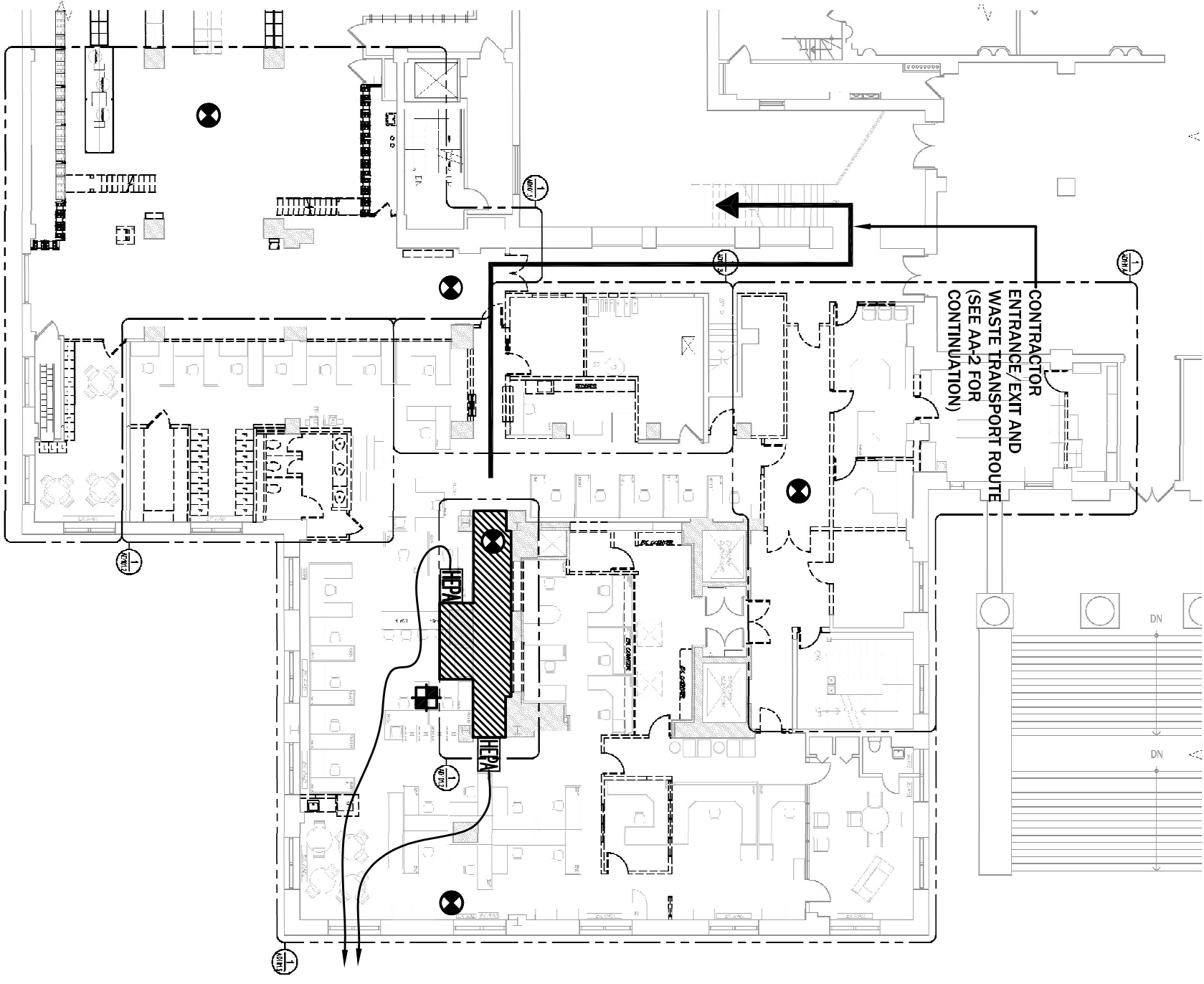
Accreditation Number: NAETI 56040

NOTES

1. COMPLETE ALL OF THE ASBESTOS ABATEMENT WORK SPECIFIED IN ACCORDANCE WITH N.J.A.C. 5:23-8.15 "ASBESTOS HAZARD ABATEMENT PROJECTS", N.J.A.C. 5:23-8.19 "ABATEMENT IN OCCUPIED BUILDINGS" AND THE SPECIFICATIONS.
2. COMPLETE THE ASBESTOS ABATEMENT WORK SPECIFIED ON THESE DRAWINGS UTILIZING NO MORE THAN ONE (1) FULL WORK AREA ENCLOSURE IN ACCORDANCE WITH THE SUB CODE AND THE SPECIFICATIONS.
3. AREAS WHERE NO ACM IS PRESENT MAY BE EXCLUDED FROM THE WORK AREAS.
4. INSTALL AND MAINTAIN THE SEPARATION BARRIERS ON THESE DRAWINGS AS REQUIRED FOR THE DURATION OF THE ASBESTOS ABATEMENT WORK.
5. THE HEPA UNIT AND AIR SAMPLE LOCATIONS INDICATED ARE FOR ILLUSTRATION PURPOSES ONLY. THE ACTUAL NUMBER AND LOCATIONS OF THE HEPA UNITS AND AIR SAMPLES SHALL VARY DEPENDING UPON SITE CONDITIONS AND NEGATIVE AIRFLOW MEASUREMENTS.
6. EXHAUST ALL HEPA UNITS TO THE EXTERIOR OF THE FACILITY.
7. BUILDING TO REMAIN OCCUPIED FOR THE DURATION OF THE WORK.

LEGEND

-  - DECONTAMINATION/SHOWER UNIT
-  - NEGATIVE AIR FILTRATION UNIT
-  - EXHAUST DUCT FROM NEGATIVE AIR FILTRATION UNIT
-  - GLOVEBAG WORK AREA ENCLOSURE
-  - SEPARATION BARRIER (DOORWAY)
-  - AIR SAMPLE LOCATION
-  - MANOMETER LOCATION
-  - CONTRACTOR ENTRANCE/ EXIT AND WASTE TRANSPORTATION ROUTE.
-  - BUILDING OCCUPANT ENTRANCE/EXIT



FIRST FLOOR PARTIAL PLAN

SCALE: N.T.S.

ASBESTOS ABATEMENT ACTIVITIES
 UNION COUNTY COURTHOUSE COMPLEX
 OFFICE OF COUNTY CLERK
 RENOVATIONS
 2 BROAD STREET
 ELIZABETH, NEW JERSEY



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Drawing Name: TMGA-0001AA-2.dwg	Drawn GH	Designed KB	Checked KB	Released KB
Job No. TMGA-00001	Date 8/12/20	Scale: (H) N.T.S. (V)	Plate No. AA-1	

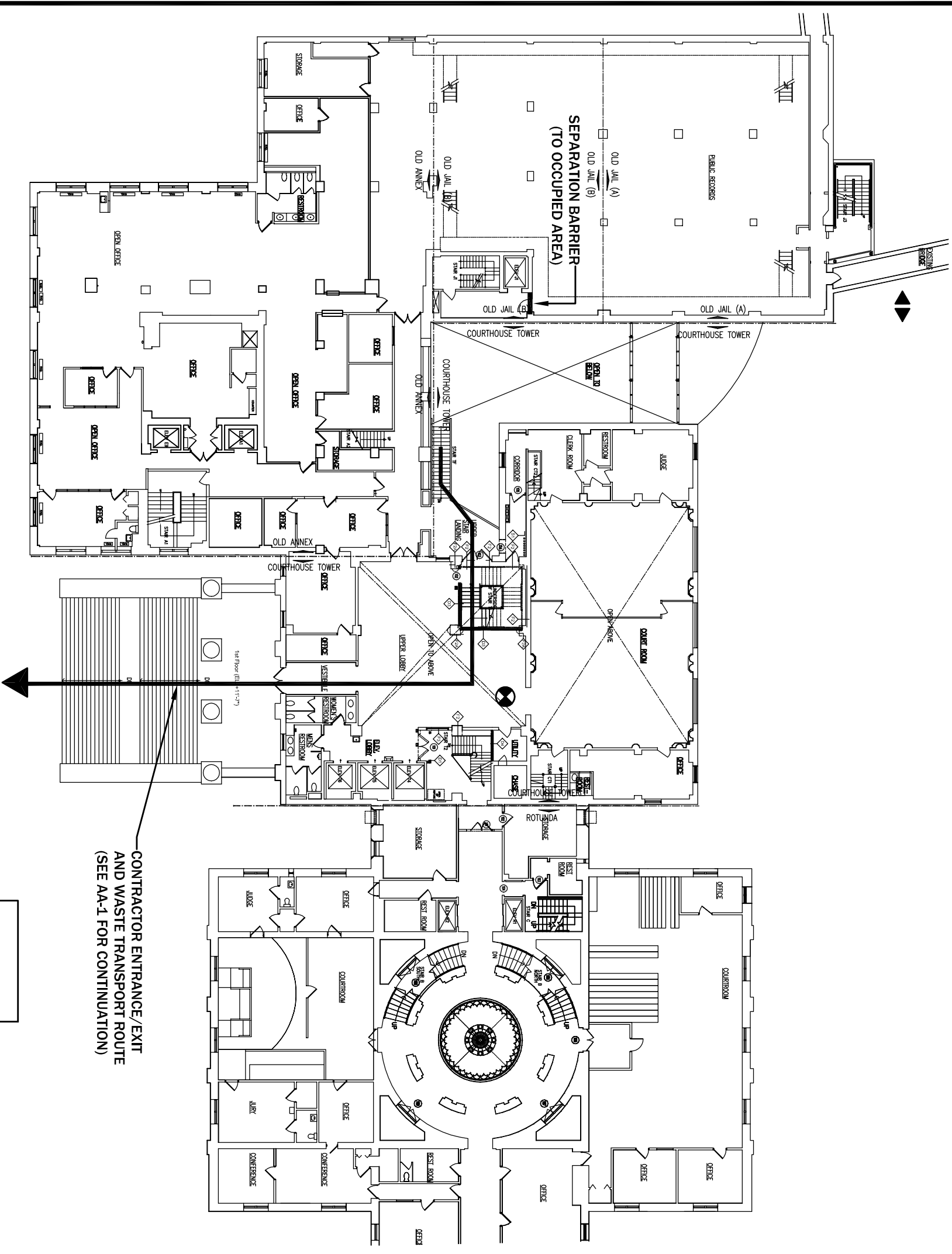
APPROVED AND RELEASED
 ACCREDITED AHERA PROJECT DESIGNER
 KEVIN BURNS
 ACCREDITATION NUMBER:
 NAEI 56040
 DATE: _____

NOTES

1. COMPLETE ALL OF THE ASBESTOS ABATEMENT WORK SPECIFIED IN ACCORDANCE WITH N.J.A.C. 5:23-8.1-5 "ASBESTOS HAZARD ABATEMENT PROJECTS", N.J.A.C. 5:23-8.1-9 "ABATEMENT IN OCCUPIED BUILDINGS" AND THE SPECIFICATIONS.
2. COMPLETE THE ASBESTOS ABATEMENT WORK SPECIFIED ON THESE DRAWINGS UTILIZING NO MORE THAN ONE (1) FULL WORK AREA ENCLOSURE IN ACCORDANCE WITH THE SUB CODE AND THE SPECIFICATIONS.
3. AREAS WHERE NO ACM IS PRESENT MAY BE EXCLUDED FROM THE WORK AREAS.
4. INSTALL AND MAINTAIN THE SEPARATION BARRIERS ON THESE DRAWINGS AS REQUIRED FOR THE DURATION OF THE ASBESTOS ABATEMENT WORK.
5. THE HEPA UNIT AND AIR SAMPLE LOCATIONS INDICATED ARE FOR ILLUSTRATION PURPOSES ONLY. THE ACTUAL NUMBER AND LOCATION OF THE HEPA UNITS AND AIR SAMPLES SHALL VARY DEPENDING UPON SITE CONDITIONS AND NEGATIVE AIRFLOW MEASUREMENTS.
6. EXHAUST ALL HEPA UNITS TO THE EXTERIOR OF THE FACILITY.
7. BUILDING TO REMAIN OCCUPIED FOR THE DURATION OF THE WORK.

LEGEND

- DECONTAMINATION/SHOWER UNIT
- HEPA
- NEGATIVE AIR FILTRATION UNIT
- EXHAUST DUCT FROM NEGATIVE AIR FILTRATION UNIT
- GLOVEBAG WORK AREA ENCLOSURE
- SEPARATION BARRIER (DOORWAY)
- AIR SAMPLE LOCATION
- MANOMETER LOCATION
- CONTRACTOR ENTRANCE/EXIT AND WASTE TRANSPORTATION ROUTE
- BUILDING OCCUPANT ENTRANCE/EXIT



GROUND FLOOR PARTIAL PLAN

SCALE: N.T.S.

ASBESTOS ABATEMENT ACTIVITIES
 UNION COUNTY COURTHOUSE COMPLEX
 OFFICE OF COUNTY CLERK
 RENOVATIONS
 2 BROAD STREET
 ELIZABETH, NEW JERSEY



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Drawing Name:	Drawn	Designed	Checked	Released
TMGA-00001AAI-24ng	GH	KB	KB	KB

Job No.	Date	Scale:	Plate No.
TMGA-00001	8/12/20	(H) N.T.S.	AA-2

APPROVED AND RELEASED
 ACCREDITED AHERA PROJECT DESIGNER
 KEVIN BURNS
 ACCREDITATION NUMBER:
 NAETI 56040
 DATE: _____

SECTION 02087 - LEAD-BASED PAINT MANAGEMENT

PART 1 - LEAD-BASED PAINT MANAGEMENT: GENERAL

- 1.1 The Contractor should assume that any number of structural and/or architectural components and elements associated with the renovations planned in the Office of the County Clerk within the First Floor spaces at the Union County Courthouse may exhibit lead-based paint (LBP). No specific lead-based paint (LBP) testing/screening has been performed as part of this overall project.
- A. The Lead-Based Paint Management Work, or "LBP Work", shall be defined as the Work that encompasses the handling of lead-based paint (LBP), materials to which LBP is applied, and any waste and contamination resulting from the handling or disturbance of LBP, or any other lead-bearing surface.
 - B. It is not the intent of this section to define or require a LBP abatement project or LBP hazard abatement project as may be defined by the New Jersey Lead Hazard Evaluation and Abatement Subcode (N.J.A.C. 5:17). Further, these Contract Documents are not meant to require the Contractor to retain a New Jersey-licensed lead abatement contractor to complete the LBP Work as specified. This statement, nor any other in the Contract Documents, does not limit the Contractor's responsibility to act in a manner pursuant to N.J.A.C. 5:17, or any other regulations, depending upon conditions resulting from the Contractor's performance of the Work and other activities.
 - C. This section pertains to all Work for this project involving the disturbance of paint, and related dust/debris. All painted surfaces are likely to contain some concentration of lead. There are also surfaces that may be contaminated with lead containing dust and/or debris. As part of the performance of this Work, incorporate appropriate lead paint/dust testing, containment, worker protection and disposal procedures.
 - D. Perform all work necessary to carry out the proper removal and disposal of all lead-contaminated waste, in accordance with all applicable laws, codes, rules and regulations and in accordance with the requirements set forth in this section.

1.2 SCOPE OF LBP MANAGEMENT WORK

- A. The Scope of the LBP Work shall include those activities necessary to assure compliance with applicable worker protection and waste disposal standards, and to prevent release of fugitive lead-containing debris and dust generated from the LBP to the surrounding properties. These Specifications delineate no specific activities, but rather the Contractor shall prepare and make available upon request by the Owner or authorized representative a plan sufficient to achieve these requirements.

PART 2 - JOB CONDITIONS

2.1 CONTRACTOR RESPONSIBILITY

- A. Provide investigation as necessary to properly plan LBP Management Work.

2.2 PHASING

- A. Phase the LBP Work in accordance with the overall renovation/demolition Work phasing. The LBP Work is not meant to be an activity separate from the overall renovation/demolition process, but rather an essential element of the renovation/demolition Work to allow for the demolition and any other related Work to be undertaken with proper LBP management.

2.3 METHODS

- A. Provide work methods pursuant to applicable standards and good industry practice. The Contractor's attention is particularly brought to OSHA requirements relative to torch cutting controls and use of HEPA-fitted cutting tool options under certain conditions.

PART 3 - REGULATORY REQUIREMENTS, REFERENCE STANDARDS

- 3.1 Include provisions for the proper containment, removal, and disposal of lead-containing waste, as well as appropriate worker protection in accordance with all applicable laws, codes, rules and regulations pertaining to lead. Applicable guidelines and standards listed in this Scope of Work include, but are not necessarily limited to:

- 1. Code of Federal Regulations (CFR) Publications:

- 29 CFR, Part 1926.62 Lead Exposure in Construction; Interim Final Rule Vol. 58, No. 84

- 40 CFR 61, Subpart A General Provisions (Hazardous Air Pollutants Listing)

- 40 CFR 61.152 Standards for Waste Manufacturing, Demolition, Renovation, Spraying and Fabricating Operations

- 40 CFR 241 Guidelines for the Land Disposal of Solid Wastes

- 40 CFR 257 Criteria for Classification of Solid Waste

- 40 CFR 261 Identification and Listing of Hazardous Wastes

- 40 CFR 262 Standards Applicable to Generators of Hazardous Waste

- 2. Current NJDEP requirements, N.J.A.C. 7:26-1 et.seq.

PART 4 - WORKER PROTECTION

4.1 GENERAL

- A. Treat any surface coating and/or underlying substrate containing lead in any concentration that will be disturbed as a potential lead hazard to workers in accordance with 29 CFR 1926.62, Lead Exposure in Construction. This standard applies to all construction work in which lead in any concentration is present.
- B. Maintain a program in accordance with 29 CFR 1926.62 at minimum and be responsible for protecting and training employees on worker safety, health hazards, etc. relating to lead. This program shall be incorporated into the Contractor's written health and safety plan. The Contractor should consult the following publications and/or competent environmental counsel:

- OSHA - 3079 Respiratory Protection
 - OSHA - 3142 Lead in Construction

PART 5 - MANAGEMENT PROCEDURES

5.1 WORK PLANS

- A. Prepare and make available upon request by the Owner or authorized representative task specific Work Plan prior to starting Work detailing how the Contractor shall accomplish each task of work related to the disturbance of any LBP surface or contaminated material. Prepare the Work Plan with the needs, logistics and constraints of the individual job in mind, taking into account such factors as paint removal method, worker safety, proximity to other personnel and/or the public, protection of the environment including containment and air monitoring requirements, condition of the underlying substrate.
- B. Prepare and make available upon request by the Owner or authorized representative the Plan to include methods of minimizing and containing the generation of all dust, including dust generated while cleaning up construction and demolition debris. These methods may include such techniques as wet mopping and/or wiping, HEPA vacuuming or the use of a negative pressure ventilation system where lead dust is generated. Once the Work has been completed and debris has been properly removed from the site, all surfaces shall be free and clear of visible dust. All work areas shall be cleaned on a daily basis at the end of each shift. Particular attention to be paid to fugitive dust which may arise from the sites and contaminate adjacent properties.
- C. At no time perform any Work which may impact upon lead containing material until authorization from the Owner or its authorized representative is obtained.

PART 6 - PROTECTION OF ADJACENT AREAS AND THE ENVIRONMENT

6.1 CONTROL OF CONTAMINATION ON SITE

- A. If it's determined by visual identification that the exterior of this property, or adjacent properties have been contaminated as a result of the Contractor's work, clean the affected premises at no charge to the Owner. The Contractor shall be responsible for all costs incurred by this clean-up activity.

6.2 DISPOSAL REQUIREMENTS

- A. Perform sampling and analysis as may be required to assure the proper and legal handling of the waste. If any chemical analysis or sampling is performed by or on behalf of the Contractor, its Transporter, or its Treatment Storage and Disposal facility (TSD), a copy of such analysis must be provided to the Owner at no additional cost to the Owner. (Note: As prevailing law may allow, painted metal may be designated as recyclable and disposed of at a scrap metal facility for reuse or resale).
- B. Ensure that waste disposal Transporter (be it the Contractor itself or a Subcontractor) warrants and represents possession of all permits and/or licenses required under the Resource Conservation and Recovery Act (RCRA) as well as any state or local permits or licenses required for removal, repackaging, transportation and disposal of hazardous waste.
- C. Treat and dispose hazardous waste materials removed by the waste disposal Subcontractor at an Environmental Protection Agency (EPA) permitted Treatment, Storage and Disposal Facility.
- D. Treat and dispose of all wastes, drums, and other items removed hereunder within sixty (60) days after removal from the site. Ensure that the waste disposal Subcontractor provides completed shipping documents for all hazardous wastes removed, which contain the information required under 40 CFR Part 262 Subpart B (hereinafter the "Manifest Form") and NJDEP requirements. Such Certificates shall include references to the Manifest Form for the shipment as well as address and EPA identification numbers for the generator facility.

- E. Ensure that all TSD facilities or transporters which the waste disposal Transporter intends to use to treat and/or dispose of hazardous waste are approved for use by the Owner prior to any delivery of waste by the waste disposal Transporter to such TSD facility. The Owner reserves the right to inspect the waste disposal Transporter's equipment storage facility and TSD facility at any time prior to or subsequent to the award of this Contract.
- F. Should any problems arise regarding the TSD facility chosen to accept the waste for treatment and disposal that would require the return of waste to the Owner, or should such TSD facility have violated any environmental regulation which would result in regulatory enforcement action, ensure that the waste disposal Subcontractor immediately notifies the Contractor in writing of such situation, identifies an alternate TSD and obtains written approval from the Owner for disposal at such TSD.
- G. Ensure that the waste disposal Transporter provides completed shipping documents, hereinafter referred to as "Bills of Lading", for all non-hazardous waste removed from Owner property. A Bill of Lading must accompany each waste shipment and must include information regarding the quantity and type of waste, the waste transporter name, and the date of removal from the property.

6.3 TRANSPORTATION REQUIREMENTS

- A. Arrange that the waste disposal Transporter providing waste transportation services possesses a valid Waste Hauler's permit issued pursuant to the NJDEP regulations.
- B. Package and transport all waste shall in accordance with the applicable sections of the Department of Transportation (DOT) regulations.

END OF SECTION 02087

SECTION 211000 - WATER-BASED FIRE-SUPPRESSION SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Scope:

1. The fire protection system shall be light hazard, wet piping system. It will cover the areas noted on the drawings. The design and installation shall comply with the requirements of the latest edition of NFPA 13, the New Jersey Uniform Construction Code, the Owner's insurance providers underwriting agency, and the local authorities having jurisdiction.
2. The sprinkler contractor shall be a subcontractor to the general contractor. Sprinkler contractor shall be responsible for all work of this specification section and other associated work as contracted with the general contractor.
3. The challenging part of the project is maintaining building systems operational during phased construction. In addition to sprinkler heads, a number of sprinkler mains, and risers must be relocated and raised to accommodate the new conditions, ceiling types & ceiling heights This is especially true in the area adjacent to the Record Room. There presently is a dropped ceiling which is being removed and the ceiling will be raised to the existing ceiling height of the record room. The sprinkler lines must be re-routed out of the open space and be configured to be as high as possible within the spaces.

B. Section Includes:

1. Wet pipe sprinkler systems.

C. Related Sections:

1. Fire alarm and detection systems: Division 13.

1.2 DEFINITIONS

- A. Working Plans: Drawings and calculations prepared in accordance with the requirements of NFPA 13 and approved by the local fire official, the Owner's insurance underwriter and the Owner's representative (submit approved drawings).

1.3 SYSTEM DESCRIPTION

A. Design Requirements:

1. Conform to NFPA 13.

2. Conform to the New Jersey Uniform Construction Code.

B. Coverage:

1. Location: Entire building
 - a. Hazard: Light Hazard.
 - b. System: Wet.
 - c. Density in gpm per square foot: 0.15 gpm per sq. ft.
 - d. Area of sprinkler operation: 1,000 sq. ft.
 - e. Sprinkler head temperature: 165 degrees F, ½ inch orifice.

- f. Type of sprinkler heads: Concealed except in areas without ceiling.

1.4 SUBMITTALS

A. Product Data: Submit for each of the following:

1. Sprinkler heads.
2. Valves.
3. Trouble and alarm signal equipment.
4. Back flow preventers.

B. Shop Drawings:

1. Prepare working plans in accordance with the requirements of the latest edition of NFPA 13. Include hydraulic calculations. Submit plans to the local fire subcode official. Prepared plans and calculations shall be signed and sealed by a professional engineer licensed to practice in New Jersey. Drawings shall feature engineer's title block as required by N.J.A.C. 13:40-1.2. After approval by the Fire Sub Code official, submit the drawings with the calculations to the Owner.
2. IF required by the Owner, submit copies of plans and calculations to the owner's insurance underwriters and owner's representative for review and approval.

C. Contract Close-out Submittals:

1. Project record documents.
2. Operations and maintenance data.
3. Warranty data.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with the following:
 - a. NFPA 13, "Standard for the Installation of Sprinkler Systems."

2. All valves, sprinkler heads, water flow indicators, electric alarm switches, and other manufactured items used in the fire protection system shall be UL listed and labeled, and/or FM approved for the anticipated application.
3. The authority having jurisdiction is the local Fire Subcode Official.

1.6 SEQUENCING, SCHEDULING AND COORDINATION

- A. Sequence work to avoid installation conflicts with building elements and finishes.
- B. Coordinate installation of sprinkler piping and heads with other trades.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Pipe and Tubing:
 1. Conform with requirements of NFPA 13 for black steel pipe, copper tube, and fittings used in sprinkler systems.
 2. Obtain approval of pipe material, thickness, joint type, and fittings from the authority having jurisdiction.

2.2 WET SYSTEM

- A. Water Flow Indicators:
 1. SPDT circuit switches, for remote alarm and spare contacts.
 2. Size: Full size of zone or main pipe.

2.3 SPRINKLER HEADS

- A. Manufacturers:
 1. Products of the following manufacturers, provided they comply with requirements of the contract documents, will be among those considered acceptable:
 - a. The Reliable Automatic Sprinkler Co., Inc.
 - b. Approved equal.
- B. Sprinkler Descriptions:
 1. Upright sprinklers:
 - a. Location: All areas without ceilings.
 - b. Finish natural bronze.
 - c. Orifice size: 1/2-inch diameter.
 2. Pendent sprinklers:

- a. Sprinkler head finish: Natural bronze.
 - b. Orifice size: 1/2-inch diameter.
 - c. Escutcheon type: Concealed.
 - d. Escutcheon finish: Painted white except within metal act-4 ceiling, in which the escutcheons shall be painted to match the adjacent metal ceiling panels.
3. Sidewall sprinklers:
- a. Sprinkler head finish: Natural bronze
 - b. Orifice size: ½-inch diameter.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:
1. Correct any unsatisfactory conditions before installing products.

3.2 INSTALLATION

- A. Install fire sprinkler system in accordance with approved working plans prepared by the Contractor's engineer.
1. Center head in square ceiling tile.
 2. Center head or place at quarter points in rectangular ceiling tile.
 3. Locate heads in the proper relation to other building components.
- B. Deviations from the approved working plans require written approval from the authority having jurisdiction.
- C. Notify architect of any deviations and send architect a file copy of written approval before installing fire sprinkler system piping in the affected area.
- D. Install sprinkler heads with manufacturer's recommended tools to prevent damage.

3.3 FIELD QUALITY CONTROL

- A. Tests:
1. Test sprinkler systems in accordance with NJUCC, and authority having jurisdiction.
 2. Replace or repair any piping or system components that fail system tests.
 3. Retest affected areas of the system.
 4. Perform tests as required in NJUCC in the presence of the authority having jurisdiction.

5. The sprinkler contractor shall perform all system tests required by local FIRE SUBCODE OFFICIAL and as specified.

B. Inspections:

1. Inspect sprinkler systems in accordance with NFPA 13 and the authority having jurisdiction.

3.4 CLEANING

A. Flush sprinkler systems in accordance with NFPA 13.

END OF SECTION 211000

SECTION 210000 – FIRE SUPPRESSION SCOPE OF WORK

PART 1 - GENERAL

The scope of fire suppression work includes but is not necessarily limited to the following:

All new sprinkler piping shall be Schedule 40 black steel.

The areas in the building that are part of the Scope of Work have a wet type fire suppression sprinkler system. There is a computer room within the bounds of the work area, but not work is to be performed within that space. The computer has a pre-action sprinkler system and FM 200 clean agent system, which must maintain operation and functionality throughout the duration of the project.

Locations of existing sprinkler heads, branch lines& mains may be in conflict with new ceilings, ceiling heights, light fixtures, HVAC air diffusers, and grilles. The contractor shall relocate the heads away from these interferences but still be in compliance with the current edition of NFPA 13 and local Fire subcode official having jurisdiction. As a result of exiting ceilings being removed, ceiling heights in portions of the project are increased, at times substantially such as in the map viewing area. Sprinkler mains and branch lines are to be raised as high as possible within the spaces so as to not have sprinkler lines within the middle of the volume. The changes in room configurations, changes to the room sizes and new location may require new sprinklers to be added because of these changes.

This contractor shall be responsible for any modifications to the sprinkler systems including removing and/or relocating existing sprinkler mains, branch lines, and heads to comply with new building floor plans and ceiling heights. The contractor shall have his professional engineer licensed in New Jersey provide to the local fire subcode official signed and sealed drawings and hydraulic calculations for their review and approval.

Sprinkler contractor shall have his Professional Engineer licensed in the state of New Jersey perform hydraulic calculations of the new layout of sprinkler piping on the 1st floor that are in the Scope of Work for this project, in compliance with current edition of NFPA Std. 13. Drawings showing changes to the sprinkler system and accompanying hydraulic calculations shall be signed and sealed by the PE and 3 copies with imprinted seal (not a copy) submitted as follows: 1 copy to the architect and 2 copies to the fire subcode official in Elizabeth.

Code Compliance

Fire protection suppression systems to comply with current edition of NFPA Std, 13 and the local Fire subcode official.

NEW WORK

1. Relocate/add new fire suppression sprinkler heads and piping throughout the floor to achieve fully sprinklered Clerk's Office floor.
2. The contractor may elect to have a New Jersey licensed Professional Engineer design the system based on a water test that he shall arrange with the local Water Department.
3. The modifications to the fire protection suppression systems to comply with applicable edition of NFPA Std 13 (except as noted above in PART 1 – GENERAL), 2015

National Standard Plumbing Code, and the local Fire sub code official having jurisdiction.

END OF SECTION 210000

SECTION 220000 - PLUMBING SCOPE OF WORK

PART 1 - GENERAL

The scope of plumbing work includes but is not necessarily limited to the following:

DEMOLITION WORK

Demolish existing toilet rooms and other plumbing fixtures on the 1st Floor, as shown on contract drawings.

NEW WORK

PLUMBING

1. Install new plumbing fixtures (lavs, water closets, urinals, with associated faucets, valves, piping and accessories in new toilet rooms and other spaces as is shown on contract drawings.

Code Compliance

Installation of plumbing systems to comply with Latest National Standard Plumbing Code as amended by the New Jersey Uniform Construction Code, and local plumbing sub code official having jurisdiction.

END OF SECTION 220000

SECTION 220700 - PIPE INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes preformed, rigid and flexible pipe insulation; insulating cements; field-applied jackets; accessories and attachments; and sealing compounds.
- B. Related Sections include the following:
 - 1. Division 7 Section "Firestopping" for firestopping materials and requirements for penetrations through fire and smoke barriers.
 - 2. Division 23 Section "Hangers and Supports" for pipe insulation shields and protection saddles.

1.3 SUBMITTALS

- A. Product Data: Identify thermal conductivity, thickness, and jackets (both factory and field applied, if any), for each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for the following:
 - 1. Application of protective shields, saddles, and inserts at pipe hangers for each type of insulation and hanger.
 - 2. Attachment and covering of heat trace inside insulation.
 - 3. Insulation application at pipe expansion joints for each type of insulation.
 - 4. Insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
 - 5. Removable insulation at piping specialties and equipment connections.
 - 6. Application of field-applied jackets.
- C. Installer Certificates: Signed by the Contractor certifying that installers comply with requirements.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the U.S. Department of Labor, Bureau of Apprenticeship and Training.
- B. Fire-Test-Response Characteristics: As determined by testing materials identical to those specified in this Section according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and

sealer and cement material containers with appropriate markings of applicable testing and inspecting agency.

1. Insulation Installed Indoors: Flame-spread rating of 25 or less and smoke-developed rating of 50 or less.
2. Insulation Installed Outdoors: Flame-spread rating of 75 or less, and smoke-developed rating of 150 or less.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaging ship insulation materials in containers marked by manufacturer with appropriate ASTM specification designation, type and grade, and maximum use temperature.

1.6 COORDINATION

- A. Coordinate size and location of supports, hangers, and insulation shields specified in Division 23 Section "Hangers and Supports."
- B. Coordinate clearance requirements with piping Installer for insulation application.
- C. Coordinate installation and testing of electric heat tracing.

1.7 SCHEDULING

- A. Schedule insulation application after testing piping systems and, where required, after installing and testing heat-trace tape. Insulation application may begin on segments of piping that have satisfactory test results.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Mineral-Fiber Insulation:
 - a. CertainTeed Manson.
 - b. Knauf FiberGlass GmbH.
 - c. Owens-Corning Fiberglas Corp.
 - d. Schuller International, Inc.
 2. Cellular-Glass Insulation:
 - a. Pittsburgh-Corning Corp.
 3. Flexible Elastomeric Thermal Insulation for outdoor application only:
 - a. Armstrong World Industries, Inc.
 - b. Rubatex Corp.

2.2 INSULATION MATERIALS

- A. Mineral-Fiber Insulation: Glass fibers bonded with a thermosetting resin complying with the following:
1. Preformed Pipe Insulation: Comply with ASTM C 547, Type 1, with factory-applied, all-purpose, vapor-retarder jacket.
 2. Blanket Insulation: Comply with ASTM C 553, Type II, without facing.
 3. Fire-Resistant Adhesive: Comply with MIL-A-3316C in the following classes and grades:
 - a. Class 1, Grade A for bonding glass cloth and tape to unfaced glass-fiber insulation, for sealing edges of glass-fiber insulation, and for bonding lagging cloth to unfaced glass-fiber insulation.
 - b. Class 2, Grade A for bonding glass-fiber insulation to metal surfaces.
 4. Vapor-Retarder Mastics: Fire- and water-resistant, vapor-retarder mastic for indoor applications. Comply with MIL-C-19565C, Type II.
 5. Mineral-Fiber Insulating Cements: Comply with ASTM C 195.
 6. Expanded or Exfoliated Vermiculite Insulating Cements: Comply with ASTM C 196.
 7. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449/C 449M.
- B. Cellular-Glass Insulation: Inorganic, foamed or cellulated glass, annealed, rigid, hermetically sealed cells, noncombustible.
1. Preformed Pipe Insulation, without Jacket: Comply with ASTM C 552, Type II, Class 1.
 2. Preformed Pipe Insulation, with Jacket: Comply with ASTM C 552, Type II, Class 2.
- C. Flexible Elastomeric Thermal Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.
1. Adhesive: As recommended by insulation material manufacturer.
 2. Ultraviolet-Protective Coating: As recommended by insulation manufacturer.
- D. Prefabricated Thermal Insulating Fitting Covers: Comply with ASTM C 450 for dimensions used in pre-formed insulation to cover valves, elbows, tees, and flanges.

2.3 FIELD-APPLIED JACKETS

- A. General: ASTM C 921, Type 1, unless otherwise indicated.
- B. PVC Jacket: High-impact, ultraviolet-resistant PVC; 20 mils thick; roll stock ready for shop or field cutting and forming.
1. Adhesive: As recommended by insulation material manufacturer.
 2. PVC Jacket Color: White.
- C. Heavy PVC Fitting Covers: Factory-fabricated fitting covers manufactured from 30-mil- thick, high-impact, ultraviolet-resistant PVC.
1. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories for the disabled.
 2. Adhesive: As recommended by insulation material manufacturer.

- D. Standard PVC Fitting Covers: Factory-fabricated fitting covers manufactured from 20-mil- thick, high-impact, ultraviolet-resistant PVC.
 - 1. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories for the disabled.
 - 2. Adhesive: As recommended by insulation material manufacturer.
- E. Aluminum Jacket: Factory cut and rolled to indicate sizes. Comply with ASTM B 209, 3003 alloy, H-14 temper.
- F. Aluminum Jacket: Aluminum roll stock, ready for shop or field cutting and forming to indicated sizes. Comply with ASTM B 209, 3003 alloy, H-14 temper.
 - 1. Finish and Thickness: Smooth finish, 0.010 inch thick.
 - 2. Finish and Thickness: Corrugated finish, 0.010 inch thick.
 - 3. Moisture Barrier: 1-mil- thick, heat-bonded polyethylene and kraft paper.
 - 4. Elbows: Preformed, 45- and 90-degree, short- and long-radius elbows; same material, finish, and thickness as jacket.

2.4 ACCESSORIES AND ATTACHMENTS

- A. Glass Cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, pre-sized a minimum of 8-oz. /sq. yd.
 - 1. Tape Width: 4 inches.
- B. Bands: 3/4 inch wide, in one of the following materials compatible with jacket:
 - 1. Stainless Steel: ASTM A 666, Type 304; 0.020 inch thick.
 - 2. Galvanized Steel: 0.005 inch thick.
 - 3. Aluminum: 0.007 inch thick.
 - 4. Brass: 0.010 inch thick.
 - 5. Nickel-Copper Alloy: 0.005 inch thick.
- C. Wire: 0.080-inch, nickel-copper alloy; 0.062-inch, soft-annealed, stainless steel; or 0.062-inch, soft-annealed, galvanized steel.

2.5 VAPOR RETARDERS

- A. Mastics: Materials recommended by insulation material manufacturer that are compatible with insulation materials, jackets, and substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean and dry pipe and fitting surfaces. Remove materials that will adversely affect insulation application.

3.3 GENERAL APPLICATION REQUIREMENTS

- A. Roof Penetrations: Apply insulation for interior applications to a point even with top of roof flashing.
 - 1. Seal penetrations with vapor-retarder mastic.
 - 2. Apply insulation for exterior applications tightly joined to interior insulation ends.
 - 3. Extend metal jacket of exterior insulation outside roof flashing at least 2 inches below top of roof flashing.
 - 4. Seal metal jacket to roof flashing with vapor-retarder mastic.
- B. Exterior Wall Penetrations: For penetrations of below-grade exterior walls, terminate insulation flush with mechanical sleeve seal. Seal terminations with vapor-retarder mastic.
- C. Floor Penetrations: Apply insulation continuously through floor assembly.
 - 1. For insulation with vapor retarders, seal insulation with vapor-retarder mastic where floor supports penetrate vapor retarder.

3.4 MINERAL-FIBER INSULATION APPLICATION

- A. Apply insulation to straight pipes and tubes as follows:
 - 1. Secure each layer of preformed pipe insulation to pipe with bands without deforming insulation materials.
 - 2. Where vapor retarders are indicated, seal longitudinal seams and end joints with vapor-retarder mastic. Apply vapor retarder to ends of insulation at intervals of 15 to 20 feet to form a vapor retarder between pipe insulation segments.
 - 3. For insulation with factory-applied jackets, secure laps with outward clinched staples at 6 inches o.c.
 - 4. For insulation with factory-applied jackets with vapor retarders, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by the insulation material manufacturer and seal with vapor-retarder mastic.
- B. Apply insulation to flanges as follows:
 - 1. Apply preformed pipe insulation to outer diameter of pipe flange.
 - 2. Make width of insulation segment the same as overall width of the flange and bolts, plus twice the thickness of the pipe insulation.
 - 3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
 - 4. Apply canvas jacket material with manufacturer's recommended adhesive; overlapping seams at least 1 inch, and seal joints with vapor-retarder mastic.
- C. Apply insulation to fittings and elbows as follows:

1. Apply premolded insulation sections of the same material as straight segments of pipe insulation when available. Secure according to manufacturers written instructions.
2. When premolded insulation elbows and fittings are not available, apply mitered sections of pipe insulation, or glass-fiber blanket insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with tape, or bands.
3. Cover fittings with heavy PVC fitting covers. Overlap PVC covers on pipe insulation jackets at least 1 inch at each end. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.

D. Apply insulation to valves and specialties as follows:

1. Apply premolded insulation sections of the same material as straight segments of pipe insulation when available. Secure according to manufacturers written instructions.
2. When premolded insulation sections are not available, apply glass-fiber blanket insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation. For check valves, arrange insulation for access to strainer basket without disturbing insulation.
3. Apply insulation to flanges as specified for flange insulation application.
4. Use preformed standard PVC fitting covers for valve sizes where available. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
5. For larger sizes where PVC fitting covers are not available, seal insulation with canvas jacket and sealing compound recommended by the insulation material manufacturer.

3.5 CELLULAR-GLASS INSULATION APPLICATION

A. Apply insulation to straight pipes and tubes as follows:

1. Secure each layer of insulation to pipe with wire, tape, or bands without deforming insulation materials.
2. Where vapor retarders are indicated, seal longitudinal seams and end joints with vapor-retarder mastic.
3. For insulation with factory-applied jackets, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets with vapor retarders, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by the insulation material manufacturer and seal with vapor-retarder mastic.

B. Apply insulation to flanges as follows:

1. Apply preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation segment the same as overall width of the flange and bolts, plus twice the thickness of the pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of the same thickness as pipe insulation.
4. Apply canvas jacket material with manufacturer's recommended adhesive; overlapping seams at least 1 inch, and seal joints with vapor-retarder mastic.

C. Apply insulation to fittings and elbows as follows:

1. Apply premolded insulation sections of the same material as straight segments of pipe insulation when available. Secure according to manufacturers written instructions.

2. When premolded sections of insulation are not available, apply mitered sections of cellular-glass insulation. Secure insulation materials with wire, tape, or bands.
3. Cover fittings with heavy PVC fitting covers. Overlap PVC covers on pipe insulation jackets at least 1 inch at each end. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.

D. Apply insulation to valves and specialties as follows:

1. Apply premolded segments of cellular-glass insulation or glass-fiber blanket insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation. For check valves, arrange insulation for access to strainer basket without disturbing insulation.
2. Apply insulation to flanges as specified for flange insulation application.
3. Use preformed heavy PVC fitting covers for valve sizes where available. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
4. For larger sizes where PVC fitting covers are not available, seal insulation with canvas jacket and sealing compound recommended by the insulation material manufacturer.

E. Apply insulation to flanges as follows:

1. Apply pipe insulation to outer diameter of pipe flange.
2. Make width of insulation segment the same as overall width of the flange and bolts, plus twice the thickness of the pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of the same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive. Cement to avoid openings in insulation that will allow passage of air to the pipe surface.

F. Apply insulation to fittings and elbows as follows:

1. Apply mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive. Cement to avoid openings in insulation that will allow passage of air to the pipe surface.

G. Apply insulation to valves and specialties as follows:

1. Apply preformed valve covers manufactured of the same material as pipe insulation and attached according to the manufacturer's written instructions.
2. Apply cut segments of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation. For check valves, fabricate removable sections of insulation arranged to allow access to strainer basket.
3. Apply insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive. Cement to avoid openings in insulation that will allow passage of air to the pipe surface.

3.6 FIELD-APPLIED JACKET APPLICATION

- A. Apply glass-cloth jacket, where indicated, directly over bare insulation or insulation with factory-applied jackets.

1. Apply jacket smooth and tight to surface with 2-inch overlap at seams and joints.
2. Embed glass cloth between two 0.062-inch- thick coats of jacket manufacturer's recommended adhesive.
3. Completely encapsulate insulation with jacket, leaving no exposed raw insulation.

B. Foil and Paper Jackets: Apply foil and paper jackets where indicated.

1. Draw jacket material smooth and tight.
2. Apply lap or joint strips with the same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Apply jackets with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-retarder mastic.

C. Apply PVC jacket where indicated, with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

D. Apply metal jacket where indicated, with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

3.7 FINISHES

- A. Glass-Cloth Jacketed Insulation: Paint insulation finished with glass-cloth jacket as specified in Division 9 Section "Painting."
- B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

3.8 PIPING SYSTEM APPLICATIONS

- A. Insulation materials and thicknesses are specified in schedules at the end of this Section.

3.9 FIELD QUALITY CONTROL

- A. Inspection: Perform the following field quality-control inspections, after installing insulation materials, jackets, and finishes, to determine compliance with requirements:
 1. Inspect fittings and valves randomly selected by Architect.
 2. Remove fitting covers from 20 elbows or 1 percent of elbows, whichever is less, for various pipe sizes.
 3. Remove fitting covers from 20 valves or 1 percent of valves, whichever is less, for various pipe sizes.
- B. Reinstall insulation and covers on fittings and valves uncovered for inspection according to these Specifications.

3.10 INSULATION APPLICATION SCHEDULE, GENERAL

- A. Refer to insulation application schedules for required insulation materials, vapor retarders, and field-applied jackets.
- B. Application schedules identify piping system and indicate pipe size ranges and material, thickness, and jacket requirements.

3.11 INTERIOR INSULATION APPLICATION SCHEDULE

- A. Service: Domestic hot and cold water.
 - 1. Insulation Material: Cellular glass, with jacket,.
 - 2. Insulation Thickness: Apply the following insulation thicknesses:
 - a. Copper Pipe: 1 inch thick all pipe sizes
 - 3. Field-Applied Jacket: PVC, Aluminum, or Stainless steel.
 - 4. Vapor Retarder Required: No.
 - 5. Finish: None.
- B. Service: Rainwater conductors.
 - 1. Insulation Material: Cellular glass, with jacket
 - 2. Insulation Thickness: Apply the following insulation thicknesses: 1 inch all pipes.
 - 3. Vapor Retarder Required: Yes.
 - 4. Finish: None.
- C. Service: Roof drain bodies.
 - 1. Insulation Material: Cellular glass, with jacket.
 - 2. Insulation Thickness: 1 inch
 - 3. Field-Applied Jacket: PVC.
 - 4. Vapor Retarder Required: Yes.
 - 5. Finish: None.
- D. Service: Condensate drains piping.
 - 1. Insulation Material: Cellular glass
 - 2. Insulation Thickness: ½ inch (Indoors)
 - 3. Field-Applied Jacket: ASJ.
 - 4. Vapor Retarder Required: No.
 - 5. Finish: None.
- E. Service: Exposed sanitary drains and domestic water supplies and stops for fixtures for the disabled.
 - 1. Insulation Material: Flexible elastomeric.
 - 2. Insulation Thickness: 1 inch
 - 3. Field-Applied Jacket: PVC P-trap and supply covers.
 - 4. Vapor Retarder Required: No.
 - 5. Finish: None.
- F. Service: Refrigerant suction and hot-gas piping.
 - 1. Insulation Material: Flexible elastomeric.
 - 2. Insulation Thickness: Apply the following insulation thicknesses:
 - a. Copper Pipe: 1 inch thick up to 4 inch pipe size
 - b. Copper Pipe,: 1-1/2 inch thick over 4 inch pipe size

3. Field-Applied Jacket: PVC.

G. Heating-Hot-Water Supply and Return:

1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Mineral-Fiber, Preformed Pipe Insulation, Type Cellular Glass:1-1/2 inches thick.

H. Chilled Water:

1. 3 inches diameter and smaller: Insulation shall be: Cellular Glass: 1-1/2 inches thick.
4 inches and larger: Insulation shall be: Cellular Glass: 2 inches thick.

3.12 EXTERIOR INSULATION APPLICATION SCHEDULE

END OF SECTION 220700

SECTION 221116 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Aboveground domestic water pipes, tubes, fittings, and specialties inside the building.
 - 2. Specialty valves.
 - 3. Flexible connectors.
 - 4. Escutcheons.
 - 5. Sleeves and sleeve seals.
 - 6. Wall penetration systems.

1.3 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Domestic water piping and support and installation shall withstand effects of earthquake motions determined according to ASCE/SEI 7.

1.4 SUBMITTALS

- A. Coordination Drawings: For piping in equipment rooms and other congested areas, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:
 - 1. Fire-suppression-water piping.
 - 2. Domestic water piping.
 - 3. DWV plumbing piping
 - 4. HVAC hydronic piping.

- B. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 61 for potable domestic water piping and components.

1.6 COORDINATION

- A. Coordinate sizes and locations of domestic water piping with actual equipment provided.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 COPPER TUBE AND FITTINGS

- A. Hard Copper Tube: ASTM B 88, Type L and ASTM B 88, Type M water tube, drawn temper.
1. Cast-Copper Solder-Joint Fittings: ASME B16.18, pressure fittings.
 2. Wrought-Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
 3. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.
 4. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.
 5. Grooved-Joint Copper-Tube Appurtenances:
 - a. Manufacturers: Subject to compliance with requirements,:
 - 1) Victaulic Company.
 - 2) Approved equal.
 - b. Copper Grooved-End Fittings: ASTM B 75 copper tube or ASTM B 584 bronze castings.
 - c. Grooved-End-Tube Couplings: Copper-tube dimensions and design similar to AWWA C606. Include ferrous housing sections, EPDM-rubber gaskets suitable for hot and cold water, and bolts and nuts.
- B. Soft Copper Tube: ASTM B 88, Type K and ASTM B 88, Type L water tube, annealed temper.
1. Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

2.3 GALVANIZED-STEEL PIPE AND FITTINGS

- A. Galvanized-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B, Standard Weight. Include ends matching joining method.
1. Galvanized-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106/A 106M, Standard Weight, seamless steel pipe with threaded ends.
 2. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
 3. Malleable-Iron Unions: ASME B16.39, Class 150, hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface, and female threaded ends.
 4. Flanges: ASME B16.1, Class 125, cast iron.
 5. Grooved-Joint, Galvanized-Steel-Pipe Appurtenances:
 - a. Manufacturers: Subject to compliance with requirements,:
 - 1) Victaulic Company.
 - 2) Approved equal.

- b. Galvanized, Grooved-End Fittings for Galvanized-Steel Piping: ASTM A 47/A 47M, malleable-iron casting; ASTM A 106/A 106M, steel pipe; or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.
- c. Grooved-End-Pipe Couplings for Galvanized-Steel Piping: AWWA C606 for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gaskets suitable for hot and cold water, and bolts and nuts.

2.4 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free, unless otherwise indicated; full-face or ring type unless otherwise indicated.
- B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- D. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.5 SPECIALTY VALVES

- A. Comply with requirements in Division 22 Section "Domestic Water Piping Specialties" for balancing valves, drain valves, backflow preventers, and vacuum breakers.

ESCUTCHEONS

- A. General: Manufactured ceiling, floor, and wall escutcheons and floor plates.
- B. One Piece, Cast Brass: Polished, chrome-plated finish with setscrews.
- C. Split Casting, Cast Brass: Polished, chrome-plated finish with concealed hinge and setscrew.

2.7 SLEEVES

- A. Galvanized-Steel-Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc-coated, with plain ends.
- C. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
 - 1. Underdeck Clamp: Clamping ring with setscrews.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- B. Install shutoff valve immediately upstream of each dielectric fitting.
- C. Install domestic water piping level without pitch and plumb.
- D. Install seismic restraints on piping. Comply with requirements in Division 23 Section "Vibration and Seismic Controls" for seismic-restraint devices.
- E. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.
- F. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- G. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.
- H. Install piping adjacent to equipment and specialties to allow service and maintenance.
- I. Install piping to permit valve servicing.
- J. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than system pressure rating used in applications below unless otherwise indicated.
- K. Install piping free of sags and bends.
- L. Install fittings for changes in direction and branch connections.
- M. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

3.2 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads.

2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- D. Brazed Joints: Join copper tube and fittings according to CDA's "Copper Tube Handbook," "Braze Joints" Chapter.
- E. Soldered Joints: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."
- F. Pressure-Sealed Joints: Join copper tube and pressure-seal fittings with tools recommended by fitting manufacturer.
- G. Copper-Tubing, Push-on Joints: Clean end of tube. Measure insertion depth with manufacturer's depth gage. Join copper tube and push-on-joint fittings by inserting tube to measured depth.
- H. Extruded-Tee Connections: Form tee in copper tube according to ASTM F 2144. Use tool designed for copper tube; drill pilot hole, form collar for outlet, dimple tube to form seating stop, and braze branch tube into collar.
- I. Copper-Tubing Grooved Joints: Roll groove end of tube. Assemble coupling with housing, gasket, lubricant, and bolts. Join copper tube and grooved-end fittings according to AWWA C606 for roll-grooved joints.
- J. Steel-Piping Grooved Joints: Cut or roll groove end of pipe. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.
- K. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.
- L. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.3 VALVE INSTALLATION

- A. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball or gate valves for piping NPS 2 and smaller. Use butterfly or gate valves for piping NPS 2-1/2 and larger.

3.4 DIELECTRIC FITTING INSTALLATION

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric couplings or nipples unions.
- C. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric nipples.
- D. Dielectric Fittings for NPS 5 and Larger: Use dielectric flange kits.

3.5 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for seismic-restraint devices.
- B. Support vertical piping and tubing at base and at each floor.
- C. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.
- D. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
 - 2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
 - 3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
 - 4. NPS 2-1/2: 108 inches with 1/2-inch rod.
 - 5. NPS 3 to NPS 5: 10 feet with 1/2-inch rod.
 - 6. NPS 6: 10 feet with 5/8-inch rod.
 - 7. NPS 8: 10 feet with 3/4-inch rod.
- E. Install supports for vertical copper tubing every 10 feet.
- F. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/4 and Smaller: 84 inches with 3/8-inch rod.
 - 2. NPS 1-1/2: 108 inches with 3/8-inch rod.
 - 3. NPS 2: 10 feet with 3/8-inch rod.
 - 4. NPS 2-1/2: 11 feet with 1/2-inch rod.
 - 5. NPS 3 and NPS 3-1/2: 12 feet with 1/2-inch rod.
 - 6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.
 - 7. NPS 6: 12 feet with 3/4-inch rod.
 - 8. NPS 8 to NPS 12: 12 feet with 7/8-inch rod.
- G. Install supports for vertical steel piping every 15 feet.
- H. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.6 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment and machines to allow service and maintenance.
- C. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:
 - 1. Domestic Water Booster Pumps: Cold-water suction and discharge piping.
 - 2. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.

3. Plumbing Fixtures: Cold- and hot-water supply piping in sizes indicated, but not smaller than required by plumbing code. Comply with requirements in Division 15 plumbing fixture Sections for connection sizes.
4. Equipment: Cold- and hot-water supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.7 IDENTIFICATION

- A. Identify system components. Comply with requirements in Division 23 Section "Identification" for identification materials and installation.
- B. Label pressure piping with system operating pressure.

3.8 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Piping Inspections:
 1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
 2. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
 - a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
 3. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
 4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- C. Piping Tests:
 1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
 2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
 3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 4. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
 6. Prepare reports for tests and for corrective action required.
- D. Domestic water piping will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

3.9 CLEANING

- A. Clean and disinfect potable and non-potable domestic water piping as follows:
1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Fill and isolate system according to either of the following:
 - 1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
 - 2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.
 - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
 - d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.
- B. Clean non-potable domestic water piping as follows:
1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
 2. Use purging procedures prescribed by authorities having jurisdiction or; if methods are not prescribed, follow procedures described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.
- C. Prepare and submit reports of purging and disinfecting activities.
- D. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.10 PIPING SCHEDULE

- A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

- B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
- C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.
- D. Aboveground domestic water piping, NPS 2 and smaller, shall be the following:
 - 1. Hard copper tube, ASTM B 88, Type L; copper solder-joint fittings; and soldered joints.
- E. Aboveground domestic water piping, NPS 2-1/2 to NPS 4, shall be the following:
 - 1. Hard copper tube, ASTM B 88, Type L; copper solder-joint fittings; and soldered joints.

3.11 VALVE SCHEDULE

- 1. Shutoff Duty: Use ball valves for piping NPS 2 and smaller. Use butterfly, or ball valves with flanged ends for piping NPS 2-1/2 and larger.
 - 2. Throttling Duty: Use ball or globe valves for piping NPS 2 and smaller. Use butterfly or ball valves with flanged ends for piping NPS 2-1/2 and larger.
 - 3. Hot-Water Circulation Piping, Balancing Duty: Calibrated balancing valves.
 - 4. Drain Duty: Hose-end drain valves.
- B. Use check valves to maintain correct direction of domestic water flow to and from equipment.
 - C. Iron grooved-end valves may be used with grooved-end piping.

END OF SECTION 221116

SECTION 221119 - PLUMBING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following plumbing specialties:
 - 1. Backflow preventers.
 - 2. Water regulators.
 - 3. Balancing valves.
 - 4. Water filters.
 - 5. Thermostatic water mixing valves.
 - 6. Water tempering valves.
 - 7. Water hammer arresters.
 - 8. Strainers.
 - 9. Trap seal primer valves.
 - 10. Miscellaneous piping specialties.
 - 11. Sleeve penetration systems.
 - 12. Flashing materials.
 - 13. Cleanouts.
 - 14. Floor drains.
 - 15. Roof drains (not used).

- B. Related Sections Div. 22 Plumbing Fixtures, Water Piping, Valves

1.3 PERFORMANCE REQUIREMENTS

- A. Provide components and installation capable of producing piping systems with following minimum working-pressure ratings, unless otherwise indicated:
 - 1. Domestic Water Piping: 125 psig.
 - 2. Sanitary Waste and Vent Piping: 10-foot head of water.
 - 3. Storm Drainage Piping: 10-foot head of water.

1.4 SUBMITTALS

- A. Product Data: Include rated capacities and shipping, installed, and operating weights. Indicate materials, finishes, dimensions, required clearances, and methods of assembly of components; and piping and wiring connections for the following:
 - 1. Backflow preventers and water regulators.

2. Balancing valves, water filters, and strainers.
3. Thermostatic water mixing valves and water tempering valves.
4. Water hammer arresters, air vents, and trap seal primer valves and systems.
5. Cleanouts, floor drains, and roof drains.
6. Air-admittance valves, vent caps, vent terminals, and roof flashing assemblies.
7. Sleeve penetration systems.

B. Shop Drawings: Diagram power, signal, and control wiring.

1.5 QUALITY ASSURANCE

- A. Plumbing specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for piping materials and installation.
- D. NSF Compliance:
 1. Comply with NSF 61, "Drinking Water System Components--Health Effects, Sections 1 through 9," for potable domestic water plumbing specialties.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
 2. Products: Subject to compliance with requirements, provide one of the products specified.
 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
 4. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 BACKFLOW PREVENTERS

- A. Manufacturers:
 1. Mueller Co.; Hersey Meters Div.
 2. Watts Industries, Inc.; Water Products Div.
 3. Zurn Industries, Inc.; Wilkins Div.
- B. General: ASSE standard, backflow preventers.
 1. NPS 2 and Smaller: Bronze body with threaded ends.

2. NPS 2-1/2 and Larger: Bronze, cast-iron, steel, or stainless-steel body with flanged ends.
 - a. Interior Lining: AWWA C550 or FDA-approved, epoxy coating for backflow preventers having cast-iron or steel body.
 3. Interior Components: Corrosion-resistant materials.
 4. Exterior Finish: Polished chrome plate if used in chrome-plated piping system.
 5. Strainer: On inlet, if indicated.
- C. Pipe-Applied, Atmospheric-Type Vacuum Breakers: ASSE 1001, with floating disc and atmospheric vent.
- D. Hose-Connection Vacuum Breakers: ASSE 1011, nickel plated, with nonremovable and manual drain features, and ASME B1.20.7, garden-hose threads on outlet. Units attached to rough-bronze-finish hose connections may be rough bronze.
- E. Intermediate Atmospheric-Vent Backflow Preventers: ASSE 1012, suitable for continuous pressure application. Include inlet screen and two independent check valves with intermediate atmospheric vent.
- F. Reduced-Pressure-Principle Backflow Preventers: ASSE 1013, suitable for continuous pressure application. Include outside screw and yoke gate valves on inlet and outlet, and strainer on inlet; test cocks; and pressure-differential relief valve with ASME A112.1.2 air-gap fitting located between two positive-seating check valves.
 1. Pressure Loss: 12 psig maximum, through middle 1/3 of flow range.
- G. Double-Check Backflow Prevention Assemblies: ASSE 1015, suitable for continuous pressure application. Include shutoff valves on inlet and outlet, and strainer on inlet; test cocks; and two positive-seating check valves.
 1. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.
- H. Antisiphon-Pressure-Type Vacuum Breakers: ASSE 1020, suitable for continuous pressure application. Include shutoff valves, spring-loaded check valve, spring-loaded floating disc, test cocks, and atmospheric vent.
 1. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.
- I. Dual-Check-Valve-Type Backflow Preventers: ASSE 1024, suitable for continuous pressure application. Include union inlet and two independent check valves.
- J. Dual-Check-Valve-Type Backflow Preventers: ASSE 1032, suitable for continuous pressure application for carbonated beverage dispensers. Include stainless-steel body; primary and secondary checks; ball check; intermediate atmospheric-vent port for relieving carbon dioxide; and threaded ends, NPS 3/8.
- K. Laboratory Faucet Vacuum Breakers: ASSE 1035, suitable for continuous pressure application and chrome plated; consisting of primary and secondary checks; intermediate vacuum breaker; and threaded ends, NPS 1/4 or NPS 3/8 as required.
- L. Reduced-Pressure Detector Assembly Backflow Preventers: ASSE 1047, FM approved or UL listed, and suitable for continuous pressure application. Include outside screw and yoke gate valves on inlet and outlet, and strainer on inlet. Include test cocks; pressure-differential relief

valve with ASME A112.1.2 air-gap fitting located between two positive-seating check valves; and bypass with displacement-type water meter, valves, and reduced-pressure backflow preventer.

1. Pressure Loss: 12 psig maximum, through middle 1/3 of flow range.

M. Hose-Connection Backflow Preventers: ASSE 1052, suitable for at least 3-gpm flow and applications with up to 10-foot head of water back pressure. Include two check valves; intermediate atmospheric vent; and nonremovable, ASME B1.20.7, garden-hose threads on outlet.

N. Back-Siphonage Backflow Vacuum Breakers: ASSE 1056, suitable for continuous pressure and backflow applications. Include shutoff valves, check valve, test cocks, and vacuum vent.

2.3 WATER REGULATORS

A. Manufacturers:

1. Watts Industries, Inc.; Water Products Div.
2. Zurn Industries, Inc.; Wilkins Div.

B. General: ASSE 1003, water regulators, rated for initial working pressure of 150 psig minimum. Include integral factory-installed or separate field-installed, Y-pattern strainer.

1. NPS 2 and Smaller: Bronze body with threaded ends.

- a. General-Duty Service: Single-seated, direct operated, unless otherwise indicated.
- b. Booster Heater Water Supply: Single-seated, direct operated with integral bypass.

2. NPS 2-1/2 and Larger: Bronze or cast-iron body with flanged ends. Include AWWA C550 or FDA-approved, interior epoxy coating for regulators with cast-iron body.

- a. Type: Single-seated, direct operated.
- b. Type: Pilot-operated, single- or double-seated, cast-iron-body main valve, with bronze-body pilot valve.

3. Interior Components: Corrosion-resistant materials.

4. Exterior Finish: Polished chrome plate if used in chrome-plated piping system.

2.4 THERMOSTATIC WATER MIXING VALVES

A. Manufacturers:

1. Lawler Manufacturing Company, Inc.
2. Leonard Valve Company.

B. General: ASSE 1017, manually adjustable, thermostatic water mixing valve with bronze body. Include check stop and union on hot- and cold-water-supply inlets, adjustable temperature setting, and thermometer.

1. Type: Bimetal thermostat, operation and pressure rating 125 psig minimum.
2. Type: Liquid-filled motor, operation and pressure rating 100 psig minimum.

- C. Photographic-Process, Thermostatic Water Mixing-Valve Assemblies: Factory-fabricated, thermostatic water mixing valve; volume-control valve; unions; check stops; thermometer; atmospheric vacuum breaker; piping; escutcheons; and panel enclosure.
 - 1. Sizes and Arrangement: Controls mounted shall be in front of panel cover with factory- or field-installed inlet valves. Assembly shall control outlet-water temperature within 0.5 deg F throughout temperature and flow operating ranges.
 - 2. Panel: Steel box with white enameled finish.
 - 3. Panel Mounting: Surface.

2.5 WATER TEMPERING VALVES

- A. Manufacturers:
 - 1. Heat-Timer Corporation.
 - 2. Holby Valve Co., Inc.
 - 3. Sparco, Inc.
 - 4. Watts Industries, Inc.; Water Products Div.
- B. General: Manually adjustable, thermostatically controlled water tempering valve; bronze body; and adjustable temperature setting.
- C. System Water Tempering Valves: Piston or discs controlling both hot- and cold-water flow, capable of limited antiscald protection. Include threaded inlets and outlet.
 - 1. Finish: Chrome plated.
- D. Limited-Volume, Water Tempering Valves: Solder-joint inlets and NPS 3/4 maximum outlet.

2.6 STRAINERS

- A. Strainers: Y-pattern, unless otherwise indicated, and full size of connecting piping. Include ASTM A 666, Type 304, stainless-steel screens with 3/64-inch round perforations, unless otherwise indicated.
 - 1. Pressure Rating: 125-psig minimum steam working pressure, unless otherwise indicated.
 - 2. NPS 2 and Smaller: Bronze body, with female threaded ends.
 - 3. NPS 2-1/2 and Larger: Cast-iron body, with interior AWWA C550 or FDA-approved, epoxy coating and flanged ends.
 - 4. Y-Pattern Strainers: Screwed screen retainer with centered blowdown.
 - a. Drain: Factory- or field-installed, hose-end drain valve.
 - 5. T-Pattern Strainers: Malleable-iron or ductile-iron body with grooved ends; access end cap with drain plug and access coupling with rubber gasket.
 - 6. Basket Strainers: Bolted flange or clamp cover, and basket with lift-out handle.
 - a. Type: Simplex with one basket.
 - b. Drain: Factory- or field-installed, hose-end drain valve.
- B. Drainage Basket Strainers: Non-pressure-rated, cast-iron or coated-steel body; with bolted flange or clamp cover and drain with plug.

1. Basket: Bronze or stainless steel with 1/8- or 3/16-inch- diameter holes and lift-out handle.
2. Female threaded ends for NPS 2 and smaller, and flanged ends for NPS 2-1/2 and larger.

2.7 TRAP SEAL PRIMER VALVES

- A. Supply-Type Trap Seal Primer Valves: ASSE 1018, water-supply-fed type, with the following characteristics:
1. Manufacturers:
 - a. Josam Co.
 - b. Smith, Jay R. Mfg. Co.
 - c. Watts Industries, Inc.;
 - d. Zurn Industries, Inc.;
 2. 125-psig minimum working pressure.
 3. Bronze body with atmospheric-vented drain chamber.
 4. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
 5. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
 6. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

2.8 MISCELLANEOUS PIPING SPECIALTIES

- A. Water Hammer Arresters: ASSE 1010 or PDI-WH 201, piston type with pressurized metal-tube cushioning chamber. Sizes indicated are based on ASSE 1010, Sizes AA and A through F or PDI-WH 201, Sizes A through F.
1. Available Manufacturers:
 2. Manufacturers:
 - a. Amtrol, Inc.
 - b. Josam Co.
 - c. Sioux Chief Manufacturing Co., Inc.
 - d. Watts Industries, Inc.; Drainage Products Div.
 - e. Watts Industries, Inc.; Water Products Div.
 - f. Zurn Industries, Inc.; Wilkins Div.
- B. Air Vents: Float type for automatic air venting.
1. Bolted Construction: Bronze body with replaceable, corrosion-resistant metal float and stainless-steel mechanism and seat; threaded NPS 1/2 minimum inlet; 125-psig minimum pressure rating at 140 deg F; and threaded vent outlet.
 2. Welded Construction: Stainless-steel body with corrosion-resistant metal float, stainless-steel mechanism and seat, threaded NPS 3/8 minimum inlet, 150-psig minimum pressure rating, and threaded vent outlet.
- C. Air-Admittance Valves: Plastic housing with mechanical-operation sealing diaphragm, designed to admit air into drainage and vent piping and to prevent transmission of sewer gas into building.
1. Manufacturers:
 - a. Sioux Chief Manufacturing Co., Inc.
 - b. Approved equal.

2. Stack Vent Valve: ASSE 1050, designed for installation as terminal on soil, waste, and vent stacks, instead of stack vent extending through roof, in NPS 2 to NPS 4.
 3. Fixture Vent Valve: ASSE 1051, designed for installation on waste piping, instead of vent connection, for single fixture, in NPS 1-1/4 to NPS 2.
- D. Deep-Seal Traps: Cast-iron or bronze casting, with inlet and outlet matching connected piping and cleanout trap seal primer valve connection.
1. NPS 2: 4-inch- minimum water seal.
 2. NPS 2-1/2 and Larger: 5-inch- minimum water seal.
- E. Floor-Drain Inlet Fittings: Cast iron, with threaded inlet and threaded or spigot outlet, and trap seal primer valve connection.
- F. Fixed Air-Gap Fittings: Manufactured cast-iron or bronze drainage fitting with semiopen top with threads or device to secure drainage inlet piping in top and bottom spigot or threaded outlet larger than top inlet. Include design complying with ASME A112.1.2 that will provide fixed air gap between installed inlet and outlet piping.
- G. Stack Flashing Fittings: Counterflashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with threaded or hub top for extending vent pipe.
- H. Vent Caps: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and set-screws to secure to vent pipe.
- I. Vent Terminals: Commercially manufactured, shop- or field-fabricated, frost-proof assembly constructed of galvanized steel, copper, or lead-coated copper. Size to provide 1-inch enclosed air space between outside of pipe and inside of flashing collar extension, with counterflashing.
- J. Expansion Joints: ASME A112.21.2M, assembly with cast-iron body with bronze sleeve, packing gland, and packing; of size and end types corresponding to connected piping.
- K. Downspout Boots: ASTM A 48, gray-iron casting, with NPS 4 outlet; shop-applied bituminous coating; and inlet size to match downspout.
- L. Downspout Boots: ASTM A 74, Service class, hub-and-spigot, cast-iron soil pipe.
- M. Conductor Nozzles: Bronze body with threaded inlet for connected conductor size, and bronze wall flange with mounting holes.
1. Finish: bronze.
- 2.9 SLEEVE PENETRATION SYSTEMS
- A. Manufacturers:
1. ProSet Systems, Inc.
 2. Approved equal.
 3. Paragraph below is firestop assembly for plastic soil, waste, and vent stacks. Another assembly is available for combustible, plastic pressure piping systems. Sleeves are specified in Division 15 Section "Basic Mechanical Materials and Methods."

- B. Description: UL 1479, through-penetration firestop assembly consisting of sleeve and stack fitting with firestopping plug.
 - 1. Sleeve: Molded PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.
 - 2. Stack Fitting: ASTM A 48, gray-iron, hubless-pattern, wye-branch stack fitting with neoprene O-ring at base and gray-iron plug in thermal-release harness in branch. Include PVC protective cap for plug.
 - a. Special Coating: Include corrosion-resistant interior coating on fittings for plastic chemical waste and vent stacks.

2.10 FLASHING MATERIALS

- A. Lead Sheet: ASTM B 749, Type L51121, copper bearing, with the following minimum weights and thicknesses, unless otherwise indicated:
 - 1. General Use: 4-lb/sq. ft., 0.0625-inch thickness.
 - 2. Vent Pipe Flashing: 3-lb/sq. ft., 0.0469-inch thickness.
 - 3. Burning: 6-lb/sq. ft., 0.0938-inch thickness.
- B. Copper Sheet: ASTM B 152, of the following minimum weights and thicknesses, unless otherwise indicated:
 - 1. General Applications: 12 oz./sq. ft..
 - 2. Vent Pipe Flashing: 8 oz./sq. ft..
- C. Zinc-Coated Steel Sheet: ASTM A 653/A 653M, with 0.20 percent copper content and 0.04-inch minimum thickness, unless otherwise indicated. Include G90 hot-dip galvanized, mill-phosphatized finish for painting if indicated.
- D. Elastic Membrane Sheet: ASTM D 4068, flexible, chlorinated polyethylene, 40-mil minimum thickness.
- E. Fasteners: Metal compatible with material and substrate being fastened.
- F. Metal Accessories: Sheet metal strips, clamps, anchoring devices, and similar accessory units required for installation; matching or compatible with material being installed.
- G. Solder: ASTM B 32, lead-free alloy.
- H. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic.

2.11 CLEANOUTS

- A. Cleanouts,: Comply with ASME A112.36.2M.
 - 1. Application: Floor cleanout Wall cleanout.
 - 2. Manufacturers:
 - a. Josam Co.
 - b. Smith, Jay R. Mfg. Co.

2.12 FLOOR DRAINS

- A. Floor Drains Comply with ASME A112.21.1M.
 - 1. Application: Floor drain.
 - 2. Manufacturers:
 - a. Josam Co.
 - b. Smith, Jay R. Mfg. Co.
 - 3. Trap Pattern: Deep-seal P-trap.

2.13 ROOF DRAINS

- A. Roof Drains Comply with ASME A112.21.2M.
 - 1. Application: Roof drain Canopy drain Scupper drain.
 - 2. Manufacturers:
 - a. Josam Co.
 - b. Smith, Jay R. Mfg. Co.
 - 3. Body Material: Cast iron.
 - 4. Outlet: Bottom.
 - 5. Dome Material: Cast iron.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Refer to Section "Basic Mechanical Materials and Methods" for piping joining materials, joint construction, and basic installation requirements.
- B. Install pressure regulators with inlet and outlet shutoff valves and balance valve bypass. Install pressure gages on inlet and outlet.
- C. Install strainers on supply side of each control valve, pressure regulator, and solenoid valve.
- D. Install trap seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.
- E. Install backwater valves in building drain piping. For interior installation, provide cleanout deck plate flush with floor and centered over backwater valve cover, and of adequate size to remove valve cover for servicing.
- F. Install expansion joints on vertical risers, stacks, and conductors if indicated.
- G. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
 2. Locate at each change in direction of piping greater than 45 degrees.
 3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
 4. Locate at base of each vertical soil and waste stack.
- H. Install cleanout deck plates with top flush with finished floor, for floor cleanouts for piping below floors.
- I. Install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall, for cleanouts located in concealed piping.
- J. Install flashing flange and clamping device with each stack and cleanout passing through floors with waterproof membrane.
- K. Install vent flashing sleeves on stacks passing through roof. Secure over stack flashing according to manufacturer's written instructions.
- L. Install frost-proof vent caps on each vent pipe passing through roof. Maintain 1-inch clearance between vent pipe and roof substrate.
- M. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
1. Position floor drains for easy access and maintenance.
 2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
 - a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.
 - b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
 - c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.
 3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
 4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.
- N. Install roof drains at low points of roof areas according to roof membrane manufacturer's written installation instructions.
1. Install roof-drain flashing collar or flange so no leakage occurs between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.
 2. Position roof drains for easy access and maintenance.
- O. Fasten wall-hanging plumbing specialties securely to supports attached to building substrate if supports are specified and to building wall construction if no support is indicated.
- P. Fasten recessed-type plumbing specialties to reinforcement built into walls.
- Q. Install wood-blocking reinforcement for wall-mounting and recessed-type plumbing specialties.

- R. Install individual shutoff valve in each water supply to plumbing specialties. Use ball, gate, or globe valve if specific valve is not indicated. Install shutoff valves in accessible locations. Refer to Division 23 Section "Valves" for general-duty ball, butterfly, check, gate, and globe valves.
- S. Install air vents at piping high points. Include ball, gate, or globe valve in inlet and drain piping from outlet to floor drain.
- T. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.
- U. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.
- C. Connect plumbing specialties to piping specified in other Division 22 Sections.
- D. Ground equipment.
- E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- F. Connect plumbing specialties and devices that require power according to Division 26 Sections.
- G. Interceptor Connections: Connect piping, flow-control fittings, and accessories.
 - 1. Oil Interceptors: Connect inlet, outlet, vent, and gravity drawoff piping to unit; flow-control fitting and vent to unit inlet piping; and gravity drawoff and suction piping to oil storage tank.
 - 2. Solids Interceptors: Connect inlet and outlet.

3.3 FLASHING INSTALLATION

- A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:
 - 1. Lead Sheets: Burn joints of lead sheets 6-lb/sq. ft., 0.0938-inch thickness or thicker. Solder joints of lead sheets 4-lb/sq. ft., 0.0625-inch thickness or thinner.
 - 2. Copper Sheets: Solder joints of copper sheets.
- B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.
 - 1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches, and skirt or flange extending at least 8 inches around pipe.
 - 2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches around sleeve.

3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches around specialty.
 - C. Set flashing on floors and roofs in solid coating of bituminous cement.
 - D. Secure flashing into sleeve and specialty clamping ring or device.
 - E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Division 7 Section "Sheet Metal Flashing and Trim."
 - F. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.
 - G. Fabricate and install flashing and pans, sumps, and other drainage shapes.
- 3.4 FIELD QUALITY CONTROL
1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

END OF SECTION 221119

SECTION 221316 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following for soil, waste, and vent piping inside the building:
 - 1. Pipe, tube, and fittings.
 - 2. Special pipe fittings.
 - 3. Encasement for underground metal piping.

1.3 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressure, unless otherwise indicated:
 - 1. Soil, Waste, and Vent Piping: 10-foot head of water.
- B. Seismic Performance: Soil, waste, and vent piping and support and installation shall be capable of withstanding the effects of seismic events determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures."

1.4 SUBMITTALS

- A. Product Data: For pipe, tube, fittings, and couplings.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and details.
- C. Field quality-control inspection and test reports.

1.5 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 PIPING MATERIALS

2.3 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 74, Service and Extra-Heavy class(es).
- B. Gaskets: ASTM C 564, rubber.
- C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

2.4 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.
- B. Shielded Couplings: ASTM C 1277 assembly of metal shield or housing, corrosion-resistant fasteners, and rubber sleeve with integral, center pipe stop.
 - 1. Standard, Shielded, Stainless-Steel Couplings: CISPI 310, with stainless-steel corrugated shield; stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve.
 - a. Manufacturers:
 - 1) Fernco, Inc.
 - 2) Tyler Pipe; Soil Pipe Div.
 - 3) Approved equal.
 - 2. Heavy-Duty, Shielded, Stainless-Steel Couplings: With stainless-steel shield, stainless-steel bands and tightening devices, and ASTM C 564, rubber sleeve.
 - a. Manufacturers:
 - 1) Tyler Pipe; Soil Pipe Div.
 - 2) Approved equal.

2.5 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade A or B, Standard Weight or Schedule 40, galvanized. Include ends matching joining method.
- B. Drainage Fittings: ASME B16.12, galvanized, threaded, cast-iron drainage pattern.
- C. Pressure Fittings:

1. Steel Pipe Nipples: ASTM A 733 made of ASTM A 53/A 53M or ASTM A 106, Schedule 40, galvanized, seamless steel pipe. Include ends matching joining method.
2. Malleable-Iron Unions: ASME B16.39; Class 150; hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface; and female threaded ends.
3. Gray-Iron, Threaded Fittings: ASME B16.4, Class 125, galvanized, standard pattern.
4. Cast-Iron Flanges: ASME B16.1, Class 125.
5. Cast-Iron, Flanged Fittings: ASME B16.1, Class 125, galvanized.

2.6 DUCTILE-IRON PIPE AND FITTINGS

- A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell and plain spigot end, unless grooved or flanged ends are indicated.
 1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- B. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell and plain spigot end, unless grooved or flanged ends are indicated.
 1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 2. Gaskets: AWWA C111, rubber.
- C. Flanges: ASME 16.1, Class 125, cast iron.

2.7 COPPER TUBE AND FITTINGS

- A. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.
 1. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.
- B. Hard Copper Tube: ASTM B 88, Types L and M, water tube, drawn temper.
 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
 2. Copper Flanges: ASME B16.24, Class 150, cast copper with solder-joint end.
 3. Copper Unions: MSS SP-123, copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.
- C. Soft Copper Tube: ASTM B 88, Type L, water tube, annealed temper.
 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.

2.8 SPECIAL PIPE FITTINGS

- A. Flexible, Nonpressure Pipe Couplings: Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition pattern. Include shear ring, ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

1. Manufacturers:
 - a. Fernco, Inc.
 - b. Approved equal.
 2. Sleeve Materials:
 - a. For Cast-Iron Soil Pipes: ASTM C 564, rubber.
 - b. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.
- B. Shielded Nonpressure Pipe Couplings: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
1. Manufacturers:
 - a. Mission Rubber Co.
 - b. Approved equal.
- C. Expansion Joints: Two or three-piece, ductile-iron assembly consisting of telescoping sleeve(s) with gaskets and restrained-type, ductile-iron, bell-and-spigot end sections complying with AWWA C110 or AWWA C153. Select and assemble components for expansion indicated. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.
1. Manufacturers:
 - a. Star Pipe Products; Star Fittings Div.
 - b. Approved equal.
- D. Wall-Penetration Fittings: Compound, ductile-iron coupling fitting with sleeve and flexing sections for up to 20-degree deflection, gaskets, and restrained-joint ends complying with AWWA C110 or AWWA C153. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.
1. Manufacturers:
 - a. SIGMA Corp.
 - b. Approved equal.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

- A. Flanges and unions may be used on aboveground pressure piping, unless otherwise indicated.
- B. Aboveground, soil and waste piping NPS 4 and smaller shall be the following:
 1. Hubless cast-iron soil pipe and fittings; couplings; and hubless-coupling joints.
- C. Aboveground, soil and waste piping NPS 5 and larger shall be the following:
 1. Hubless cast-iron soil pipe and fittings; shielded, stainless-steel couplings; and hubless-coupling joints.

- D. Aboveground, vent piping NPS 4 and smaller shall be any of the following:
 - 1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
 - 2. Hard copper tube, copper pressure fittings; and soldered joints.

3.2 PIPING INSTALLATION

- A. Basic piping installation requirements are specified in Division 23 Section "Basic Mechanical Materials and Methods."
- B. Install seismic restraints on piping. Seismic-restraint devices are specified in Division 23 Section "Mechanical Vibration and Seismic Controls."
 - 1. Install encasement on piping according to ASTM A 674 or AWWA C105.
- C. Install underground, ductile-iron, special pipe fittings according to AWWA C600.
- D. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
- E. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.
- F. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated:
 - 1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
 - 2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
 - 3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
- G. Install engineered soil and waste drainage and vent piping systems as follows:
 - 1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.
 - 2. Reduced-Size Venting: Comply with standards of authorities having jurisdiction.
- H. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

3.3 JOINT CONSTRUCTION

- A. Join hubless cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-coupling joints.
- B. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

- C. Grooved Joints: Assemble joint with keyed coupling, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.

3.4 HANGER AND SUPPORT INSTALLATION

- A. Seismic-restraint devices are specified in Division 23 Section "Mechanical Vibration Controls and Seismic Restraints."
- B. Pipe hangers and supports are specified in Division 23 Section "Hangers and Supports." Install the following:
 - 1. Vertical Piping: MSS Type 8 or Type 42 clamps.
 - 2. Install individual, straight, horizontal piping runs according to the following:
 - a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
 - b. Longer than 100 Feet: MSS Type 43, adjustable roller hangers.
 - c. Longer than 100 Feet, if indicated: MSS Type 49, spring cushion rolls.
 - 3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
 - 4. Base of Vertical Piping: MSS Type 52, spring hangers.
- C. Install supports according to Division 23 Section "Hangers and Supports."
- D. Support vertical piping and tubing at each floor.
- E. Rod diameter may be reduced 1 size for double-rod hangers, with 3/8-inch minimum rods.
- F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
 - 2. NPS 3: 60 inches with 1/2-inch rod.
 - 3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
- G. Install supports for vertical cast-iron soil piping every 15 feet.
- H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/4: 84 inches with 3/8-inch rod.
 - 2. NPS 1-1/2: 108 inches with 3/8-inch rod.
 - 3. NPS 2: 10 feet with 3/8-inch rod.
 - 4. NPS 2-1/2: 11 feet with 1/2-inch rod.
 - 5. NPS 3: 12 feet with 1/2-inch rod.
 - 6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.
- I. Install supports for vertical steel piping every 15 feet.
- J. Install supports for vertical copper tubing every 10 feet.
- K. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect drainage and vent piping to the following:
 - 1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
 - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
 - 3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
 - 4. Equipment: Connect drainage piping as indicated.
- D. Connect force-main piping to the following:
 - 1. Sanitary Sewer: To exterior force main or sanitary manhole.
 - 2. Sewage Pumps: To sewage pump discharge.

3.6 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
 - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
 - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
 - 2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 - 3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping, except outside leaders, on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
 - 4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping

system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.

5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
 6. Prepare reports for tests and required corrective action.
- E. Test force-main piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
1. Leave uncovered and unconcealed new, altered, extended, or replaced force-main piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 2. Cap and subject piping to static-water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
 3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
 4. Prepare reports for tests and required corrective action.

3.7 CLEANING

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.

END OF SECTION 221316

SECTION 221319 - SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following sanitary drainage piping specialties:
 1. Cleanouts.
 2. Floor drains.
 3. Roof flashing assemblies.
 4. Through-penetration firestop assemblies.
 5. Miscellaneous sanitary drainage piping specialties.

- B. Related Sections include the following:

Not used.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. characteristics, and accessories for the following:
- B. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.5 COORDINATION

- A. Coordinate size and location of roof penetrations.

PART 2 - PRODUCTS

2.1 CLEANOUTS

A. Exposed Metal Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - c. Watts Drainage Products Inc.
 - d. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.36.2M for cast iron for cleanout test tee.
3. Size: Same as connected drainage piping
4. Body Material: Hub-and-spigot, cast-iron soil pipe T-branch as required to match connected piping.
5. Closure: Countersunk or raised-head, brass plug.
6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
7. Closure: Stainless-steel plug with seal.

B. Metal Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - c. Watts Drainage Products Inc.
 - d. Zurn Plumbing Products Group;
2. Standard: ASME A112.36.2M for cast-iron soil pipe with cast-iron ferrule cleanout.
3. Size: Same as connected branch.
4. Type: Cast-iron soil pipe with cast-iron ferrule.
5. Body or Ferrule: Cast iron.
6. Outlet Connection: Threaded.
7. Closure: Brass plug with straight threads and gasket.
8. Frame and Cover Material and Finish: Rough bronze.
9. Frame and Cover Shape: Round.
10. Top Loading Classification: Medium Duty.
11. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to cleanout.
12. Standard: ASME A112.3.1.
13. Size: Same as connected branch.
14. Housing: Stainless steel.
15. Closure: Stainless steel with seal.
16. Riser: Stainless-steel drainage pipe fitting to cleanout.

C. Cast-Iron Wall Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - c. Watts Drainage Products Inc.
 - d. Zurn Plumbing Products Group

2. Standard: ASME A112.36.2M. Include wall access.
3. Size: Same as connected drainage piping.
4. Body: Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Closure: Countersunk, brass plug.
6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
7. Wall Access: Round, flat, chrome-plated brass or stainless-steel cover plate with screw.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfg. Co.
 - c. Watts Drainage Products Inc.
 - d. Zurn Plumbing Products Group
2. Standard: ASME A112.6.3.
3. Pattern: Floor drain.
4. Body Material: Gray iron.
5. Outlet: Bottom.
6. Backwater Valve: Not required.
7. Sediment Bucket: .
8. Top or Strainer Material: Bronze.
9. Top of Body and Strainer Finish: Polished bronze.
10. Top Shape: Round Square.
11. Trap Material: Bronze.
12. Trap Pattern: Deep-seal P-trap.
13. Trap Features: Trap-seal primer valve drain connection.

2.3 THROUGH-PENETRATION FIRESTOP ASSEMBLIES

A. Through-Penetration Firestop Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ProSet Systems Inc.
3. Standard: UL 1479 assembly of sleeve and stack fitting with firestopping plug.
4. Size: Same as connected soil, waste, or vent stack.
5. Sleeve: Molded PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.
6. Stack Fitting: ASTM A 48/A 48M, gray-iron, hubless-pattern, wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.
7. Special Coating: Corrosion resistant on interior of fittings.

2.4 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Deep-Seal Traps:

1. Description: Cast-iron or bronze casting, with inlet and outlet matching connected piping and cleanout trap-seal primer valve connection.
2. Size: Same as connected waste piping.
 - a. NPS 2: 4-inch- minimum water seal.
 - b. NPS 2-1/2 and Larger: 5-inch- minimum water seal.

B. Floor-Drain, Trap-Seal Primer Fittings:

1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
2. Size: Same as floor drain outlet with NPS 1/2 side inlet.

C. Air-Gap Fittings:

1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.
2. Body: Bronze or cast iron.
3. Inlet: Opening in top of body.
4. Outlet: Larger than inlet.
5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

D. Sleeve Flashing Device:

1. Description: Manufactured, cast-iron fitting, with clamping device that forms sleeve for pipe floor penetrations of floor membrane. Include galvanized-steel pipe extension in top of fitting that will extend 1 inch above finished floor and galvanized-steel pipe extension in bottom of fitting that will extend through floor slab.
2. Size: As required for close fit to riser or stack piping.

E. Stack Flashing Fittings:

1. Description: Counterflashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with threaded or hub top for extending vent pipe.
2. Size: Same as connected stack vent or vent stack.

F. Vent Caps:

1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.
2. Size: Same as connected stack vent or vent stack.

G. Frost-Resistant Vent Terminals:

1. Description: Manufactured or shop-fabricated assembly constructed of copper, lead-coated copper, or galvanized steel.
2. Design: To provide 1-inch enclosed air space between outside of pipe and inside of flashing collar extension, with counterflashing.

H. Expansion Joints:

1. Standard: ASME A112.21.2M.
2. Body: Cast iron with bronze sleeve, packing, and gland.
3. End Connections: Matching connected piping.
4. Size: Same as connected soil, waste, or vent piping.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
 1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
 2. Locate at each change in direction of piping greater than 45 degrees.
 3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
 4. Locate at base of each vertical soil and waste stack.
- B. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.
- C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
- D. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
 1. Position floor drains for easy access and maintenance.
 2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
 - a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.
 - b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
 - c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.
 3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
 4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.
- E. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.
- F. Install through-penetration firestop assemblies in plastic conductors and stacks at floor penetrations.
- G. Install deep-seal traps on floor drains and other waste outlets, if indicated.
- H. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

- I. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.
- J. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

3.2 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.

3.3 FLASHING INSTALLATION

- A. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.
- B. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.4 LABELING AND IDENTIFYING

- A. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit.

3.5 FIELD QUALITY CONTROL

3.6 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221319

SECTION 224000 - PLUMBING FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following conventional plumbing fixtures and related components:
 - 1. Faucets for lavatories, and sinks.
 - 2. Flushometers.
 - 3. Toilet seats.
 - 4. Fixture supports.
 - 5. Water closets.
 - 6. Urinals.
 - 7. Lavatories.
 - 8. Service sinks.
 - 9. Service basins.
- B. Related Sections include the following:
 - 1. Division 10 Section "Toilet and Bath Accessories."
 - 2. Division 22 Section "Drinking Fountains and Water Coolers."
 - 3. Division 22 Section "Plumbing Specialties" for backflow preventers, floor drains, and specialty fixtures not included in this Section.

1.3 DEFINITIONS

- A. ABS: Acrylonitrile-butadiene-styrene plastic.
- B. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.
- C. Cast Polymer: Cast-filled-polymer-plastic material. This material includes cultured-marble and solid-surface materials.
- D. Cultured Marble: Cast-filled-polymer-plastic material with surface coating.
- E. Fitting: Device that controls the flow of water into or out of the plumbing fixture. Fittings specified in this Section include supplies and stops, faucets and spouts, shower heads and tub spouts, drains and tailpieces, and traps and waste pipes. Piping and general-duty valves are included where indicated.
- F. FRP: Fiberglass-reinforced plastic.
- G. PMMA: Polymethyl methacrylate (acrylic) plastic.

- H. PVC: Polyvinyl chloride plastic.
- I. Solid Surface: Nonporous, homogeneous, cast-polymer-plastic material with heat-, impact-, scratch-, and stain-resistance qualities.

1.4 SUBMITTALS

- A. Product Data: For each type of plumbing fixture indicated. Include selected fixture and trim, fittings, accessories, appliances, appurtenances, equipment, and supports. Indicate materials and finishes, dimensions, construction details, and flow-control rates.
- B. LEED Submittal:

Not used
- C. Shop Drawings: Diagram power, signal, and control wiring.
- D. Operation and Maintenance Data: For plumbing fixtures to include in emergency, operation, and maintenance manuals.
- E. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.
 - 1. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; for plumbing fixtures for people with disabilities.
- D. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.
- E. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
- F. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.
- G. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
 - 1. Solid-Surface-Material Lavatories and Sinks: ANSI/ICPA SS-1.
 - 2. Vitreous-China Fixtures: ASME A112.19.2M.

- H. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
 - 1. Faucets: ASME A112.18.1.
 - 2. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
 - 3. NSF Potable-Water Materials: NSF 61.
 - 4. Pipe Threads: ASME B1.20.1.
 - 5. Supply Fittings: ASME A112.18.1.
 - 6. Brass Waste Fittings: ASME A112.18.2.

- I. Comply with the following applicable standards and other requirements specified for shower faucets:

Not used.

- J. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
 - 1. Atmospheric Vacuum Breakers: ASSE 1001.
 - 2. Brass and Copper Supplies: ASME A112.18.1.
 - 3. Manual-Operation Flushometers: ASSE 1037.
 - 4. Plastic Tubular Fittings: ASTM F 409.
 - 5. Brass Waste Fittings: ASME A112.18.2.
 - 6. Sensor-Operation Flushometers: ASSE 1037 and UL 1951.

- K. Comply with the following applicable standards and other requirements specified for miscellaneous components:
 - 1. Flexible Water Connectors: ASME A112.18.6.
 - 2. Floor Drains: ASME A112.6.3.
 - 3. Grab Bars: ASTM F 446.
 - 4. Hose-Coupling Threads: ASME B1.20.7.
 - 5. Off-Floor Fixture Supports: ASME A112.6.1M.
 - 6. Pipe Threads: ASME B1.20.1.
 - 7. Plastic Toilet Seats: ANSI Z124.5.
 - 8. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 WARRANTY

- A. Special Warranties: Manufacturer's standard form in which manufacturer agrees to repair or replace components that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures of unit shell.
 - b. Faulty operation of controls, blowers, pumps, heaters, and timers.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal use.

 - 2. Warranty Period for Commercial Applications: Three year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 LAVATORY FAUCETS

A. Lavatory Faucets,:

1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Standard Companies, Inc.
 - b. Approved equal.

2.2 SINK FAUCETS

A. Sink Faucets,:

- a. American Standard Companies, Inc.
- b. BOBRICK OMNIDECK & WASH BAR. SEE SCHEDULE AND DETAILS ON DRAWINGS

2.3 FLUSHOMETERS

A. Flushometers,:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard Companies
 - b. Sloan Valve Company.
 - c. Approved equal

2.4 TOILET SEATS

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard Companies, Inc.
 - b. Approved equal.
2. Description: Toilet seat for water-closet-type fixture.
 - a. Material: Molded, solid plastic.
 - b. Configuration: Open front without cover.
 - c. Size: Elongated.
 - d. Color: White.

2.5 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. TRUEBRO, Inc.

2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

2.6 FIXTURE SUPPORTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Josam Company.
2. Smith, Jay R. Mfg. Co.
3. Watts Drainage Products Inc.; a div. of Watts Industries, Inc.
4. Zurn Plumbing Products Group; Specification Drainage Operation.

B. Water-Closet Supports,:

1. Description: Combination carrier designed for accessible mounting height of wall-mounting, water-closet-type fixture. Include single or double, vertical or horizontal, hub-and-spigot or hubless waste fitting as required for piping arrangement; faceplates; couplings with gaskets; feet; and fixture bolts and hardware matching fixture. Include additional extension coupling, faceplate, and feet for installation in wide pipe space.

C. Urinal Supports,:

1. Description: Type I, urinal carrier with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture for wall-mounting, urinal-type fixture. Include steel uprights with feet.
2. Accessible-Fixture Support: Include rectangular steel uprights.

D. Lavatory Supports,:

1. Description: Type I, lavatory carrier with exposed arms and tie rods for wall-mounting, lavatory-type fixture. Include steel uprights with feet.
2. Accessible-Fixture Support: Include rectangular steel uprights.

E. Sink Supports,:

1. Description: Type I, sink carrier with exposed arms and tie rods for sink-type fixture. Include steel uprights with feet.

2.7 WATER CLOSETS

A. Water Closets,:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard Companies, Inc.
 - b. Owner approved equal
2. Description Accessible, wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.

- a. Style: One piece.
 - 1) Bowl Type: Elongated with siphon-jet design.
 - 2) Design Consumption: 1.6 gal. /flush.
 - 3) Color: White.

B. Urinals:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard Companies, Inc.
 - b. Owner approved equal
- 2. Description: Accessible, wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.

C. Lavatories,:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard Companies, Inc.
 - b. Owner approved equal

2.8 SERVICE SINKS

A. Service Sinks:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard Companies, Inc.
 - b. Owner approved equal

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.
- B. Examine cabinets, counters, floors, and walls for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.

- B. Install off-floor supports, affixed to building substrate, for wall-mounting fixtures.
 - 1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
 - 2. Use carrier supports without waste fitting for fixtures with tubular waste piping.
 - 3. Use chair-type carrier supports with rectangular steel uprights for accessible fixtures.
- C. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.
- D. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.
- E. Install wall-mounting fixtures with tubular waste piping attached to supports.
- F. Install floor-mounting, back-outlet water closets attached to building floor substrate and wall bracket and onto waste fitting seals.
- G. Install counter-mounting fixtures in and attached to casework.
- H. Install fixtures level and plumb according to roughing-in drawings.
- I. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.
 - 1. Exception: Use ball, or globe valves if supply stops are not specified with fixture. Valves are specified in Division 23 Section "Valves."
- J. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.
- K. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.
- L. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.
- M. Install toilet seats on water closets.
- N. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- O. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.
- P. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- Q. Install shower flow-control fittings with specified maximum flow rates in shower arms.

Not used.
- R. Install traps on fixture outlets.
 - 1. Exception: Omit trap on fixtures with integral traps.

2. Exception: Omit trap on indirect wastes, unless otherwise indicated.

- S. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings. Escutcheons are specified in Division 23 Section "Basic Mechanical Materials and Methods."
- T. Set shower receptors and service basins in leveling bed of cement grout. Grout is specified in Division 23 Section "Basic Mechanical Materials and Methods."
- U. Seal joints between fixtures and walls, floors, and countertops using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Sealants are specified in Division 7 Section "Joint Sealants."

3.3 CONNECTIONS

- A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- C. Ground equipment according to Division 26 Section "Grounding and Bonding."
- D. Connect wiring according to Division 26 Section "Conductors and Cables."

3.4 FIELD QUALITY CONTROL

- A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.
- B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.
- C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.
- D. Test installed fixtures after water systems are pressurized for proper operation. Replace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.
- E. Install fresh batteries in sensor-operated mechanisms.

Not used.

3.5 ADJUSTING

- A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.
- B. Adjust water pressure at faucets and flushometer valves to produce proper flow and stream.
- C. Replace washers and seals of leaking and dripping faucets and stops.

3.6 CLEANING

- A. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials. Do the following:
 - 1. Remove faucet spouts and strainers, remove sediment and debris, and reinstall strainers and spouts.
 - 2. Remove sediment and debris from drains.
- B. After completing installation of exposed, factory-finished fixtures, faucets, and fittings, inspect exposed finishes and repair damaged finishes.

3.7 PROTECTION

- A. Provide protective covering for installed fixtures and fittings.
- B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224000

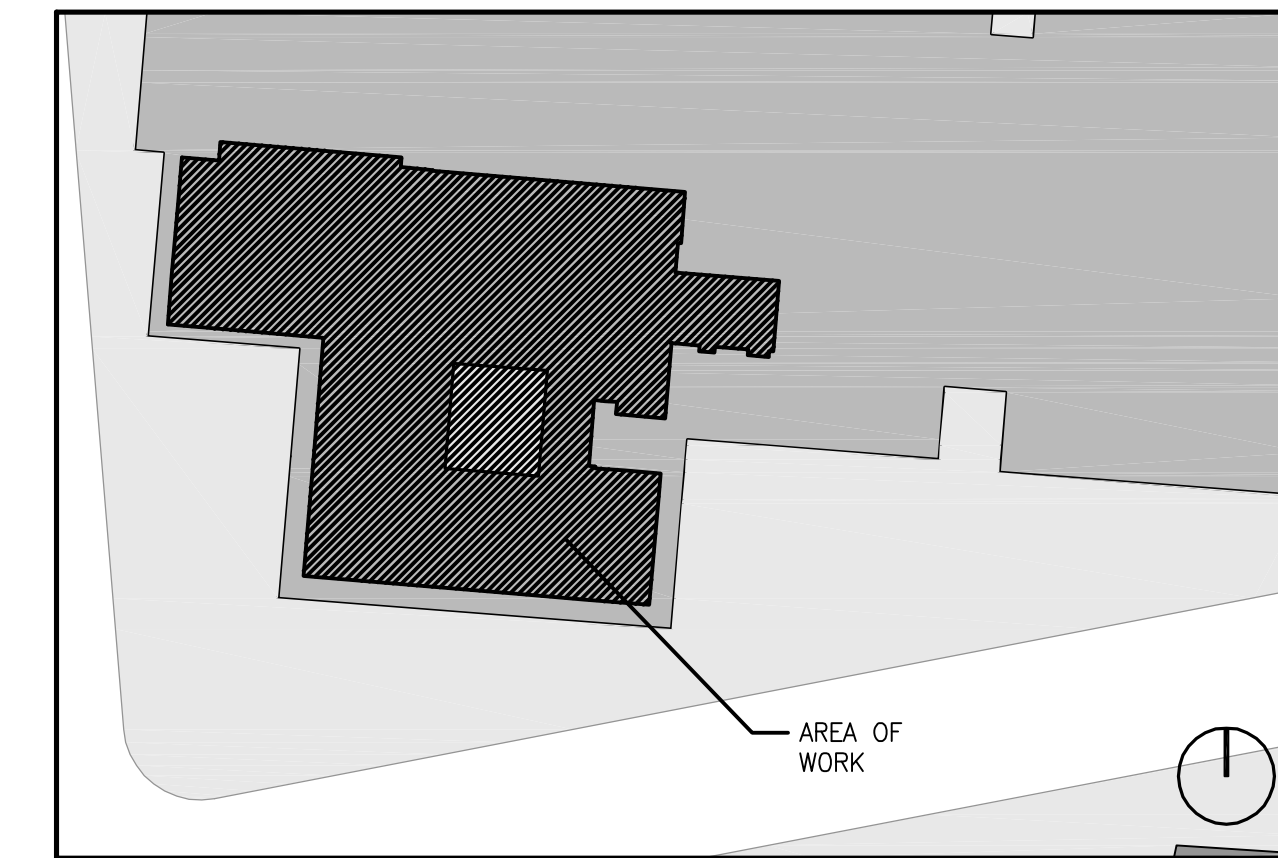
UNION COUNTY CLERK OFFICE RENOVATION

2 Broad Street,
Elizabeth, NJ 07201

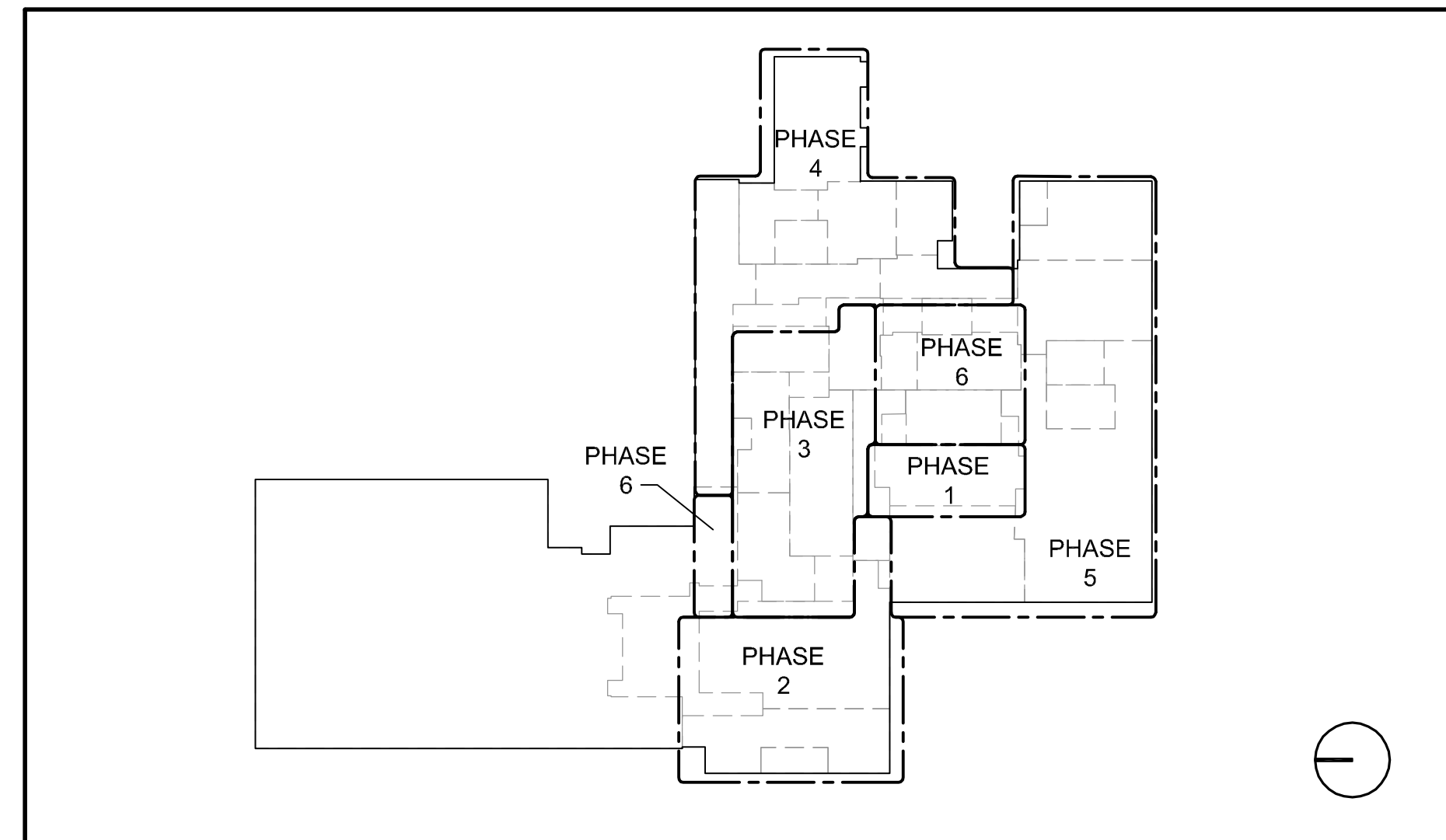
BA # 44-2021
UC Engineering # 2017-009



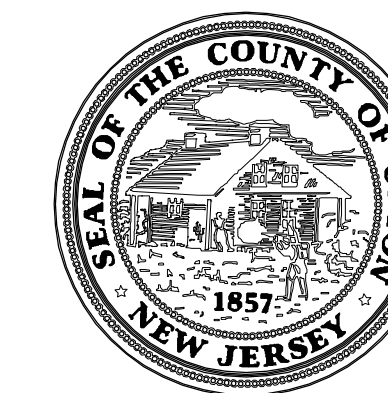
1 SITE PLAN
SCALE: 1" = 200'



2 AREA OF WORK
SCALE: 1" = 50'



3 KEY PHASING PLAN
SCALE: 1/32"=1'



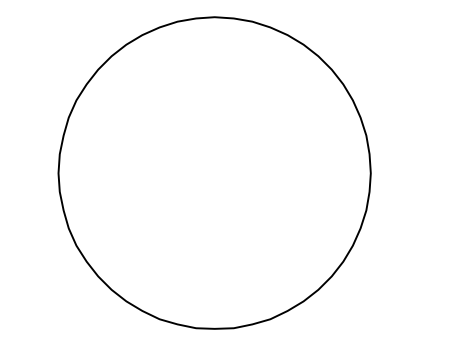
COUNTY OF UNION

BOARD OF CHOSEN COMMISSIONERS

Joseph A. Graziano, Sr., CPWM,
Department of Engineering,
Public Works and Facilities Management

Thomas Mineo, P.E.
County Engineer,
Division of Engineering

Joanne Rajoppi
Union County Clerk



Noel S. Musial, A.I.A.
N.J. A105415 N.Y. 11339
CT. 09009 PA. B 6580

Noel S. Musial, II, A.I.A.
N.J. 21A102068500

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UNION COUNTY CLERK OFFICE RECONSTRUCTION
2 Broad Street
Elizabeth, NJ 07201

SEPTEMBER 2021

No.	Revision Description	Date

Scale:
Drawn by:
Checked by:

113316.01

TITLE SHEET

A000

DRAWING INDEX:

- INDICATES NEW OR REVISED DRAWINGS
- INDICATES DRAWINGS RE-ISSUED WITHOUT CHANGE

NO.	DESCRIPTION	BID SET
A 000	TITLE SHEET	●
A 001	GENERAL NOTES, ABBREVIATIONS, LEGENDS & PARTITION TYPES	●
A 002	BUILDING CODE DATA AND EGRESS PLANS	●
A 002A	BUILDING CODE DATA AND EGRESS PHASING PLANS	●
A 002B	BUILDING CODE DATA AND EGRESS PHASING PLANS	●
A 003	ADA NOTES	●
A 004	THROUGH PENETRATION & FIRE STOPPING DETAILS	●
A 005	THROUGH PENETRATION & FIRE STOPPING DETAILS	●
AP 101	PHASING PLANS	●
AP 102	PHASING PLANS	●
AP 103	PHASING PLANS	●
AP 104	PHASING PLANS	●
AP 105	PHASING PLANS	●
AP 106	PHASING PLANS	●
AD 101	FIRST FLOOR DEMOLITION PLAN AND NOTES	●
A 101	FIRST FLOOR PLAN	●
A 101.1	FIRST FLOOR PLAN PHASE 1	●
A 101.2	FIRST FLOOR PLAN PHASE 2	●
A 101.3	FIRST FLOOR PLAN PHASE 3	●
A 101.4	FIRST FLOOR PLAN PHASE 4	●
A 101.5	FIRST FLOOR PLAN PHASE 5	●
A 101.6	FIRST FLOOR PLAN PHASE 6	●

NO.	DESCRIPTION	BID SET
A 111	REFLECTED CEILING PLAN	●
A 111A	REFLECTED CEILING PARTIAL PLAN	●
A 201	BUILDING ELEVATIONS	●
A 301	BUILDING SECTIONS	●
A 401	MAP VIEWING & ELECTIONS CASEWORK DETAILS	●
A 402	PASSPORT CASEWORK DETAILS	●
A 501	SECTION DETAILS	●
A 502	SECTION DETAILS	●
A 601	DOOR SCHEDULE & WALL DETAILS	●
A 602	FINISH PLAN SCHEDULE & DETAILS	●
PD 101	PLUMBING DEMOLITION FIRST FLOOR PLAN	●
P 101	PLUMBING FIRST FLOOR PLAN	●
P 601	PLUMBING SCHEDULES, NOTES AND DETAILS	●
FP 101	FIRE PROTECTION FIRST FLOOR PLAN	●
FP 102	FIRE PROTECTION MEZZANINE PLAN	●

NO.	DESCRIPTION	BID SET
M 001	MECHANICAL OVERVIEW SHEET	●
MD 100	MECHANICAL DEMOLITION PLAN	●
M 100	MECHANICAL WORK PLAN	●
M 101	MECHANICAL ROOF PLAN	●
M 200	MECHANICAL SCHEMATIC DIAGRAM	●
M 300	MECHANICAL SCHEDULES	●
M 400	MECHANICAL DETAILS	●
M 401	MECHANICAL DETAILS	●
M 500	MECHANICAL SPECIFICATIONS	●
M 501	MECHANICAL SPECIFICATIONS	●
E 001	ELECTRICAL OVERVIEW SHEET	●
ED 100	ELECTRICAL DEMOLITION PLAN	●
E 200	ELECTRICAL POWER PLAN	●
E 300	ELECTRICAL LIGHTING PLAN	●
E 301	ELECTRICAL LIGHTING CONTROLS (1)	●
E 302	ELECTRICAL LIGHTING CONTROLS (2)	●
E 303	ELECTRICAL LIGHTING CONTROLS (3)	●
E 400	HVAC ELECTRICAL PLAN	●
E 500	ELECTRICAL DETAILS	●

SCOPE OF WORK

- PHASED RENOVATIONS OF EXISTING SPACE FOR THE OFFICES OF THE COUNTY CLERK, ELECTIONS, PASSPORT WHICH IS TO ENTAIL:
- DEMOLITION OF EXISTING INTERIOR FINISHES
 - INSTALLATION OF NEW WALLS, FINISHES, ELECTRICAL POWER, DATA, AND LIGHTING FIXTURES
 - PARTIAL DEMOLITION OF EXISTING MECHANICAL SYSTEMS AND INSTALLATION OF NEW UNITS AND RELATED DUCTWORK FOR NEW TOILET ROOMS.
 - CLOSE UP EXISTING SKYLIGHTS AND PATCH ROOF. PREPARE ROOF STRUCTURE TO RECEIVE NEW MECHANICAL EQUIPMENT. REFER TO SPEC SECTION 051210 AND MECH DWGS AND SPECS.
 - INSTALLATION OF NEW LIGHTING AND VIDEO SECURITY COMMUNICATION SYSTEM. Tie IN COMMUNICATIONS SYSTEM INTO EXISTING BUILDING SECURITY INFRASTRUCTURE

BUILDING/SITE DATA

2 BROAD STREET
ELIZABETH, NJ, 07201
ZONE C5: COMMERCIAL

RENOVATION PROJECT INCLUDING ALTERATION, RENOVATION, AND REPAIR WORK FOR THE EXISTING BUILDING SHALL BE CONSTRUCTED AS PER SUBCODE, SUBCHAPTER SIX OF THE UNIFORM CONSTRUCTION CODE OF THE STATE OF NEW JERSEY AND ALL APPLICABLE MODEL CODES REFERENCED THEREIN / 2015 AS RECONSTRUCTION WORK (UCC 5:23-6.1) AND CODE UPDATES THRU 2018.

INTERNATIONAL BUILDING CODE / 2015 (NEW JERSEY EDITION)
NATIONAL ELECTRICAL CODE / 2014
ASHRAE STANDARD 90.1 / 2013
INTERNATIONAL MECHANICAL CODE / 2015
NATIONAL STANDARD PLUMBING CODE / 2015
ICC/ANSI-2009 & SUBCHAPTER 7 (BARRIER FREE SUBCODE)
INTERNATIONAL FIRE CODE / 2015
NFPA 13

AS THIS PROJECT INVOLVES A PRIMARY FUNCTION SPACE, WHICH CANNOT BE OCCUPIED WHILE THE WORK IS TAKING PLACE, THIS PROJECT IS "RECONSTRUCTION."

ALL WORK IS TO CONFORM TO THE IBC NJ 2018.

PROJECT OVERVIEW: EXISTING BUILDING WITH ALTERATIONS, RECONSTRUCTION OF EXISTING INTERIOR SPACES AND EXTERIOR STAIRS.

EXISTING CONSTRUCTION TYPE 2A, NON-COMBUSTIBLE (216.0)
EXISTING BUILDING IS FULLY SPRINKLERED

EXISTING USE GROUPS
NON-SEPARATED, MIXED USE:
B BUSINESS (OFFICES)
A-3 (CONFERENCE ROOM)
S-1 (ACCESSORY MECH./STORAGE)

EXISTING BUILDING AREA ±80,000 GSF (TOTAL)
EXISTING BUILDING HEIGHT (15) STORY (+/- 155') ABOVE GRADE PLANE, WITH BASEMENT 15 STORIES ABOVE GRADE PLANE

GENERAL NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE ZONING AND BUILDING CODES AND THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION, AS WELL AS ANY & ALL REGULATORY AGENCIES, INCLUDING BUT NOT LIMITED TO:
 - THE "UNIFORM CONSTRUCTION CODE OF THE STATE OF NEW JERSEY",
 - THE "INTERNATIONAL BUILDING CODE" NJ EDITION, 2018,
 - THE "NATIONAL ELECTRICAL CODE" (NFPA 70), 2017,
 - THE "NATIONAL STANDARD PLUMBING CODE" NJ EDITION, 2018,
 - "ASHRAE 90.1-2018",
 - THE "INTERNATIONAL MECHANICAL CODE", 2018,
 - THE "INTERNATIONAL FUEL GAS CODE", 2018,
 - THE "BARRIER-FREE SUBCODE", NJAC 5:23-7, ICC/ANSI A117.1-2009, CHAPTER 11 OF IBC/2018
 - "N.F.P.A.", AND
 - "O.S.H.A."
- SHOULD ANYTHING CONTAINED IN THE CONTRACT DOCUMENTS BE AT VARIANCE WITH SAID CODES, CONTRACTOR(S) SHALL IMMEDIATELY INFORM OWNER AND ARCHITECT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR APPLYING AND OBTAINING ALL PERMITS AND SHALL PAY FOR ALL ASSOCIATED PERMIT FEES AS WELL AS ANY AND ALL REQUIRED INSPECTION AS WELL AS APPLYING FOR AND OBTAINING A "CERTIFICATE OF OCCUPANCY". SHOULD ANY OF THE WORK REQUIRE CORRECTIVE MEASURES IN ORDER TO OBTAIN THE "CERTIFICATE OF OCCUPANCY", THE CONTRACTOR SHALL BE RESPONSIBLE FOR BEARING ALL ASSOCIATED EXPENSES AT NO ADDITIONAL COST TO THE OWNER.
- ALL NOTES ON DRAWINGS SHALL APPLY TO ENTIRE SET OF DRAWINGS.
- DRAWINGS ARE NOT TO BE SCALED, DIMENSIONS GOVERN. LARGE SCALE DRAWINGS TAKE PRECEDENCE OVER SMALL SCALE DRAWINGS.
- ALL DIMENSIONS ARE FINISHED SURFACE TO FINISHED SURFACE, UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS INDICATED AS PLUS/MINUS (+/-), SHALL BE FIELD VERIFIED & COORDINATED.
- THE CONTRACTOR SHALL FIELD VERIFY ALL JOB CONDITIONS, DIMENSIONS AND DETAILS PRIOR TO START OF CONSTRUCTION / DEMOLITION.
- ALL WORK, WHETHER SHOWN OR IMPLIED, UNLESS SPECIFICALLY QUESTIONED PRIOR TO THE SUBMISSION OF BID(S) SHALL BE CONSIDERED FULLY UNDERSTOOD IN ALL RESPECTS BY THE GENERAL CONTRACTOR AND THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MISINTERPRETATIONS OR CONSEQUENCES THEREOF FOR WORK INDICATED ON THE CONTRACT DOCUMENTS.
- ALL REQUESTS FOR SUBSTITUTIONS OF MATERIALS OR EQUIPMENT SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING. THESE REQUESTS SHALL INCLUDE MFR.'S DATA SHEETS AS WELL AS LINE BY LINE COMPARISONS AS WELL AS ANY ADDITIONAL DATA AND/OR DETAILS AS MAY BE REQUIRED BY THE ARCHITECT AND/OR THE ENGINEER TO ASSIST IN THE EVALUATION. THE DECISION RENDERED BY THE ARCHITECT AND/OR ENGINEER SHALL BE DEEMED FINAL. COMPLY WITH "OR EQUAL" REQUIREMENTS OF SPECIFICATIONS, SECTION ONE.
- CONTRACTOR SHALL PROVIDE ALL ITEMS, EQUIPMENT & LABOR NECESSARY FOR THE COMPLETION OF THE WORK SHOWN ON THE CONTRACT DOCUMENTS, INCLUDING TAX, PURCHASE, DELIVERY ARRANGEMENTS AND STORAGE, AS WELL AS ADDITIONAL PREMIUMS TO EXPEDITE DELIVERY OF EQUIPMENT & MATERIAL IN ORDER TO MEET THE DATE OF COMPLETION.
- CONTRACTOR MAY SUBMIT TO THE ARCHITECT FOR CONSIDERATION AND APPROVAL ANY SUGGESTIONS THAT MAY SIMPLIFY THE JOB, IMPROVE THE FINAL RESULT OR REDUCE COST WHILE MAINTAINING FULL COMPLIANCE WITH DESIGN INTENT. THE OWNER AND/OR THE ARCHITECT SHALL NOT BE LIABLE FOR ANY ASSUMPTIONS MADE BY THE GENERAL CONTRACTOR.
- THE GENERAL CONTRACTOR SHALL SUBMIT IN WRITING ALL CHANGE ORDER REQUESTS FOR ADDITIONAL WORK TO THE ARCHITECT'S OFFICE FOR REVIEW & APPROVAL. THE ADDITIONAL WORK IS NOT TO PROCEED UNTIL A SIGNED CHANGE ORDER IS RETURNED TO THE GENERAL CONTRACTOR. (SEE SPECIFICATIONS FOR PROCEDURE).
- ALL WORK IS TO CONFORM TO DRAWINGS & SPECIFICATIONS, AND SHALL BE NEW AND BEST QUALITY OF THE KINDS SPECIFIED.
- ALL MANUFACTURED ARTICLES, MATERIALS AND EQUIPMENT SHALL BE SUPPLIED, INSTALLED, CONNECTED, ERECTED, USED, CLEANED & MAINTAINED AS DIRECTED BY THE MANUFACTURERS AND BE FULLY GUARANTEED UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS. SHOULD ANY ARTICLES, MATERIALS AND EQUIPMENT BE INSTALLED OR ERECTED IN SUCH A MANNER AS TO CAUSE THE APPROPRIATE MFR. NOT TO ISSUE A WARRANTY, THEN THE CONTRACTOR SHALL BE HELD RESPONSIBLE TO MAKE ANY AND ALL REPAIRS AND/OR REPLACEMENTS AS DEEMED NECESSARY BY THE ARCHITECT AND THE MFR. SO THAT A GUARANTEE CAN BE ISSUED.
- ALL WORK SHALL BE PERFORMED BY TRAINED AND EXPERIENCED TRADESMAN, PERSONNEL AND SUPERVISORS WHO ARE COMPLETELY FAMILIAR WITH THE REQUIREMENTS FOR HIS WORK. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE TO HAVE THE MFR. REP. FOR THE VARIOUS BUILDING SYSTEMS ELEMENTS AND EQUIPMENT MAKE PERIODIC VISITS TO THE SITE TO CHECK THE QUALITY AND PROGRESS OF THE WORK.

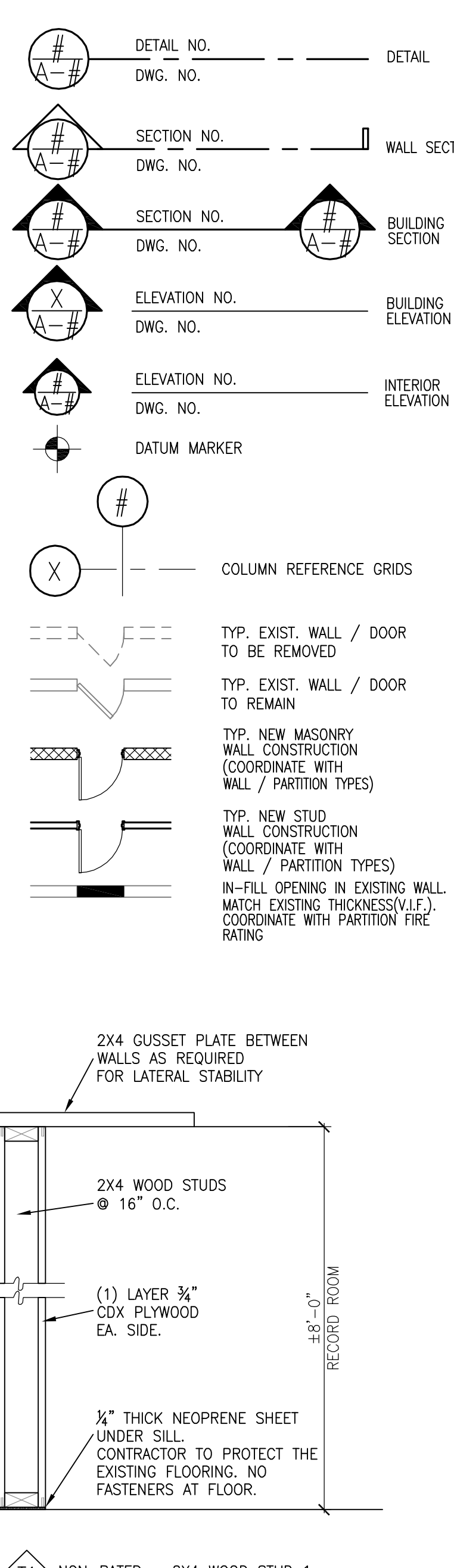
- IT IS THE RESPONSIBILITY OF ALL CONTRACTORS WORKING ON THIS PROJECT TO MAINTAIN WORKING HARMONY BETWEEN ALL OTHER TRADES & CREWS WORKING ON THIS PROJECT & SITE.
- THE GENERAL CONTRACTOR SHALL PROVIDE FULL TIME SUPERVISION FOR THE DURATION OF THE PROJECT.
- SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION. ANY EQUIPMENT, MATERIALS OR SYSTEMS FABRICATED AND/OR INSTALLED WITHOUT APPROVED SHOP DRAWINGS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SHOULD ADDITIONAL COSTS ARISE AS A DIRECT RESULT OF PROCEEDING WITHOUT PRIOR APPROVAL, THESE COSTS SHALL BE BORN BY THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SUBMIT ALL SHOP DRAWINGS IN A TIMELY MANNER FOR REVIEW AND COMMENT(S) AND TO AVOID DELAY OF THE PROJECT. (SEE SPECIFICATIONS)
- CONTRACTOR SHALL MAINTAIN THE LATEST SET OF ALL CONTRACT DOCUMENTS (PLANS, PROJECT MANUAL CLARIFICATIONS, SUPPLEMENTARY DOCUMENTS, ETC.) AT THE JOB SITE AT ALL TIMES.
- EACH TRADE SHALL BE RESPONSIBLE FOR REVIEWING THE ENTIRE SET OF CONTRACT DOCUMENTS AND NOTING THAT PARTICULAR TRADES WORK & SHALL REVIEW AND COORDINATE WITH WORK OF OTHER TRADES FOR A COMPLETE AND FULLY FUNCTIONAL INSTALLATION. ALL WORK SHALL BE COORDINATED THROUGH THE G.C.
- EACH TRADE SHALL BE RESPONSIBLE FOR REVIEWING THE ENTIRE SET OF CONTRACT DOCUMENTS AND NOTING THAT PARTICULAR TRADES WORK & SHALL REVIEW AND COORDINATE WITH WORK OF OTHER TRADES FOR A COMPLETE AND FULLY FUNCTIONAL INSTALLATION. ALL WORK SHALL BE COORDINATED THROUGH THE G.C.
- THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VISIT THE AREAS INVOLVED IN THE RENOVATION TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS PRIOR TO THE SUBMITTAL OF BIDS.
- ALL PRELIMINARY INVESTIGATION SHALL BE DONE AT THE EXPENSE OF THE OF THE CONTRACTOR REQUESTING SUCH INVESTIGATION AND SHALL BE COORDINATED WITH THE OWNER, SO AS NOT TO INTERRUPT THE OPERATIONS OF THE FACILITY.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL DEBRIS, DISCARDED MATERIALS AND/OR EQUIPMENT FROM ALL TRADES, AND PROVIDING NECESSARY PERMITS AND DISPOSAL CONTAINERS TO REMOVE DEBRIS FROM THE SITE. TRANSPORT ALL DEBRIS AND LEGALLY DISPOSE OF OFF-SITE.
- THE GENERAL CONTRACTOR SHALL NOT PERMIT THE OVER LOADING OF THE EXISTING OR NEW STRUCTURE WITH DEBRIS FROM THE DEMOLITION AND NEW CONSTRUCTION MATERIALS.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWICE DAILY REMOVAL OF ALL DEMOLITION DEBRIS & A DAILY GENERAL BROOM CLEANING. THE GENERAL CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR REMOVAL OF ANY DISCARDED BOXES, ETC.
- DURING CONSTRUCTION THE GENERAL CONTRACTOR SHALL PROVIDE THE NECESSARY BARRIERS TO MINIMIZE DUST, PROTECT THE PUBLIC AND MINIMIZE DAMAGE TO OTHER SURFACES OR ITEMS TO REMAIN. COORDINATE BARRIER LOCATION WITH OWNER AND ARCHITECT SO AS NOT TO INTERRUPT OPERATION OF FACILITY. CONTRACTOR SHALL MAKE PRECAUTIONS TO PROTECT ALL SMOKE DETECTORS LOCATED IN AREAS OF DEMOLITION TO PREVENT ACCIDENTAL TRIPPING OF SAME. CONTRACTOR SHALL REMOVE THESE PRECAUTIONS AT THE END OF EACH DAY.
- ALL TEMPORARY SERVICES REQUIRED TO MAINTAIN OWNER OPERATIONS DURING & AFTER DEMOLITION SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR INCLUDING BUT NOT LIMITED TO WATER, ELECTRICAL POWER, H.V.A.C., TELEPHONE, FIRE ALARM / DETECTION, ETC.
- COORDINATE ALL MECHANICAL AND ELECTRICAL WORK TO MAINTAIN UTILITY SERVICE TO NON-CONSTRUCTION AREAS DURING NORMAL BUSINESS HOURS. PROVIDE WRITTEN NOTIFICATION TO OWNER, ARCHITECT AND UTILITY COMPANY MIN. ONE (1) WEEK IN ADVANCE OF ANY INTERRUPTIONS TO UTILITY SERVICES THAT MAY TAKE PLACE AFTER SCHOOL HOURS.
- THE CONTRACTOR SHALL MAINTAIN THE SECURITY OF THE BUILDING AT ALL TIMES, AND ERECT TEMPORARY FULL HEIGHT PLYWOOD ENCLOSURES AS REQUIRED FOR SAFETY AND SECURITY.
- SHOULD UNFORESEEN CONDITIONS BE ENCOUNTERED THAT AFFECT DESIGN OR FUNCTION OF THE PROJECT, INVESTIGATE FULLY & CONTACT THE OWNER AND ARCHITECT. WHILE AWAITING ARCHITECT'S RESPONSE, RESCHEDULE OPERATIONS IF NECESSARY TO AVOID DELAY OF OVERALL PROJECT.
- ANY EXISTING WALL TO BE DEMOLISHED AND FOUND TO CONTAIN STRUCTURAL SUPPORTS, PLUMBING, ELECTRIC OR OTHER SERVICES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT UPON DISCOVERY FOR DIRECTION.
- CUTTING AND PATCHING, GENERAL: EMPLOY SKILLED WORKMAN TO PERFORM CUTTING AND PATCHING. PROCEED WITH CUTTING & PATCHING AT THE EARLIEST FEASIBLE TIME & COMPLETE WITHOUT DELAY. CUT EXISTING CONSTRUCTION TO PROVIDE FOR INSTALLATION OF OTHER COMPONENTS OR PERFORMANCE OF OTHER CONSTRUCTION ACTIVITIES AND THE SUBSEQUENT FITTING AND PATCHING REQUIRED TO RETURN SURFACES TO THEIR ORIGINAL CONDITION. PROVIDE SHORING & BRACING AS WELL AS PROTECTIVE BARRIERS BASED ON CONDITIONS.

- CUTTING: CUT EXISTING CONSTRUCTION USING METHODS LEAST LIKELY TO DAMAGE ELEMENTS TO BE RETAINED OR ADJOINING CONSTRUCTION. IN GENERAL, WHERE CUTTING IS REQUIRED USE HAND OR SMALL POWER TOOLS DESIGNED FOR SAWING OR GRINDING. CUT HOLES AND SLOTS NEARLY TO SIZE REQUIRED WITH MINIMUM DISTURBANCE OF ADJACENT SURFACES. TEMPORARILY COVER OPENINGS WHEN NOT IN USE. TO AVOID MARRING EXISTING FINISHED SURFACES, CUT OR DRILL FROM THE EXPOSED OR FINISHED SIDE INTO CONCEALED SURFACES. CUT CONCRETE, MASONRY, OR NATURAL STONE USING A CUTTING MACHINE SUCH AS A CARBORUNDUM SAW OR DIAMOND CORE DRILL. PROVIDE SHORING & BRACING AS WELL AS PROTECTIVE BARRIERS BASED ON CONDITIONS. SET SAWING AND/OR CORING SHALL REQUIRE THE CONTRACTOR TO PROTECT ALL REMAINING SURFACES AND ROOM AREAS FROM WATER DAMAGE AND/OR PENETRATION. THE COST FOR ANY WATER DAMAGE SHALL BE BORN BY THE CONTRACTOR.
- WHERE SPOT PATCHING IS REQUIRED IT SHALL MATCH THE EXISTING SURROUNDING SURFACES IN TEXTURE, FINISH AND COLOR. WHERE NEW CONSTRUCTION IS TIED INTO EXISTING, ALL PATCHING SHALL BE FEATHERED IN SO AS TO PROVIDE INVISIBLE JOINTS.
- GENERAL CONTRACTOR TO PATCH ALL SCAR JOINTS AS REQUIRED ON EXISTING CONSTRUCTION TO REMAIN WITHIN THE LIMITS OF THE CONTRACT DWGS. ALL SURFACES OR FINISHES TO REMAIN SHALL BE REPAIRED BY THE GENERAL CONTRACTOR AT HIS EXPENSE TO "LIKE NEW" CONDITION.
- BUILDING IS TO REMAIN OCCUPIED DURING CONSTRUCTION / DEMOLITION. GENERAL CONTRACTOR SHALL COORDINATE WITH THE OWNER TO MINIMIZE DISRUPTIONS TO NORMAL BUILDING ACTIVITIES, AND TO MAINTAIN SAFETY AND SECURITY REQUIREMENTS AT ALL TIMES.
- THESE DRAWINGS HAVE BEEN PREPARED FOR A PARTICULAR BUILDING IMPROVEMENT ONLY WITH DISTINCT UNDERSTANDING THAT THEY ARE INSTRUMENTS OF SERVICE AND ARE THE PROPERTY OF THE ARCHITECT. IF THESE DRAWINGS OR ANY PART THEREOF ARE USED IN ANY MANNER WITHOUT WRITTEN CONSENT OF THE ARCHITECT, THE USER THEREOF BECOMES INDEBTED TO THE ARCHITECT FOR FULL REASONABLE COMPENSATION.
- ANY AND ALL REQUIRED FIRE EXTINGUISHERS (SEE PLANS) AND ALARMS SHALL BE LOCATED & CLASSIFIED BY CODE. LOCATIONS SHOWN ON PLANS SHALL BE COORDINATED WITH AND APPROVED BY THE FIRE OFFICIAL.
- THE GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING WITH THE OWNER FOR REMOVAL OF ALL EXISTING TELEPHONE CABLES, CONNECTIONS, JACKS AND PANELS PRIOR TO THE START OF THE WORK.
- SOME EXISTING DOORS, LIGHT FIXTURES, ETC., REMOVED BUT NOT TO BE RE-USED AT THIS TIME SHALL BE TURNED OVER TO THE OWNER FOR STORAGE. COORDINATE LOCATION WITH OWNER.
- ANY ACTIVE PIPES, CONDUITS, DUCTS, ETC., TO BE RELOCATED, AND WHICH ARE ESSENTIAL TO THE PROPER OPERATIONS OF THE PREMISES SHALL BE PROMPTLY RELOCATED AND MAINTAINED AT ALL TIMES. ALL MECHANICAL AND ELECTRICAL SHUTDOWNS & CONNECTIONS MUST BE MADE AT A TIME CONVENIENT TO THE OWNER BY THE CONTRACTOR WHETHER THESE SHUTDOWNS & CONNECTIONS ARE MADE AFTER NORMAL WORKING HOURS, SATURDAYS, SUNDAYS OR HOLIDAYS, OR ON NORMAL WORKING DAYS.
- ANY WALL SWITCHES OR ELECTRICAL OUTLETS IN WAY OF NEW WORK SHALL BE RELOCATED. LOCATION TO BE APPROVED BY ARCHITECT.
- GENERAL CONTRACTOR TO COORDINATE WITH OWNER USE OF CRANES OR HOISTS, IF REQUIRED FOR MECHANICAL EQUIPMENT TO MINIMIZE THE IMPACT ON THE REGULAR OPERATION OF THE BUILDING AND ITS GROUNDS. CONTRACTOR SHALL COORDINATE WITH CITY FOR ANY STREET CLOSINGS, CRANE PLACEMENTS, ETC., AND OBTAIN & PAY FOR ANY RELATED PERMITS. ALL COSTS FOR USE OF CRANES SHALL BE INCLUDED IN BASE BID.
- GENERAL CONTRACTOR SHALL COORDINATE INSTALLATION OF DOORS, HARDWARE AND FRAMES.
- GENERAL CONTRACTOR TO COORDINATE LOCATION OF POWER AND VIDEO OUTLETS AND PROVIDE BLOCKING AS REQUIRED FOR CAMERAS & BRACKET MOUNTED MONITORS.
- SOME WORK MUST BE DONE IN AREAS THAT ARE OUTSIDE THE CONTRACT LIMIT LINE SHOWN ON THE DRAWINGS. GENERAL CONTRACTOR SHALL COORDINATE WITH OWNER FOR ACCESS TO THESE AREAS WHEN WORKING IN AREAS OUTSIDE THE CONTRACT LIMIT LINE, AND SHALL TAKE EXTRA PRECAUTION TO PROTECT EXISTING FINISHES, FURNISHING AND/OR EQUIPMENT INCLUDING REMOVAL OF EXISTING LIGHT FIXTURES & CEILING TILES FOR LATER REPLACEMENT. ANY DAMAGED TILES, FINISHES, ETC., SHALL BE REPAIRED OR REPLACED BY GENERAL CONTRACTOR TO MATCH CONDITIONS EXISTING BEFORE WORK WAS DAMAGED.
- CONTRACTOR SHALL MAINTAIN SAFE EGRESS FROM BUILDING AT ALL TIMES. HE SHALL ERECT PROPER SCAFFOLDING TO PROTECT OCCUPANTS EXITING THE BUILDING.

ABBREVIATIONS :

AC, ACOUS	ACOUSTICAL	GL	GLASS	SQ	SQUARE
ACT	ACOUSTICAL TILE	G.B.	GYPSUM BOARD	STD	STANDARD
ADJ	ADJACENT	GYP BD		T.B.	TACKBOARD
ALUM, AL	ALUMINUM	H.C.	HANDICAPPED	TRTD	TREATED
AL/GL	ALUMINUM AND GLASS	HGT	HEIGHT	TYP	TYPICAL
A.F.F.	ABOVE FINISHED FLOOR	HM	HOLLOW METAL	THR	THRESHOLD
ANOD	ANODIZED	HWD	HOLLOW CORE WOOD	T.O.S.	TOP OF SLAB
ARCH	ARCHITECT	HORIZ	HORIZONTAL	T.O.W.	TOP OF WALL
BLDG	BUILDING	INS, INSULN	INSULATION	U.N.O.	UNLESS NOTED OTHERWISE
BLK RES	BULLET RESISTANT	JAN	JANITOR	VCT	VINYL COMPOSITION TILE
BLK(G)	BLOCK(ING), BLOCK (CMU)	KITCHEN		V.I.F.	VERIFY IN FIELD
BRK	BRICK	LMST	LIMESTONE	VERT	VERTICAL
BSMT	BASEMENT	LGT	LIGHTING	WP	WORKING POINT
B.U.R.	BUILT-UP ROOFING	MACH	MACHINE	W.R.	WATER RESISTANT
BD	BOARD	MAR	MARBLE	WTRPRFG	WATERPROOFING
BIT	BITUMINOUS	MECH	MECHANICAL	WD	WOOD
C.B.U.	CEMENTITIOUS BACKER UNITS	MEMB	MEMBRANE	WOW	WINDOW
CLG	CEILING	MFG	MANUFACTURED	W/	WITH
C/L	CENTERLINE	MNFR	MANUFACTURER	W/O	WITHOUT
CL, CLOS	CLOSET	MET., MTL	METAL	+/-	PLUS/MINUS (TO BE VERIFIED IN FIELD)
CMU	CONCRETE MASONRY UNIT	MTR.	MOISTURE RESISTANT		
CONC	CONCRETE	MAX	MAXIMUM		
CONST	CONSTRUCTION	MIN	MINIMUM		
CONT	CONTINUOUS	MOD. BIT.	MODIFIED BITUMEN		
C.T.	CERAMIC TILE	MATL	MATERIAL		
CORR	CORRIDOR	MTD	MOUNTED		
C.J.	CONTROL JOINT	N.I.C.	NOT IN CONTRACT		
C.O.	CLEAR OPENING	NOM	NOMINAL		
COLUMN	COLUMN	OBS	OBSERVATION		
DBL	DOUBLE	O.C.	ON CENTER		
DR	DISPLAY RAIL	OH	OVERHEAD		
DTL	DETAIL	OPP	OPPOSITE		
DUP	DUPLICATION	PC	PARTITION		
DWG	DRAWING	PC	PORTLAND CEMENT		
DIA	DIAMETER	PL	PLASTIC LAMINATE		
DIFF	DIFFUSER	PTW	PRESSURE TREATED WOOD		
DIM	DIMENSION	P.T.	PRESSURE TREATED		
EA	EACH	PTD	PAINTED		
E.J.	EXPANSION JOINT	PLWD	PLYWOOD		
ELEC	ELECTRICAL	PVMT	PAVEMENT		
EL, ELEV	ELEVATION	REF.	REFRIGERATOR		
EQ	EQUAL	REINFG	REINFORCING		
EX, EXISTG	EXISTING	REQD	REQUIRED		
E.O.	EDGE OF	RMV(D)	REMOVE(D)		
EXP	EXPANSION	RGD	RIGID		
FBRLGS	FIBREGLASS	RAD	RADIUS		
FRTW	FIRE RETARDANT TREATED WOOD	REC	RECESSED		
FIREP'G	FIREPROOFING	REV	REVISED		
FSTNRS	FASTENERS	R.O.	ROUGH OPENING		
FNDN, FDN	FOUNDATION	R.O.W.	RIGHT OF WAY		
F.E.	FIRE EXTINGUISHER	SACT	SUSPENDED ACOUSTICAL CEILING TILE		
F.E.C.	FIRE EXTINGUISHER CABINET	S.C.W.	SOLID CORE WOOD		
FIN	FINISH	S.S.	STAINLESS STEEL		
FL	FLOOR	STRUCL	STRUCTURAL		
F.O.	FACE OF	SUSP	SUSPENDED		
FTG	FOOTING	SEQ.	SEQUESTERED		
F.R.	FIRE RATED	ST	STUCCO		
GA	GAUGE	STL	STEEL		
GALV	GALVANIZED	STOR, STG	STORAGE		
G.C.	GENERAL CONTRACTOR	STF	STAIN FINISH		
		SIM	SIMILAR		
		SPEC	SPECIFICATION		

LEGEND:



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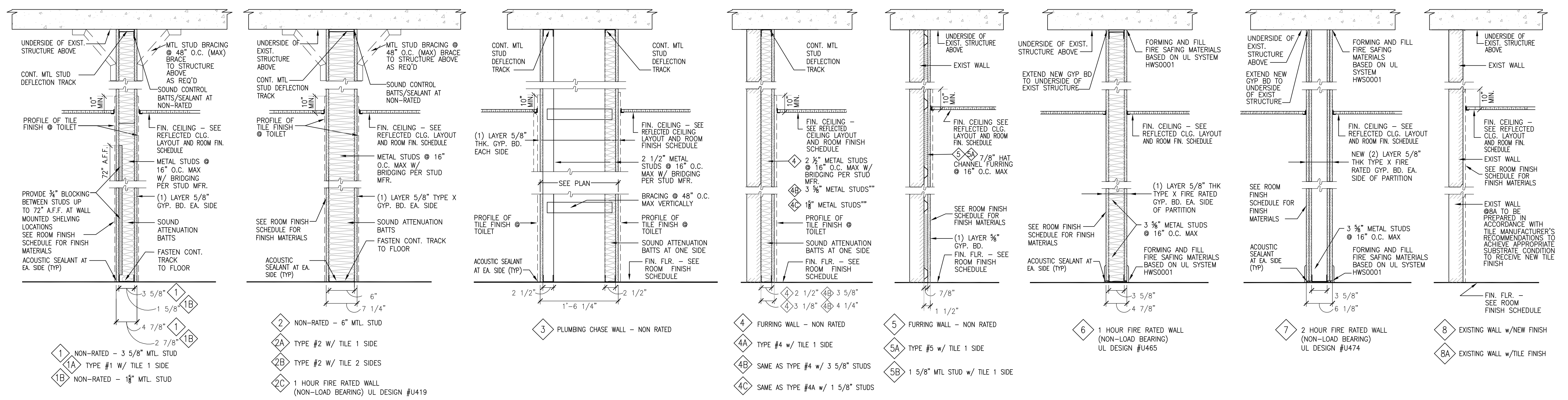
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No.	Revision Description	Date

Scale: As Noted
 Drawn by:
 Checked by:

113316.01
 GENERAL NOTES
 ABBREVIATIONS
 LEGENDS AND
 PARTITION TYPES
A001

PARTITION TYPES



PLUMBING CODE DATA
TOILET FIXTURE COUNT FOR EXISTING AREA RECONSTRUCTION:

FOR USE GROUP A-3: PER UCC 15.23-6.14(i). OCCUPANCY 101 AND OVER, REFER TO 2018 PLUMBING CODE TABLE 7.21.1

FOR USE GROUP B: PER UCC 15.23-6.17(k). EMPLOYEE OCCUPANCY 16 AND OVER, REFER TO 2018 PLUMBING CODE TABLE 7.21.1

FOR USE GROUP S-1: PER UCC 15.23-6.28(k). OCCUPANCY 16 AND OVER, REFER TO 2018 PLUMBING CODE TABLE 7.21.1

FLOOR AREAS AND MAXIMUM DESIGN OCCUPANT LOADS

USE GROUP CLASSIFICATION	OCCUPANCY DESIGNATION	FLOOR AREA ALLOWANCES PER OCCUPANT (S.F. / OCC.)	FLOOR AREA PER OCCUPANCY DESIGNATION (S.F.)	OCCUPANCY DESIGNATION (OCCUPANTS)	USE GROUP CLASSIFICATION (OCCUPANTS)	
(B) BUSINESS	101 MEN'S ROOM	ACTUAL NUMBER OF FIXTURES		2	134 OCC (EMPLOYEES)	
	102 WOMEN'S ROOM	ACTUAL NUMBER OF FIXTURES		3	134 X .67 = 89.78 S.V. 90	
	201 CLOSET	300 GROSS	15	0 A	90 X .5 = 45 WOMEN	
	202 MAP VIEWING	150 GROSS	483	2		
	203 OFFICE	150 GROSS	513	8 B		
	204 MECH	300 GROSS	160	2 C		
	301 PASSPORT LOBBY	150 GROSS	183	2		
	302 PASSPORT WAITING	7 NET	180	14 D		
	303 STORAGE	300 GROSS	95	1 E		
	304 COPIER	150 GROSS	102	1		
	305 PHOTO	150 GROSS	40	1		
	306 PASSPORT STORAGE	300 GROSS	56	1 E		
	307 PASSPORT	150 GROSS	400	5		
	308 COMPUTER ROOM	150 GROSS	285	3		
	309 CORRIDOR	150 GROSS	371	3		
	401 CORRIDOR	150 GROSS	729	5		
	402 ELEVATOR LOBBY	150 GROSS	684	5		
	403 FILE ROOM	300 GROSS	160	1 E		
	404 OFFICE	150 GROSS	475	8 B		
	405 OFFICE	150 GROSS	113	1		
	406 ELECTIONS	150 GROSS	258	4 B		
	407 ELECTION LOBBY	7 NET	148	8 D		
	408 STORAGE	300 GROSS	36	1		
	409 EXISTING STAIRS	NOT APPLICABLE				
	501 CLERK LOBBY	150 GROSS	477	4		
	502 PRIVATE OFFICE	150 GROSS	117	1		
	503 PRIVATE OFFICE	150 GROSS	139	1		
	504 OFFICE	150 GROSS	1,151	8 B		
	505 OFFICE	150 GROSS	521	8 B		
	506 CLERK OFFICE	150 GROSS	343	3		
	507 TOILET	150 GROSS	44	1		
	601 LUNCH ROOM	15 NET	224	10 D		
	602 CONFERENCE ROOM	15 NET	269	10 D		
	603 CLOSET	300 GROSS	82	1 E		
	604 STORAGE	300 GROSS	95	1 E		
	605 RECORDS ENTRY	150 GROSS	671	5		

FOOTNOTES:
 A. SPACE IS TOO SMALL TO BE CONSIDERED FOR OCCUPANCY COUNT
 B. CONCENTRATED BUSINESS USE
 C. MECHANICAL SPACE IS AN ACCESSORY OCCUPANCY (IBC 508.2.3)
 D. LIMIT OCCUPANCY TO NUMBER SHOWN, ALSO LESS THAN 50 (IBC 303.1.1)
 E. STORAGE SPACE IS AN ACCESSORY OCCUPANCY (IBC 508.2.3)

MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES							
OCCUPANCY CLASSIFICATION (2018 PLUMBING CODE TABLE 7.21.1)	MALE	FEMALE		OTHER FIXTURES			
NUMBER PER GENDER PER IPC	WATER CLOSETS	URINALS	LAVATORIES	WATER CLOSETS	LAVATORIES	DRINKING FOUNTAIN	SERVICE SINK
(B) BUSINESS	45 MALES 45 FEMALES	1	1	1	2	1	1 PER 100 PEOPLE
TOTAL PROVIDED		1	1	2	3	3	1 PROVIDED ON FLOOR BEYOND THE CLERK AREA 1 PROVIDED BEYOND THE CLERK AREA

BUILDING AND CODE DATA

PROJECT NAME: OFFICE OF THE UNION COUNTY CLERK
LOCATION: 2 BROAD STREET, ELIZABETH, NJ 07201
ARCHITECTS: THE MUSIAL GROUP ARCHITECTURE, 191 MILL LANE, MOUNTAINSIDE, NJ 07092, 908.232.2860

BUILDING OVERVIEW: RECONSTRUCTION TO AN EXISTING BUILDING. NO ADDITIONAL FLOOR AREA OR HEIGHT TO BUILDING IS PROPOSED.

CONSTRUCTION TYPE: 2B (ASSUMED)

PROPOSED USE GROUPS (CHAPTER 3):
 B (BUSINESS)
 S-1 (ACCESSORY STORAGE/ACCESSORY MECH. PER IBC 508.2.3)
 - ASSEMBLY ACCESSORY SPACES PER IBC 303.1.2

AUTOMATIC FIRE SUPPRESSION: BUILDING IS FULLY SPRINKLERED

APPLICABLE CODES	
CODE TYPE	APPLICABLE CODE
Rehab	Rehabilitation subcode (NJAC 5:23-6); NJUCC, Subchapter 6 Updated as necessary (current as of 02/16/21) 2021 I-code update
Building	2018 New Jersey Building Code (NJBC, NJAC 5:23-3.14, 2018 International Building Code, New Jersey Edition)
Energy	2018 International Energy Conservation Code (IECC/2018), as the energy subcode for New Jersey (NJAC 5:23-3.18), ASHRAE 90.1-2016
Fire	2018 New Jersey Fire Code (NJFC, NJAC 5:70-3)
Accessibility	2018 New Jersey Building Code, Chapter 11, NJAC 5:23-7, ICC/ANSI A117.1-2009
Mechanical	2018 International Mechanical Code (NJAC 5:23-3.20)
Plumbing	2018 National Standard Plumbing Code, NJ edition (NSPC with NJ edits from 3.15), NJAC 5:23-3.15
Electrical	2017 National Electrical Code (NFPA 70, NJAC 5:23-3.16)

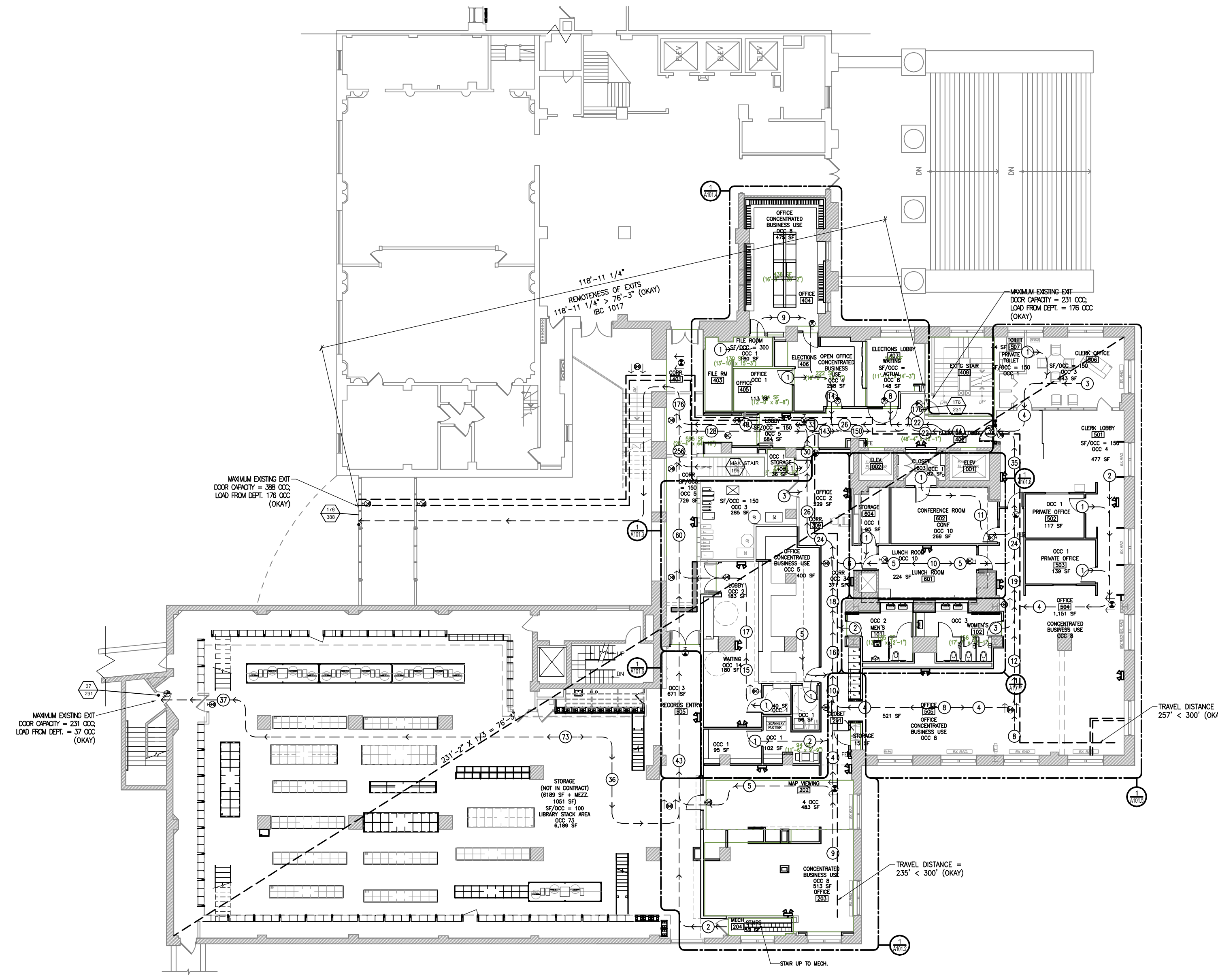
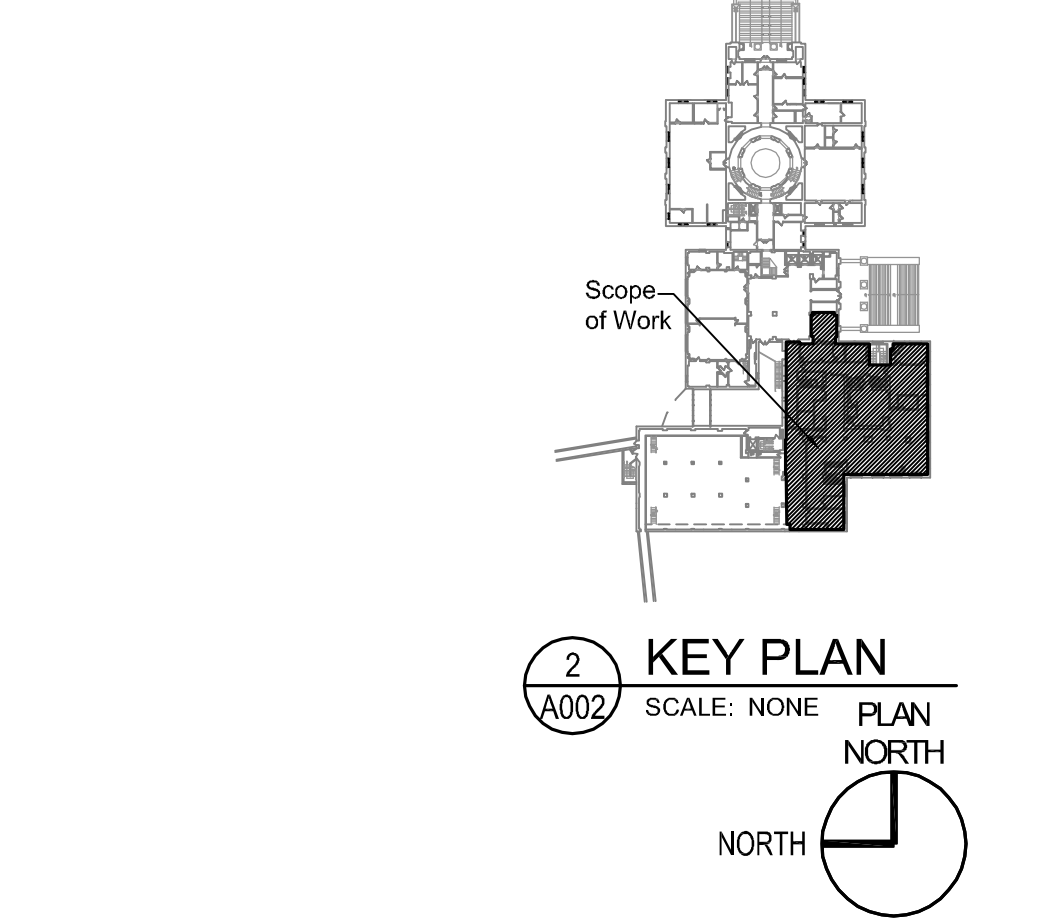
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS) Table 601	
BUILDING ELEMENT	IBC type 2B Construction
Primary Structural Frame	0
Bearing Walls Exterior	0
Bearing Walls Interior	0
Nonbearing Walls and Partitions Exterior (Where Fire Separation Distance >= 30'-0" at the Nearest Location to the Property Line per Table 602)	0
Nonbearing Walls and Partitions Interior	0
Floor Construction and Secondary Members	0
Roof Construction and Secondary Members	0

MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT (IBC TABLE 1004.5)

ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 GROSS S.F.
ACCESSORY ASSEMBLY WITHOUT FIXED SEATS	7 NET S.F.
ACCESSORY ASSEMBLY UNCONCENTRATED (TABLES AND CHAIRS)	15 NET S.F.
BUSINESS AREAS	150 GROSS S.F.
CONCENTRATED BUSINESS USE AREA	MIN. 50 S.F. (IBC 1004.8)
LIBRARY STACK AREA (NOT IN SCOPE)	100 GROSS S.F.

SYMBOL LEGEND

000 INDICATES OCCUPANT LOAD SERVED BY MEANS OF EGRESS COMPONENT
 000 INDICATES CAPACITY OF MEANS OF EGRESS COMPONENT
 [Symbol] INDICATES ILLUMINATED EXIT SIGNS. SHADED AREA READS "EXIT"
 [Symbol] WALL MOUNTED EMERGENCY LIGHTING WITH BATTERY PACK
 [Symbol] PORTABLE FIRE EXTINGUISHER IN SEMI-RECESSED CABINET



FIRST FLOOR EXITING PLAN
 SCALE: 1/16" = 1'-0"

OTHER EGRESS REQUIREMENTS

- Other egress requirements:**
 - All exit doors serving more than 50 occupants must swing in the direction of egress travel (NJBC 1010.1.2.1);
 - Doors, when fully opened, shall not reduce the required width by more than 7 inches. Doors in any position shall not reduce the required width by more than one-half. (NJBC 1005.7.1)
 - Maximum Exit Access Travel Distance (NJBC Table 1017.2): Group S-1, 250 feet; Group B, 300 feet;
 - Maximum Dead End Corridor Length (NJBC 1020.4; Exception 2): Groups B and S-1, 50 feet;
- Remoteness of Exit Doors:** Each floor must meet the exit remoteness requirement of one third of the diagonal measurement of the space in a fully sprinklered building. (2018 NJBC Section 1007.1.1; Exception 2)

EGRESS CAPACITY: PER UCC OF NEW JERSEY 5:23-6.11 TABLE 1: BASED ON MOST RESTRICTIVE B USE WITH AUTOMATIC SPRINKLER SYSTEM:

- EXISTING STAIR FROM SURROGATE AREA OF FLOOR ABOVE = 90 OCC / 22" UNIT WIDTH;**
 EXISTING 48" STAIR WIDTH / 22" = 2.18 UNIT WIDTHS
 2.18 X 90 = 196 OCC CAPACITY
- EXISTING STAIRS TO ATRIUM = 90 OCC / 22" UNIT WIDTH;**
 EXISTING 56" STAIR WIDTH / 22" = 2.54 UNIT WIDTHS
 2.54 X 90 = 229 OCC CAPACITY
- EXISTING STAIRS 409 = 90 OCC / 22" UNIT WIDTH;**
 44" STAIR WIDTH / 22" = 2.00 UNIT WIDTHS
 2.00 X 90 = 180 OCC CAPACITY
- EXISTING DOORS:**
 150 OCC / 22" UNIT WIDTH;
- SINGLE 36" D.O. (34" CLR. WIDTH / 22") = 1.54 UNIT WIDTHS
 1.54 X 150 = 231 OCC CAPACITY PER DOOR
- DOUBLE 36" D.O. DOORS = 231 X 2 = 462 OCC CAPACITY
- EXISTING EXTERIOR DOORS AT ATRIUM 57" D.O. (57" CLR. WIDTH / 22") = 2.59 UNIT WIDTHS
 2.59 X 150 = 388 OCC CAPACITY PER DOOR

FIRE PROTECTION

- Maintain Code Compliant Fire Protection** Throughout All Phases of Construction.
- Sprinklers:** The building is fully sprinklered. GC to maintain full coverage in all spaces and phases of the work.
- Standpipes:** GC to protect existing standpipes.
- Fire Alarms:** GC to protect existing fire alarms to remain in operation and comply with code requirements when relocating the existing fire alarm fire alarm system.
- Portable Fire Extinguishers:** Portable fire extinguishers are required (NJBC 906.1 for Ordinary Hazard Occupancy). One 2-A rated extinguisher with a maximum floor area per unit of "A" to be 3000 sf. Maximum floor area extinguisher to be 11,250 sf. Maximum travel distance to extinguisher to be 75'-0". Indicated with the symbol (Refer to symbols legend). Semi-recessed except on concrete walls (maintain ADA clearances). Maintain fire rating of rated walls with fire rated cabinets.
- Exit Stairways:** Stairways serving more than 4 floors must be enclosed in a 2 hour rated fire barrier. Any stairways serving less than 4 stories must be enclosed in a 1 hour rated fire barrier. (2108 NJBC Section 1023.2). GC to maintain fire rating of existing stairs to remain.

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SEPTEMBER 2021

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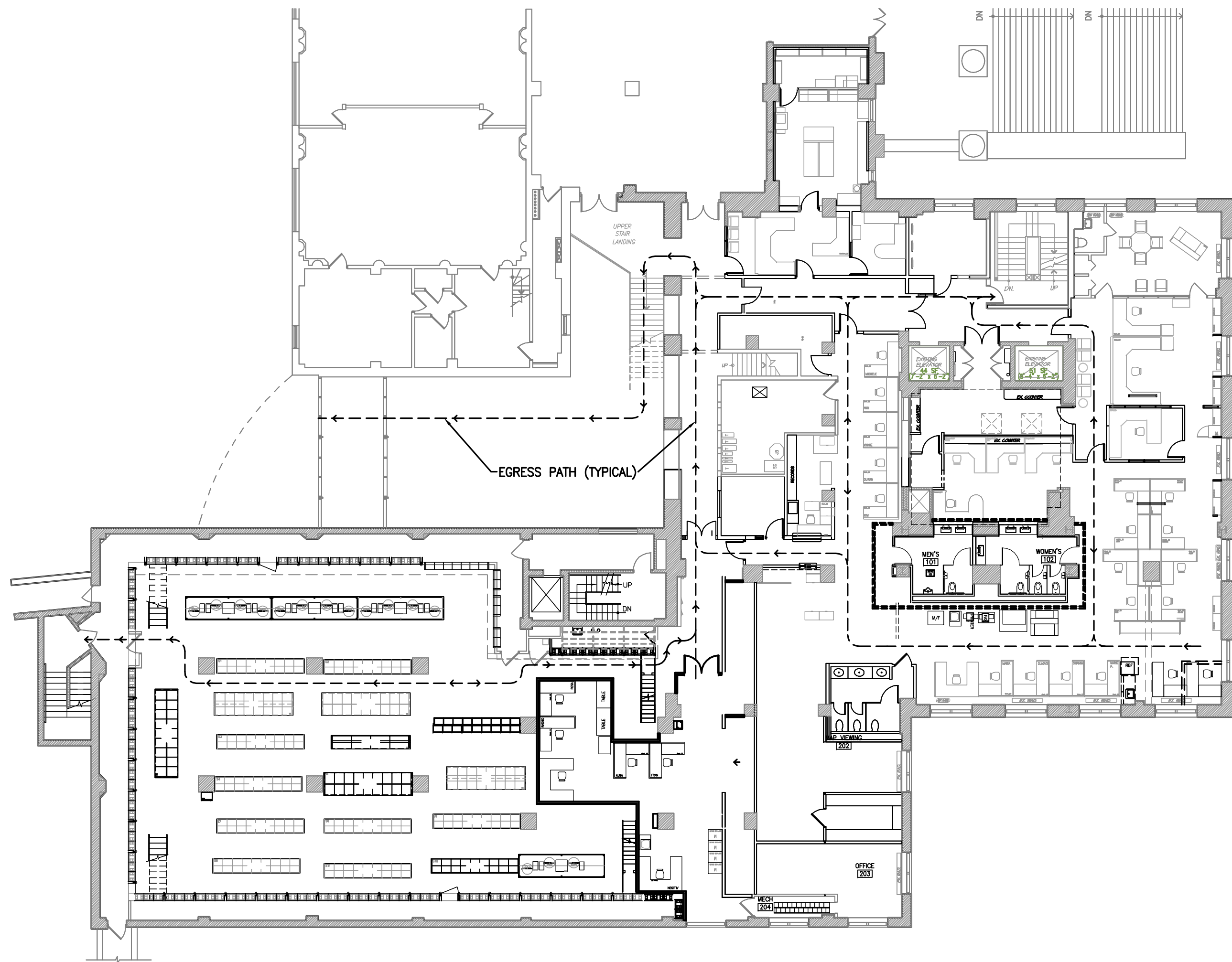
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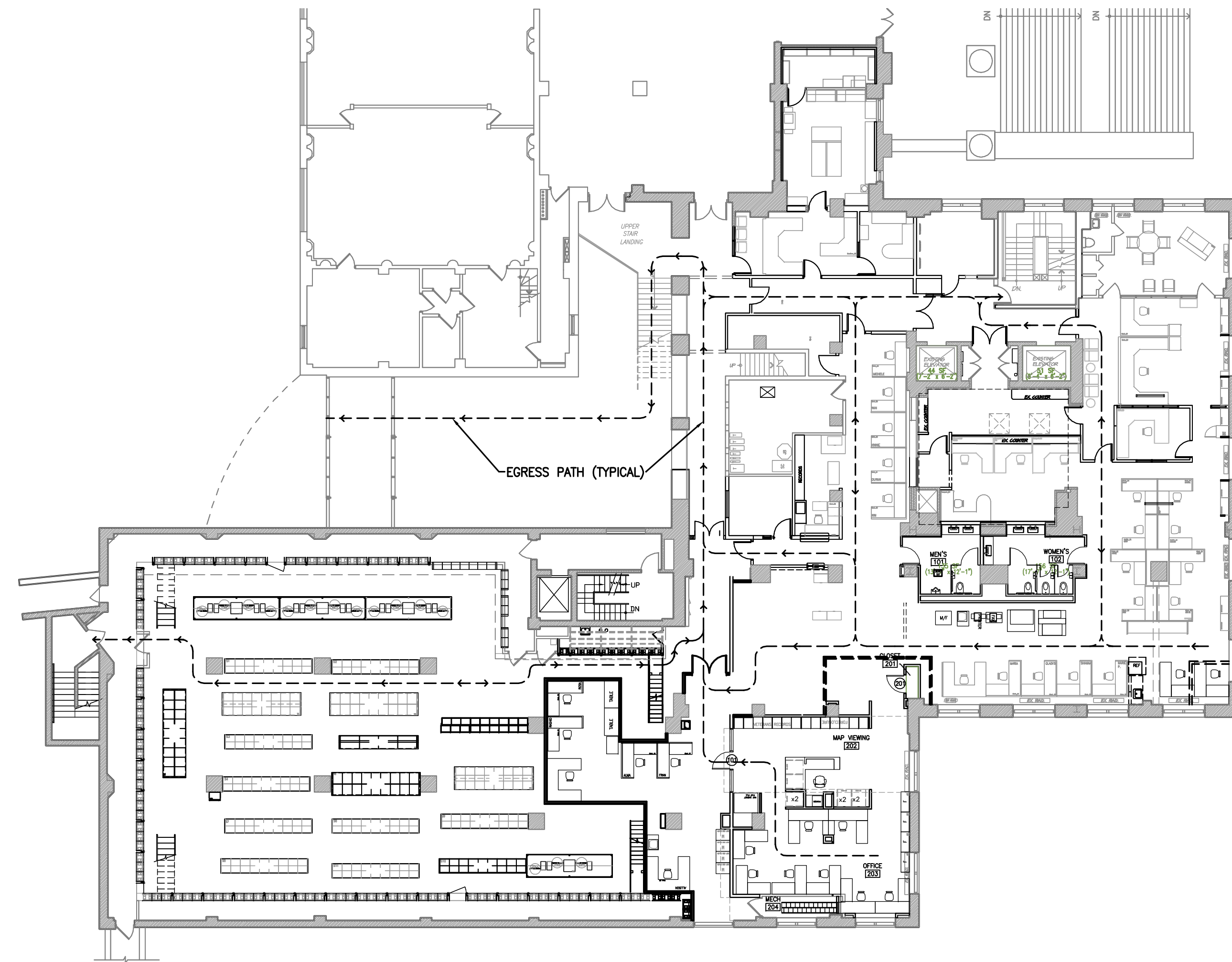
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ORIGINAL IF IT IS RED IT IS AN ORIGINAL

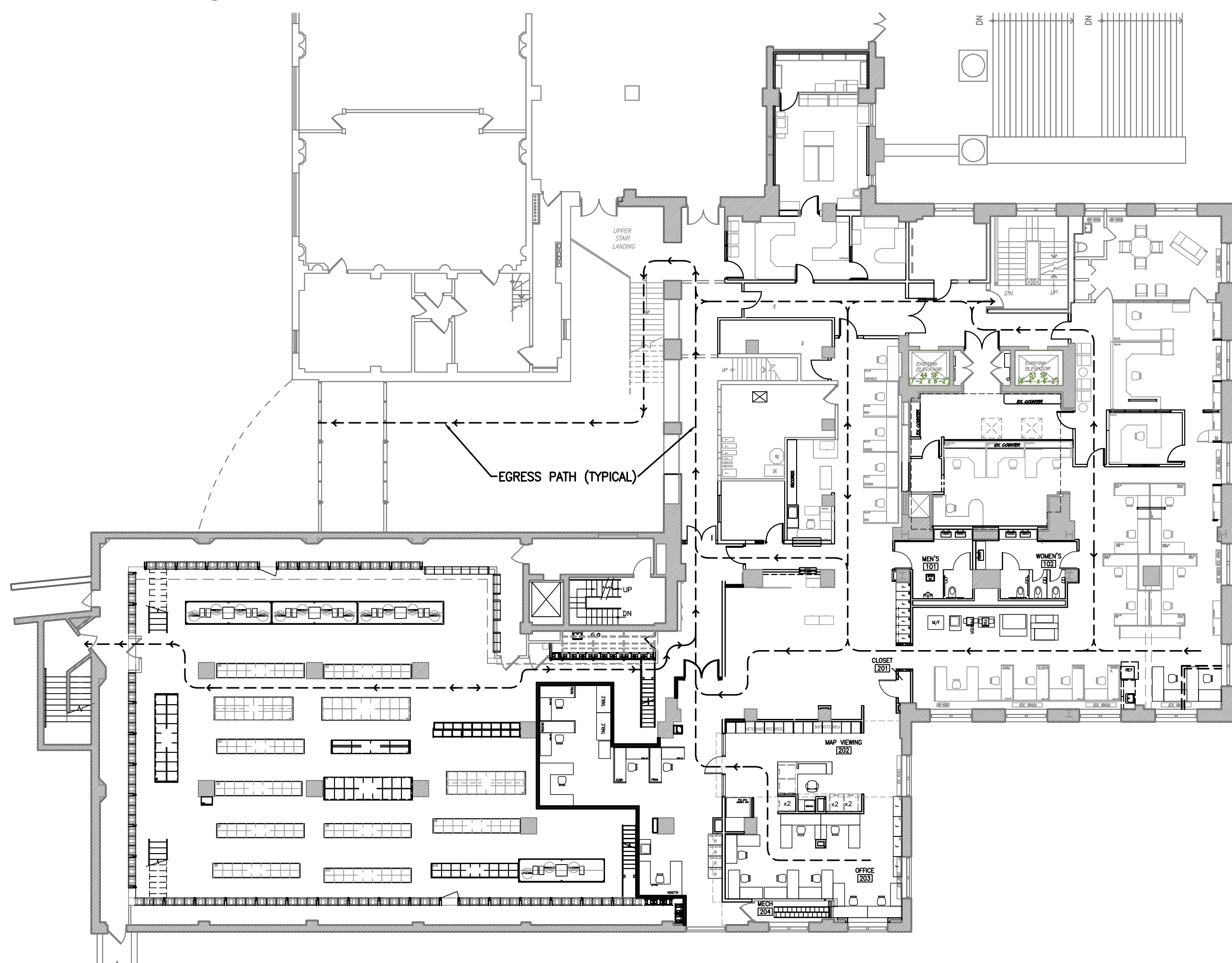
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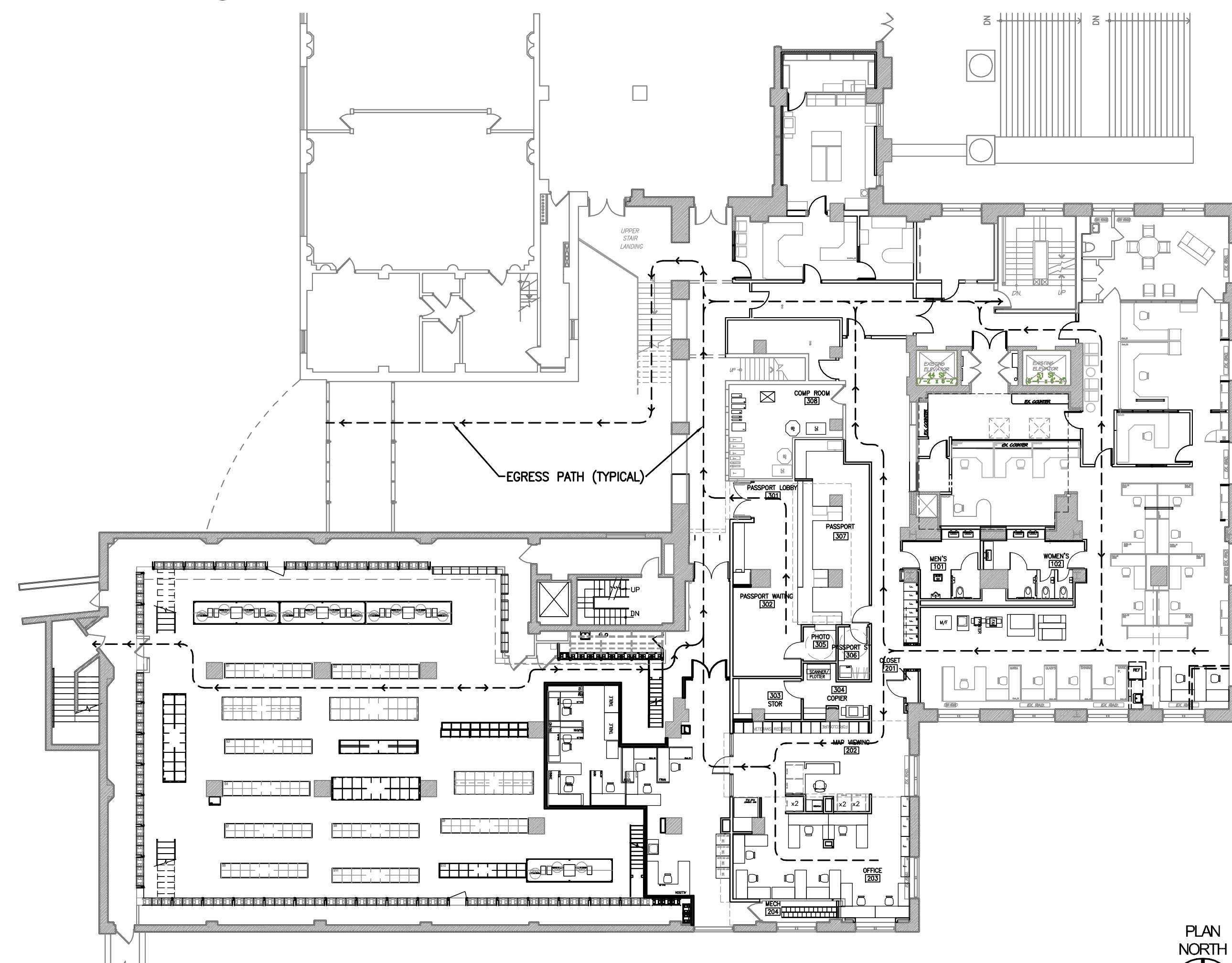
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A002A PHASE 1
FIRST FLOOR EXITING PLAN
SCALE: 1/16" = 1'-0"



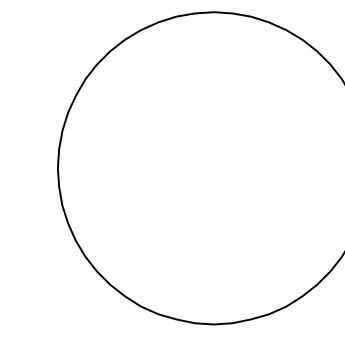
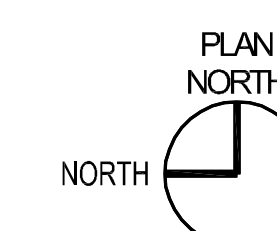
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A002A PHASE 2
FIRST FLOOR EXITING PLAN
SCALE: 1/16" = 1'-0"



3
A002A PHASE 2A
FIRST FLOOR EXITING PLAN
SCALE: 1/16" = 1'-0"



4
A002A PHASE 3
FIRST FLOOR EXITING PLAN
SCALE: 1/16" = 1'-0"



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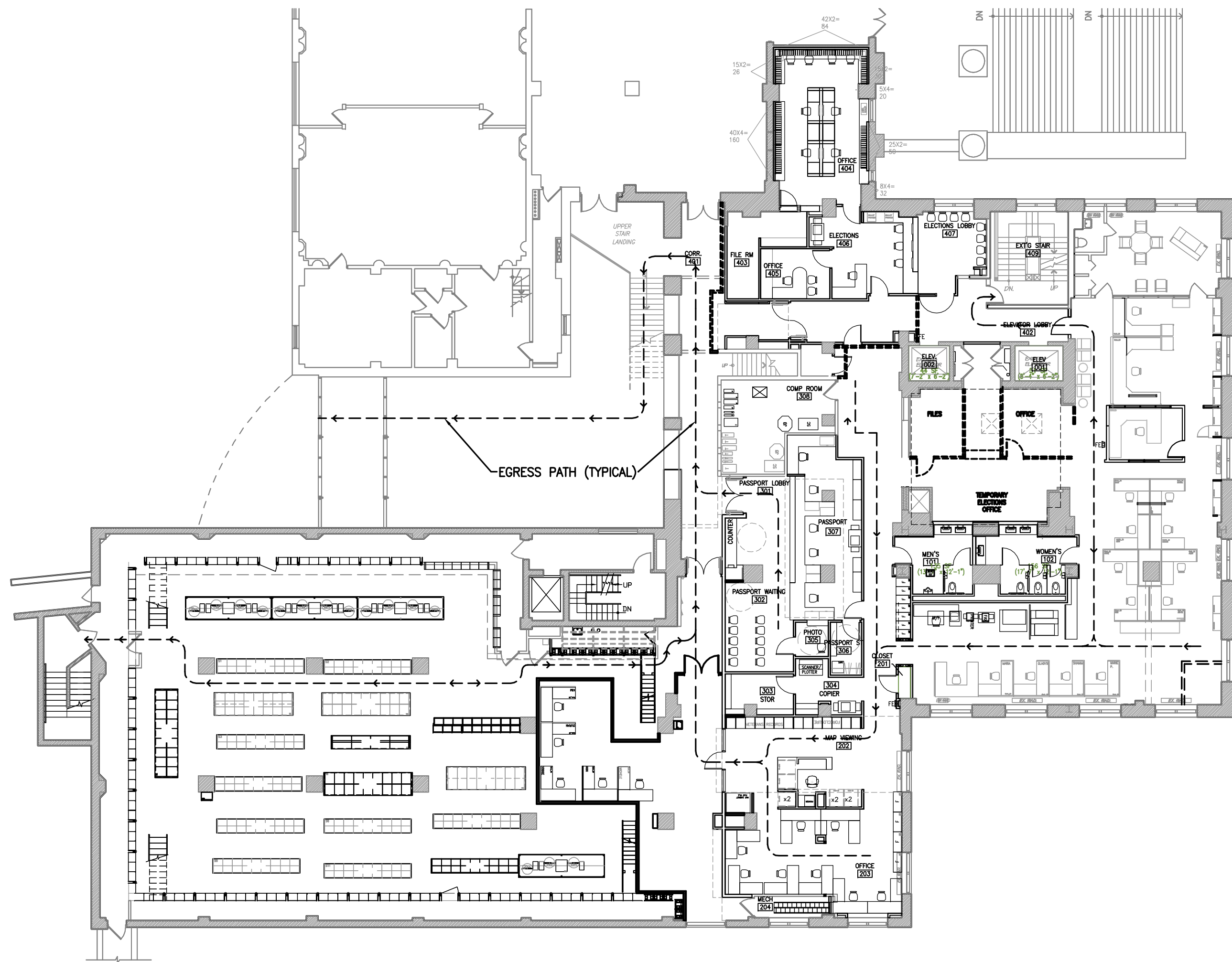
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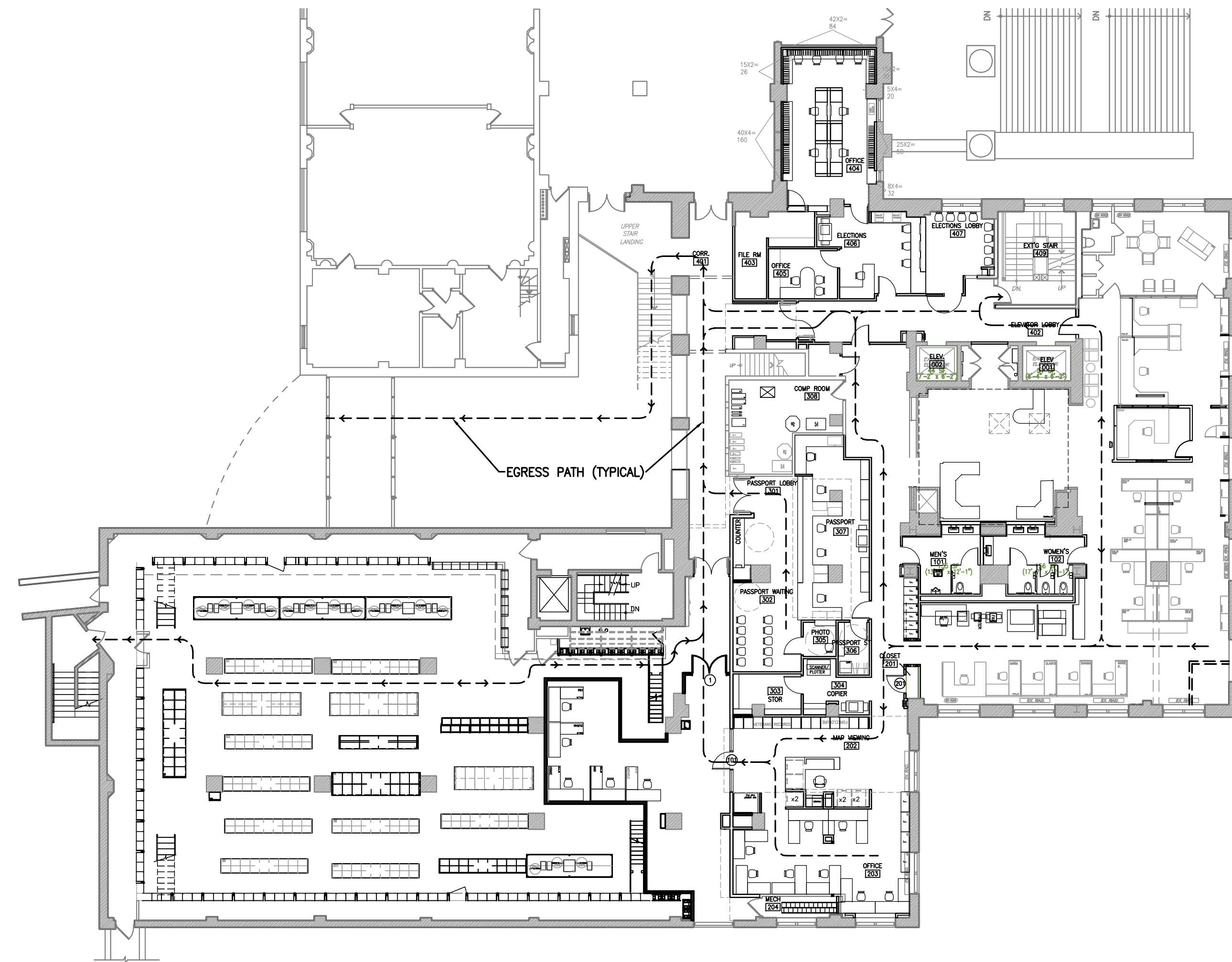
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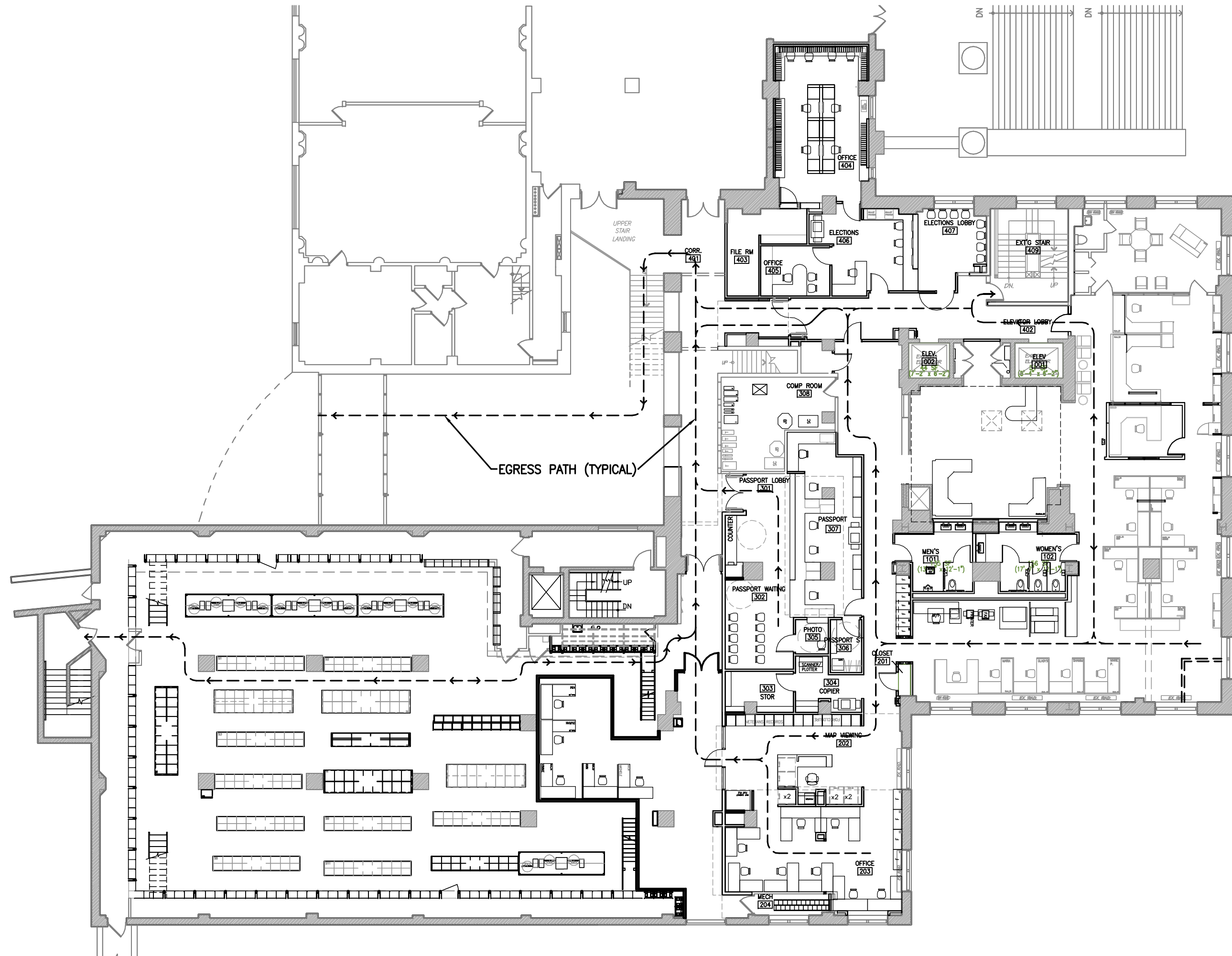
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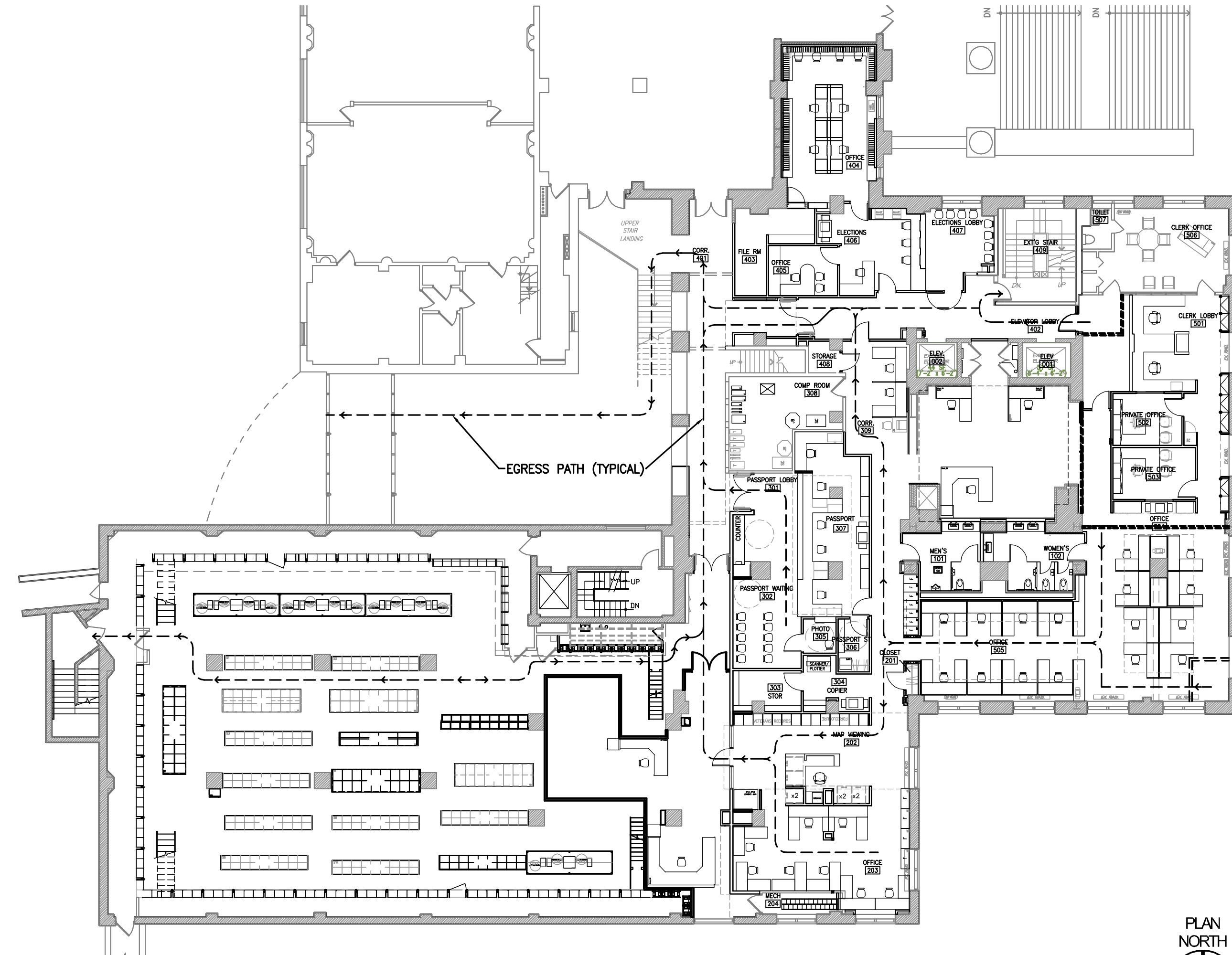
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A002B PHASE 4
FIRST FLOOR EXITING PLAN
SCALE: 1/16" = 1'-0"



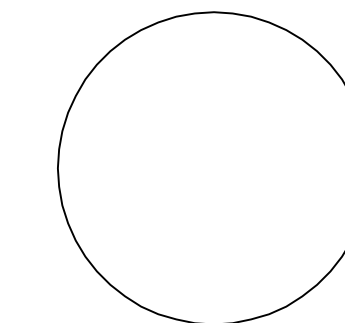
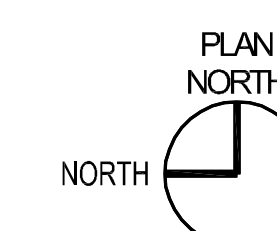
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A002B PHASE 4A
FIRST FLOOR EXITING PLAN
SCALE: 1/16" = 1'-0"



3
A002A PHASE 5
FIRST FLOOR EXITING PLAN
SCALE: 1/16" = 1'-0"



4
A002A PHASE 5A
FIRST FLOOR EXITING PLAN
SCALE: 1/16" = 1'-0"



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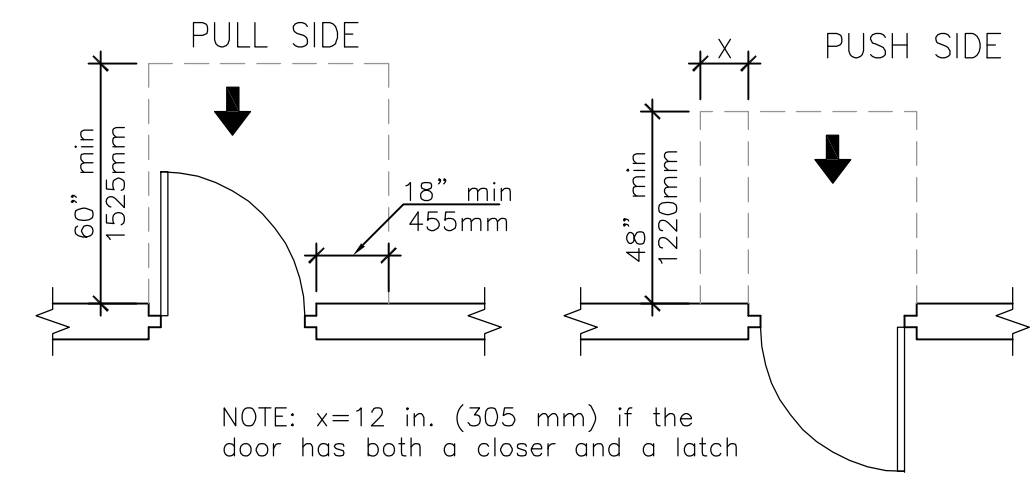
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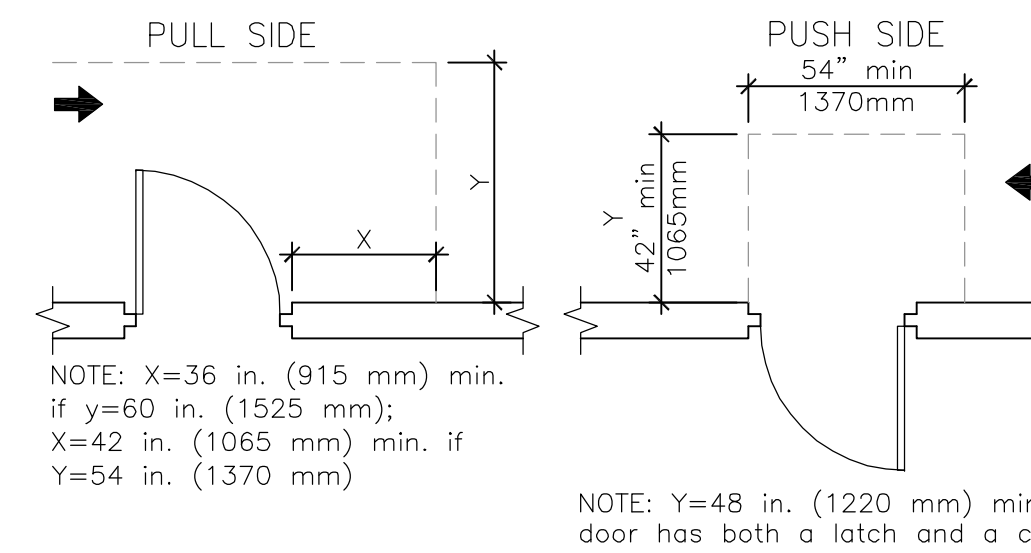
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**BUILDING
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A002B

ACCESSIBILITY CLEARANCES

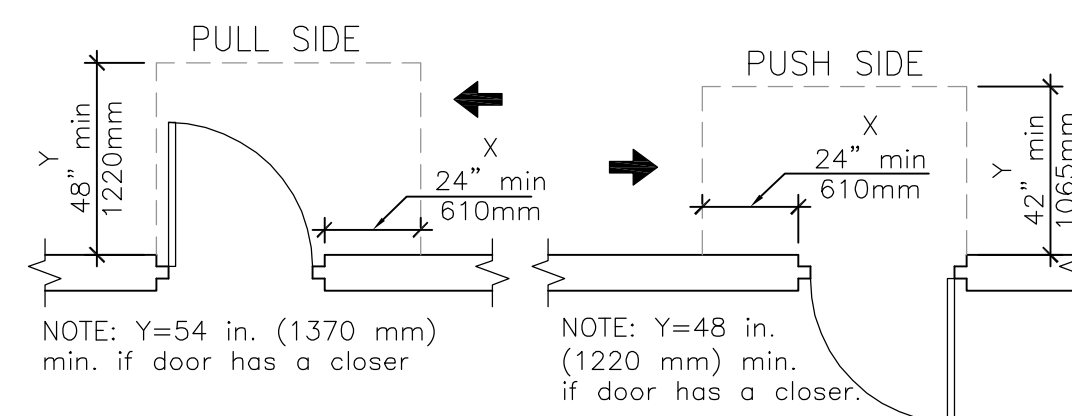


FRONT APPROACHES - SWINGING DOORS

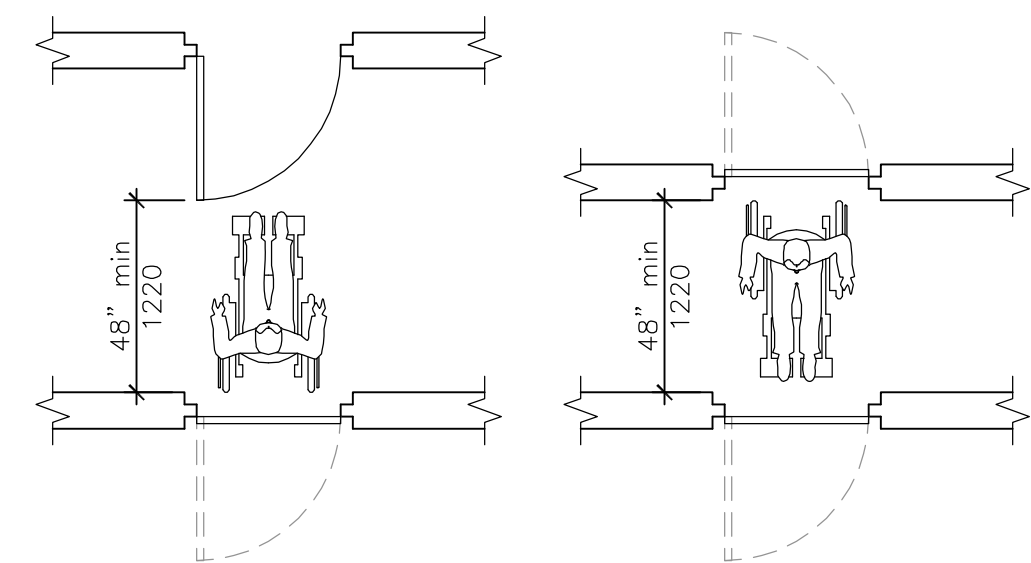


HINGE SIDE APPROACHES - SWINGING DOORS

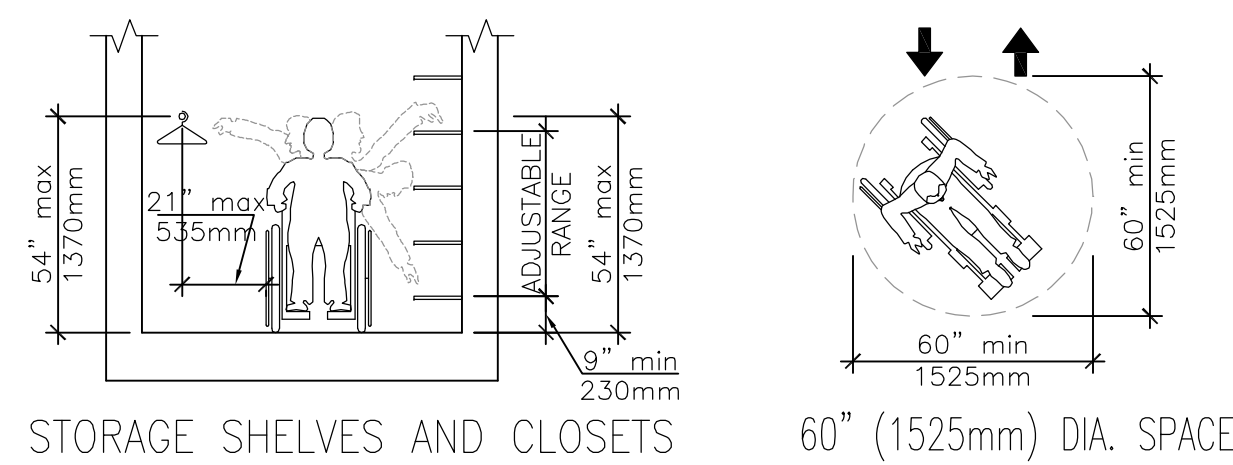
NOTE: All doors in alcoves shall comply with clearances for front approaches.



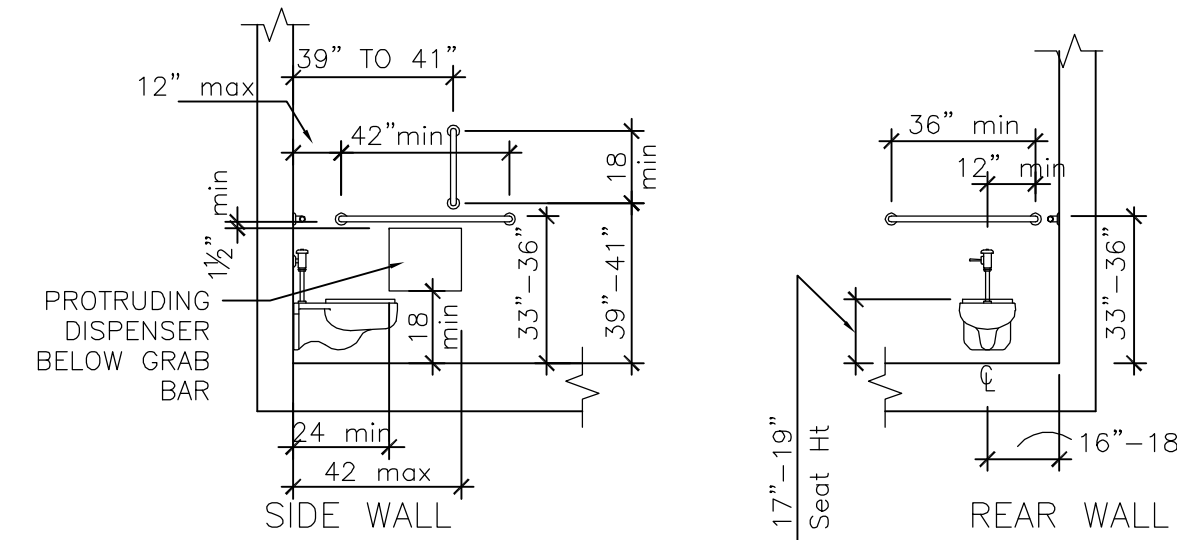
LATCH SIDE APPROACHES - SWINGING DOORS



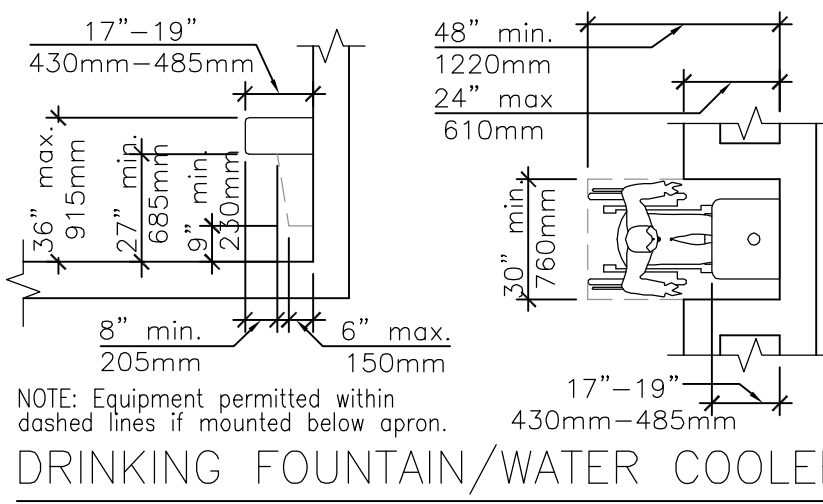
TWO HINGED DOORS IN SERIES



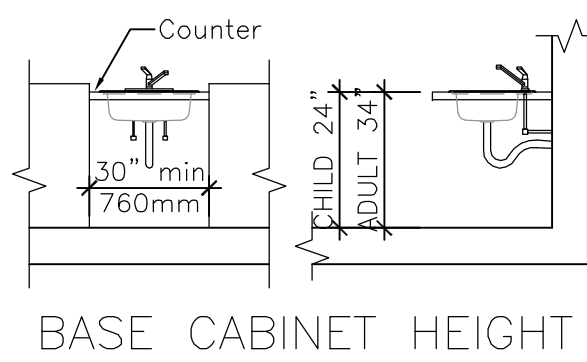
STORAGE SHELVES AND CLOSETS



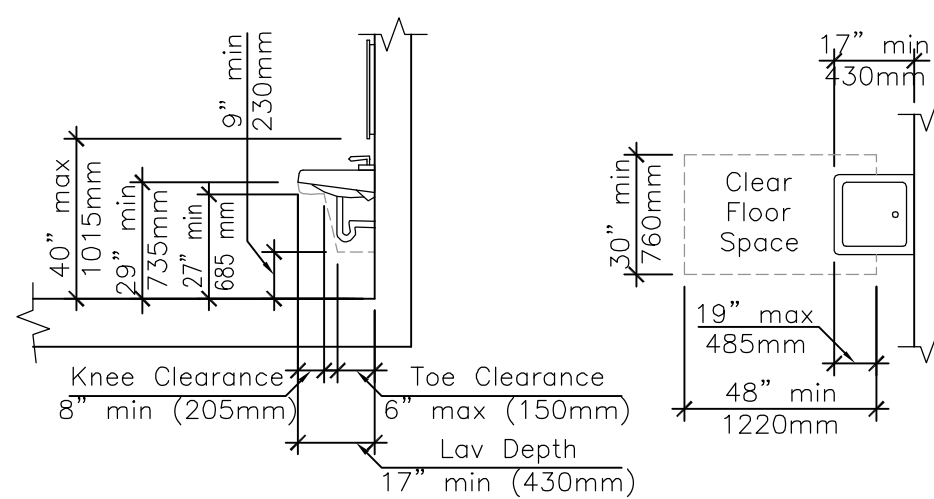
TOILET
USE MANUFACTURE STANDARD FOR FLOOR MOUNTED WATER CLOSETS



DRINKING FOUNTAIN/WATER COOLER

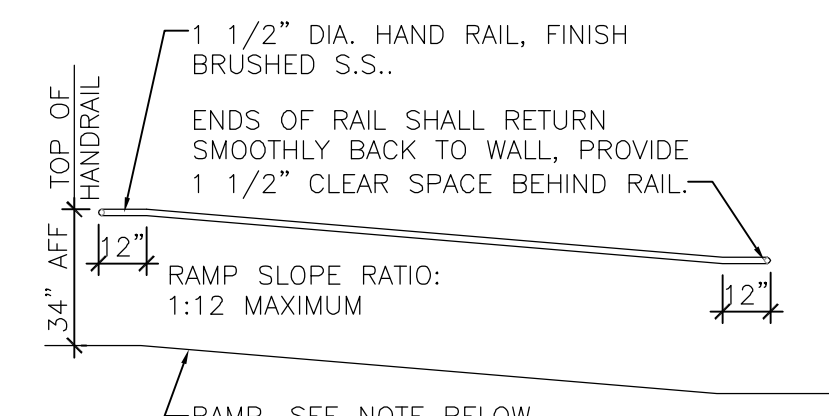


BASE CABINET HEIGHT



ADULT LAVATORY CLEARANCES

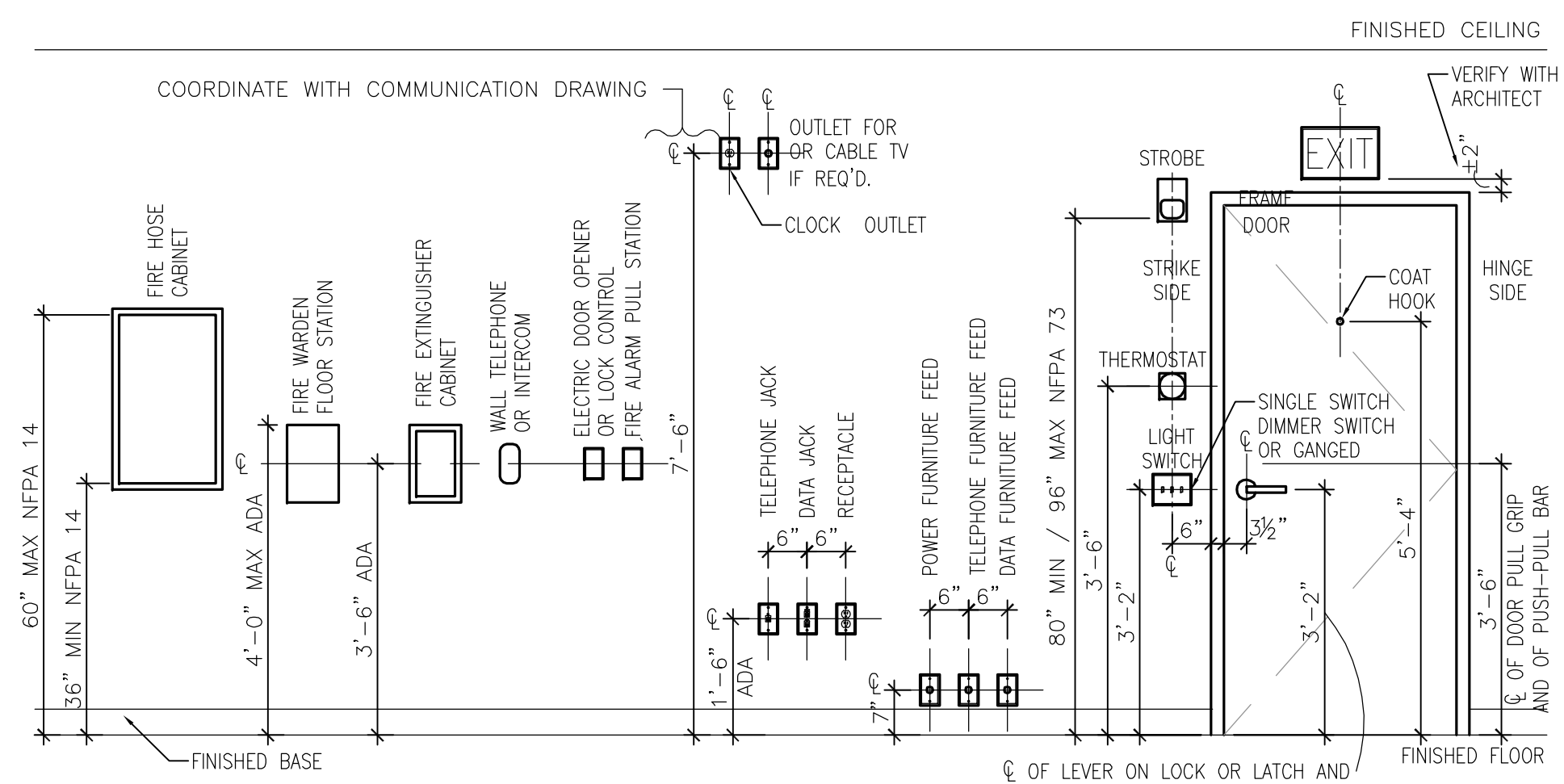
NOTE: Dashed line indicates dimensional clearance of optional underlavatory enclosure.



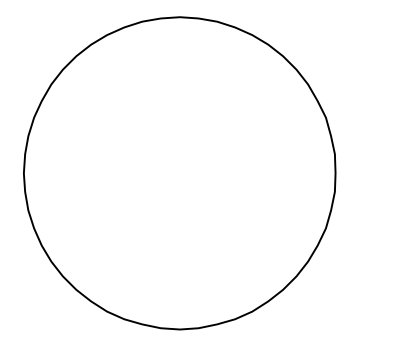
1. RAMP SURFACES SHALL BE FINISHED WITH NON-SKID SURFACE AND SHALL BE A MINIMUM WIDTH OF 36". ALL RAMP AND RAILS SHALL COMPLY WITH ALL RULES AND REGULATIONS OF THE LOCAL, STATE AND ALL OTHER APPLICABLE CODE.

RAMP

NOTE: REFER TO DRAWING A401 & A402 TO MOUNTING HEIGHTS OF FIXTURES & CABINETS



TYPICAL DEVICE MOUNTING LOCATIONS



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CT. 09009 PA. B 6580
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N.J. 21A10208500

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UNION COUNTY CLERK OFFICE RECONSTRUCTION
2 Broad Street
Elizabeth, NJ 07201

SEPTEMBER 2021

No.	Revision Description	Date
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Scale: As Noted
Drawn by:
Checked by:

113316.01

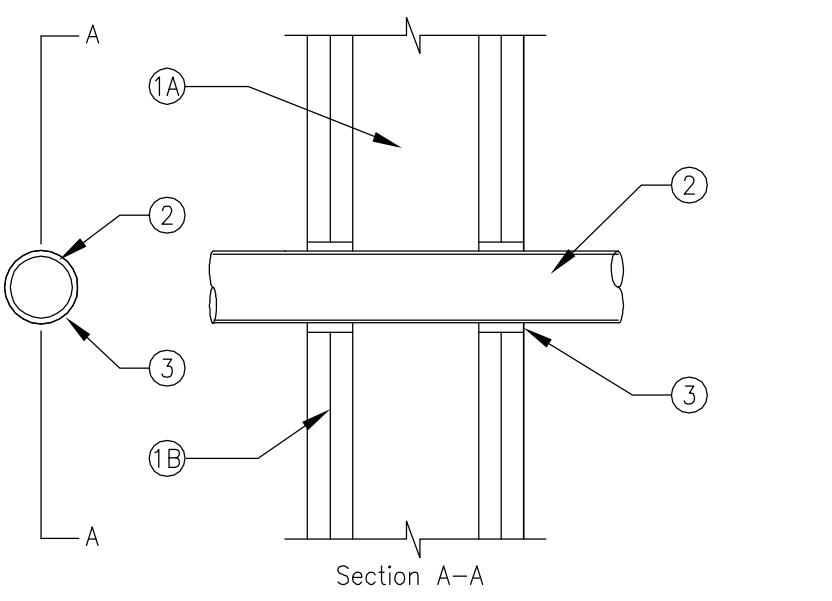
ADA Notes

A003

ORIGINAL
IF IT IS RED IT IS AN ORIGINAL

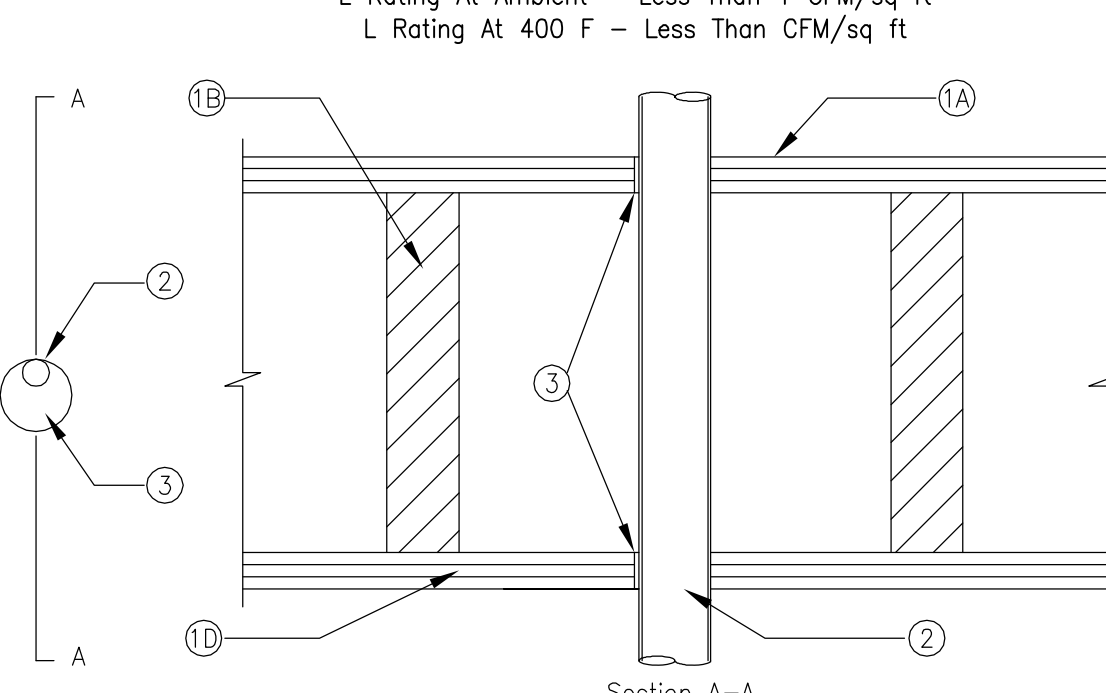
ORIGINAL
IF IT IS RED IT IS AN ORIGINAL

System No. W-L-2093
F-Rating - 1 and 2 Hr (See Item 1)
T-Rating - 1 and 1-1/2 Hr (See Item 2)



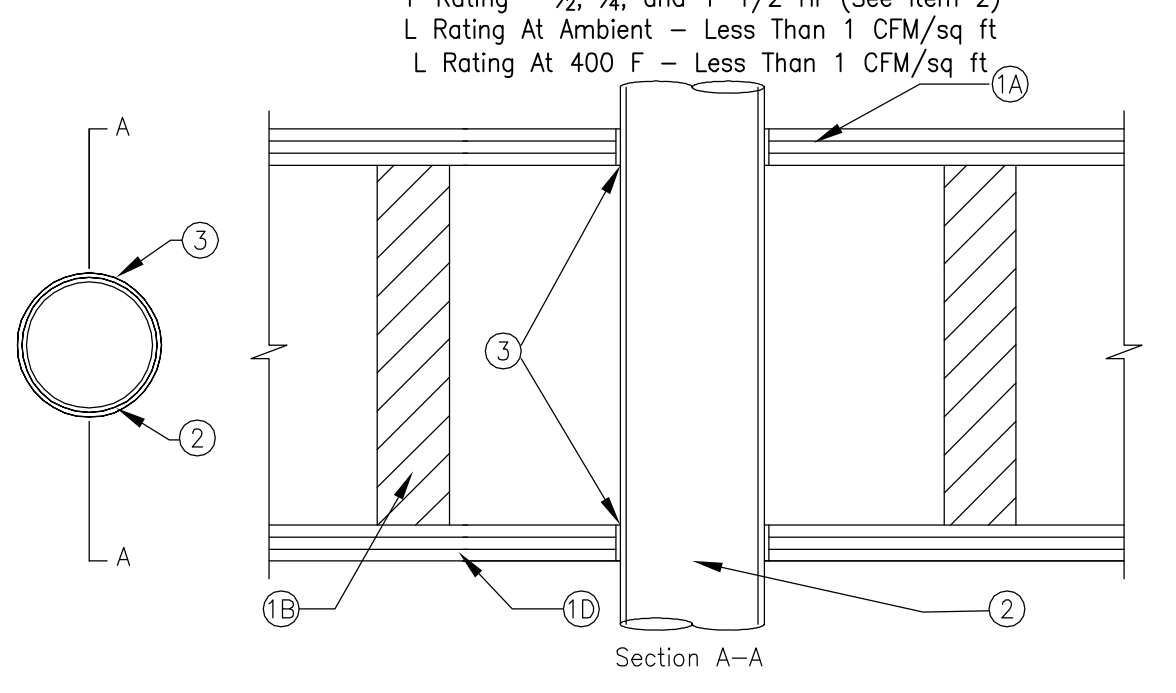
- 1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. O.C. with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide and spaced max. 24 in. O.C.
B. Gypsum Board**
The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants - One nonmetallic pipe, conduit or raceway to be centered within the firestop system. A nom annular space of 3/16 in. is required within the firestop system. Pipe, conduit or raceway to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes, conduits or raceway may be used:
A. Polyvinyl Chloride (PVC) - Nom 2 in. diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) piping systems.
B. Rigid Nonmetallic Conduit** - Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70).
C. Chlorinated Polyvinyl Chloride (CPVC) Pipe - Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) piping systems.

System No. F-C-3013
F-Rating - 1 and 2 Hr (See Item 2A)
T-Rating - 3/4, 1 and 2 Hr (See Item 2A)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than CFM/sq ft



- D. Optical Fiber Raceway* - Nom 2 in. diam (or smaller) optical fiber raceway formed from polyvinyl chloride (PVC) or nom 1-1/4 in. diam (or smaller) optical fiber raceway formed from polyvinylidene fluoride (PVDF). Raceway to be installed in accordance with Article No. 770 of the National Electrical Code. Raceway to be rigidly supported on both sides of wall assembly.
E. Electrical Nonmetallic Tubing* - Nom 2 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA No. 70). See Electrical Nonmetallic Tubing - (FKHU) category in the Electrical Construction Materials Directory for names of manufacturers.
The hourly T Rating of the firestop system is dependent upon the hourly fire rating of the wall and the diam of the through-penetrant as shown below:
Wall HrMax Diam of Through Penetrant in. T Rating Hr 12111-1/4122121-1/41-1/23.
Fill, Void or Cavity Material** - Sealant - Min 3/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall. Additional fill material to be installed such that a min. 1/4 in. thick crown is formed around the penetrating item and lapping 1 in. beyond the periphery of the opening.
SPECIFIED TECHNOLOGIES INC. - SpecSeal 100, 101, 102, or 105 Sealant
*Bearing the UL Listing Mark
**Bearing the UL Classification Marking

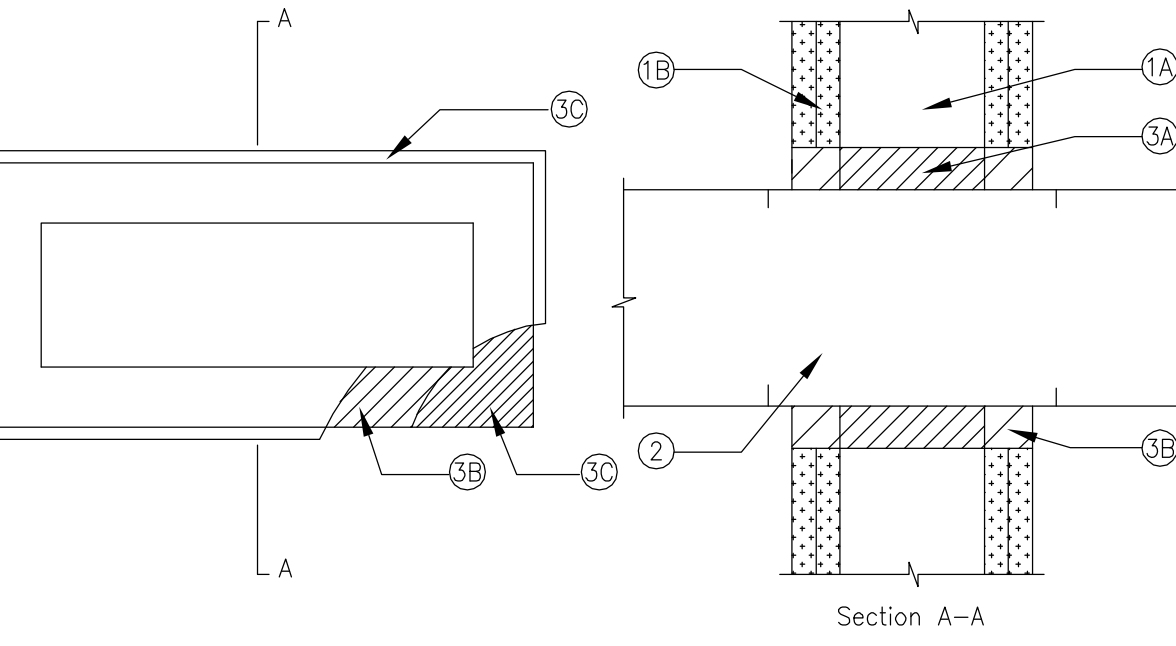
System No. F-C-1010
F-Rating - 1 and 2 Hr (See Item 1)
T-Rating - 3/4, 1 and 1-1/2 Hr (See Item 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



- 1. Floor-Ceiling Assembly - The 1 hr fire-rated joist floor-ceiling assembly. The general construction features of the floor-ceiling assembly are summarized below:
A. Flooring System - Lumber or plywood subfloor with finish floor of lumber, plywood or as specified in the individual Floor-Ceiling Design. Max diam of floor opening is 5 in.
B. Wood Joists*
C. Furring Channels - (Not Shown) - in 2 hr fire-rated assemblies, resilient galv steel furring installed perpendicular to wood joists between first and second layers of gypsum board (item 1D). Furring channels spaced max 24 in. OC. in 1 hr fire-rated assemblies, resilient galv steel furring installed perpendicular to wood joists between gypsum board and wood joists as specified in the individual Floor-Ceiling Design. Furring channels spaced max 24 in. OC.
D. Gypsum Board*
2. Through Penetrants - One metallic pipe, conduit or tube installed approximately midway between wood joists. Diam of openings hole-sawed through flooring system and through gypsum board ceiling to be nom 1/2 in. greater than the outside diam of through-penetrant. For 2 hr rated floor assemblies, through penetrant to be installed either concentrically or eccentrically with an annular space of 0 in. (point contact) to 1/2 in. For 2 hr rated floor assemblies, through metallic pipes, conduits or tubing may be used:
A. Steel Pipe - Nom 4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
B. Iron Pipe - Nom 4 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit - Nom 4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.
D. Copper Pipe - Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe
E. Copper Tubing - Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
The T Rating of the firestop system is dependent upon the hourly rating of the floor-ceiling assembly and type of through-penetrant as shown in the table below:
Floor Ceiling Rating HrType of Penetrant Rating Hr1Steel or Iron Pipe1Steel Conduit11Copper Tube or Pipe3/42Steel or Iron Pipe 1-1/22Steel Conduit1-1/22Copper Tube or Pipe1/23. Fill, Void or Cavity Material* - Sealant - Fill material forced into annulus to fill space to max extent possible on top surface of floor and bottom surface of ceiling. Min 3/8 in. diam bead of fill material applied at point contact location on top surface of floor and on bottom surface of gypsum board ceiling.
SPECIFIED TECHNOLOGIES INC. - SpecSeal 100, 101, 102, 105, 120, or 129 Sealant
*Bearing the UL Classification Mark

- 1. Floor-Ceiling Assembly - The 1 hr fire-rated joist floor-ceiling assembly. The general construction features of the floor-ceiling assembly summarized below:
A. Flooring System - Lumber or plywood subfloor with finish floor of lumber, plywood as specified in the individual Floor-Ceiling Design. Max diam of floor opening is 2 in.
B. Wood Joists*
C. Furring Channels
D. Gypsum Board*
2. Cables - One or more cables to be installed either concentrically or eccentrically within the firestop system. Cable(s) to be installed approximately midway between wood joist. Diam of openings hole-sawed through flooring and through gypsum wallboard ceiling to be min. 3/8 in. larger than the outside diam of cable or cable bundle. The annular space within the firestop system shall be min. 0 in. (point contact) to a max. 1-1/4 in. Cables to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of cables may be used:
A. Max. 100 pair No. 24 AWG (or smaller) copper conductor telephone cables with polyvinyl chloride (PVC) insulation and jacket materials.
B. Max. 3/C (with ground) No. 2/0 (or smaller) AWG aluminum conductor service entrance cable with PVC insulation and jacket materials.
C. Max. 3/C (with ground) No. 12 AWG (or smaller) copper conductor nonmetallic sheathed (Romex) cable with PVC insulation and jacket materials.
The number of cables allowed within the opening is dependent upon the type and size of cable as tabulated in Item 2A.
2A. Through Penetrating Product* (Not Shown) - As an alternate to Item 2, max. 4/C No. 2/0 AWG (or smaller) aluminum or steel Armored Cable* or Metal-Clad Cable* with copper conductors. Max. one armored cable or metal-clad cable to be installed either concentrically or eccentrically within the firestop system. One cable to be installed approximately midway between wood joist. Diam of openings hole-sawed through flooring system and through gypsum wallboard ceiling to be min. 3/8 in. larger than the outside diam of cable. The annular space within the firestop system shall be a min. 0 in. (point contact) to a max. 1-1/4 in. Through-penetrating product to be rigidly supported on both sides of a floor-ceiling assembly.
SPECIFIED TECHNOLOGIES INC. - SpecSeal 100, 101, 102 or 105 Sealant
*Bearing the UL Classification Marking

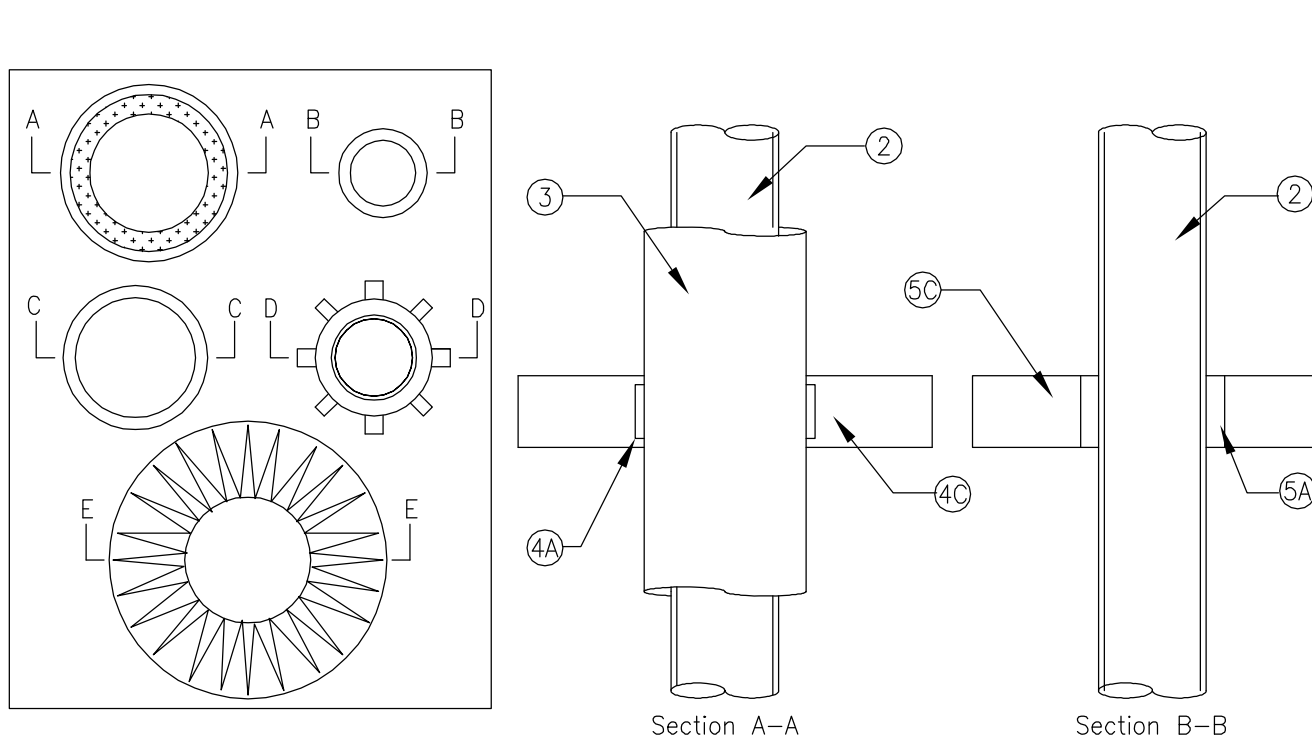
System No. W-L-7009
F-Ratings - 1 and 2 Hr (See Item 1)



- 1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly in which it is installed.
2. Steel duct - Nom 24 by 12 in. (or smaller) No. 24 gauge (or heavier) steel duct to be installed vertically or horizontally within the firestop system. The annular space between the steel duct and the periphery of the framed opening shall be a min. 1/4 in. to a max. 2 in. The max. dimensions of the steel duct is dependent upon the hourly rating of the wall and type of stud used as tabulated below
Fire Rating of Wall Hr Type of Stud Max. Dimension of Steel Duct
1 Steel 24 in. by 12 in.
2 Steel 12 in. by 12 in.
1 Wood 12 in. by 12 in.
2 Wood 12 in. by 12 in.
3. Firestop System - The firestop system shall consist of the following:
A. Packing Material - Min. 1-1/2 in. thickness of min. 4pcf mineral wool batt insulation firmly packed between framed opening and steel duct as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

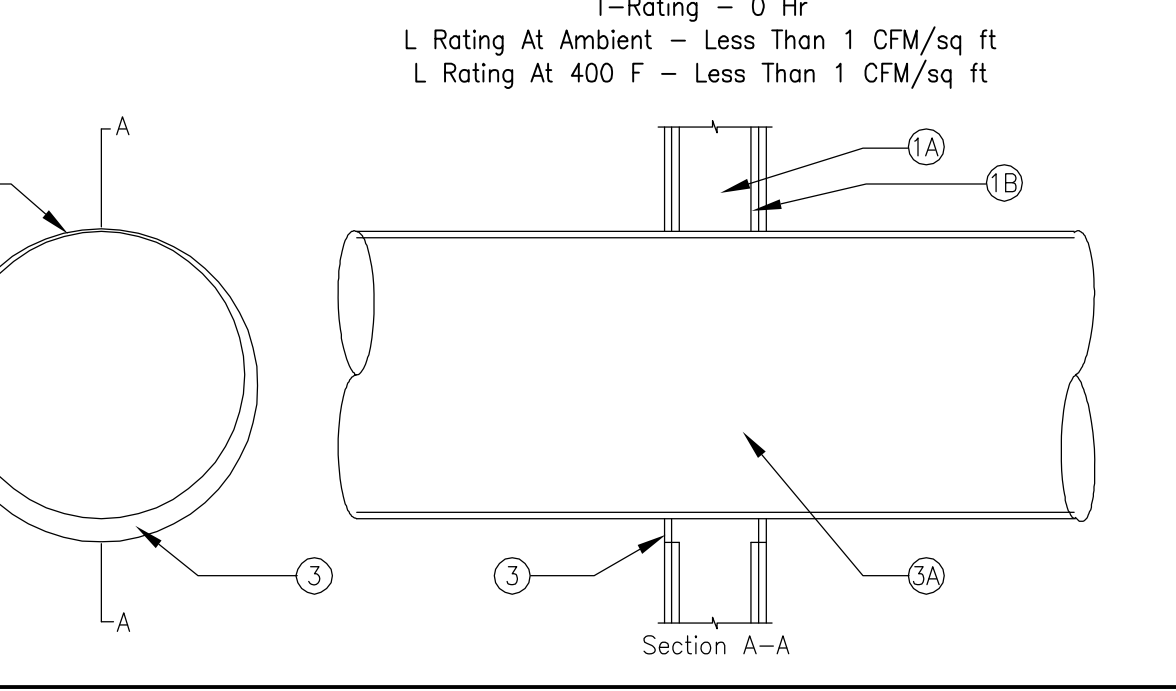
- B. Fill, Void or Cavity Material* - Sealant - in 2 hr fire rated assemblies, min. 1-1/4 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. In 1 hr fire rated assemblies, min 3/8 in. thickness of fill material applied within the annulus on both surfaces of the wall.
SPECIFIED TECHNOLOGIES INC. - SpecSeal 100, 101, 102 or 155 Sealant, LC 150, 151, 152 or 155 Sealant and Pensil 300 Sealant
C. Steel Retaining Angles - Min. 2 by 2 by 0.030 in. (No. 22 gauge) steel angles cut to fit the contour of the steel duct with a 1 in. lap on both surfaces of wall. Angles secured to steel duct with min. No. 8 by 3/4 in. long steel sheet metal screws spaced a max. 4 in. OC.
*Bearing the UL Classification Marking

System No. C-AJ-8055
F-Rating - 2 Hr
T-Rating - 0, 3/4, 1 and 2 Hr (See Item 2)



- 1. Floor Assembly - Min. 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete.
2. Firestop system - The firestop system consists of any combination of the four individual firestop configurations described below, installed within the opening. Each configuration consists of a through penetrant, wrap strip and/or putty pads, forms and mortar, installed within the opening around the various configurations. The space between the firestop configurations shall be a min. 2-1/2 in. to max. 13 in. The space between the firestop configurations and the periphery of the opening shall be a min. 1 in. to a max. 6-1/2 in. The T Rating of the firestop system is dependent on the firestop configuration, as shown in the table below:
Firestop Configuration Rating, HRA3/4BC00D2E1
Firestop Configuration A-A
1. Through-Penetrants - One metallic pipe or tubing to be installed within the opening. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe - Nom 3 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe - Nom 3 in. diam (or smaller) cast or ductile iron pipe.
C. Copper Tubing - Nom 3 in. diam (or smaller) Type L (or heavier) copper tubing.
D. Copper Pipe - Nom 3 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Tube Insulation - Plastics** Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing.
See Plastics** (OMF22) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification= of 94-5VA may be used.
4. Firestop Configuration - The firestop configuration shall consist of the following:
A. Fill, Void or Cavity Material* - Mortar - Min. 3-1/2 in. thickness of fill material applied within the annulus. The mortar shall be recessed 1/8 in. from the bottom surface of the floor or from each surface of the wall. Mortar to be mixed with water at a rate of 1.4 parts dry mixture to 1.0 part water by weight in accordance with the installation instructions supplied with the product.
SPECIFIED TECHNOLOGIES INC. - SpecSeal Mortar
Firestop Configuration B-B
2. Through Penetrants - One metallic pipe or tubing to be installed within the opening. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe - Nom 3 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe - Nom 3 in. diam (or smaller) cast or ductile iron pipe.
C. Copper Tubing - Nom 3 in. diam (or smaller) Type L (or heavier) copper tubing.
D. Copper Pipe - Nom 3 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Firestop Configuration - The firestop configuration shall consist of the following:
A. Fill, Void or Cavity Material* - Putty Pad - Nom 3-1/2 in. wide moldable putty. A single layer of putty pads shall be wrapped around outer circumference of through penetrant with ends butted. In floors, the putty pad shall be recessed 1/2 in. from the bottom surface of the floor and flush with the bottom edge of mortar (item 3C). In walls, the putty pad shall be recessed min. 1/2 in. from each surface of mortar.
SPECIFIED TECHNOLOGIES INC. - SpecSeal Putty Pads
B. Forms - (Not Shown) - Used as a form to prevent the leakage of fill material installation. Forms to be rigid sheet material, cut to fit the contour of the penetrating item and positioned on the bottom surface of the floor or both sides of the wall as required to accommodate the required thickness of fill material. Forms to be removed after fill material has cured.
C. Fill, Void or Cavity Material* - Mortar - Min. 3-1/2 in. thickness of fill material applied within the annulus. Fill material to be recessed 1/2 in. from the bottom surface of floor or both surfaces of the wall assembly. Mortar to be mixed with water at a rate of 1.4 parts dry mixture to 1.0 part water by weight in accordance with the installation instructions supplied with the product.
SPECIFIED TECHNOLOGIES INC. - SpecSeal Mortar
*Bearing the UL Classification Marking
**Bearing the UL Listing Mark
***Bearing the UL Recognized Component Mark

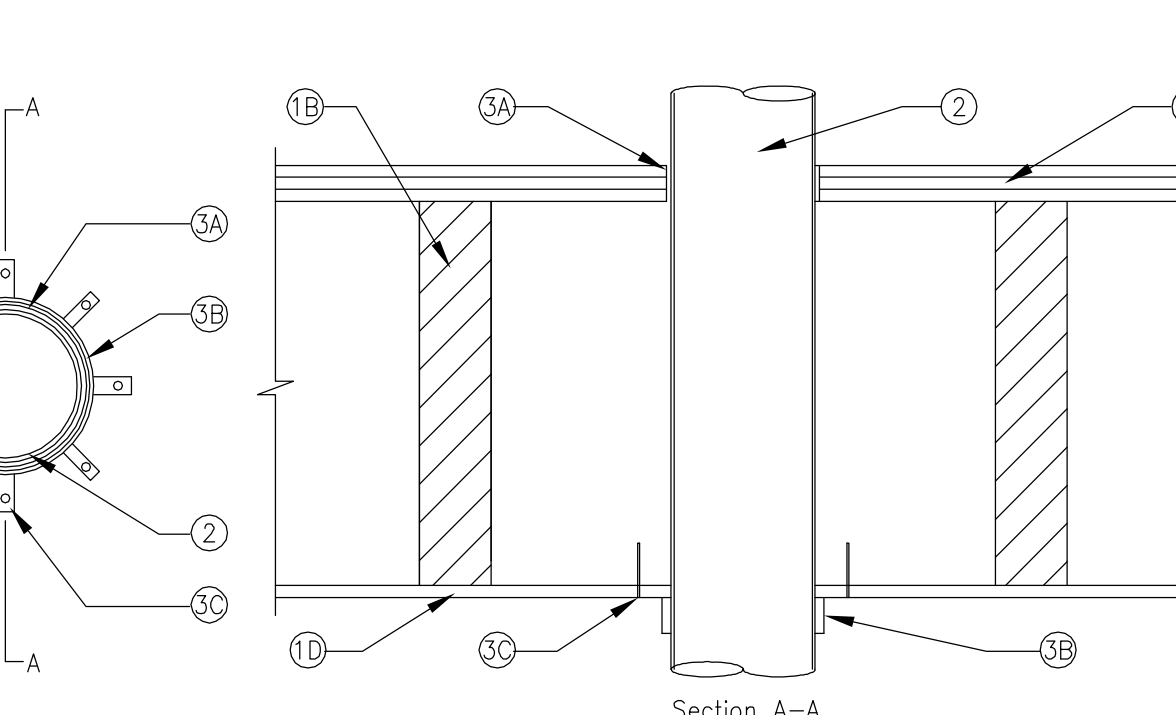
System No. W-L-1049
(Formerly System No. 635)
F-Rating - 1 and 2 Hr (See Item 1B)
T-Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



- 1. Wall Assembly The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min. 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
B. Gypsum Board*
2. Through Penetrant One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. The annular space between pipe, conduit or tubing and periphery of opening shall be min. 0 in. (0 mm, point contact) to max. 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

- A. Steel Pipe Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe Nom 24 in. (610 mm) diam (or smaller) cast or ductile iron pipe.
C. Conduit Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing, nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
D. Copper Tubing Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
E. Copper Pipe Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* - Sealant Min. 3/8 in. (16 mm) thickness of fill material applied with annulus, flush with both surfaces of wall. At the point contact location between penetrant and gypsum board, a min. 3/8 in. (10 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.
SPECIFIED TECHNOLOGIES INC. - SPECSEAL 100, 101, 102 or 105 Sealant
*Bearing the UL Classification Mark
Subscriber ID: 650692002
Directory: FIRERES

System No. F-C-2033
F-Rating - 1 Hr
T-Rating - 1 Hr



- 1. Floor-Ceiling Assembly - The fire-rated joist floor-ceiling assembly. The general construction details of the floor-ceiling assembly are summarized below:
A. Flooring System - Lumber or plywood subfloor with finish floor of lumber, plywood as specified in the individual Floor-Ceiling Design. Max. diam of floor opening is 5 in.
B. Wood Joists
C. Furring Channels - (Not Shown) - Resilient galv steel furring installed perpendicular to wood joists (item 1B) between wallboard (item 1D) and wood joists as required in the individual Floor-Ceiling Design.
D. Gypsum Board**
2. Through Penetrants - One nonmetallic pipe or conduit to be installed approximately midway between wood joists and installed either concentrically or eccentrically within the firestop system. Diam of openings hole-sawed through flooring system and through gypsum wallboard ceiling to be nom 1/2 in. larger than the outside diam of through-penetrant. The annular space between the through penetrant and the periphery of the opening shall be a min. 0 in. (point contact) to a max. of 1/4 in. Pipe or conduit to be rigidly supported on both sides of the floor-ceiling assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
A. Polyvinyl Chloride (PVC) Pipe - Nom 4 in. diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems.
B. Acrylonitrile Butadiene Styrene (ABS) Pipe - Nom. 4 in. diam (or smaller) Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
C. Rigid Nonmetallic Conduit* - Nom 4 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70)
D. Chlorinated Polyvinyl Chloride (CPVC) Pipe - Nom 4 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) vented (drain, waste or vent) piping systems.
3. Firestop system - The firestop system shall consist of the following:
A. Fill, Void or Cavity Material** - Sealant - Fill material forced into annulus to max. extent possible on top surface of floor. Additional fill material to be installed such that a min. 3/8 in. crown is formed around the penetrating item.
SPECIFIED TECHNOLOGIES INC. - SpecSeal 100, 101, 102 or 105 Sealant.

- B. Fill, Void or Cavity Material** - Wrap Strip - Nom 1/4 in. thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. wide strips. The layers of wrap strips are individually wrapped around the through-penetrant with the ends butted and held in place with masking tape. Butted ends in successive layers may be aligned or offset. The wrap strips are wrapped around through-penetrant on underside of gypsum wallboard ceiling. The number of wrap strips required is dependent upon the diameter of the through-penetrant as tabulated below:
Diam of Through-Penetrant in. No. of Wrap Strips 12324SPECIFIED TECHNOLOGIES INC. - SpecSeal RED Strip
C. Steel Collar - Collar fabricated from coils of precut 0.016 in. thick (30 MSG) galv sheet steel available from wrap strip manufacturer. Collar shall be nom 1-1/2 in. deep with 1 in. wide by 2 in. long anchor tabs for securement of underside of ceiling. Retainer tabs, 3/8 in. wide tapering down to 1/4 in. wide and located opposite the anchor tabs, are folded 90 degree toward through-penetrant surface to maintain the annular space around the through-penetrant and to retain the wrap strips. Steel collar wrapped around wrap strips and through-penetrant with a 1 in. wide overlap along its perimeter joint and secured together by means of a min. 1/2 in. wide by 0.028 in. thick stainless steel hose clamp at mid-depth of the steel collar. As an alternate to the steel hose clamp, the steel collar may be secured together by means of three No. 8 steel sheet metal screws. The length of the steel screws is dependent upon the number of layers of wrap strip used within the steel collar. For steel collars incorporating a single layer of wrap strip, the length of the steel screws shall be 1/2 in. long. For steel collars incorporating two or more layers of wrap strip, the length of the steel screws shall be 3/8 in. long. Collar secured to ceiling with 3/8 in. diam by min. 2 in. long toggle bolts in conjunction with min. 1/4 in. by 1 in. diam steel fender washers. The number of toggle bolts used is dependent upon the nom diam of the through penetrant. Two toggle bolts, symmetrically located, are required for nom 1-1/2 through 2 in. diam through penetrants. Three toggle bolts, symmetrically located, are required for nom 2-1/2 through 3 in. diam through penetrants. Four toggle bolts, symmetrically located, are required for nom 3-1/2 through 4 in. diam through penetrants.
*Bearing the UL Listing Mark
**Bearing the UL Classification Marking

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UNION COUNTY CLERK OFFICE RECONSTRUCTION
2 Broad Street Elizabeth, NJ 07201

SEPTEMBER 2021

Table with 3 columns: No., Revision Description, Date

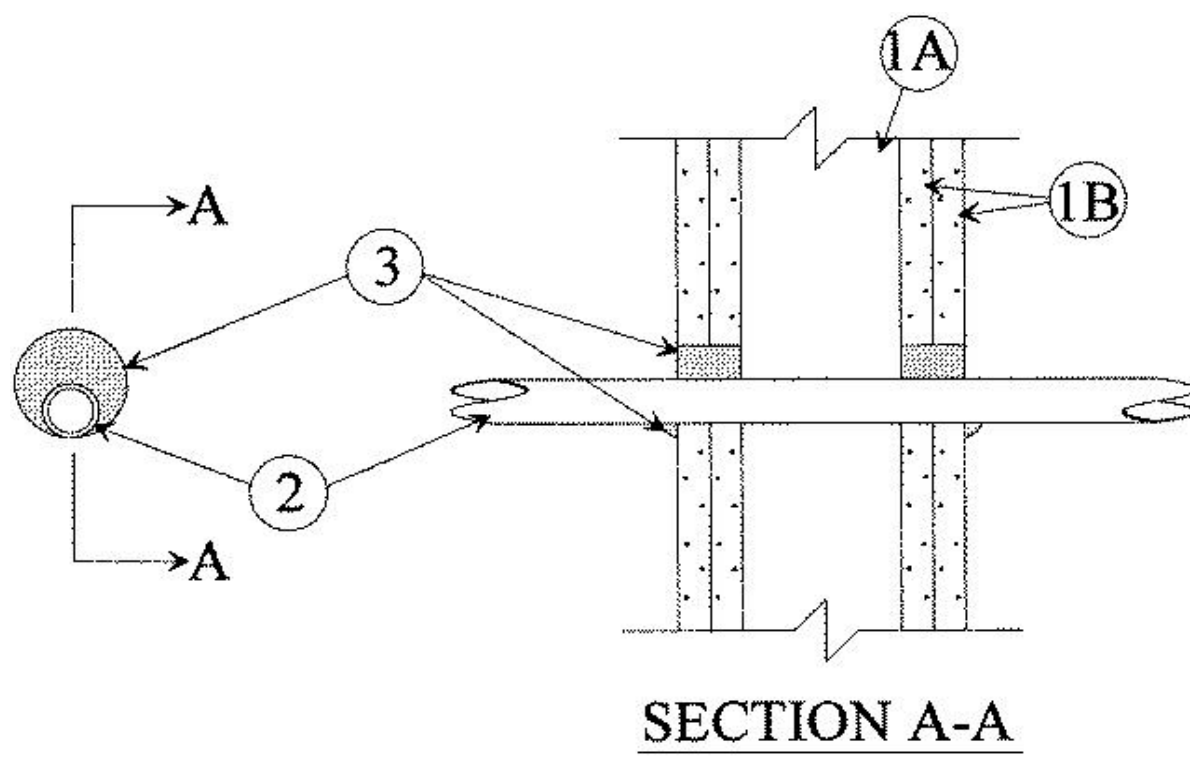
Scale: As Noted
Drawn by:
Checked by:

113316.01
Through Penetration & Fire Stopping Details

A004

THROUGH PENETRATION (WALL)

System No. W-L-2088
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1 and 2 Hr (See Item 2)



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max diam of opening shall be 7/8 in. (22 mm) larger than the outside diam of nonmetallic pipe or conduit (Item 2). The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

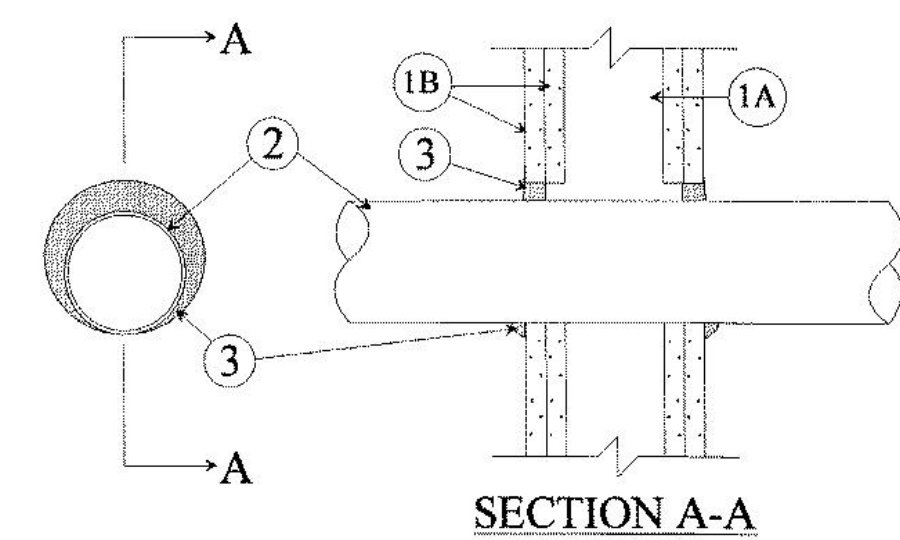
2. Through Penetrants — One nonmetallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space for max 1-1/4 in. (32 mm) diam pipe or conduit shall be min 0 in. (0 mm, point contact) to max 7/8 in. (22 mm). The annular space for pipe or conduit larger than nom 1-1/4 in. (32 mm) diam shall be min 1/2 in. (13 mm) to max 1 in. (25 mm) Pipe or conduit to be rigidly supported on both sides of wall assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
B. Polyvinyl Chloride (CPVC) Pipe — Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) piping system.
C. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 3 in. (76 mm) diam (or smaller) SDR11 CPVC pipe for use in closed (process or supply) piping systems.
D. Rigid Nonmetallic Conduit — Nom 3 in. (76 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA No. 70).
E. Electrical Nonmetallic Tubing (ENT) — Nom 1 in. (25 mm) diam (or smaller) ENT formed of PVC, installed in accordance with the National Electrical Code (NFPA No. 70).
See Rigid Nonmetallic Conduit (DZKT) and Electrical Nonmetallic Tubing (FKHU) categories in the UL Electrical Construction Equipment Directory for names of manufacturers.

F. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom. 2 in. (51 mm) diam (or smaller) Schedule 40 solid core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The hourly F Rating is dependent on the hourly rating of the wall assembly, the pipe or conduit size and whether the pipe is intended for use as a closed or vented system, as shown in the following table.

Nom Pipe Diam In.	Wall Assembly Rating Hr	Closed (c) or Vented (v)	T Rating Hr
1/2 to 3 (13 to 76)	1	c	1
1/2 to 1-1/4 (13 to 32)	1	v	1
1/2 to 1-1/4 (13 to 32)	2	c	2
1/2 to 1-1/4 (13 to 32)	2	v	1
2 (51)	1	v	0
2 (51)	2	v	0

3. Fill, Void or Cavity Materials* — Caulk, Sealant or Putty — Min thickness of 5/8 in. (16 mm) and 1-1/4 in. (32 mm) of caulk or putty for 1 and 2 hr rated wall assemblies, respectively, applied within annulus between pipe or conduit and periphery of the opening, flush with both surfaces of wall assembly. At the point contact location between pipe or conduit and gypsum board, a min 1/2 in. (13 mm) diam bead of caulk or putty shall be applied at the pipe or conduit/ board interface on both surfaces of wall assembly.
3M COMPANY — CP 25WB+, MP+ Stix, IC 15WB+ caulk or FB-3000 WT sealant. (Note: CP 25WB+ not suitable for use with CPVC pipes.)

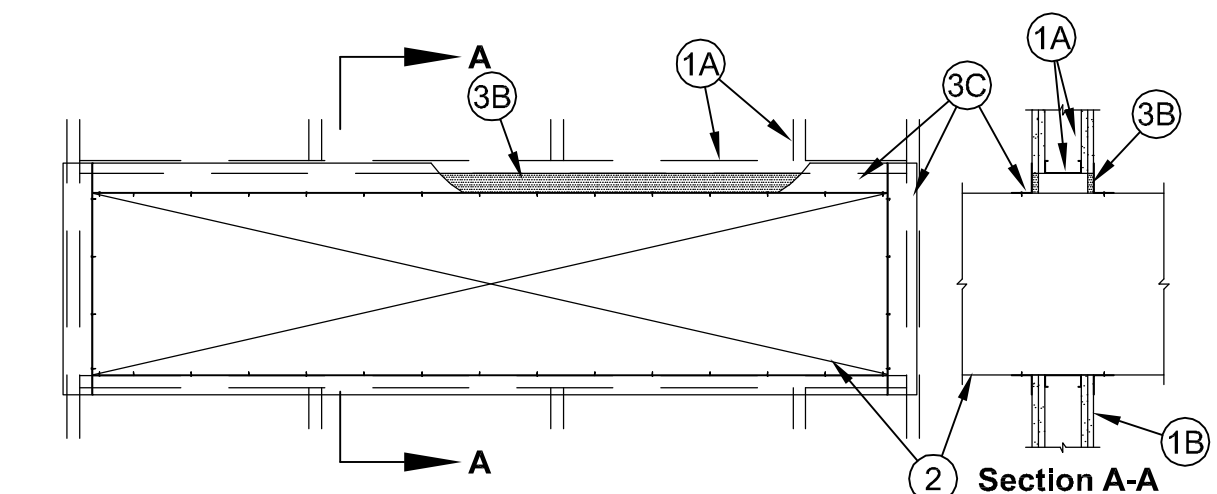
System No. W-L-1146
F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-1/2 in. wide and spaced max 24 in. OC. When steel studs are used, the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is centered in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing in all four sides.
B. Gypsum Board* — The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. in. for steel stud walls. Max diam of opening is 14-1/2 for wood stud walls. The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through-Penetrant — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in. (point contact) to max 2 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe — Nom 24 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 24 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.
C. Conduit — Nom 6 in. diam (or smaller) steel conduit or nom 4 in diam (or smaller) steel electrical metallic tubing
D. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing
E. Copper Pipe — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Materials* — Caulk or Sealant — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/2 in. diam bead of caulk applied to the penetrant/wallboard interface at the point contact location on both sides of wall.
3M COMPANY — CP25WB+ or FB-3000 WT

System No. W-L-7025
F Rating — 1 and 2 Hr (See Item 1)
T Rating — 1 1/2 Hr
L Rating At Ambient — Less than 1 CFM/sq ft.
L Rating At 400 F — Less than 1 CFM/sq ft.

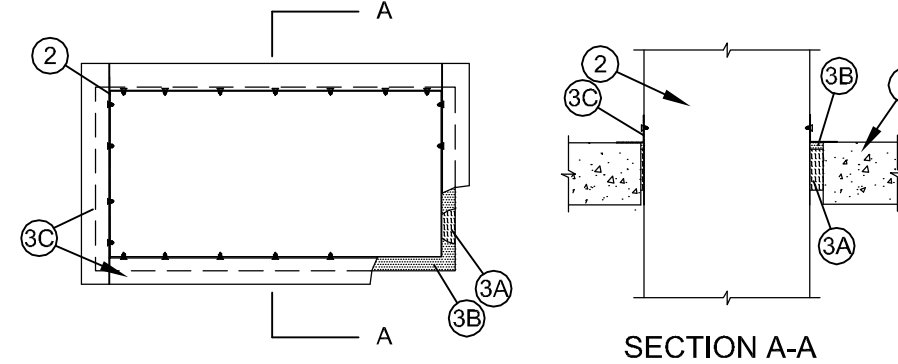


Section A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel channel studs spaced max 24 in. (610 mm) OC. Additional steel studs shall be used to completely frame the opening.
B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U400 or V400 Series Design in the UL Fire Resistance Directory. Max area of opening is 73.7 sq ft (6.85 m²) with a max dimension of 104 in. (2.64 m). The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Steel Duct — Max 100 in. by 100 in. (2.54 by 2.54 m) No. 26 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. The space between the steel duct and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Steel duct to be rigidly supported on both sides of the wall assembly.
3. Firestop System — The firestop system shall consist of the following:
A. Packing Material — (Optional, Not Shown) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction fitted into annular space. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
B. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of fill material shall be applied at the point contact location between the steel duct and the gypsum board. For 2 hr Rated walls when LC150 or LE600 Sealant is used, fill material thickness installed to full depth of gypsum board layers on each side of wall assembly.
SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, SpecSeal LCI Sealant, SpecSeal LC150 Sealant or SpecSeal LE 600 Sealant.
C. Steel Retaining Angles — Min No. 16 gauge (0.059 in. or 15 mm) galv steel angles sized to lap steel duct a min of 2 in. (51 mm) and to lap wall surfaces a min of 1 in. (25 mm). Angles attached to steel duct on both sides of wall with min No. 10 by 1/2 in. (13 mm) long steel sheet metal screws located a max of 1 in. (25 mm) from each end of steel duct and spaced a max of 6 in. (152 mm) OC.

THROUGH PENETRATION (FLOOR)

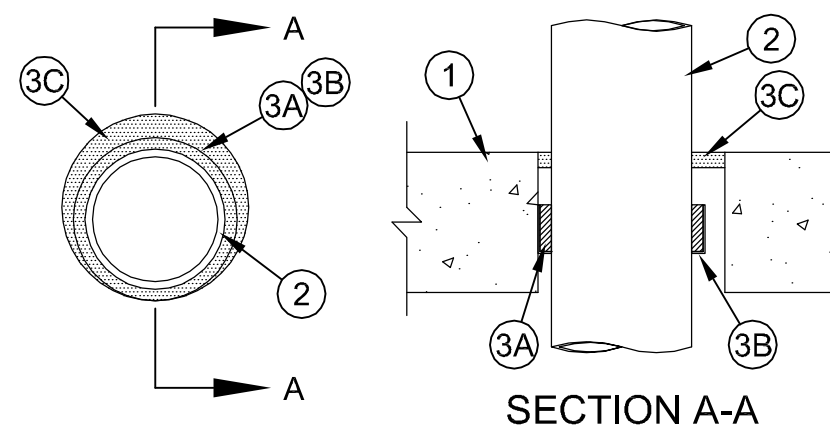
System No. C-AJ-7041
F Rating — 2 Hr
T Rating — 0 Hr
L Rating At Ambient — Less than 1 CFM/sq ft.
L Rating At 400 F — Less than 1 CFM/sq ft.



SECTION A-A

1. Floor — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete floor.
2. Steel Duct — Nom 30 by 30 in. (76 by 76 cm) (or smaller) No. 24 ga (or heavier) galv steel duct installed eccentrically or concentrically within opening. Steel gauge of duct shall conform with SMACNA requirements. Annular space between duct and periphery of opening to be min 1/4 in. to max 1-3/4 in. Duct to be rigidly supported on both sides of the floor or wall assembly.
3. Firestop System — The firestop system shall consist of the following:
A. Packing Material — Min 4 pcf (64 kg/m³) mineral wool batt insulation compressed and tightly packed to min 3 in. (76 mm) thickness. Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 3B).
B. Fill Void or Cavity Materials* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor assembly or both surfaces of wall assembly. When LC150 or LE600 Sealant is used, the min sealant thickness is 1 in. (25 mm).
SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant, SpecSeal LC150 Sealant, or SpecSeal LE600 Sealant.
C. Retaining Angles — Min 16 GA (0.059 in. or 1.5 mm) galv steel angles sized to lap duct a min of 2 in. (51 mm) and top periphery of opening a min of 1 in. (25 mm). Angles attached to all four sides of steel duct on top surface of floor or both surfaces of wall with No. 10 (or larger) steel sheet metal screws spaced 1 in. (25 mm) from each end and max 4 in. (102 mm) OC.
*Bearing the UL Classification Mark

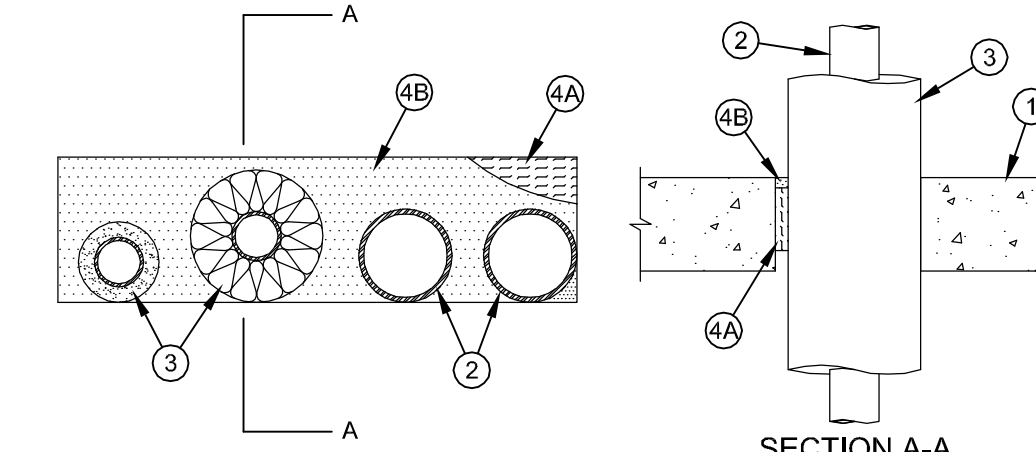
System No. F-A-2138
F Rating — 2 Hr (See item 1)
T Rating — 0 Hr
L Rating At Ambient — Less than 1 CFM/sq ft.
L Rating At 400 F — Less than 1 CFM/sq ft.



SECTION A-A

1. Floor Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Max diam of opening is 6 in. (152 mm).
2. Through Penetrants — One nonmetallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe or conduit and the periphery of the opening shall be a min of 3/8 in. (10 mm) to a max of 1-1/8 in. (29 mm). Pipe to be rigidly supported on both sides of the floor assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
3. Firestop System — The firestop system shall consist of the following:
A. Fill, Void, or Cavity Materials* — Wrap Strip — Nom 1/4 in. (6 mm) thick by 1-1/2 in. (38 mm) wide (RED), 3/16 in. (4.8 mm) by 2 in. (51 mm) wide (BLU) or 1/8 in. (3.2 mm) by 2 in. (51 mm) wide (BLU2) intumescent strips faced on both sides with a plastic film. Strips tightly wrapped around nonmetallic pipe. The wrap strips may be installed with butted seams with butted seams in successive layers aligned or offset or may be continuously wrapped around through penetrant. For max 2 in. (51 mm) diam pipes, one layer of wrap strip is required. For nom 2-1/2 and 3 in. (64 and 76 mm) diam pipes, two layers of wrap strip are required. For nom 3-1/2 and 4 in. (89 and 102 mm) diam pipes, three layers of wrap strip are required. Wrap strips are temporarily held in place with masking tape.
SPECIFIED TECHNOLOGIES INC — SpecSeal RED, BLU, or BLU2 Wrap Strip
A1. Fill, Void, or Cavity Materials* — Wrap Strip — As an alternate to Item 3A, nom 1/8, 1/4, or 3/8 in. (3.2, 6, or 9 mm) thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. (38 mm) wide strips for use with nom 2, 3, or 4 in. (51, 76, or 102 mm) diameter pipes, respectively. Single layer of wrap strip wrapped around the through penetrant with the ends butted and temporarily held in place with masking tape.
SPECIFIED TECHNOLOGIES INC — SpecSeal SSW125, SSW250 or SSW375 Wrap Strip
B. Steel Collar — Nom 1-1/2 in. (38 mm) or 2 in. (51 mm) deep collar, dependent upon wrap strip width, with min 3/4 in. (19 mm) wide retaining lips tapering down to 1/4 in. (6 mm) wide top retain wrap strip layers. Coils of precut 0.013 in. (0.33 mm) thick (30 gauge) galv steel sheet available from wrap strip manufacturer. Steel collar, with anchor tabs removed, wrapped tightly around wrap strip layers with min 1 in. (25 mm) overlap at seam. Retainer tabs to be bent 90 deg toward pipe to lock wrap strips in position. Collar to be compressed around wrap strip layers and secured with min 1/2 in. (13 mm) wide filament tape or foil tape wrapped completely around collar at the mid height of the collar. Wrap strip/collar assembly to be recessed 1-1/4 in. (32 mm) from bottom surface of floor.
C. Fill, Void or Cavity Materials* — Sealant — Min 1/2 in. (13 mm) thickness of fill material installed in annular space, flush with top surface of the floor.
SPECIFIED TECHNOLOGIES INC — SpecSeal Series 100, 101, 102, 105, 120 or 129 Sealant, SpecSeal LCI Sealant, Pensil 300 Sealant or SpecSeal Series SIL300 Sealant for floors or walls and Pensil 300 S/L Sealant or SpecSeal Series SIL300SL Sealant for floors only.
*Bearing the UL Classification Mark

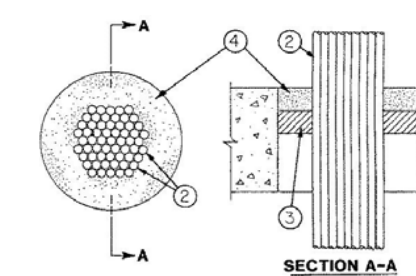
System No. C-AJ-8053
F Rating — 2 Hr
T Rating — 0, 1/4, 3/4 AND 1 1/2 Hr
L Rating At Ambient — Less than 1 CFM/sq ft.
L Rating At 400 F — Less than 1 CFM/sq ft.



SECTION A-A

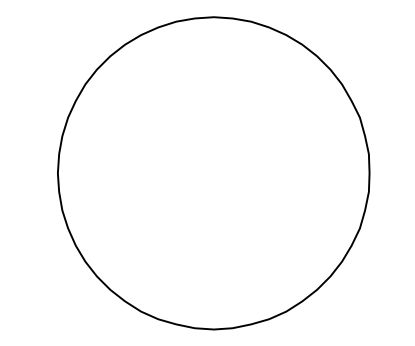
1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete floor or min 5 in. (127 mm) thick reinforced lightweight or normal weight concrete wall. Wall may also be constructed of any UL Classified Concrete Blocks*. Max area of opening is 168 in.2 (1084 cm²) with max dimension of 24 in. (610 mm).
See Concrete Block (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through-Penetrants — One or more pipes, conduits or tubing to be installed within the opening. The annular space between pipes, conduits or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 3-1/2 in. (89 mm). The annular space between the pipes, conduits or tubing shall be min 1/4 in. (6 mm) to max 2 in. (51 mm). Pipes, conduits or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or nom 4 in. diam (or smaller) steel conduit.
D. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
E. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
When through penetrant A, B or C is used without insulation, the T, FT and FTH Ratings are 1/4 hr. When through penetrant D or E is used without insulation, the T, FT and FTH Ratings are 0 hr.
3. Pipe Coverings* — One of the following types of pipe coverings shall be used:
A. Pipe and Equipment Covering Materials* — Max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m³) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.
See Pipe and Equipment Covering Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
B. Pipe Covering Materials* — Nom 2 in. (51 mm) thick unfaced mineral fiber pipe insulation having a nominal density of 3.5 pcf (56 kg/m³) (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 8 AWG steel wire spaced max 12 in. (305 mm) OC.
IGM MINWOOL L L C — High Temperature Pipe Insulation1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermoc
C. Sheathing Materials* — Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal and transverse joints sealed with metal fasteners or butt tape.
See Sheathing Materials (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
D. Tube Insulation - Plastics* — Nom 3/4 in. (19 mm) or 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing.
See Plastics* (OMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
The pipe coverings may be installed on one or more of the through penetrants having a nom diam of 2-1/2 in. (64 mm) or less. The annular space between the insulated through penetrants and the periphery of the opening shall be a min of 1/4 in. (6 mm) to a max of 3-1/8 in. (79 mm). The annular space between the through penetrants shall be min 1/4 in. (6 mm) to max 2 in. (51 mm).
When pipe covering A or B is used, the T, FT and FTH Ratings are 1-1/2 hr. When pipe covering D is used, the T, FT and FTH Ratings are 3/4 hr.
4. Firestop System — The firestop system shall consist of the following:
A. Packing Material — Min 3 in. (76 mm) thickness of min 4 kg/m³ mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material.
B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or wall assembly. When 1 in. (25 mm) thick AB/PVC tube insulation is used, min thickness of fill material shall be increased to 1 in. (25 mm). At the point contact location between through penetrant and concrete, a min 3/8 in. (10 mm) diam of fill material shall be applied at the concrete/through penetrant interface on both surfaces of floor or wall assembly.
SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant
+Bearing the UL Recognized Component Mark
*Bearing the UL Classification Marking

System No. C-AJ-3021
F Rating — 2 Hr
T Rating — 0 Hr
L Rating At Ambient — Less than 1 CFM/sq ft.
L Rating At 400 F — Less than 1 CFM/sq ft.



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 6-1/4 in. (159 mm).
See Concrete Blocks* (CAZT) category in the Fire Resistance Directory for names of manufacturers.
1A. Steel Sleeve — (Optional, Not Shown) — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe cleave cast into floor or wall assembly. Sleeve to be flush with floor or wall surfaces.
2. Cables — Min 12 percent to max 40 percent fill area per max 4 in. (102 mm) diam steel sleeve through opening. Min 20 percent to max 40 percent fill area per max 6-1/4 in. (159 mm) diam non-sleeved through opening. Cables to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of cables may be used:
A. Max 7/C No. 12 AWG multiple conductor power and control cables with polyvinyl chloride (PVC) insulation and jacket materials.
B. Multiple fiber optical communication cables jacketed with PVC and having a max outside diam of 3/4 in.
C. Max 200 pair No. 24 AWG copper conductor telephone cables with PVC insulation and jacket materials.
D. Max 350 kcmil power cables with PVC insulation and jacket material.
3. Packing Material — Nom 1 in. (25 mm) thickness of ceramic (aluminum silica) fiber blanket or mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed min 1 in. (25 mm) from top surface of floor or sleeve or from both surfaces of wall.
3A. Forming Material* — As an alternate to the packing material in Item 3, nom 4 in. (102 mm) wide strips of min 1/2 in. (13 mm) thick compressible mat to be stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 4 in. (102 mm) depth. As an option, the strips of min 1/2 in. (13 mm) thick compressible mat may be folded in half, lengthwise, and stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 2 in. (51 mm) depth. Top of forming material to be recessed from top surface of floor or from both surfaces of wall as necessary to accommodate the required thickness of caulk fill material.
3M COMPANY 3M FIRE PROTECTION PRODUCTS — Fire Barrier Packing Material
4. Fill, Void, or Cavity Materials* — Putty — Moldable putty material kneaded by hand and applied to fill annular space (and interstices between cables to max extent possible) to a min depth of 1 in. (25 mm), flush with top surface of floor or sleeve in wall assemblies, required putty depth to be installed symmetrically on both sides of wall.
3M COMPANY 3M FIRE PROTECTION PRODUCTS — type MPS-2+
*Bearing the UL Classification Mark



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N.J. A105415 N.Y. 11339
CT. 09009 PA. B 6580
Noel S. Musial, II, A.I.A.
N.J. 21A10208500

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UNION COUNTY CLERK OFFICE RECONSTRUCTION
2 Broad Street
Elizabeth, NJ 07201

SEPTEMBER 2021

No. Revision Description Date

Scale:
Drawn by:
Checked by:

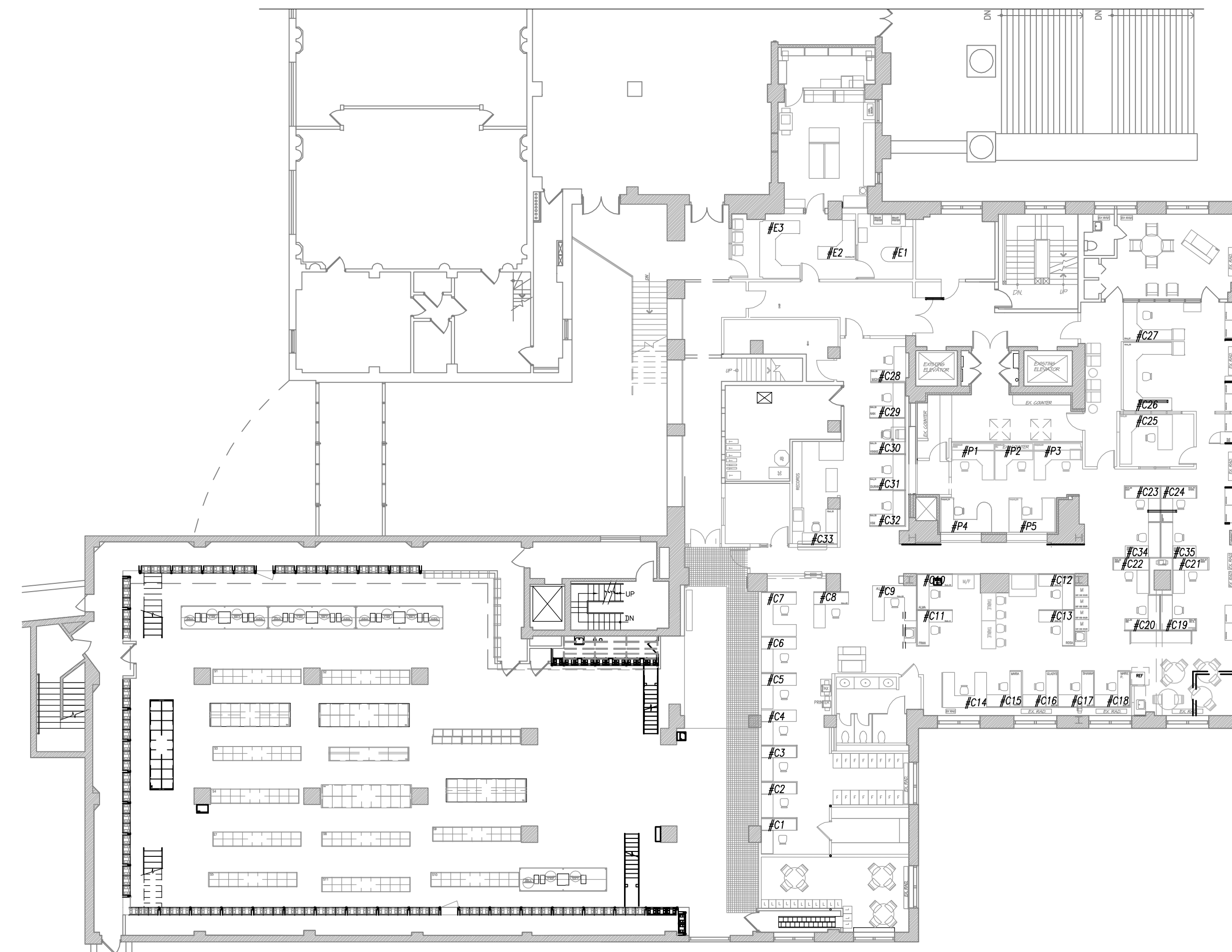
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THROUGH PENETRATION, FIRESTOPPING, AND BLOCKING DETAILS

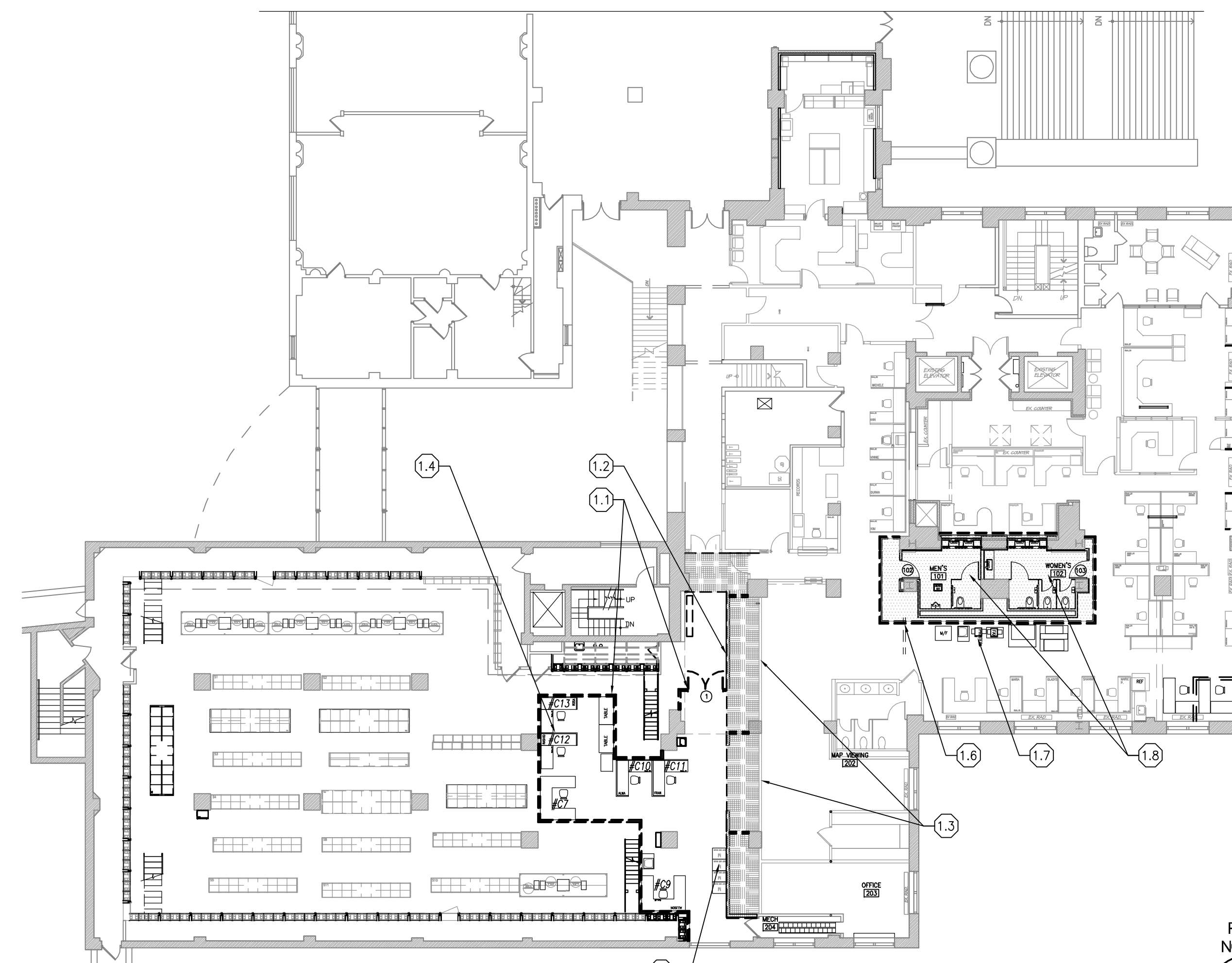
A005

PHASE 1	CONSTRUCT NEW RESTROOMS	4 MONTH DURATION
1.1	CONSTRUCT TEMP WALLS IN RECORD ROOM. TEMP DOORS 1 PER DRAWING A601 DOOR SCHED	
1.2	CONSTRUCT NEW PASSPORT & CLERK DEMISING WALL IN RECORDS ROOM	
1.3	DEMOLISH PORTION OF WALL BETWEEN RECORDS ROOM & CLERK'S OFFICE	
1.4	MOVE CLERK WORKSTATIONS 7,9,10,11,12,13 INTO TEMP RECORDS ROOM SPACE	
1.5	RELOCATE MAP CABINETS INTO TEMP. RECORDS ROOM SPACE	
1.6	INSTALL TEMP WALLS AROUND FUTURE RESTROOMS	
1.7	MOVE PRINTERS AND COPIERS INTO TEMP SPACE ADJACENT TO INITIAL 10,11,12,13 WORKSTATION LOCATIONS	
1.8	CONSTRUCT RESTROOMS	
PHASE 2	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCH ROOM	6 WEEK DURATION
2.1	RELOCATE FILING CABINETS INTO SPACE PREVIOUSLY OCCUPIED BY CLERK WORKSTATIONS #6,7,8	
2.2	INSTALL TEMP WALLS AROUND EXISTING RESTROOM	
2.3	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCHROOM	
2.4	MOVE CLERK DESKS #33,5,6 FROM LUNCH ROOM INTO FINAL LOCATIONS. MOVE CLERK DESKS #7,9,10,11,12,13 TO FINAL LOCATIONS	
2.5	MOVE MAP CABINETS, MAP BOOKS, VETERANS RECORDS & FORECLOSURE RECORDS INTO FINAL LOCATIONS	
PHASE 2A	CONSTRUCT FILING CABINET EXTENSION	1 WEEK DURATION
2A.1	CONSTRUCT FILING CABINET EXTENSION ADJACENT TO PHASE 1 RESTROOM	
2A.2	MOVE FILING CABINETS FROM PHASE 2 ITEM #1 TO FINAL LOCATION	
PHASE 3	CONSTRUCT NEW PASSPORT OFFICE	3 MONTH DURATION
3.1	MOVE CLERK WORKSTATIONS #28,29,30,31,32 TO RECORD ROOM TEMP OFFICES	
3.2	CONSTRUCT PARTITIONS AROUND NEW PASSPORT OFFICE WORK AREA	
3.3	DEMOLISH EXISTING WALLS WITHIN NEW PASSPORT OFFICE WORK AREA.	
3.4	CONSTRUCT NEW PASSPORT OFFICE	
3.5	CONSTRUCT NEW ENTRY INTO RECORDS ROOM DURING OFF HOURS	
3.6	CONSTRUCT NEW FLOORING AND CEILING FINISHES IN CORRIDOR BETWEEN PASSPORT & MEN'S ROOM AFTER HOURS	

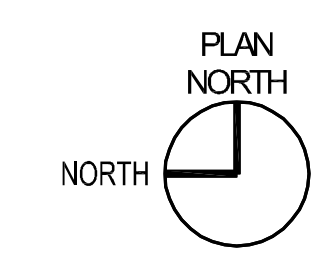
PHASE 4	CONSTRUCT ELECTIONS OFFICES & ELECTIONS CORRIDOR PART #1	3 MONTH DURATION
4.1	MOVE PASSPORT WORKSTATIONS #1,2,3,4,5 INTO NEW PASSPORT SPACE.	
4.2	CONSTRUCT TEMPORARY WALLS AROUND PERIMETER OF TEMPORARY ELECTIONS SPACE (OLD PASSPORT.)	
4.3	DEMOLISH EXISTING PASSPORT CASEWORK	
4.4	CONSTRUCT TEMPORARY OFFICE WALLS IN OLD PASSPORT OFFICES FOR TEMPORARY ELECTIONS SPACE.	
4.5	MOVE ELECTIONS WORKSTATIONS INTO TEMPORARY ELECTIONS OFFICE	
4.6	CONSTRUCT NEW ELECTIONS OFFICES AND NEW PLAN WEST CORRIDOR. ACCESS TO ELECTIONS AND CLERK IS VIA ELEVATOR AND ADJACENT STAIR.	
PHASE 4A	CONSTRUCT ELECTIONS CORRIDOR PART #2	PART OF PHASE 4 DURATION
4A.1	MOVE ELECTIONS INTO NEW ELECTIONS OFFICE	
4A.2	COMPLETE CONSTRUCTION OF REMAINING PORTION OF CORRIDOR	
PHASE 5	CLERK OFFICES PART 1	2 MONTH DURATION
5.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,34,&35 TO OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE	
5.2	CONSTRUCT CLERK OFFICE PART 1	
PHASE 5A	CLERK OFFICES PART 2	2 MONTH DURATION
5A.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,30,31,32,34,&35 FROM OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE TO FINAL SPACE	
5A.2	MOVE CLERK WORKSTATIONS #23,24,25,26,27 INTO OLD PASSPORT TEMP OFFICES AND RECORDS ROOM SPACE	
5A.3	CONSTRUCT CLERK OFFICE PART 2	
PHASE 6	CONSTRUCT LUNCH ROOM & CONFERENCE ROOM	6 WEEK DURATION
6.1	CONSTRUCT PHASE 6 LUNCH ROOM & CONFERENCE ROOMS	
6.2	COMPLETE RECORDS ROOM WALLS & REMOVE TEMP WALLS	
THE END		



1 PHASE 0 EXISTING CONDITIONS PLAN
SCALE: 1/16" = 1'-0"



2 PHASE 1 CONSTRUCT NEW RESTROOMS
SCALE: 1/16" = 1'-0"



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**UNION COUNTY
CLERK OFFICE
RECONSTRUCTION**
2 Broad Street
Elizabeth, NJ 07201

SEPTEMBER 2021

No.	Revision Description	Date
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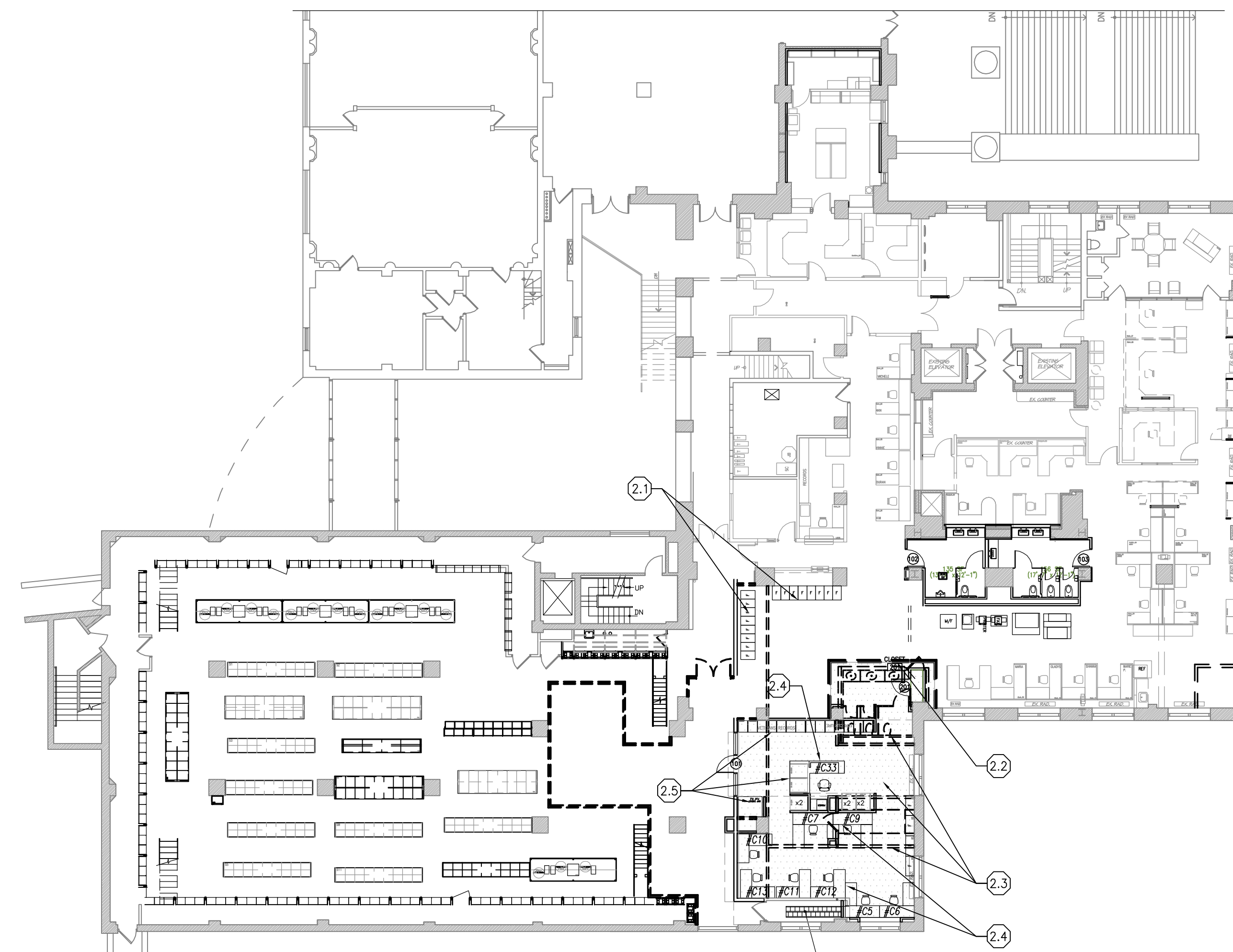
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PHASING
PLANS

AP101

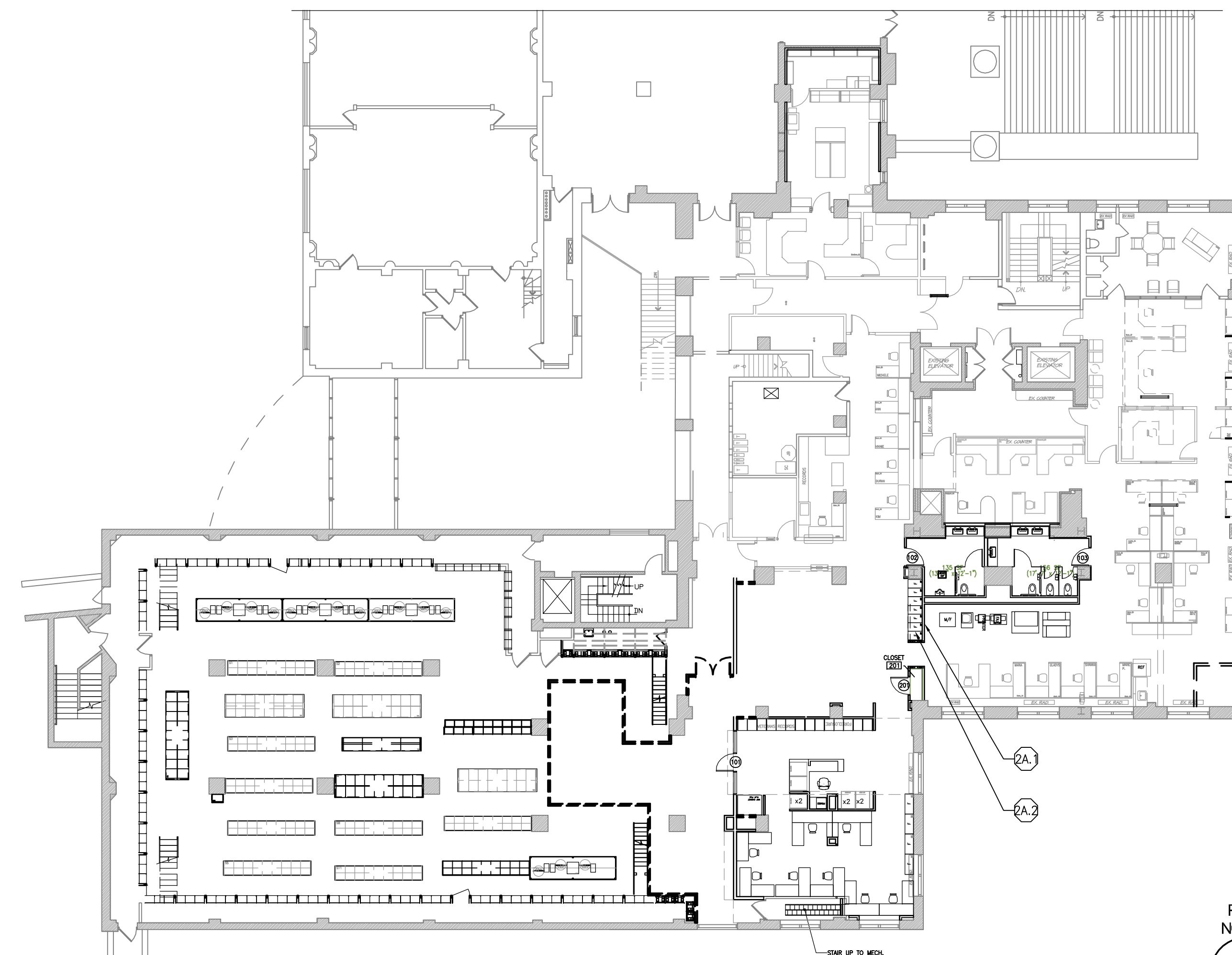
ORIGINAL
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PHASE 1	CONSTRUCT NEW RESTROOMS	4 MONTH DURATION
1.1	CONSTRUCT TEMP WALLS IN RECORD ROOM, TEMP DOORS 1 PER DRAWING A601 DOOR SCHED	
1.2	CONSTRUCT NEW PASSPORT & CLERK DEMISING WALL IN RECORDS ROOM	
1.3	DEMOLISH PORTION OF WALL BETWEEN RECORDS ROOM & CLERK'S OFFICE	
1.4	MOVE CLERK WORKSTATIONS 7,9,10,11,12,13 INTO TEMP RECORDS ROOM SPACE	
1.5	RELOCATE MAP CABINETS INTO TEMP. RECORDS ROOM SPACE	
1.6	INSTALL TEMP WALLS AROUND FUTURE RESTROOMS	
1.7	MOVE PRINTERS AND COPIERS INTO TEMP SPACE ADJACENT TO INITIAL 10,11,12,13 WORKSTATION LOCATIONS	
1.8	CONSTRUCT RESTROOMS	
PHASE 2	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCH ROOM	6 WEEK DURATION
2.1	RELOCATE FILING CABINETS INTO SPACE PREVIOUSLY OCCUPIED BY CLERK WORKSTATIONS #6,7,8	
2.2	INSTALL TEMP WALLS AROUND EXISTING RESTROOM	
2.3	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCHROOM	
2.4	MOVE CLERK DESKS #3,5,6 FROM LUNCH ROOM INTO FINAL LOCATIONS. MOVE CLERK DESKS #7,9,10,11,12,13 TO FINAL LOCATIONS	
2.5	MOVE MAP CABINETS, MAP BOOKS, VETERANS RECORDS & FORECLOSURE RECORDS INTO FINAL LOCATIONS	
PHASE 2A	CONSTRUCT FILING CABINET EXTENSION	1 WEEK DURATION
2A.1	CONSTRUCT FILING CABINET EXTENSION ADJACENT TO PHASE 1 RESTROOM	
2A.2	MOVE FILING CABINETS FROM PHASE 2 ITEM #1 TO FINAL LOCATION	
PHASE 3	CONSTRUCT NEW PASSPORT OFFICE	3 MONTH DURATION
3.1	MOVE CLERK WORKSTATIONS #28,29,30,31,32 TO RECORD ROOM TEMP OFFICES	
3.2	CONSTRUCT PARTITIONS AROUND NEW PASSPORT OFFICE WORK AREA	
3.3	DEMOLISH EXISTING WALLS WITHIN NEW PASSPORT OFFICE WORK AREA.	
3.4	CONSTRUCT NEW PASSPORT OFFICE	
3.5	CONSTRUCT NEW ENTRY INTO RECORDS ROOM DURING OFF HOURS	
3.6	CONSTRUCT NEW FLOORING AND CEILING FINISHES IN CORRIDOR BETWEEN PASSPORT & MEN'S ROOM AFTER HOURS	

PHASE 4	CONSTRUCT ELECTIONS OFFICES & ELECTIONS CORRIDOR PART #1	3 MONTH DURATION
4.1	MOVE PASSPORT WORKSTATIONS #1,2,3,4,5 INTO NEW PASSPORT SPACE.	
4.2	CONSTRUCT TEMPORARY WALLS AROUND PERIMETER OF TEMPORARY ELECTIONS SPACE (OLD PASSPORT.)	
4.3	DEMOLISH EXISTING PASSPORT CASEWORK	
4.4	CONSTRUCT TEMPORARY OFFICE WALLS IN OLD PASSPORT OFFICES FOR TEMPORARY ELECTIONS SPACE.	
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PHASE 4A	CONSTRUCT ELECTIONS CORRIDOR PART #2	PART OF PHASE 4 DURATION
4A.1	MOVE ELECTIONS INTO NEW ELECTIONS OFFICE	
4A.2	COMPLETE CONSTRUCTION OF REMAINING PORTION OF CORRIDOR	
PHASE 5	CLERK OFFICES PART 1	2 MONTH DURATION
5.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,34,&35 TO OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE	
5.2	CONSTRUCT CLERK OFFICE PART 1	
PHASE 5A	CLERK OFFICES PART 2	2 MONTH DURATION
5A.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,30,31,32,34,&35 FROM OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE TO FINAL SPACE	
5A.2	MOVE CLERK WORKSTATIONS #23,24,25,26,27 INTO OLD PASSPORT TEMP OFFICES AND RECORDS ROOM SPACE	
5A.3	CONSTRUCT CLERK OFFICE PART 2	
PHASE 6	CONSTRUCT LUNCH ROOM & CONFERENCE ROOM	6 WEEK DURATION
6.1	CONSTRUCT PHASE 6 LUNCH ROOM & CONFERENCE ROOMS	
6.2	COMPLETE RECORDS ROOM WALLS & REMOVE TEMP WALLS	
THE END		



1 PHASE 2 DEMOLISH EXISTING RESTROOM STORAGE ROOM & LUNCH ROOM
SCALE: 1/8" = 1'-0"



2 PHASE 2A CONSTRUCT FILING CABINET EXTENSION
SCALE: 1/8" = 1'-0"

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UNION COUNTY CLERK OFFICE RECONSTRUCTION
2 Broad Street
Elizabeth, NJ 07201

SEPTEMBER 2021

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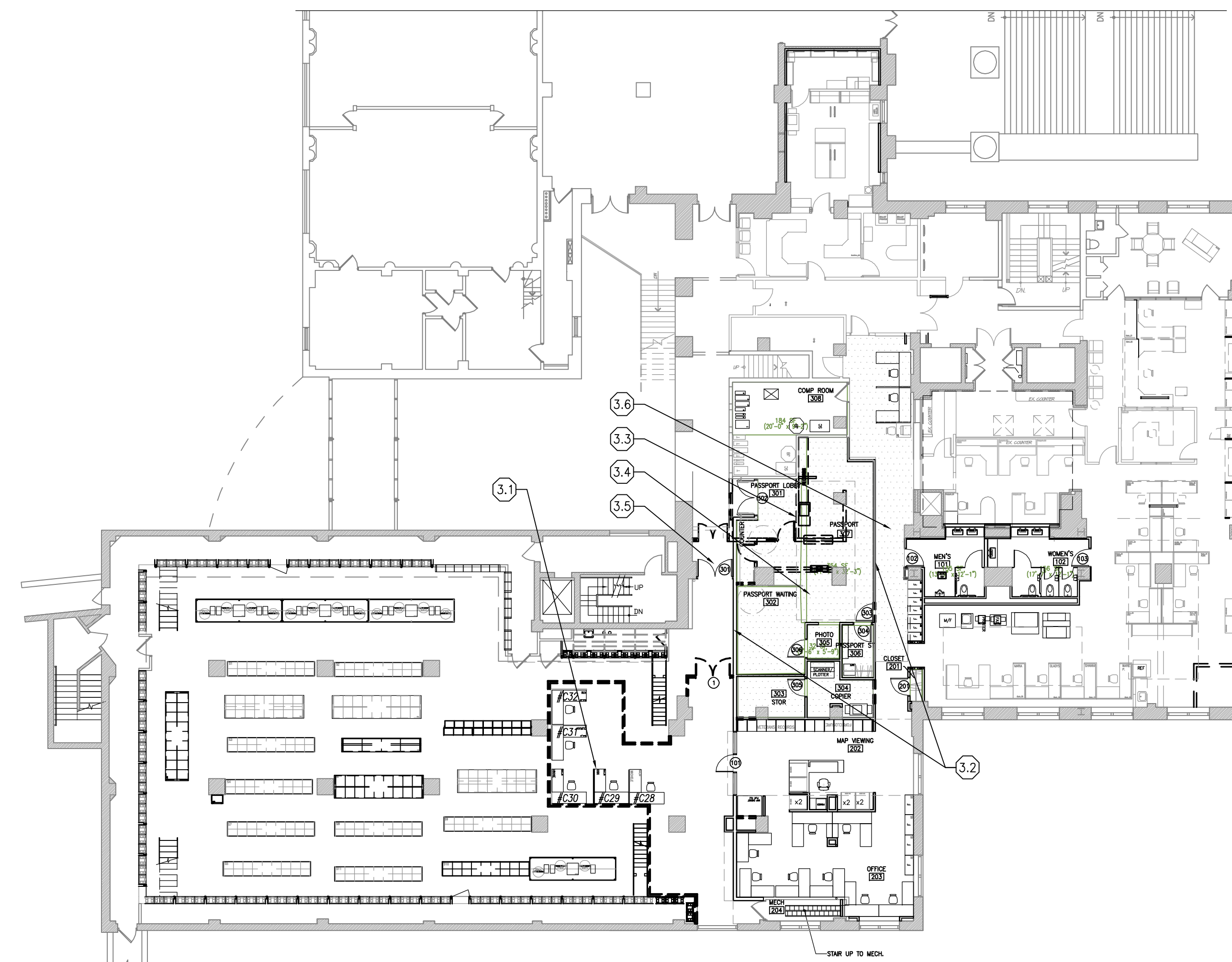
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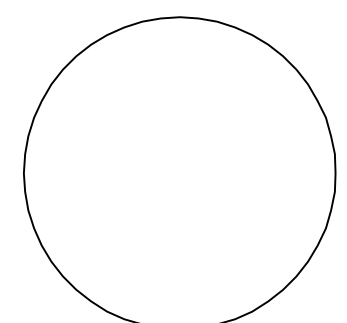
ORIGINAL
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PHASE 1	CONSTRUCT NEW RESTROOMS	4 MONTH DURATION
1.1	CONSTRUCT TEMP WALLS IN RECORD ROOM, TEMP DOORS 1 PER DRAWING A601 DOOR SCHED	
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PHASE 2	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCH ROOM	6 WEEK DURATION
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2.5	MOVE MAP CABINETS, MAP BOOKS, VETERANS RECORDS & FORECLOSURE RECORDS INTO FINAL LOCATIONS	
PHASE 2A	CONSTRUCT FILING CABINET EXTENSION	1 WEEK DURATION
2A.1	CONSTRUCT FILING CABINET EXTENSION ADJACENT TO PHASE 1 RESTROOM	
2A.2	MOVE FILING CABINETS FROM PHASE 2 ITEM #1 TO FINAL LOCATION	
PHASE 3	CONSTRUCT NEW PASSPORT OFFICE	3 MONTH DURATION
3.1	MOVE CLERK WORKSTATIONS #28,29,30,31,32 TO RECORD ROOM TEMP OFFICES	
3.2	CONSTRUCT PARTITIONS AROUND NEW PASSPORT OFFICE WORK AREA	
3.3	DEMOLISH EXISTING WALLS WITHIN NEW PASSPORT OFFICE WORK AREA.	
3.4	CONSTRUCT NEW PASSPORT OFFICE	
3.5	CONSTRUCT NEW ENTRY INTO RECORDS ROOM DURING OFF HOURS	
3.6	CONSTRUCT NEW FLOORING AND CEILING FINISHES IN CORRIDOR BETWEEN PASSPORT & MEN'S ROOM AFTER HOURS	

PHASE 4	CONSTRUCT ELECTIONS OFFICES & ELECTIONS CORRIDOR PART #1	3 MONTH DURATION
4.1	MOVE PASSPORT WORKSTATIONS #1,2,3,4,5 INTO NEW PASSPORT SPACE.	
4.2	CONSTRUCT TEMPORARY WALLS AROUND PERIMETER OF TEMPORARY ELECTIONS SPACE (OLD PASSPORT.)	
4.3	DEMOLISH EXISTING PASSPORT CASEWORK	
4.4	CONSTRUCT TEMPORARY OFFICE WALLS IN OLD PASSPORT OFFICES FOR TEMPORARY ELECTIONS SPACE.	
4.5	MOVE ELECTIONS WORKSTATIONS INTO TEMPORARY ELECTIONS OFFICE	
4.6	CONSTRUCT NEW ELECTIONS OFFICES AND NEW PLAN WEST CORRIDOR. ACCESS TO ELECTIONS AND CLERK IS VIA ELEVATOR AND ADJACENT STAIR.	
PHASE 4A	CONSTRUCT ELECTIONS CORRIDOR PART #2	PART OF PHASE 4 DURATION
4A.1	MOVE ELECTIONS INTO NEW ELECTIONS OFFICE	
4A.2	COMPLETE CONSTRUCTION OF REMAINING PORTION OF CORRIDOR	
PHASE 5	CLERK OFFICES PART 1	2 MONTH DURATION
5.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,34,&35 TO OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE	
5.2	CONSTRUCT CLERK OFFICE PART 1	
PHASE 5A	CLERK OFFICES PART 2	2 MONTH DURATION
5A.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,30,31,32,34,&35 FROM OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE TO FINAL SPACE	
5A.2	MOVE CLERK WORKSTATIONS #23,24,25,26,27 INTO OLD PASSPORT TEMP OFFICES AND RECORDS ROOM SPACE	
5A.3	CONSTRUCT CLERK OFFICE PART 2	
PHASE 6	CONSTRUCT LUNCH ROOM & CONFERENCE ROOM	6 WEEK DURATION
6.1	CONSTRUCT PHASE 6 LUNCH ROOM & CONFERENCE ROOMS	
6.2	COMPLETE RECORDS ROOM WALLS & REMOVE TEMP WALLS	
THE END		



1 PHASE 3 CONSTRUCT NEW PASSPORT OFFICE
SCALE: 1/8" = 1'-0"


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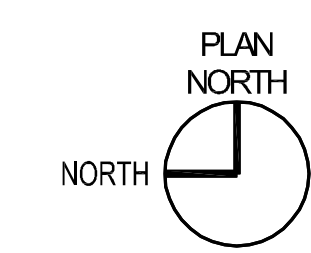
**UNION COUNTY
 CLERK OFFICE
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SEPTEMBER 2021		
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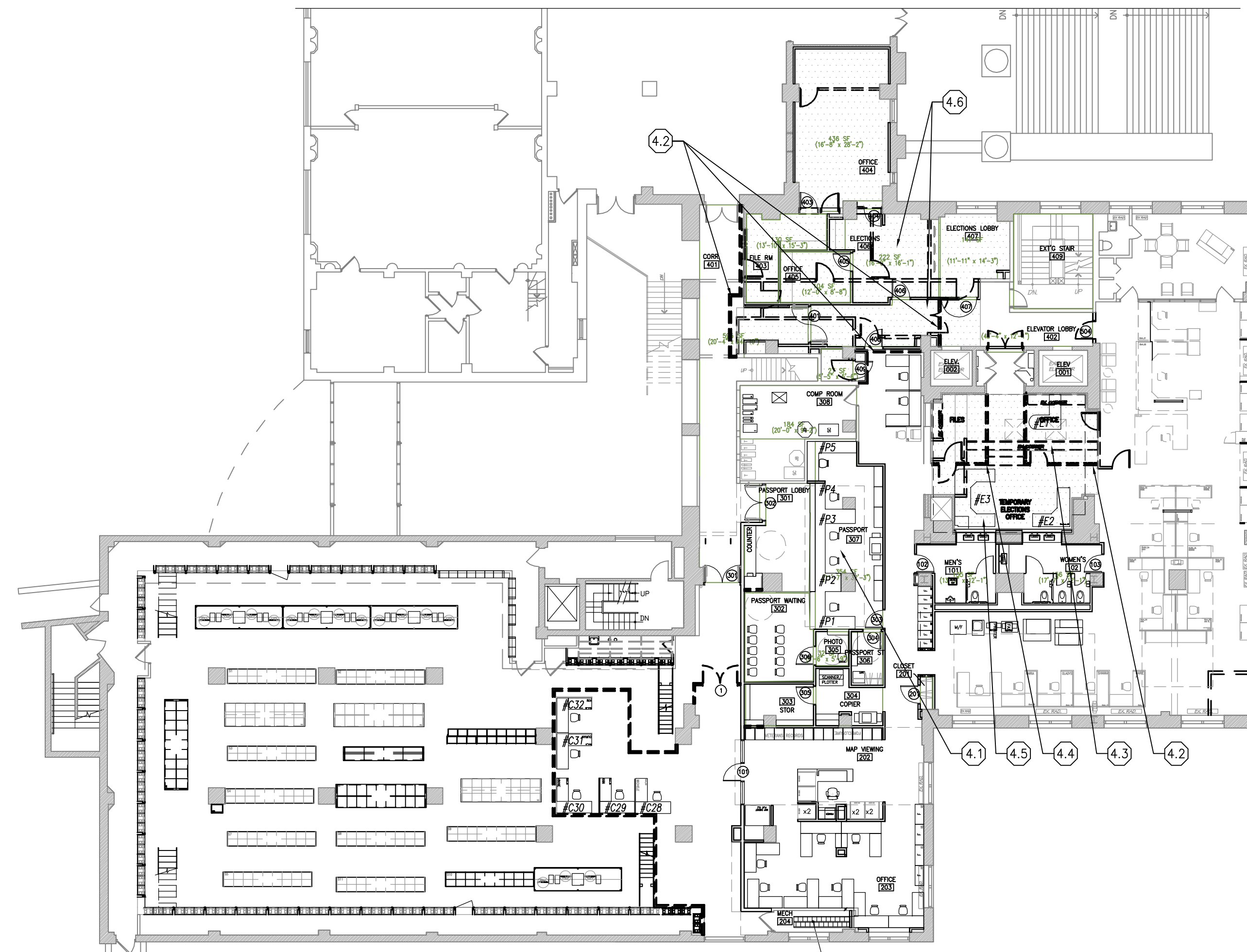
**PHASING
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AP103



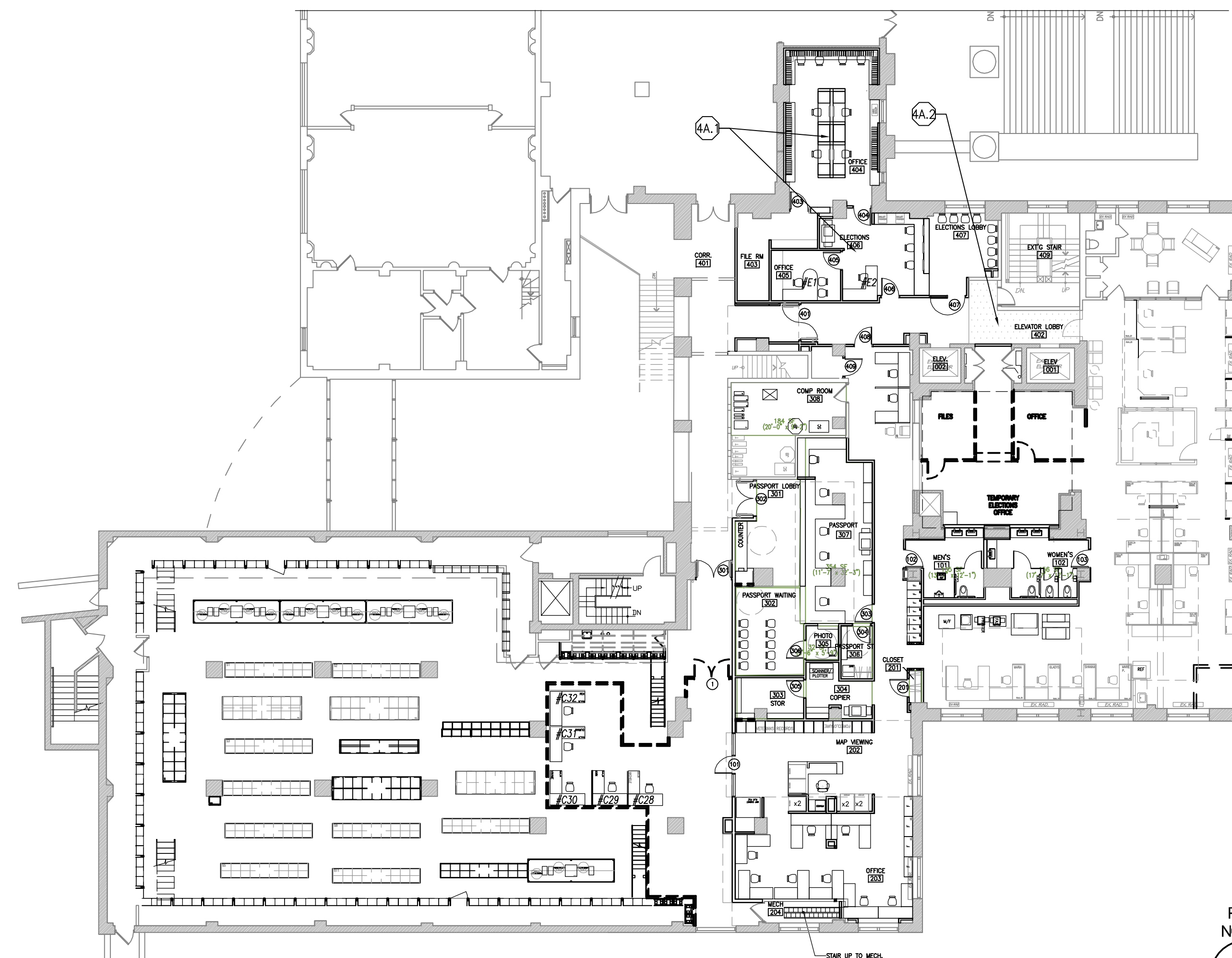
ORIGINAL
 IF IT IS RED IT IS AN ORIGINAL

PHASE 1	CONSTRUCT NEW RESTROOMS	4 MONTH DURATION
1.1	CONSTRUCT TEMP WALLS IN RECORD ROOM, TEMP DOORS 1 PER DRAWING A601 DOOR SCHED	
1.2	CONSTRUCT NEW PASSPORT & CLERK DEMISING WALL IN RECORDS ROOM	
1.3	DEMOLISH PORTION OF WALL BETWEEN RECORDS ROOM & CLERK'S OFFICE	
1.4	MOVE CLERK WORKSTATIONS 7,9,10,11,12,13 INTO TEMP RECORDS ROOM SPACE	
1.5	RELOCATE MAP CABINETS INTO TEMP. RECORDS ROOM SPACE	
1.6	INSTALL TEMP WALLS AROUND FUTURE RESTROOMS	
1.7	MOVE PRINTERS AND COPIERS INTO TEMP SPACE ADJACENT TO INITIAL 10,11,12,13 WORKSTATION LOCATIONS	
1.8	CONSTRUCT RESTROOMS	
PHASE 2	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCH ROOM	6 WEEK DURATION
2.1	RELOCATE FILING CABINETS INTO SPACE PREVIOUSLY OCCUPIED BY CLERK WORKSTATIONS #6,7,8	
2.2	INSTALL TEMP WALLS AROUND EXISTING RESTROOM	
2.3	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCHROOM	
2.4	MOVE CLERK DESKS #33,5,6 FROM LUNCH ROOM INTO FINAL LOCATIONS. MOVE CLERK DESKS #7,9,10,11,12,13 TO FINAL LOCATIONS	
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PHASE 2A	CONSTRUCT FILING CABINET EXTENSION	1 WEEK DURATION
2A.1	CONSTRUCT FILING CABINET EXTENSION ADJACENT TO PHASE 1 RESTROOM	
2A.2	MOVE FILING CABINETS FROM PHASE 2 ITEM #1 TO FINAL LOCATION	
PHASE 3	CONSTRUCT NEW PASSPORT OFFICE	3 MONTH DURATION
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3.2	CONSTRUCT PARTITIONS AROUND NEW PASSPORT OFFICE WORK AREA	
3.3	DEMOLISH EXISTING WALLS WITHIN NEW PASSPORT OFFICE WORK AREA.	
3.4	CONSTRUCT NEW PASSPORT OFFICE	
3.5	CONSTRUCT NEW ENTRY INTO RECORDS ROOM DURING OFF HOURS	
3.6	CONSTRUCT NEW FLOORING AND CEILING FINISHES IN CORRIDOR BETWEEN PASSPORT & MEN'S ROOM AFTER HOURS	

PHASE 4	CONSTRUCT ELECTIONS OFFICES & ELECTIONS CORRIDOR PART #1	3 MONTH DURATION
4.1	MOVE PASSPORT WORKSTATIONS #1,2,3,4,5 INTO NEW PASSPORT SPACE.	
4.2	CONSTRUCT TEMPORARY WALLS AROUND PERIMETER OF TEMPORARY ELECTIONS SPACE (OLD PASSPORT.)	
4.3	DEMOLISH EXISTING PASSPORT CASEWORK	
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PHASE 4A	CONSTRUCT ELECTIONS CORRIDOR PART #2	PART OF PHASE 4 DURATION
4A.1	MOVE ELECTIONS INTO NEW ELECTIONS OFFICE	
4A.2	COMPLETE CONSTRUCTION OF REMAINING PORTION OF CORRIDOR	
PHASE 5	CLERK OFFICES PART 1	2 MONTH DURATION
5.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,34,&35 TO OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE	
5.2	CONSTRUCT CLERK OFFICE PART 1	
PHASE 5A	CLERK OFFICES PART 2	2 MONTH DURATION
5A.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,30,31,32,34,&35 FROM OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE TO FINAL SPACE	
5A.2	MOVE CLERK WORKSTATIONS #23,24,25,26,27 INTO OLD PASSPORT TEMP OFFICES AND RECORDS ROOM SPACE	
5A.3	CONSTRUCT CLERK OFFICE PART 2	
PHASE 6	CONSTRUCT LUNCH ROOM & CONFERENCE ROOM	6 WEEK DURATION
6.1	CONSTRUCT PHASE 6 LUNCH ROOM & CONFERENCE ROOMS	
6.2	COMPLETE RECORDS ROOM WALLS & REMOVE TEMP WALLS	
THE END		



1 PHASE 4. CONSTRUCT ELECTIONS OFFICES & ELECTIONS CORRIDOR PART #1
SCALE: 1/8" = 1'-0"



2 PHASE 4A. CONSTRUCT ELECTIONS CORRIDOR PART #2
SCALE: 1/8" = 1'-0"

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**UNION COUNTY
CLERK OFFICE
RECONSTRUCTION**
2 Broad Street
Elizabeth, NJ 07201

SEPTEMBER 2021

No.	Revision Description	Date
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Scale:
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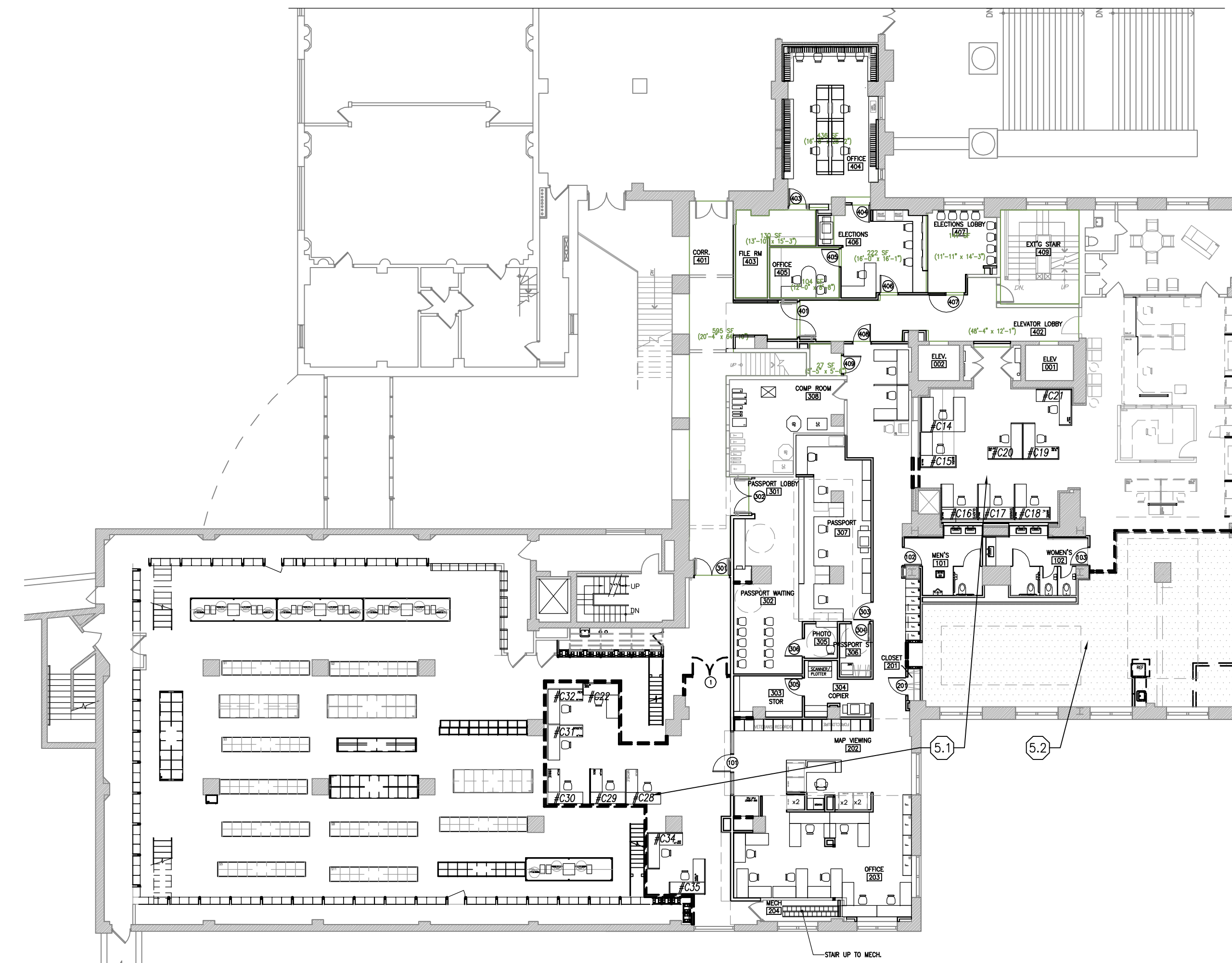
PHASING
PLANS

AP104

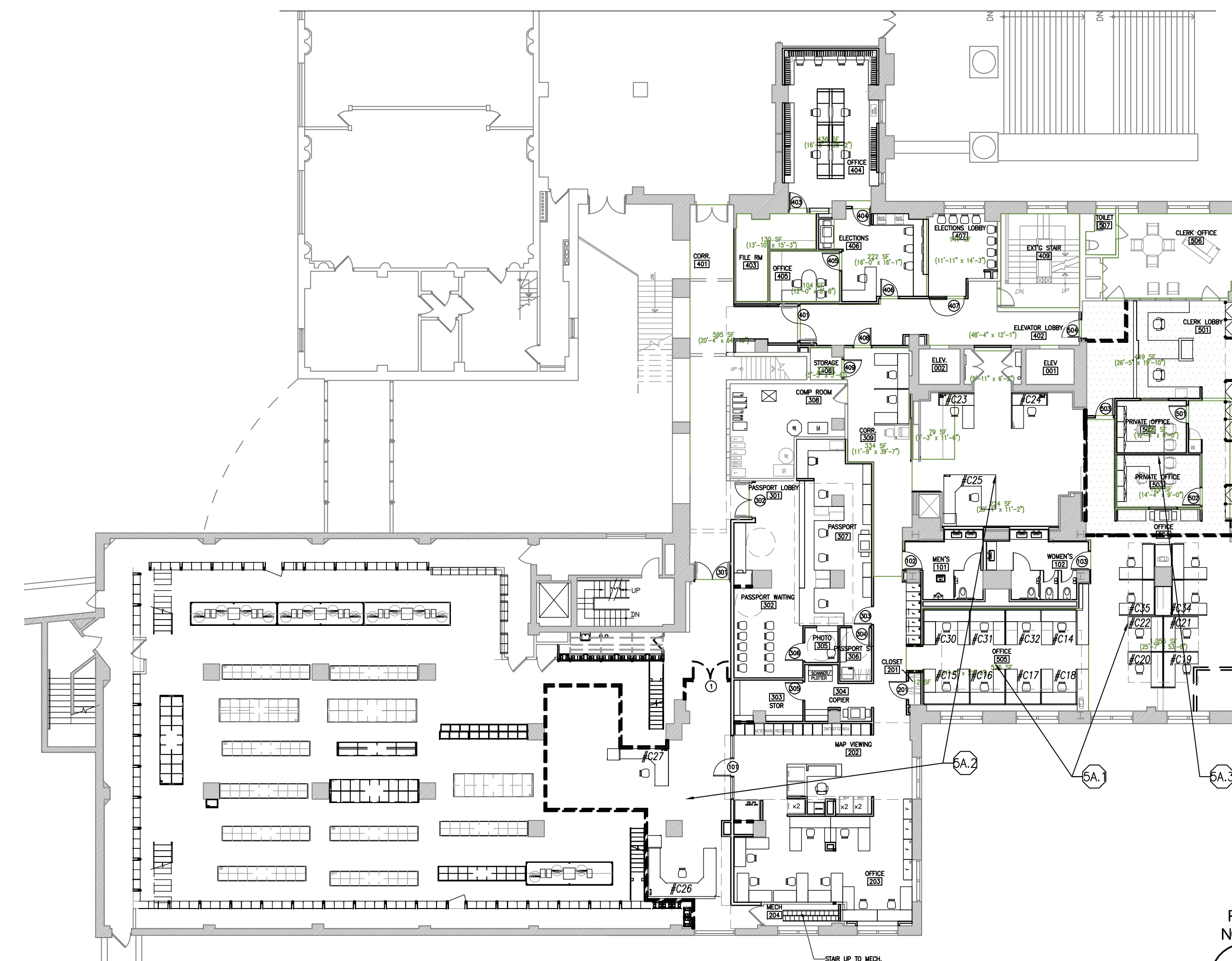
ORIGINAL
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PHASE 1	CONSTRUCT NEW RESTROOMS	4 MONTH DURATION
1.1	CONSTRUCT TEMP WALLS IN RECORD ROOM, TEMP DOORS 1 PER DRAWING A601 DOOR SCHED	
1.2	CONSTRUCT NEW PASSPORT & CLERK DEMISING WALL IN RECORDS ROOM	
1.3	DEMOLISH PORTION OF WALL BETWEEN RECORDS ROOM & CLERK'S OFFICE	
1.4	MOVE CLERK WORKSTATIONS 7,9,10,11,12,13 INTO TEMP RECORDS ROOM SPACE	
1.5	RELOCATE MAP CABINETS INTO TEMP. RECORDS ROOM SPACE	
1.6	INSTALL TEMP WALLS AROUND FUTURE RESTROOMS	
1.7	MOVE PRINTERS AND COPIERS INTO TEMP SPACE ADJACENT TO INITIAL 10,11,12,13 WORKSTATION LOCATIONS	
1.8	CONSTRUCT RESTROOMS	
PHASE 2	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCH ROOM	6 WEEK DURATION
2.1	RELOCATE FILING CABINETS INTO SPACE PREVIOUSLY OCCUPIED BY CLERK WORKSTATIONS #6,7,8	
2.2	INSTALL TEMP WALLS AROUND EXISTING RESTROOM	
2.3	DEMOLISH EXISTING RESTROOM, STORAGE ROOM & LUNCHROOM	
2.4	MOVE CLERK DESKS #33,5,6 FROM LUNCH ROOM INTO FINAL LOCATIONS. MOVE CLERK DESKS #7,9,10,11,12,13 TO FINAL LOCATIONS	
2.5	MOVE MAP CABINETS, MAP BOOKS, VETERANS RECORDS & FORECLOSURE RECORDS INTO FINAL LOCATIONS	
PHASE 2A	CONSTRUCT FILING CABINET EXTENSION	1 WEEK DURATION
2A.1	CONSTRUCT FILING CABINET EXTENSION ADJACENT TO PHASE 1 RESTROOM	
2A.2	MOVE FILING CABINETS FROM PHASE 2 ITEM #1 TO FINAL LOCATION	
PHASE 3	CONSTRUCT NEW PASSPORT OFFICE	3 MONTH DURATION
3.1	MOVE CLERK WORKSTATIONS #28,29,30,31,32 TO RECORD ROOM TEMP OFFICES	
3.2	CONSTRUCT PARTITIONS AROUND NEW PASSPORT OFFICE WORK AREA	
3.3	DEMOLISH EXISTING WALLS WITHIN NEW PASSPORT OFFICE WORK AREA.	
3.4	CONSTRUCT NEW PASSPORT OFFICE	
3.5	CONSTRUCT NEW ENTRY INTO RECORDS ROOM DURING OFF HOURS	
3.6	CONSTRUCT NEW FLOORING AND CEILING FINISHES IN CORRIDOR BETWEEN PASSPORT & MEN'S ROOM AFTER HOURS	

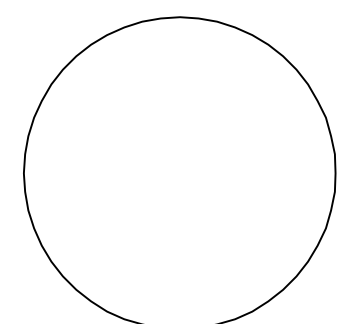
PHASE 4	CONSTRUCT ELECTIONS OFFICES & ELECTIONS CORRIDOR PART #1	3 MONTH DURATION
4.1	MOVE PASSPORT WORKSTATIONS #1,2,3,4,5 INTO NEW PASSPORT SPACE.	
4.2	CONSTRUCT TEMPORARY WALLS AROUND PERIMETER OF TEMPORARY ELECTIONS SPACE (OLD PASSPORT.)	
4.3	DEMOLISH EXISTING PASSPORT CASEWORK	
4.4	CONSTRUCT TEMPORARY OFFICE WALLS IN OLD PASSPORT OFFICES FOR TEMPORARY ELECTIONS SPACE.	
4.5	MOVE ELECTIONS WORKSTATIONS INTO TEMPORARY ELECTIONS OFFICE	
4.6	CONSTRUCT NEW ELECTIONS OFFICES AND NEW PLAN WEST CORRIDOR. ACCESS TO ELECTIONS AND CLERK IS VIA ELEVATOR AND ADJACENT STAIR.	
PHASE 4A	CONSTRUCT ELECTIONS CORRIDOR PART #2	PART OF PHASE 4 DURATION
4A.1	MOVE ELECTIONS INTO NEW ELECTIONS OFFICE	
4A.2	COMPLETE CONSTRUCTION OF REMAINING PORTION OF CORRIDOR	
PHASE 5	CLERK OFFICES PART 1	2 MONTH DURATION
5.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,34,&35 TO OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE	
5.2	CONSTRUCT CLERK OFFICE PART 1	
PHASE 5A	CLERK OFFICES PART 2	2 MONTH DURATION
5A.1	MOVE CLERK WORKSTATIONS #14,15,16,17,18,19,20,21,22,30,31,32,34,&35 FROM OLD PASSPORT TEMP OFFICE SPACE AND RECORDS ROOM SPACE TO FINAL SPACE	
5A.2	MOVE CLERK WORKSTATIONS #23,24,25,26,27 INTO OLD PASSPORT TEMP OFFICES AND RECORDS ROOM SPACE	
5A.3	CONSTRUCT CLERK OFFICE PART 2	
PHASE 6	CONSTRUCT LUNCH ROOM & CONFERENCE ROOM	6 WEEK DURATION
6.1	CONSTRUCT PHASE 6 LUNCH ROOM & CONFERENCE ROOMS	
6.2	COMPLETE RECORDS ROOM WALLS & REMOVE TEMP WALLS	
THE END		



1 PHASE 5 CLERK OFFICES PART 1
SCALE: 1/8" = 1'-0"



2 PHASE 5A CLERK OFFICES PART 2
SCALE: 1/8" = 1'-0"


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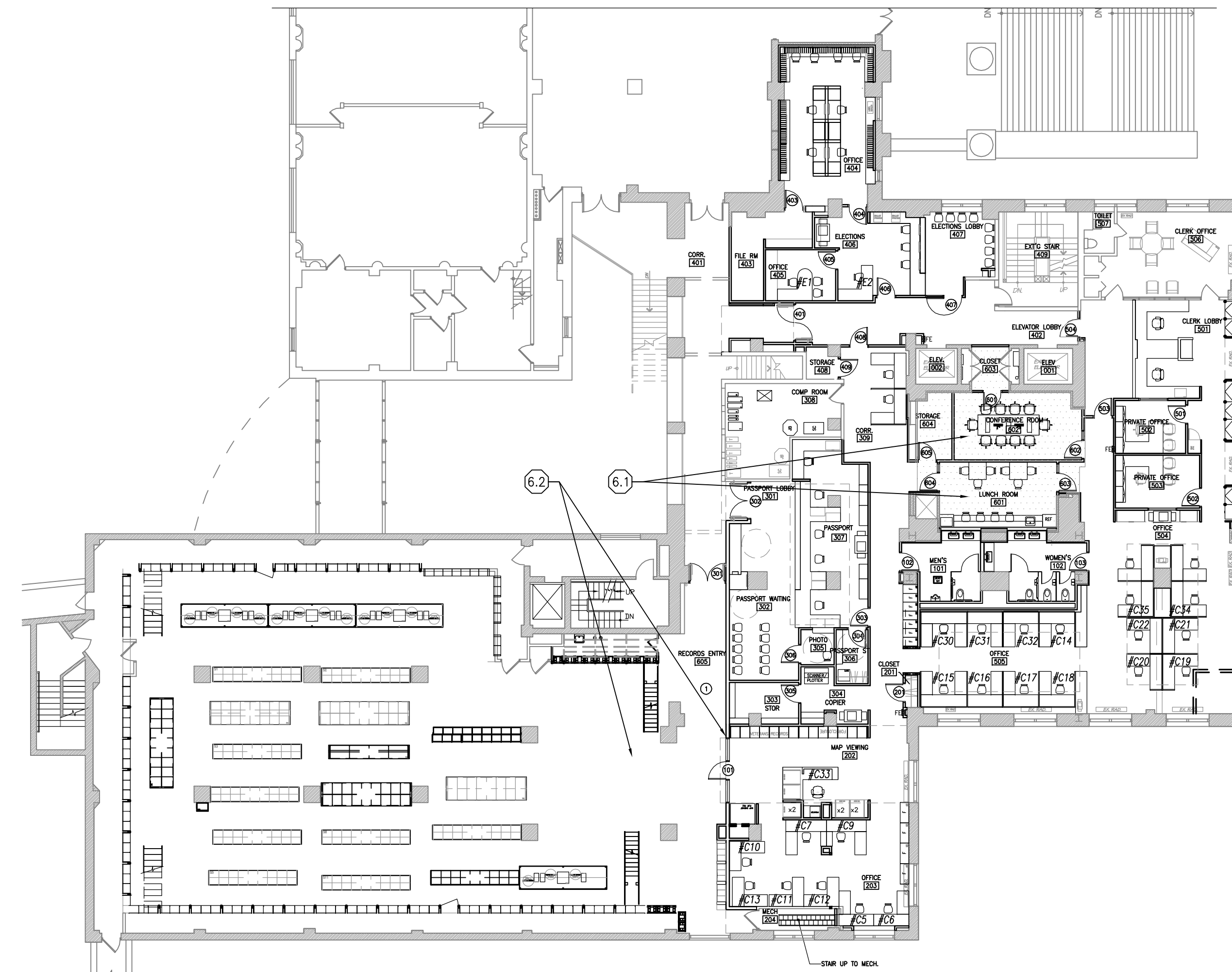
PHASING PLANS

AP105

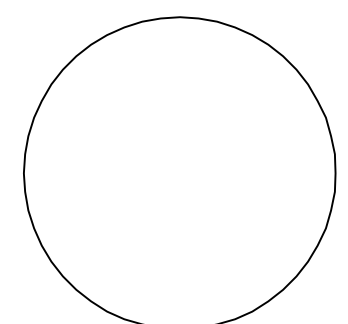
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6.2	COMPLETE RECORDS ROOM WALLS & REMOVE TEMP WALLS	
THE END		



1 PHASE 6 LUNCH & CONFERENCE ROOM
SCALE: 1/16" = 1'-0"


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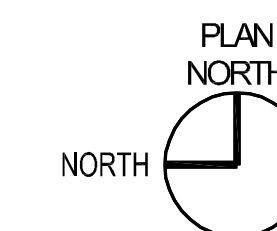
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**PHASING
PLANS**

AP106



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GENERAL DEMOLITION NOTES:

1. EACH CONTRACTOR SHALL THOROUGHLY EXAMINE AND BECOME FAMILIAR WITH ALL DEMOLITION DOCUMENTS FOR THE PROJECT AND NOT LIMIT THEIR WORK TO DRAWINGS REFERENCED FOR INDIVIDUAL TRADES. REFER TO PLUMB., MECH. AND ELEC. DWGS. ALL ITEMS INDICATED WITH DASHED LINES ARE INCLUDED IN THE DEMOLITION WORK.

2. DURING DEMOLITION AND ALTERATION PHASES, EXISTING FIRE DETECTORS SHALL ALWAYS REMAIN IN OPERATION. ALSO, MAINTAIN MOTION DETECTORS AND ALARMS DURING CONSTRUCTION PHASES.

3. DO NOT REMOVE ANY OF THE FOLLOWING ITEMS FROM AREAS OF RENOVATION THAT SERVE AREAS OF THE EXISTING BUILDING WHICH ARE NOT AFFECTED BY ARCHITECTURAL OR MECHANICAL WORK WITHOUT VERIFICATION WITH OWNER AND ARCHITECT:
DATA WIRE
FIRE ALARM WIRE
TELEPHONE WIRE
INTERCOM/AV WIRE

4. WHERE EXISTING INTERIOR PIPING IS TO BE REMOVED THROUGH OR WITHIN EXISTING CONCRETE FLOOR SLAB, PATCH FLOOR WITH NEW CONCRETE TO LEVEL OF EXISTING ADJACENT FLOOR SLAB.

5. CONTRACTOR TO REMOVE LOOSE FURNITURE. CAREFULLY REMOVE AND TEMPORARILY RELOCATE.

6. REMOVE EXISTING CERAMIC WALL TILES, MIRRORS, SOAP DISPENSERS, AND TOILET ACCESSORIES. REMOVE EXISTING CERAMIC FLOOR TILES, MORTAR AND ALL ADHESIVE IN ENTIRE ROOM. REMOVE ALL TOILET PARTITIONS AND ENTIRETY OF SUPPORTING STRUCTURE. REMOVE EXISTING FLOOR FINISH. PATCH EXISTING RECESS IN SLAB W/ 3000 PSI MIN CONC. TO MATCH ADJACENT SLAB. MAKE FLUSH WITH EXISTING SLAB.

7. ANY EXISTING EMERGENCY LIGHTS, FIRE ALARM DEVICES, SPRINKLER HEADS, DIFFUSERS, OR ACCESS PANELS THAT WILL BE COVERED BY NEW PARTITIONS OR CEILINGS SHALL BE RELOCATED BY CONTRACTOR AS DIRECTED BY ENGINEER AT NO COST TO OWNER.

8. REMOVE ANY EXISTING EXTERIOR MOUNTED EMERGENCY LIGHTS, CONDUITS, FIRE ALARM DEVICES, CAMERAS, EXHAUST FANS, LEADERS AND PIPING, HOSE BIBS, GRILLS, DIFFUSERS, OR ACCESS PANELS THAT WILL BE COVERED BY THE NEW CONSTRUCTION. CAMERAS, FIRE ALARM DEVICES AND EMERGENCY LIGHTS AND ALL ASSOCIATED CONDUITS AND WIRING SHALL BE RELOCATED

9. CONTRACTOR SHALL COORDINATE DEMOLITION WITH THE APPROPRIATE PHASING AS INDICATED ON THE PHASING PLANS. DEMOLITION SHALL ONLY BE DONE DURING THE APPROPRIATE PHASE. CONTRACTOR SHALL PROVIDE TEMPORARY WALLS, CLOSURES, COVERS, SUPPORTS, ETC. TO MAINTAIN USE OF ADJACENT UNDISTURBED SPACES WHEN DEMOLITION & CONSTRUCTION IS BEING PERFORMED. ALL SAFETY SYSTEMS SHALL BE MAINTAINED DURING DEMOLITION. TENANT MUST MAINTAIN UNIMPEDED OPERATIONS THROUGHOUT THE DURATION OF CONSTRUCTION. CONTRACTOR TO MAKE PROVISIONS TO ENSURE SAFE EGRESS AND ACCESS DURING CONSTRUCTION.

10. CONTRACTOR SHALL COORDINATE DEMOLITION WITH THE APPROPRIATE PHASING AS INDICATED ON THE PHASING PLANS. DEMOLITION SHALL ONLY BE DONE DURING THE APPROPRIATE PHASE. CONTRACTOR SHALL PROVIDE TEMPORARY WALLS, CLOSURES, COVERS, SUPPORTS, ETC. TO MAINTAIN USE OF ADJACENT UNDISTURBED SPACES WHEN DEMOLITION & CONSTRUCTION IS BEING PERFORMED. ALL SAFETY SYSTEMS SHALL BE MAINTAINED DURING DEMOLITION. TENANT MUST MAINTAIN UNIMPEDED OPERATIONS THROUGHOUT THE DURATION OF CONSTRUCTION. CONTRACTOR TO MAKE PROVISIONS TO ENSURE SAFE EGRESS AND ACCESS DURING CONSTRUCTION.

11. GENERAL CONTRACTOR IS TO COORDINATE WITH OWNER THE USE OF CRANES OR HOISTS, IF REQUIRED FOR MECHANICAL EQUIPMENT TO MINIMIZE THE IMPACT ON THE REGULAR OPERATION OF THE BUILDING AND GROUNDS. CONTRACTOR SHALL COORDINATE WITH CITY FOR ANY STREET CLOSINGS, CRANE PLACEMENTS, ETC. AND OBTAIN AND PAY FOR ANY RELATED PERMITS. ALL COSTS FOR USE OF CRANES SHALL BE INCLUDED IN THE BASE BID.

NOTE: REFER TO SPECIFIC NUMBERED DEMOLITION NOTES ON DRAWINGS AD 101

DEMOLITION NOTES:

1. EXISTING WALL TO BE REMOVED. REMOVE WALL, DISCONNECT, DEACTIVATE AND REMOVE ALL EXISTING ELECTRICAL, PLUMBING, DATA LINES, RECEPTACLES, PANELS, CLOCKS, ETC. LOCATED IN PARTITION TO POINT OF LAST USE. REMOVE ALL DOORS, FRAMES AND THRESHOLDS, TRANSOMS, ETC., LOCATED IN WALL. PROVIDE SUPPORT FOR ANY ELECTRICAL OR PLUMBING ITEMS TO REMAIN SUPPORTED BY WALL. COORDINATE WITH ELEC. AND MECH. DRAWINGS. PATCH FLOOR WITH SELF-FINISHING FLOOR ASSEMBLY. REMOVE TO BE FLUSH WITH ADJACENT FLOOR. PATCH WALLS TO REMAIN AT ENDS TO MATCH EXISTING.

2A. REMOVE EXISTING STONE, TILE, OR TERRAZZO FLOORING, FINISH, ADHESIVE, MORTAR, & GROUT INCLUDING ANY MASTIC, AND RESULTING RESIDUE. FINISHES / SETTING BEDS ARE TO BE REMOVED / GROUND DOWN TO THE EXISTING EXISTING CONCRETE SLAB TO ACHIEVE A FINISH FLOOR LEVEL THAT MATCHES THE ADJOINING SPACES. REMOVE ANY EXISTING WALL BASE. TAKE CARE TO ENSURE DEMOLITION EXTENTS ALIGNS WITH EXISTING UNIT JOINTS AND ENTAILS THE REMOVAL OF COMPLETE MASONRY STONE OR TILE UNITS. PREPARE SLAB BY PATCHING AND LEVELING AS REQUIRED TO FULFILL SUBSTRATE REQUIREMENTS OF NEW FLOOR FINISH MANUFACTURER AND TO ACHIEVE A FINISH FLOOR LEVEL THAT MATCHES THE ADJOINING SPACES THAT ARE PART OF THIS PROJECT AS WELL AS THOSE THAT ARE NOT IN CONTACT.

2B. REMOVE EXISTING CARPET OR LAMINATE TILE FLOORING, INCLUDING ANY ADHESIVE, MASTIC, AND RESULTING RESIDUE. FINISHES TO BE REMOVED DOWN TO THE EXISTING EXISTING CONCRETE SLAB. REMOVE ANY EXISTING WALL BASE. PREPARE SLAB BY PATCHING, LEVELING & SCARIFYING EXISTING SUBSTRATE AS REQUIRED TO FULFILL SUBSTRATE REQUIREMENTS OF NEW FLOOR FINISH MANUFACTURER AND TO ACHIEVE A FINISH FLOOR LEVEL THAT MATCHES THE ADJOINING SPACES.

3. REMOVE EXISTING CEILING, FASCIA, GRID AND SUPPORTS IN ENTIRE ROOM. DISCONNECT, DEACTIVATE AND REMOVE EXISTING LIGHTING, ELECTRICAL & PLUMBING FIXTURES AND CONNECTIONS AND CAP BACK AT POINT OF LAST USE. COORDINATE WITH ELEC., PLUMB. AND MECH. DRAWINGS FOR UTILIZATION WITH NEW FIXTURE / DEVICE LOCATIONS. PATCH AND PROVIDE FIREPROOFING TO EXISTING UNUSED FLOOR PENETRATIONS.

4. REMOVE LOCKERS, LOOSE FURNITURE, APPLIANCES. REMOVE AND RELOCATE SHELVING AND MAP, RECORDS, & FILING CABINETS TO OWNER'S DESIGNATED LOCATION WITHIN THE BUILDING PRIOR TO RE-INSTALLATION WITHIN THE COMPLETED SPACE. NOTE THAT PHYSICAL RELOCATION OF SYSTEMS FURNITURE IS TO BE UNDERTAKEN BY OWNER'S FORCES. CONTRACTOR TO ALLOCATE TO WORKING DAYS WITHIN SCHEDULE FOR TEMPORARY WORKSTATION FITOUT BETWEEN PHASES. CONTRACTOR TO REFLECT TEMPORARY RELOCATION PHASES WITHIN SUBMITTED PROJECT SCHEDULE. CONTRACTOR TO PROVIDE TEMPORARY POWER, PHONE & DATA TO EACH TEMPORARY WORKSTATION AND TO DEMOLISH TEMPORARY POWER / PHONE & DATA AT THE COMPLETION OF THE PROJECT. PATCH & REPAIR ANY SURFACES THAT ARE AFFECTED AS A RESULT OF THE DEMOLITION OF TEMPORARY CONDUIT, DEVICES & FIXTURES.

5. AT EACH RADIATOR, PROVIDE A NEW DANFOSS CONTROL VALVE AND REMOVE EXISTING SHUT OFF VALVES. AT EACH RADIATOR, INSTALL TWO NEW SHUT OFF VALVE. ALSO PROVIDE A VALVE MOUNTED SENSOR AT EACH NEW CONTROL VALVE AND COORDINATE WITH OWNER & CONTROL SYSTEM. PROVIDE NEW RADIATOR COVER OF SUFFICIENT SIZE TO ACCOMMODATE DIMENSIONS AND LOCATIONS OF NEW VALVES. SUBMIT PRODUCT DATA AND COLOR CHART FOR ARCHITECT APPROVAL.

6. RELOCATE SPRINKLER HEADS, RISERS, BRANCH LINES & MAINS TO ACCOMMODATE NEW CEILING LOCATIONS, TYPES, & HEIGHTS NOTED ON REFLECTED CEILING PLANS. COORDINATE PHASING OF WORK TO COINCIDE WITH PROJECT PHASING TO ENSURE CONTINUED AND UNINTERRUPTED FIRE SUPPRESSION COVERAGE. RELOCATE MAINS, BRANCH LINES & RISER LOCATIONS TO BE AS HIGH AS POSSIBLE WITHIN SPACES' NEW CEILING HEIGHTS. PROVIDE ADDITIONAL SPRINKLER HEADS AS REQUIRED WITHIN PLENUM SPACES OF METAL CEILING & FASCIA ASSEMBLIES. PROVIDE NEW SPRINKLER HEAD LOCATIONS WITHIN METAL CEILING ASSEMBLIES TO ENSURE FULL COVERAGE OF FIRE SUPPRESSION SYSTEM WITHIN THE SPACE.

7. REMOVE EXISTING VINYL WALLPAPER FROM EXISTING WALL. REMOVE ADHESIVE, PATCH & PREPARE WALL TO A LEVEL 4 DRYWALL FINISH IN ADVANCE OF NEW WALL PAINT OR WALLPAPERING FINISH.

8. REMOVE EXISTING PLUMBING & MECHANICAL FIXTURES INCLUDING SINKS, TOILETS, RADIATORS, URINALS, ETC. REMOVE ALL WATER, STEAM AND SANITARY LINES AND CAP AT POINT OF LAST USE. PATCH & REPAIR FLOOR, WALL AND CEILING TO MATCH EXISTING ADJACENT CONDITIONS.

9. REMOVE EXISTING CERAMIC WALL TILES, MIRRORS, SOAP DISPENSERS, AND TOILET ACCESSORIES. REMOVE EXISTING CERAMIC FLOOR TILES, MORTAR AND ALL ADHESIVE IN ENTIRE ROOM. REMOVE ALL TOILET PARTITIONS AND ENTIRETY OF SUPPORTING STRUCTURE. REMOVE EXISTING FLOOR FINISH. PATCH EXISTING RECESS IN SLAB W/ 3000 PSI MIN CONC. TO MATCH ADJACENT SLAB. MAKE FLUSH WITH EXISTING SLAB.

10. REMOVE EXISTING MASONRY INFILL WALL, DISCONNECT, DEACTIVATE AND REMOVE ALL EXISTING ELECTRICAL, PLUMBING & MECHANICAL LINES BACK TO THE POINT OF LAST USE. COORDINATE LOCATION OF NEW PLUMBING RISERS WITH LOCATION OF STEEL FRAMING. PATCH AND INSTALL REPAIR FLOOR ASSEMBLY / CEILING FINISH OF LOWER LEVEL AS REQUIRED AS A RESULT OF ANY NEW FLOOR PENETRATIONS CREATED BY NEW PLUMBING WORK.

11. REMOVE ALL EXISTING CASEWORK & BUILT IN FURNITURE

12. REMOVE EXISTING SKYLIGHT & CURB. INSTALL NEW INFILL METAL DECKING, ROOF INSULATION & ROOFING SYSTEM IN VOID TO MATCH EXISTING ROOF ASSEMBLY. PATCH & OVERLAP SEAMS WITH NEW ROOFING SYSTEM AT INTERFACE BETWEEN NEW AND EXISTING ROOFING TO ACHIEVE MANUFACTURER'S WARRANTY. COORDINATE PHASING, LOCATIONS, & INSTALLATION OF NEW MECHANICAL UNITS & DUCTWORK WITH ROOFING INFILL & CONSTRUCTION.

13. INSTALL NEW LINTELS WITH 8" MIN. BEARING BOTH SIDES OF EXISTING MASONRY WALL. DEMOLISH PORTION OF EXISTING WALL IN ADVANCE OF INSTALLATION OF NEW DOOR.

14. DEMOLISH EXISTING DOOR. CONSTRUCT NEW 8" REINFORCED CMU WALL IN DEMOLISHED DOOR LOCATION. INSTALL NEW LINTEL WITH 8" BEARING/ EMBEDMENT ON BOTH SIDES BETWEEN EXISTING MASONRY WALL AND NEWLY CONSTRUCTED CMU WALL. DEMOLISH PORTION OF WALL BETWEEN NEW CMU WALL AND EXISTING MASONRY WALL TO ALLOW FOR INSTALLATION OF NEW DOOR INTO FILE ROOM #403.

15. RELOCATE SAFE TEMPORARILY WITHIN CLERKS OFFICE AS REQUIRED SO AS TO NOT IMPED DAILY OPERATIONS OF CONSTRUCTION WHILE BEING ACCESSIBLE TO THE CLERK'S OFFICE. RELOCATE SAFE TO NEW LOCATION AS SHOWN ON PLANS.

16. RELOCATE PLOTTERS & EQUIPMENT TEMPORARILY WITHIN CLERKS OFFICE AS REQUIRED BY THE PHASING PLAN SO AS TO NOT IMPED DAILY OPERATIONS OF CONSTRUCTION WHILE BEING ACCESSIBLE TO THE CLERK'S OFFICE. RELOCATE TO NEW LOCATION AS SHOWN ON PLANS DURING THE APPROPRIATE PHASE. PROVIDE TEMPORARY POWER & DATA TO EACH TEMPORARY LOCATION NOTED WITHIN PHASING PLANS. REMOVE, PATCH, & REPAIR ANY SURFACES THAT ARE DAMAGED AS A RESULT OF THE DEMOLITION OF TEMPORARY CONDUIT, DEVICES, & FIXTURES.

17. AREA OF CEILING SCHEDULED TO BE EXPOSED EXISTING PLASTER CEILING TO BE PAINTED. SCRAPE LOOSE AND FLAKING PAINT IN ACCORDANCE WITH SSP-2 TO PROVIDE APPROPRIATE SURFACE PREPARATION TO ATTAIN SURFACE CONDITION EQUIVALENT TO GYPSUM PREPARATION LEVEL 3 FOR APPLICATION OF NEW PAINT. COORDINATE WITH ACT-4 HEADWALL LOCATION FOR DEMOLITION OF PORTION OF PLASTER CEILING TO ALLOW FOR SECURING OF HEADWALL TO CONCRETE STRUCTURE ABOVE PLASTER. PATCH PLASTER CEILING AROUND NEW HEADWALL CONSTRUCTION TO PROVIDE CLEAN & NEAT CONSTRUCTION.

18. REMOVE REMNANTS OF HEAD OF EXISTING TERRA COTTA WALL. PATCH PLASTER CEILING TO PRODUCE CONSISTENT SURFACE. FOLLOW DETAIL 2/AD101

19. REMOVE, REFRAME AND TEMPORARILY STORE EXISTING PHOTOS. REINSTALL FRAMED PHOTOS PER PLANS

20. INSTALL GYP BOARD INFILL AT EXTG COMPUTER ROOM WINDOWS PAINT GYP TO MATCH ADJACENT WALL SURFACE.

21. DEMOLISH A PORTION OF THE EXISTING RED LIGHT FIXTURE. SAVE ENDCAP AND REINSTALL ENDCAP AT NEW LIGHTING TERMINATION LOCATION.

22. REMOVE EXISTING PLASTER CEILING IN THIS AREA TO ALLOW FOR STOREFRONT HEAD INSTALLATION TO STRUCTURE ABOVE. PATCH PLASTER CEILING AS REQUIRED TO MATCH FINISH OF ADJACENT SURFACES.

23. CAREFULLY PERFORM EXPLORATORY DEMOLITION TO DETERMINE STRUCTURAL PORTIONS OF WALL. DEMOLISH PORTIONS OF EXISTING WALL (+/- 6" FROM FACE OF WALL) TO ACHIEVE CLEAR HOLD DIMENSIONS OF NEW CONSTRUCTION. DEMOLISHED PORTIONS OF WALL MAY BE COMPRISED OF GYPSUM BOARD, METAL STUDS AS WELL AS MASONRY.

24. CAREFULLY PERFORM EXPLORATORY DEMOLITION TO DISCOVER AND LOCATE STEEL FLOOR BEAM FOR COORDINATION WITH NEW PLUMBING PIPING INSTALLATION AND ROUTING. PROVIDE FIRESTOPPING AT VOIDS IF NOT UTILIZED FOR FUTURE ROUTING

25. REMOVE EXISTING SHADE AND SHADE POCKET

26. REMOVE EXISTING VINYL WALLPAPER FROM EXISTING WALL. REMOVE ADHESIVE, PATCH & PREPARE WALL TO A LEVEL 4 DRYWALL FINISH IN ADVANCE OF NEW WALL PAINT OR WALLPAPERING FINISH.

27. REMOVE EXISTING PLUMBING & MECHANICAL FIXTURES INCLUDING SINKS, TOILETS, RADIATORS, URINALS, ETC. REMOVE ALL WATER, STEAM AND SANITARY LINES AND CAP AT POINT OF LAST USE. PATCH & REPAIR FLOOR, WALL AND CEILING TO MATCH EXISTING ADJACENT CONDITIONS.

28. REMOVE EXISTING CERAMIC WALL TILES, MIRRORS, SOAP DISPENSERS, AND TOILET ACCESSORIES. REMOVE EXISTING CERAMIC FLOOR TILES, MORTAR AND ALL ADHESIVE IN ENTIRE ROOM. REMOVE ALL TOILET PARTITIONS AND ENTIRETY OF SUPPORTING STRUCTURE. REMOVE EXISTING FLOOR FINISH. PATCH EXISTING RECESS IN SLAB W/ 3000 PSI MIN CONC. TO MATCH ADJACENT SLAB. MAKE FLUSH WITH EXISTING SLAB.

29. REMOVE EXISTING SKYLIGHT & CURB. INSTALL NEW INFILL METAL DECKING, ROOF INSULATION & ROOFING SYSTEM IN VOID TO MATCH EXISTING ROOF ASSEMBLY. PATCH & OVERLAP SEAMS WITH NEW ROOFING SYSTEM AT INTERFACE BETWEEN NEW AND EXISTING ROOFING TO ACHIEVE MANUFACTURER'S WARRANTY. COORDINATE PHASING, LOCATIONS, & INSTALLATION OF NEW MECHANICAL UNITS & DUCTWORK WITH ROOFING INFILL & CONSTRUCTION.

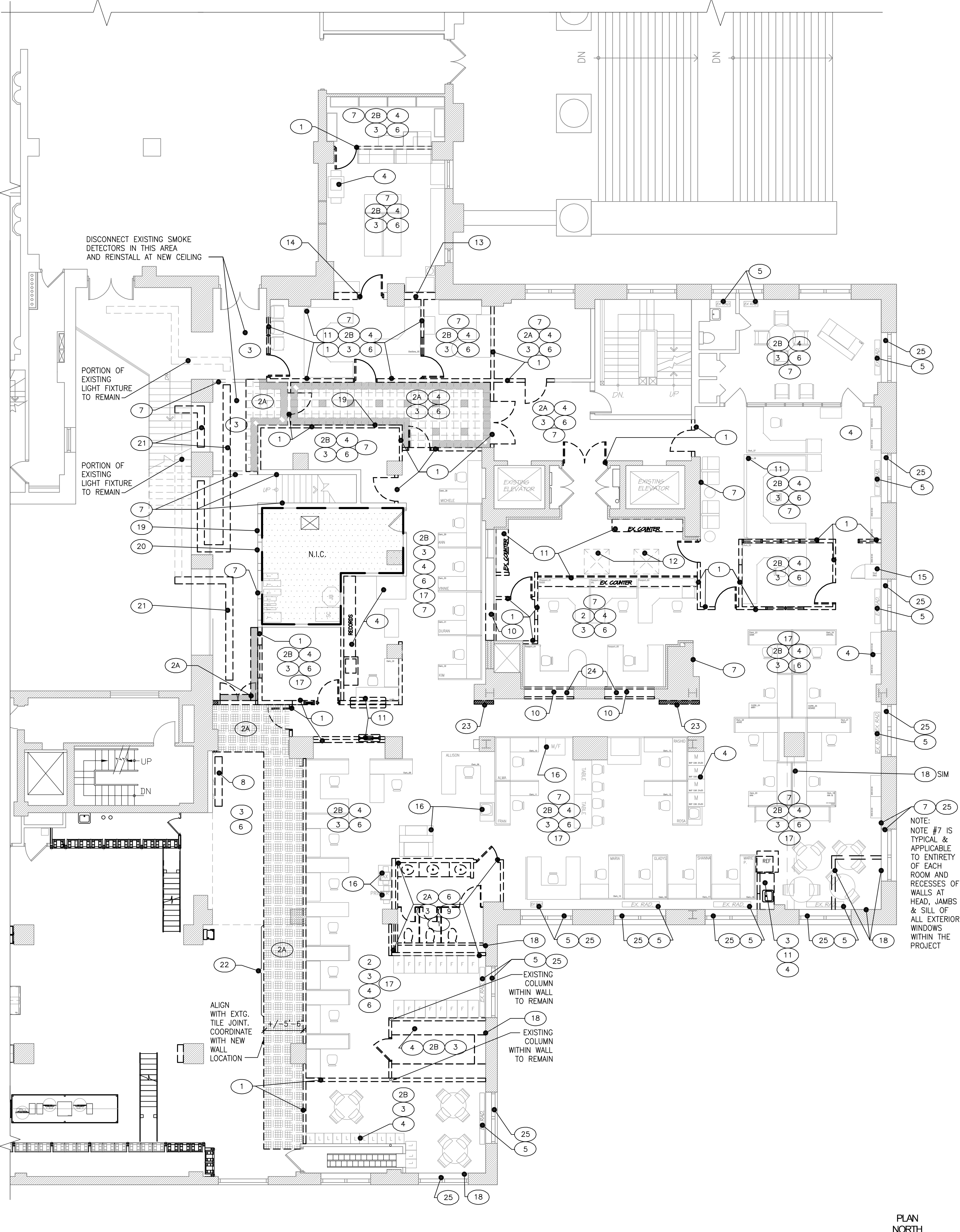
30. INSTALL NEW LINTELS WITH 8" MIN. BEARING BOTH SIDES OF EXISTING MASONRY WALL. DEMOLISH PORTION OF EXISTING WALL IN ADVANCE OF INSTALLATION OF NEW DOOR.

31. DEMOLISH EXISTING DOOR. CONSTRUCT NEW 8" REINFORCED CMU WALL IN DEMOLISHED DOOR LOCATION. INSTALL NEW LINTEL WITH 8" BEARING/ EMBEDMENT ON BOTH SIDES BETWEEN EXISTING MASONRY WALL AND NEWLY CONSTRUCTED CMU WALL. DEMOLISH PORTION OF WALL BETWEEN NEW CMU WALL AND EXISTING MASONRY WALL TO ALLOW FOR INSTALLATION OF NEW DOOR INTO FILE ROOM #403.

32. RELOCATE PLOTTERS & EQUIPMENT TEMPORARILY WITHIN CLERKS OFFICE AS REQUIRED BY THE PHASING PLAN SO AS TO NOT IMPED DAILY OPERATIONS OF CONSTRUCTION WHILE BEING ACCESSIBLE TO THE CLERK'S OFFICE. RELOCATE TO NEW LOCATION AS SHOWN ON PLANS DURING THE APPROPRIATE PHASE. PROVIDE TEMPORARY POWER & DATA TO EACH TEMPORARY LOCATION NOTED WITHIN PHASING PLANS. REMOVE, PATCH, & REPAIR ANY SURFACES THAT ARE DAMAGED AS A RESULT OF THE DEMOLITION OF TEMPORARY CONDUIT, DEVICES, & FIXTURES.

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34. REMOVE REMNANTS OF HEAD OF EXISTING TERRA COTTA WALL. PATCH PLASTER CEILING TO PRODUCE CONSISTENT SURFACE. FOLLOW DETAIL 2/AD101



2. EXTG PLASTER CEILING HEAD DETAIL
SCALE: 1" = 1'-0"



1. DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

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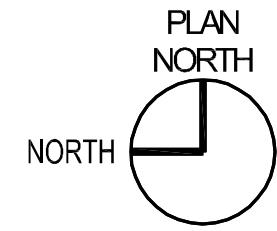
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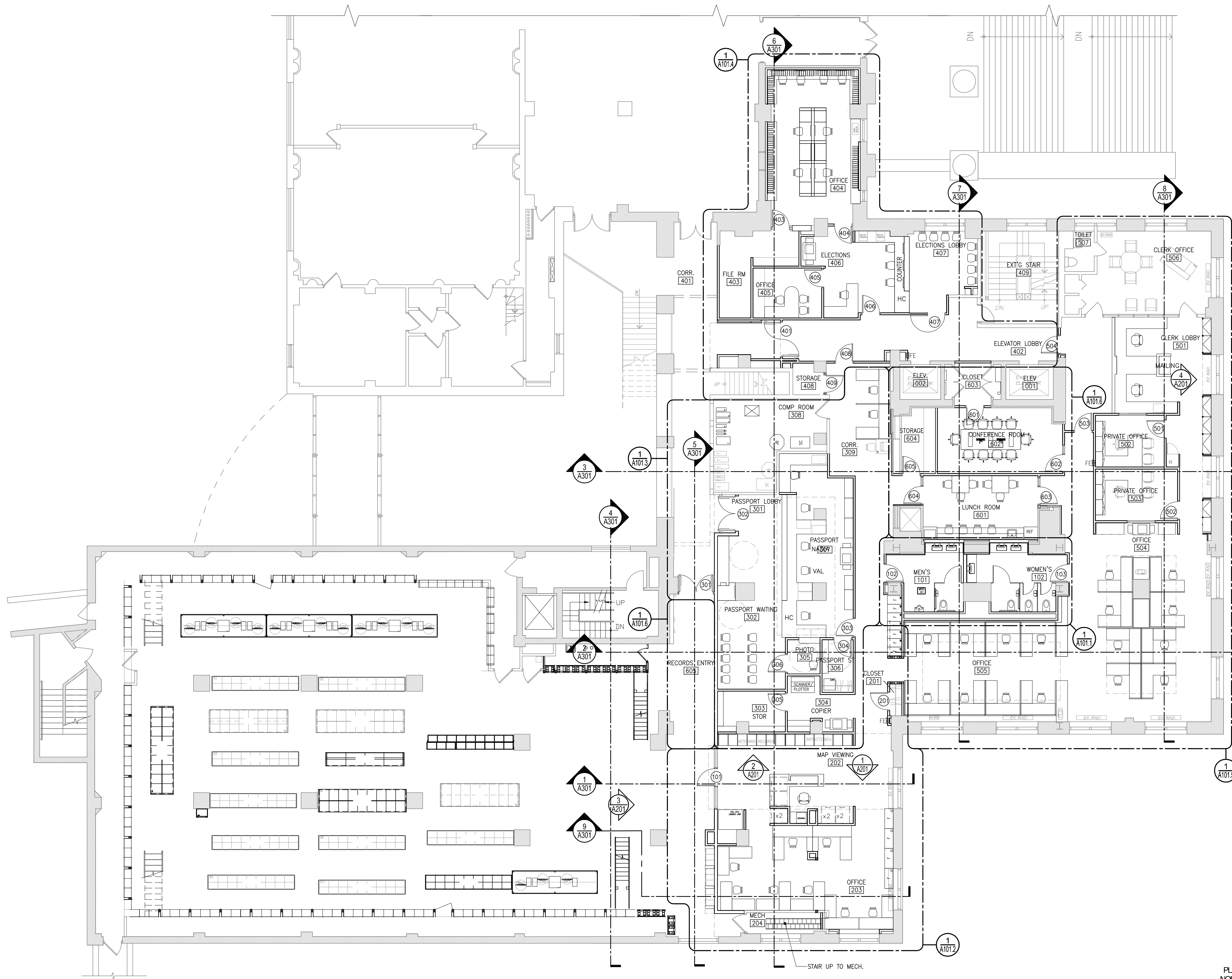
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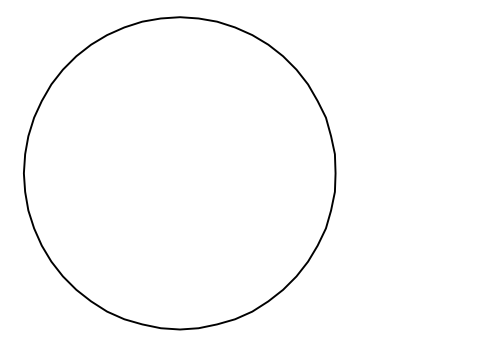
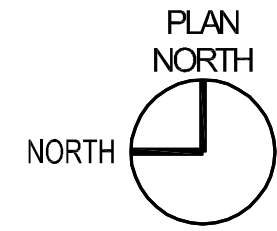
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FIRST FLOOR DEMOLITION PLAN & NOTES
AD101



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1 FLOOR PLAN
SCALE: 1/8" = 1'-0"



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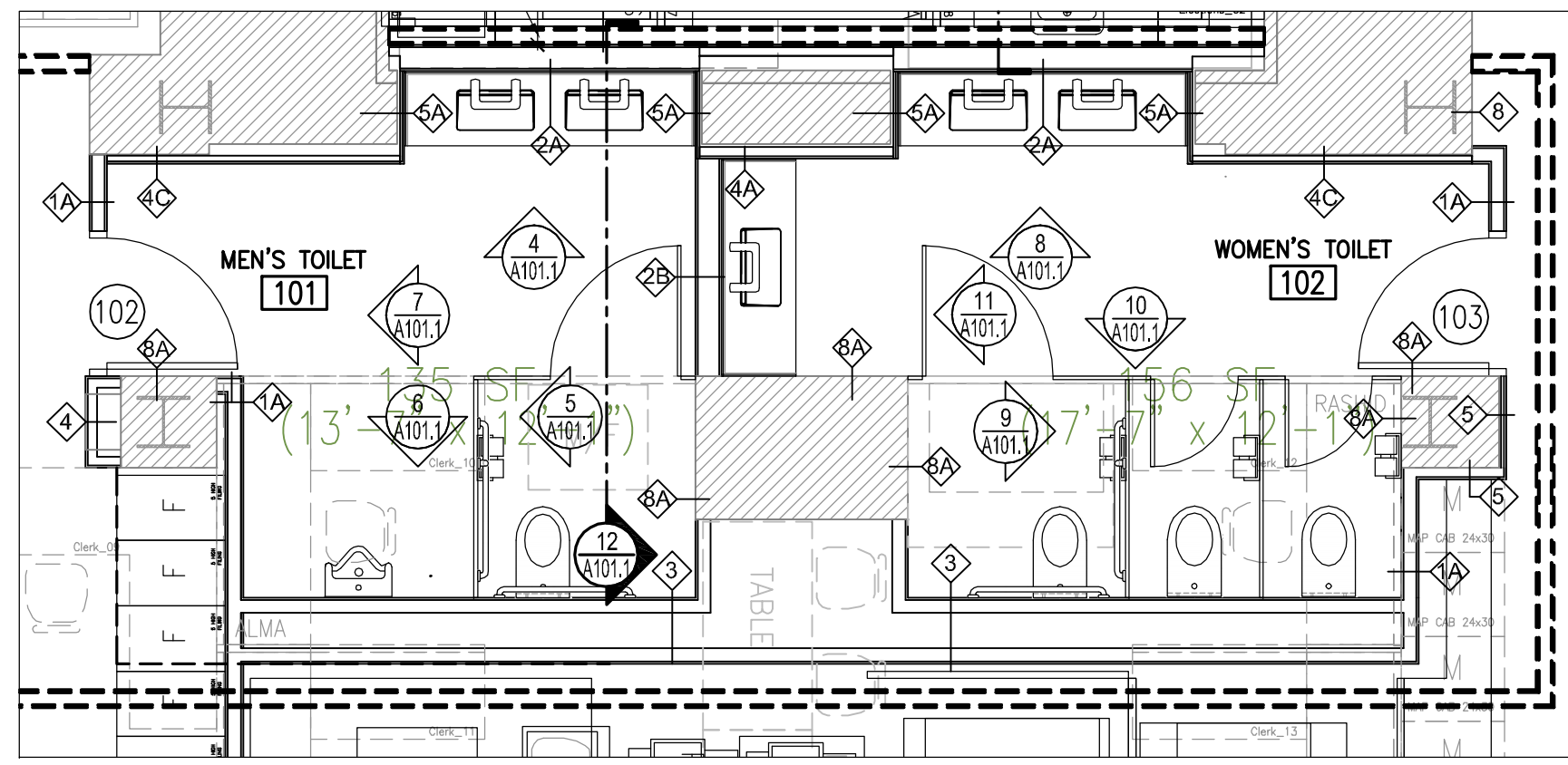
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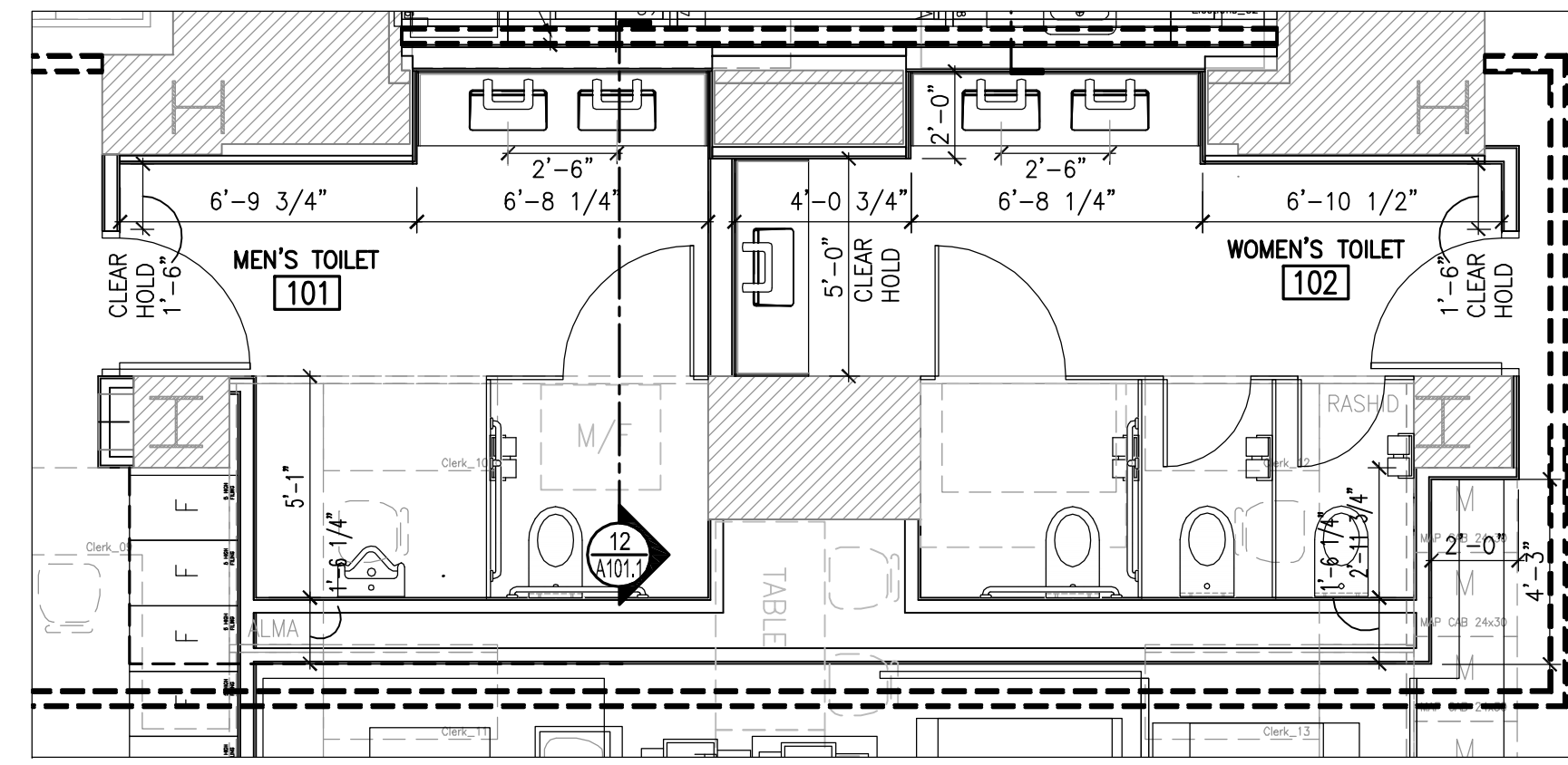
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FIRST FLOOR PLAN

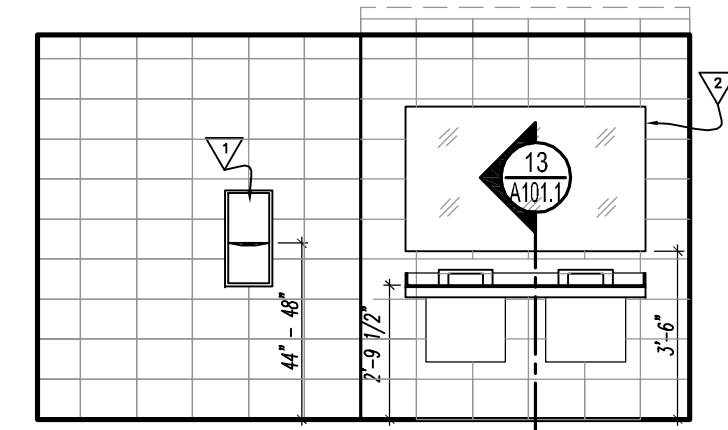
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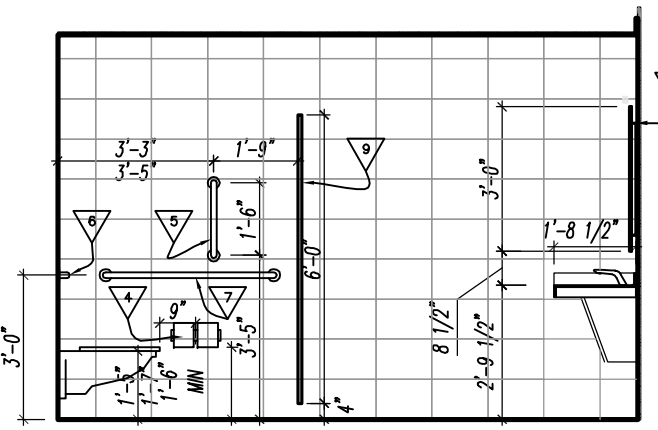
1 PHASE 1 - FLOOR PLAN
SCALE: 1/4" = 1'-0"



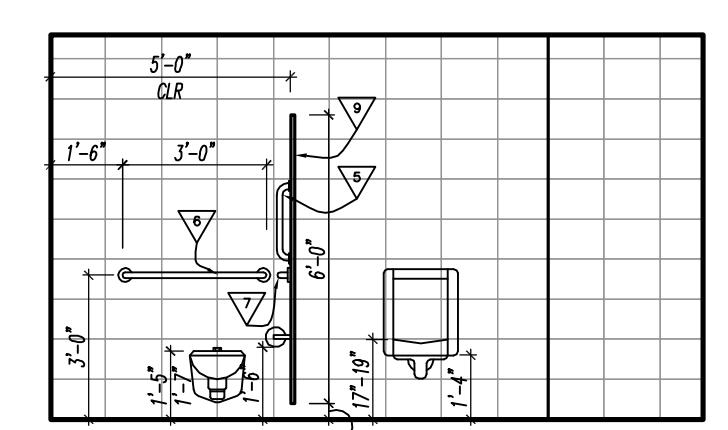
2 PHASE 1- LAYOUT & DIMENSIONING PLAN
SCALE: 1/4" = 1'-0"



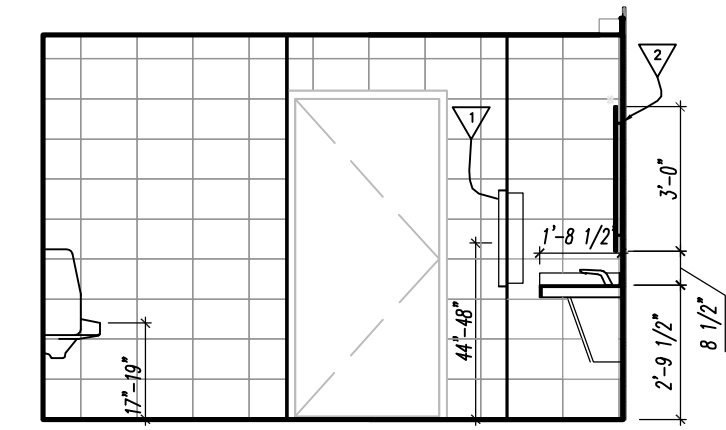
4 TOILET RM ELEVATION
SCALE: 1/4" = 1'-0"



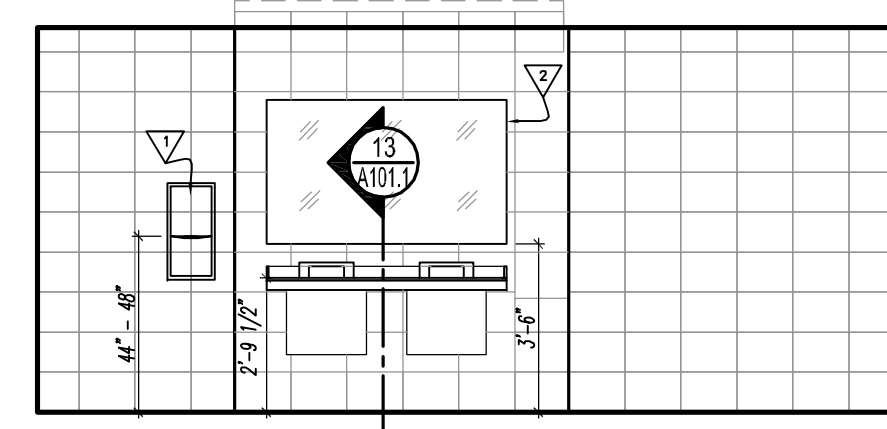
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SCALE: 1/4" = 1'-0"



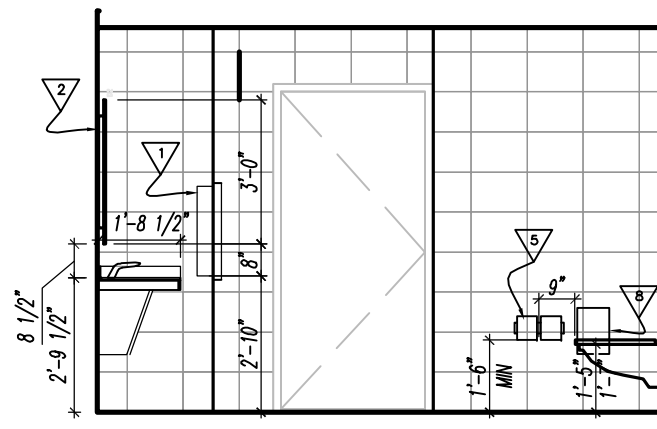
6 TOILET RM ELEVATION
SCALE: 1/4" = 1'-0"



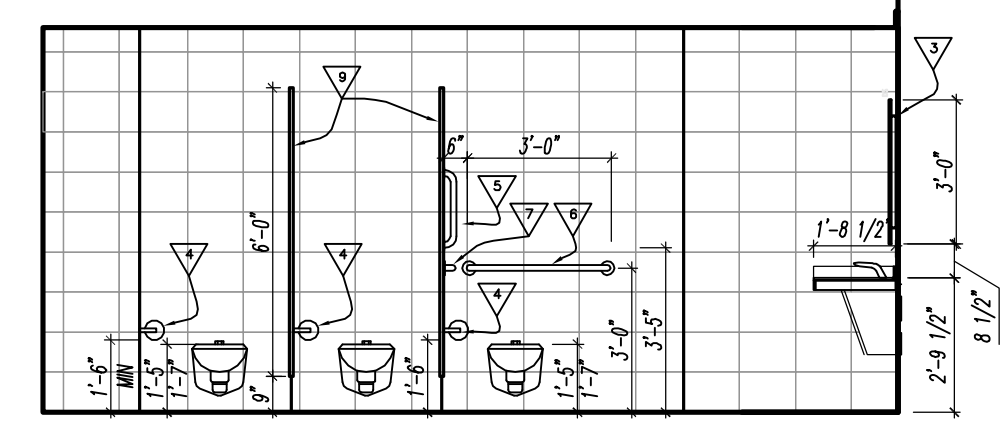
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SCALE: 1/4" = 1'-0"



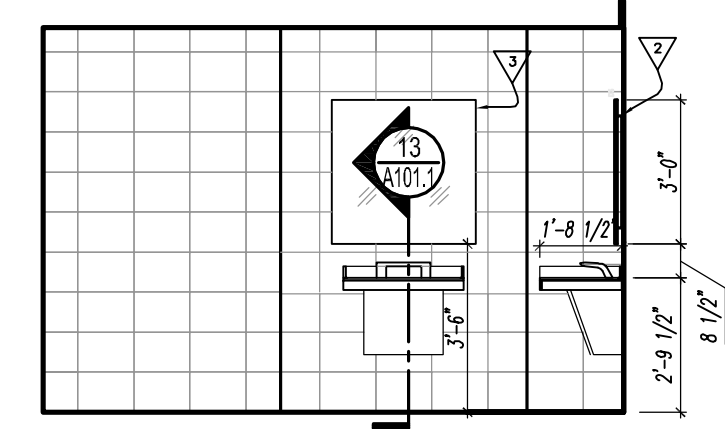
8 TOILET RM ELEVATION
SCALE: 1/4" = 1'-0"



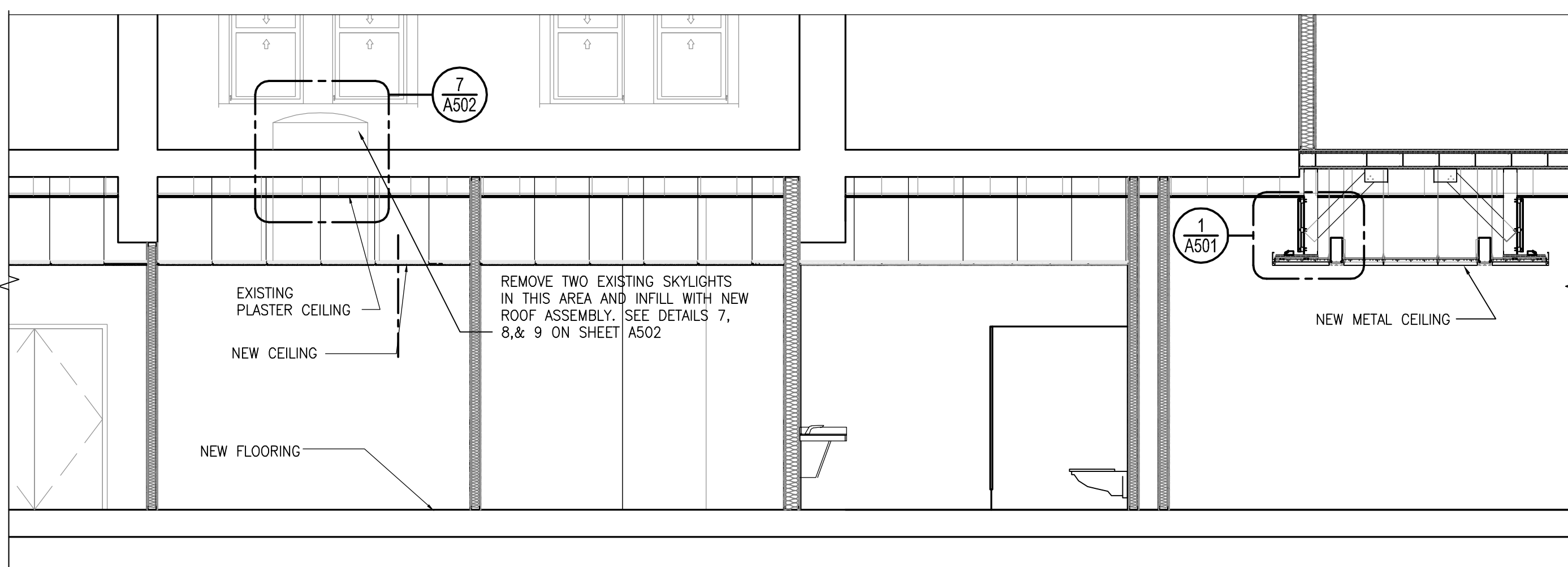
9 TOILET RM ELEVATION
SCALE: 1/4" = 1'-0"



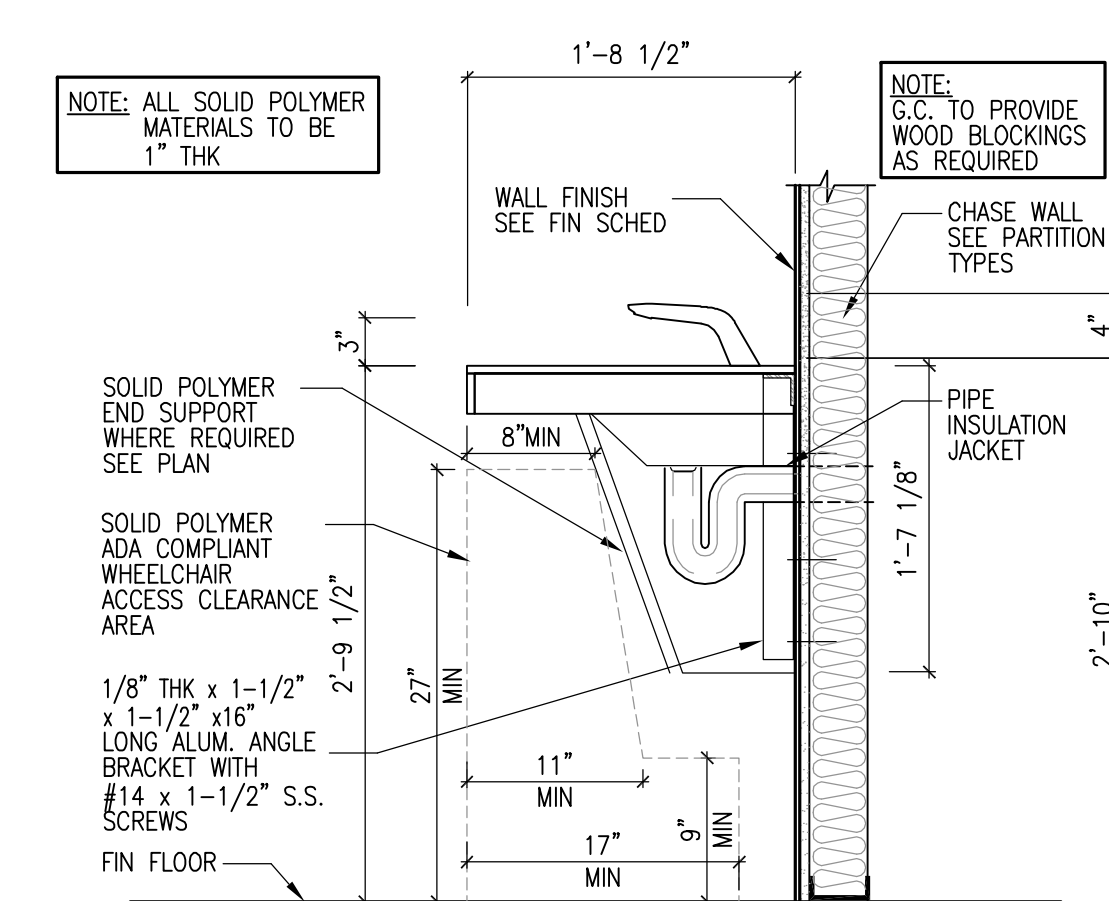
10 TOILET RM ELEVATION
SCALE: 1/4" = 1'-0"



11 TOILET RM ELEVATION
SCALE: 1/4" = 1'-0"



12 PHASE 1 SECTION
SCALE: 1/4" = 1'-0"



13 SECTION
SCALE: 1" = 1'-0"

TOILET ACCESSORY SCHEDULE	
SEE NOTES	
1	TOWEL DISPENSER/WASTE RECEPTACLE BRADLEY MODEL NO. 2017-10 (SEMI-RECESSED U.N.O.)
2	MIRROR - SIZE 60"x36" ELECTRIC MIRROR - MODEL -60.00x26.00-L7CSDH-NB-30K
3	MIRROR - SIZE 36"x36" ELECTRIC MIRROR - MODEL -36.00x26.00-L7CSDH-NB-30K
4	TOILET TISSUE DISPENSER BRADLEY MODEL NO. 5224 MOUNT WITH CENTERLINE AT 15"-48" A.F.F. (U.N.O.)
5	GRAB BAR - 18" BRADLEY MODEL NO. 812/CONFIGURATION 001-18 MOUNT w/CENTERLINE AT 39"-41" A.F.F. (U.N.O.)
6	GRAB BAR - 36" BRADLEY MODEL NO. 812/CONFIGURATION 001-36" MOUNT w/CENTERLINE AT 36" A.F.F. (U.N.O.)
7	GRAB BAR - 42" BRADLEY MODEL NO. 812/CONFIGURATION 001-42" MOUNT w/CENTERLINE AT 36" A.F.F. (U.N.O.)
8	NAPKIN DISPOSAL BRADLEY MODEL NO. 4781-15 MOUNT WITH TOP AT 15"-48" A.F.F. (U.N.O.)
9	TOILET STALL - PRIVADA CUBICLE PARTITIONS BY BOBRICK

- NOTES:
- CONTRACTOR SHALL COORDINATE WITH MANUFACTURER'S RECOMMENDATIONS FOR BLOCKING REQUIREMENTS. WHERE REQUIRED, BLOCKING AND MINIMUM FASTENING REQUIREMENTS SHALL CONFORM TO THE REQUIREMENTS OF ICC/ANSI A117.1 AS REFERENCED IN SUBCHAPTER 7 OF THE UNIFORM CONSTRUCTION CODE OF THE STATE OF NEW JERSEY.
 - INSTALL 5/8" WATER RESISTANT GYPSUM BOARD AT TOILETS, EXTEND TO UNDERSIDE OF DECK ABOVE ON TOILET ROOM SIDE.
 - ALL DIMENSIONS TAKEN FROM FINISHED SURFACE.
 - ALL EXPOSED PIPE SHALL HAVE INSULATION JACKET.
 - ALL DIMENSIONS MUST BE VERIFIED IN THE FIELD. REFER TO A003. ALL ADA CLEARANCES MUST BE MAINTAINED.

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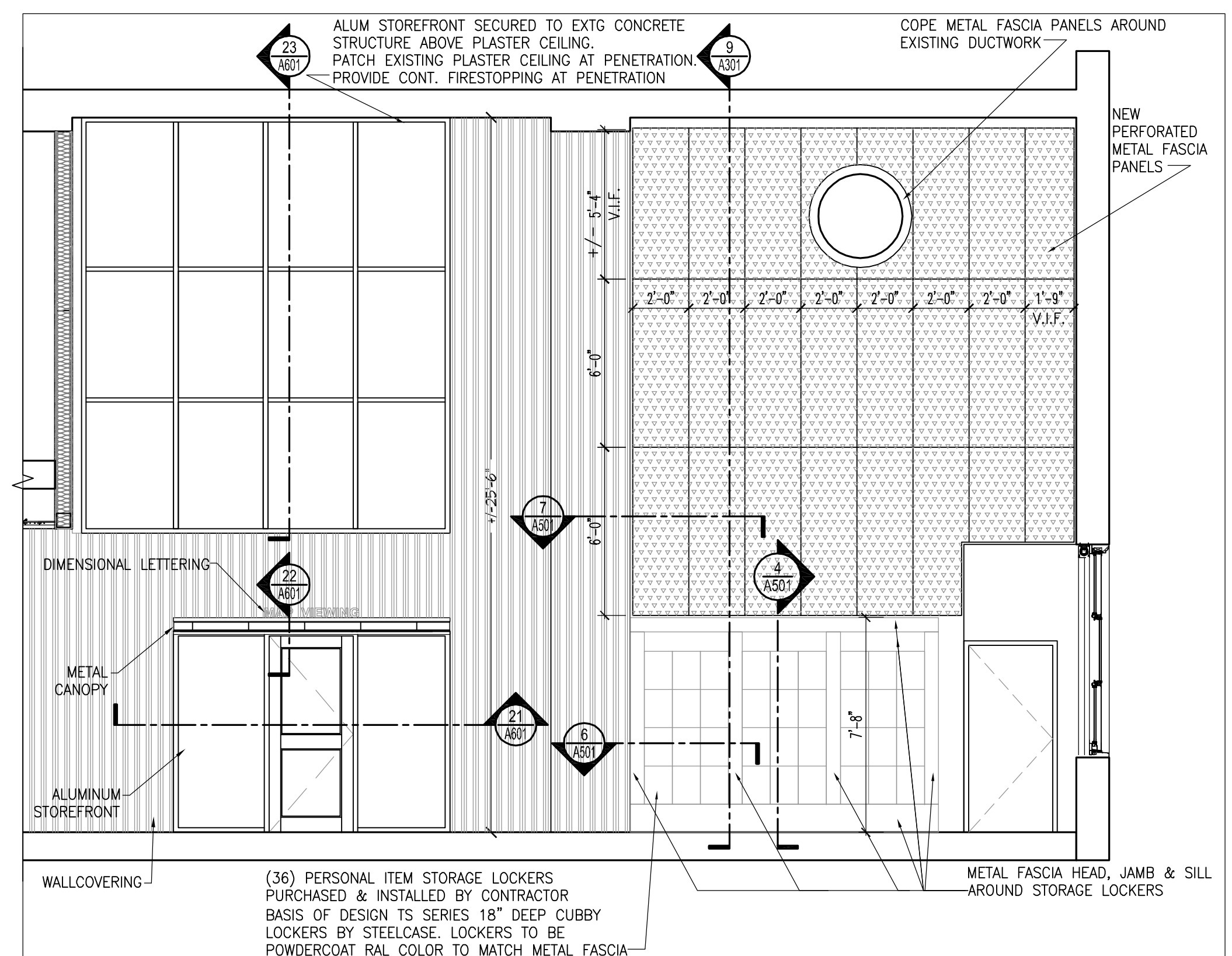
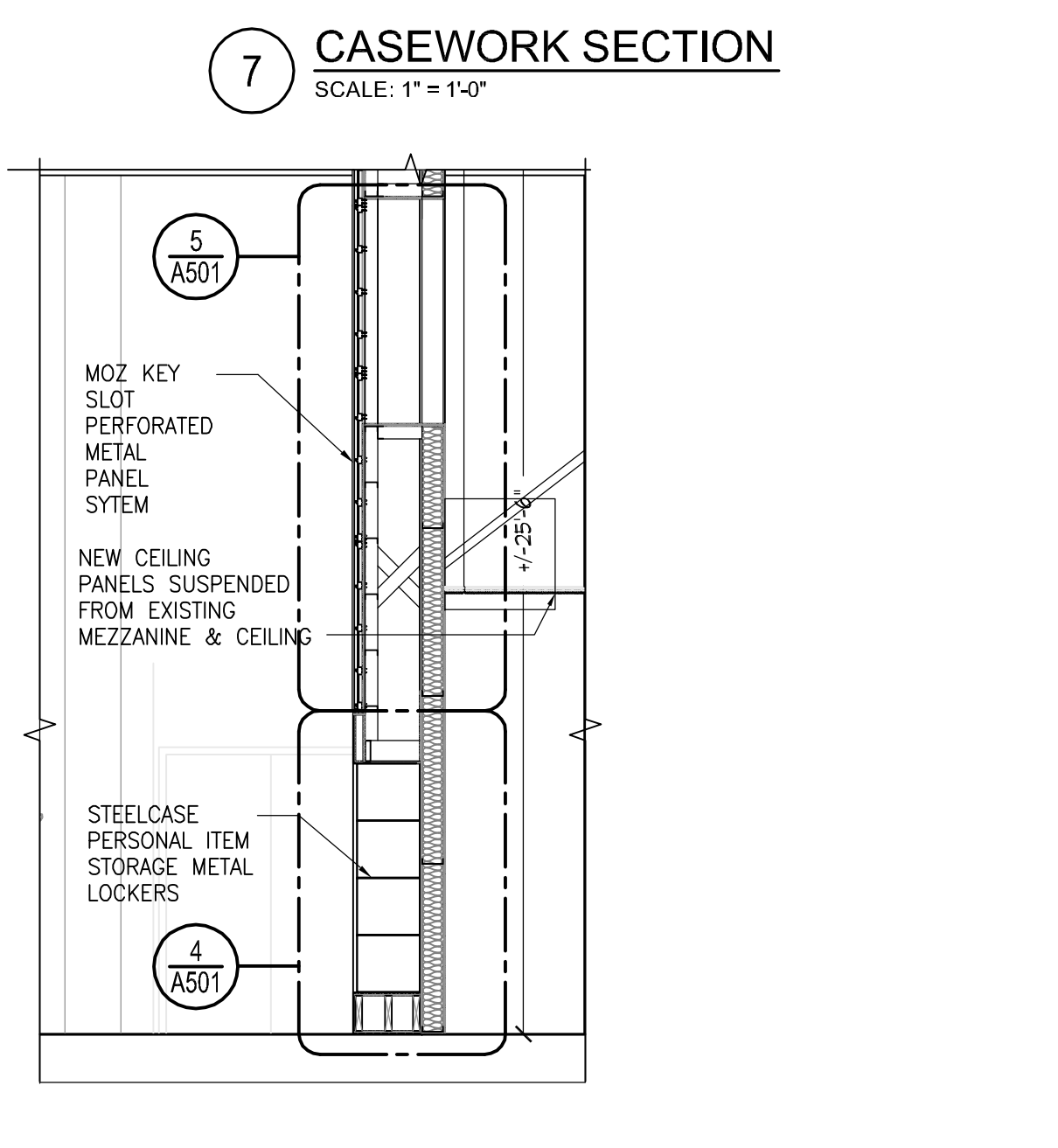
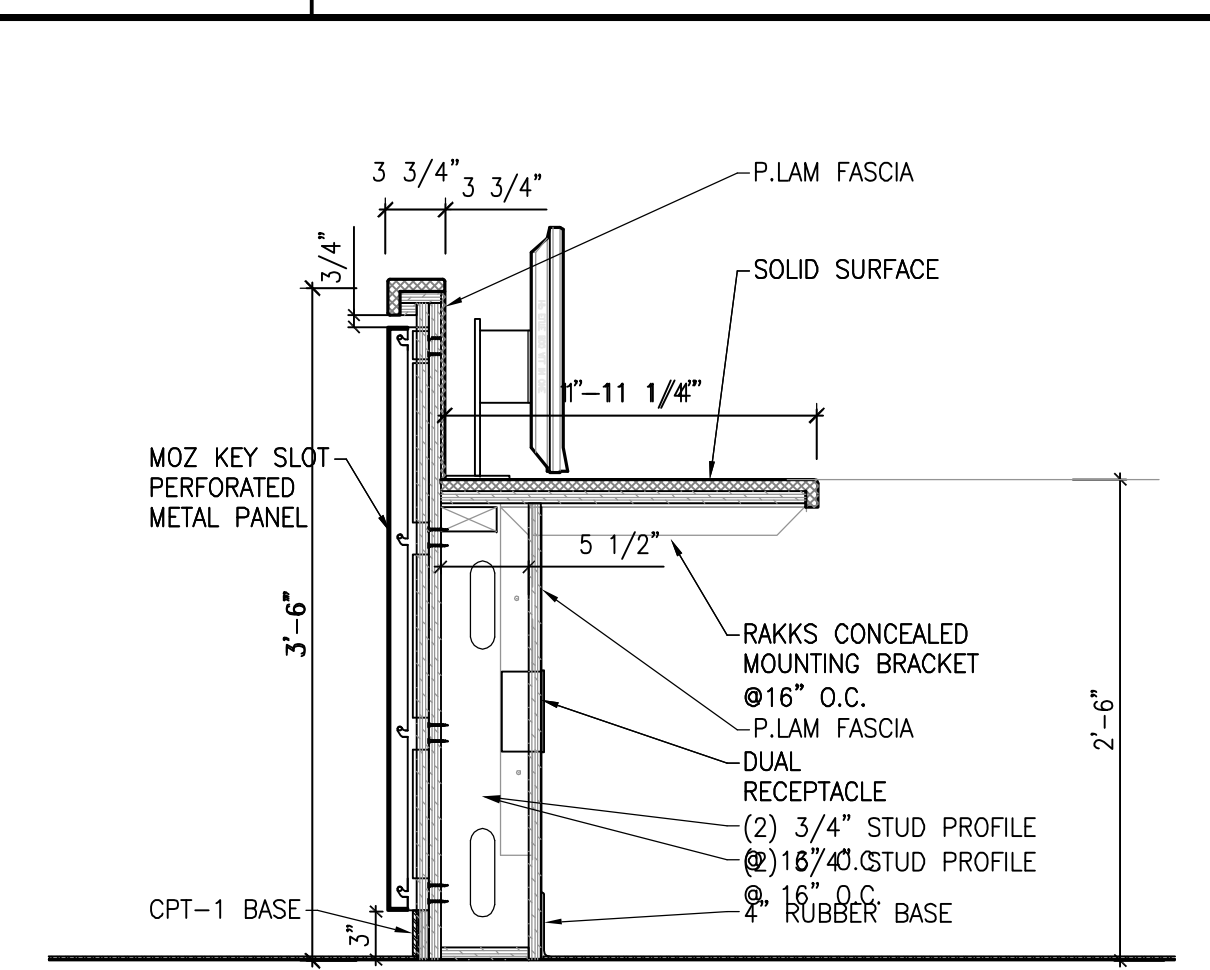
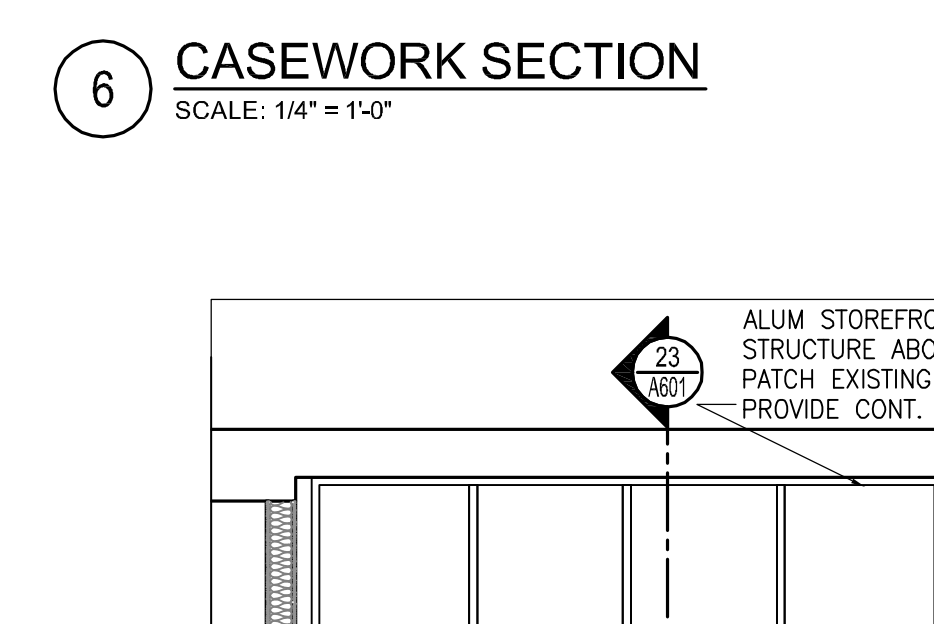
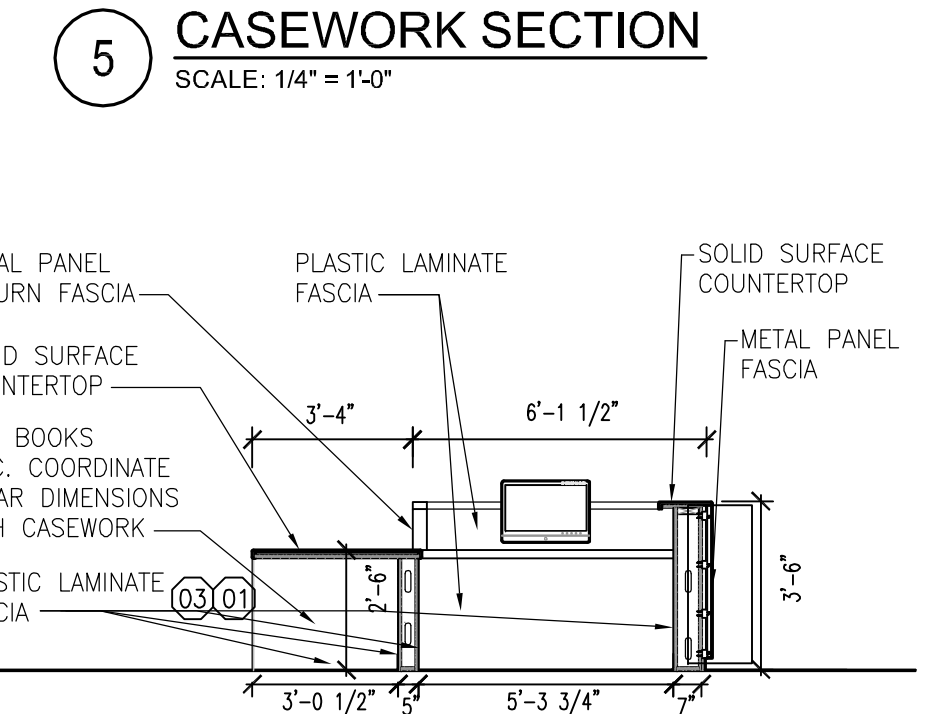
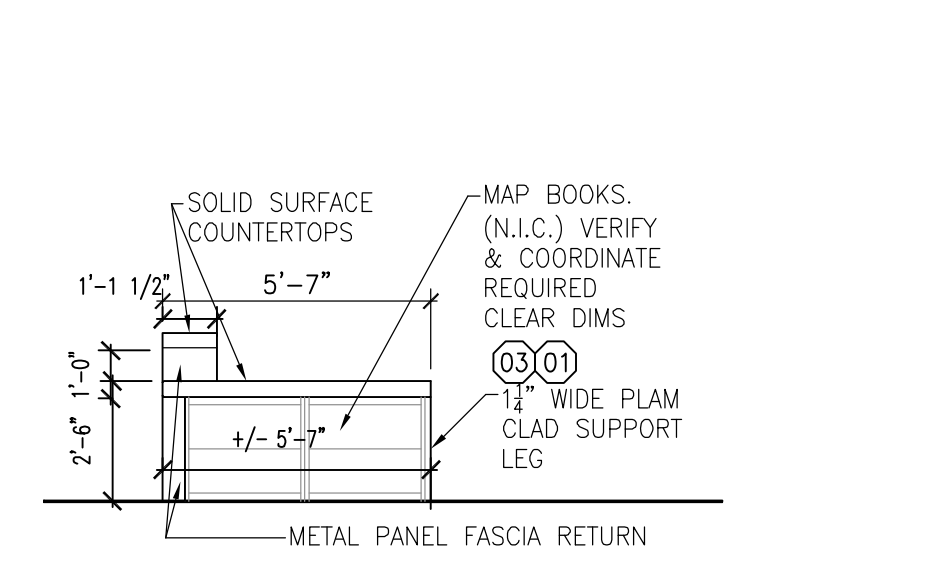
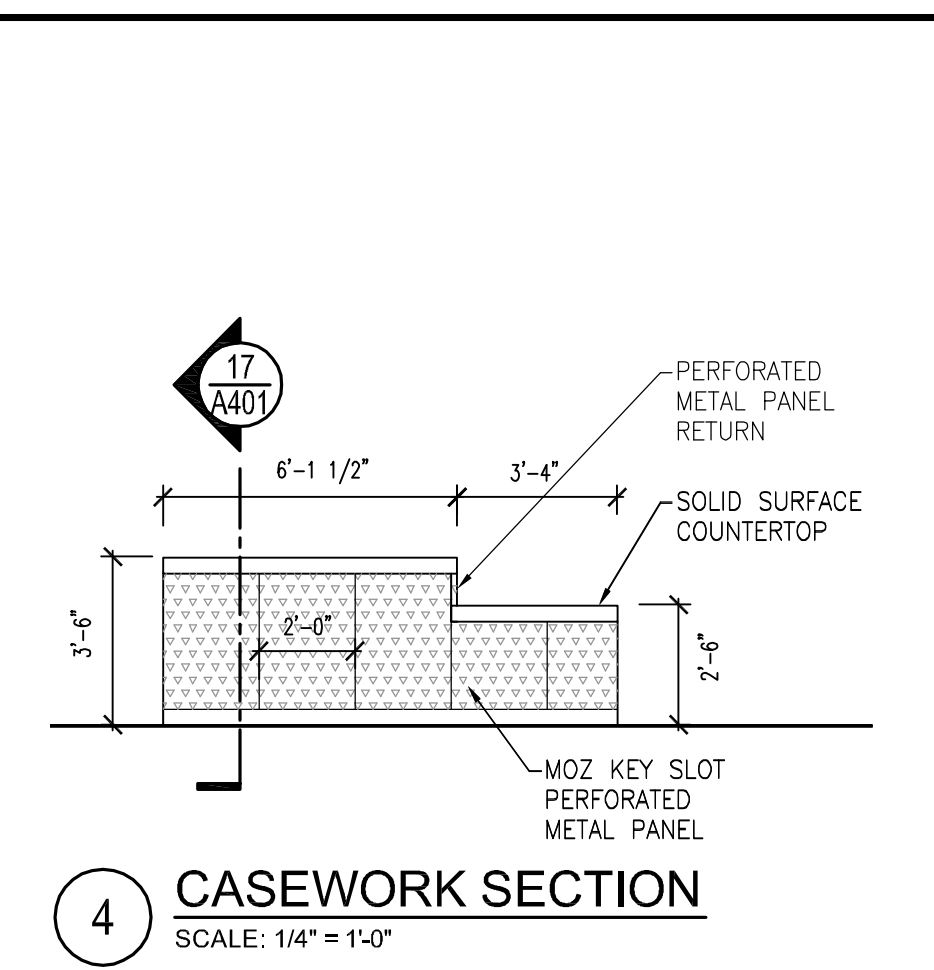
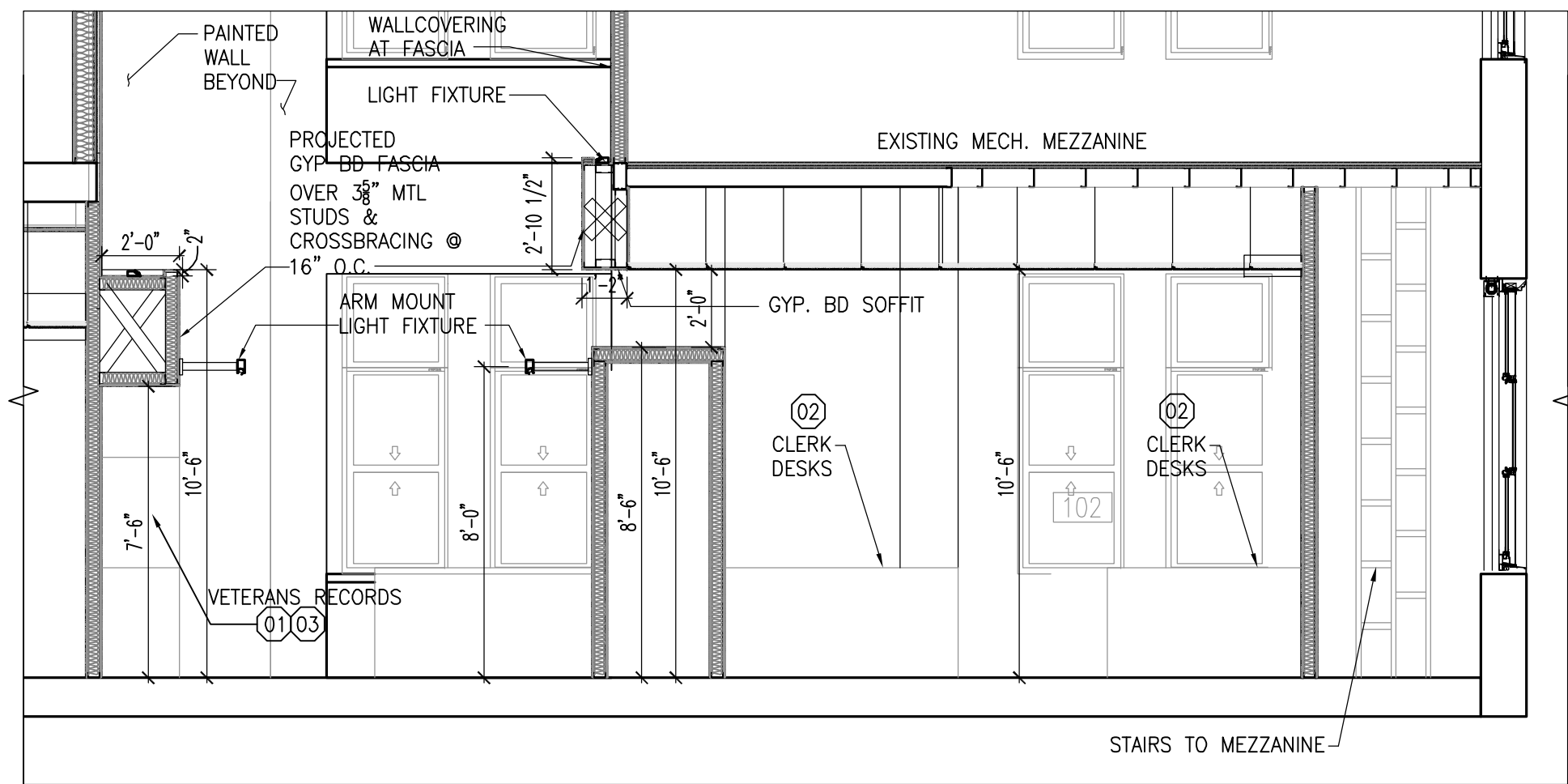
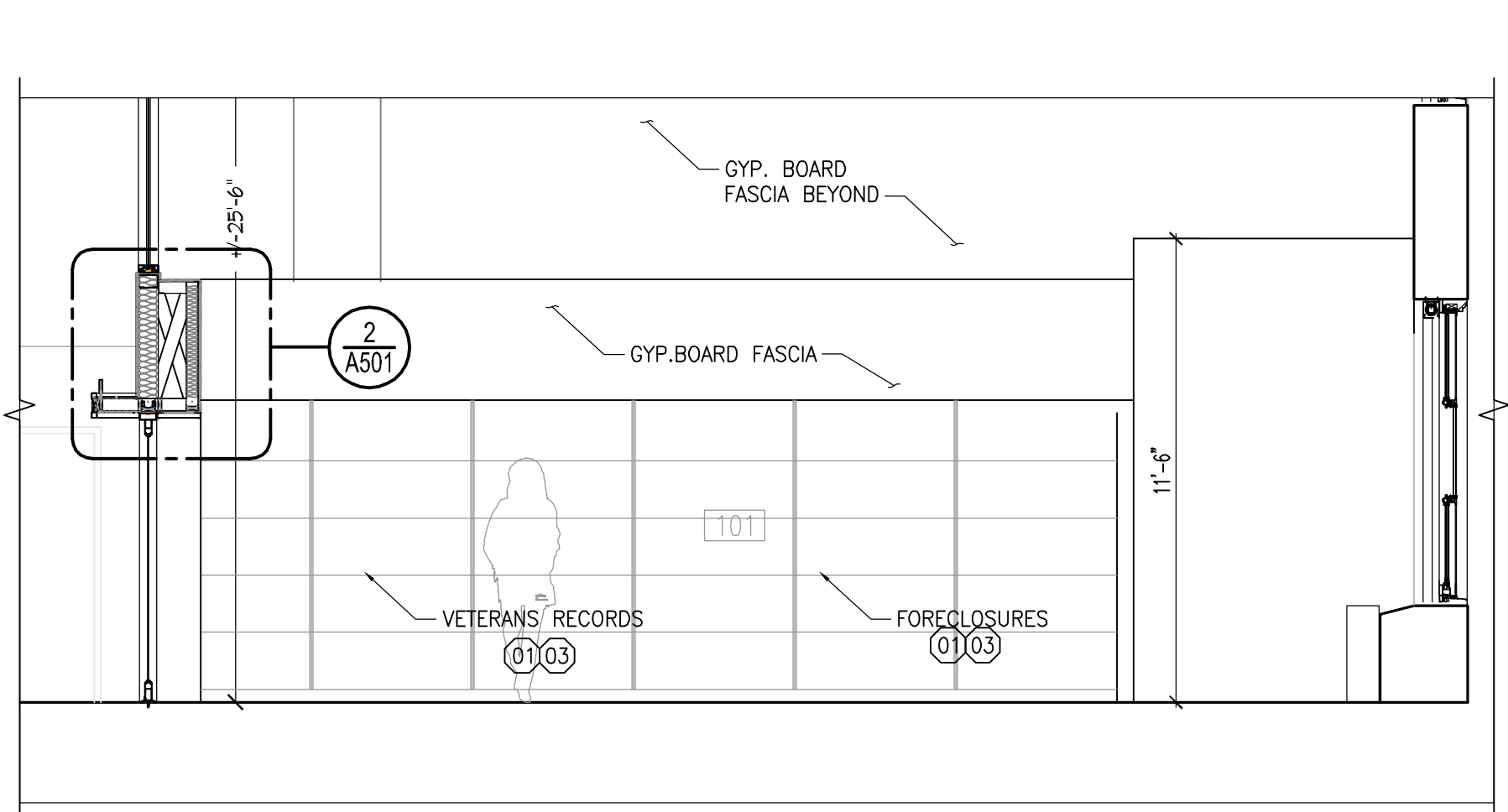
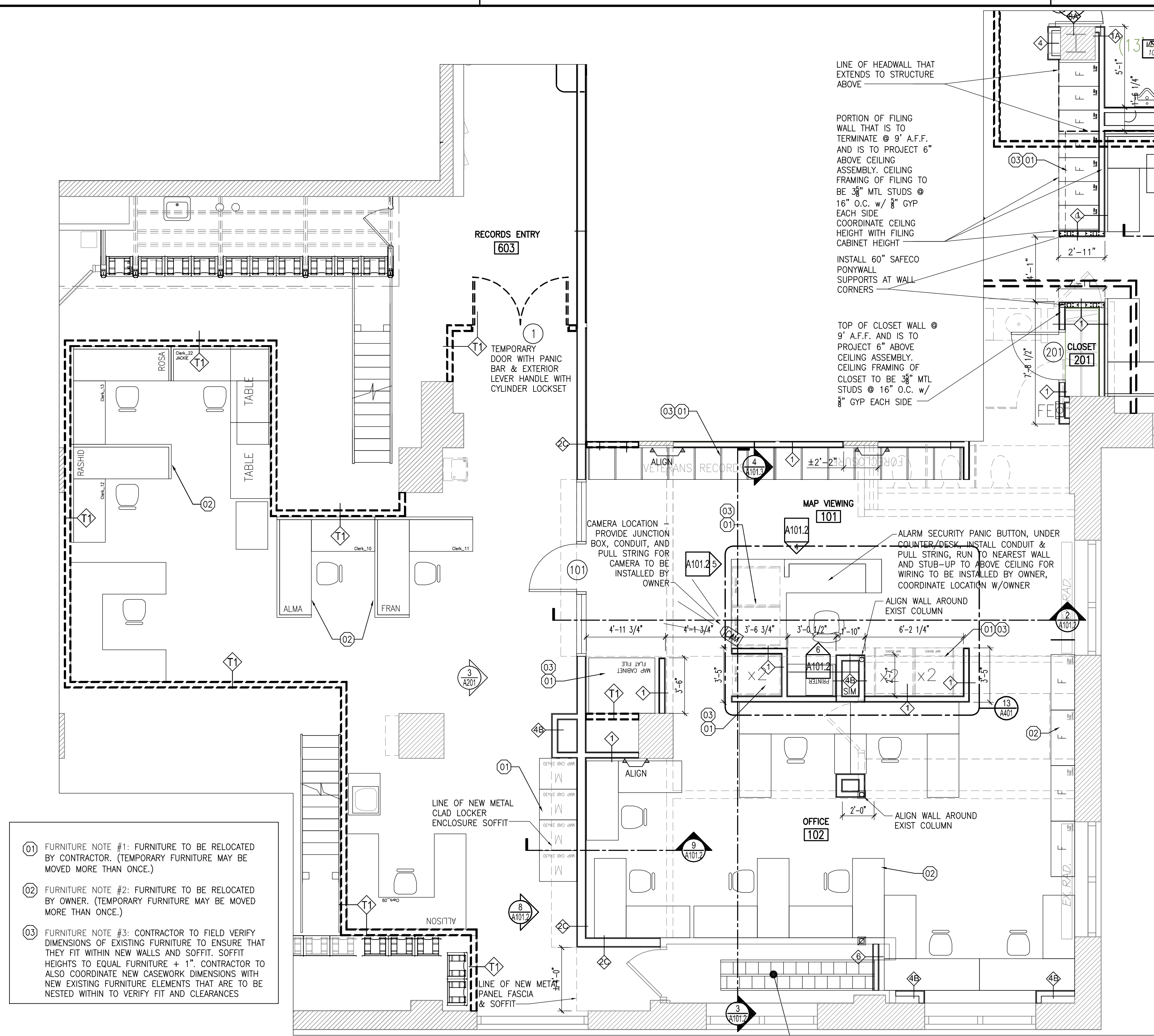
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**FIRST FLOOR
 PLAN
 PHASE 1**
A101.1

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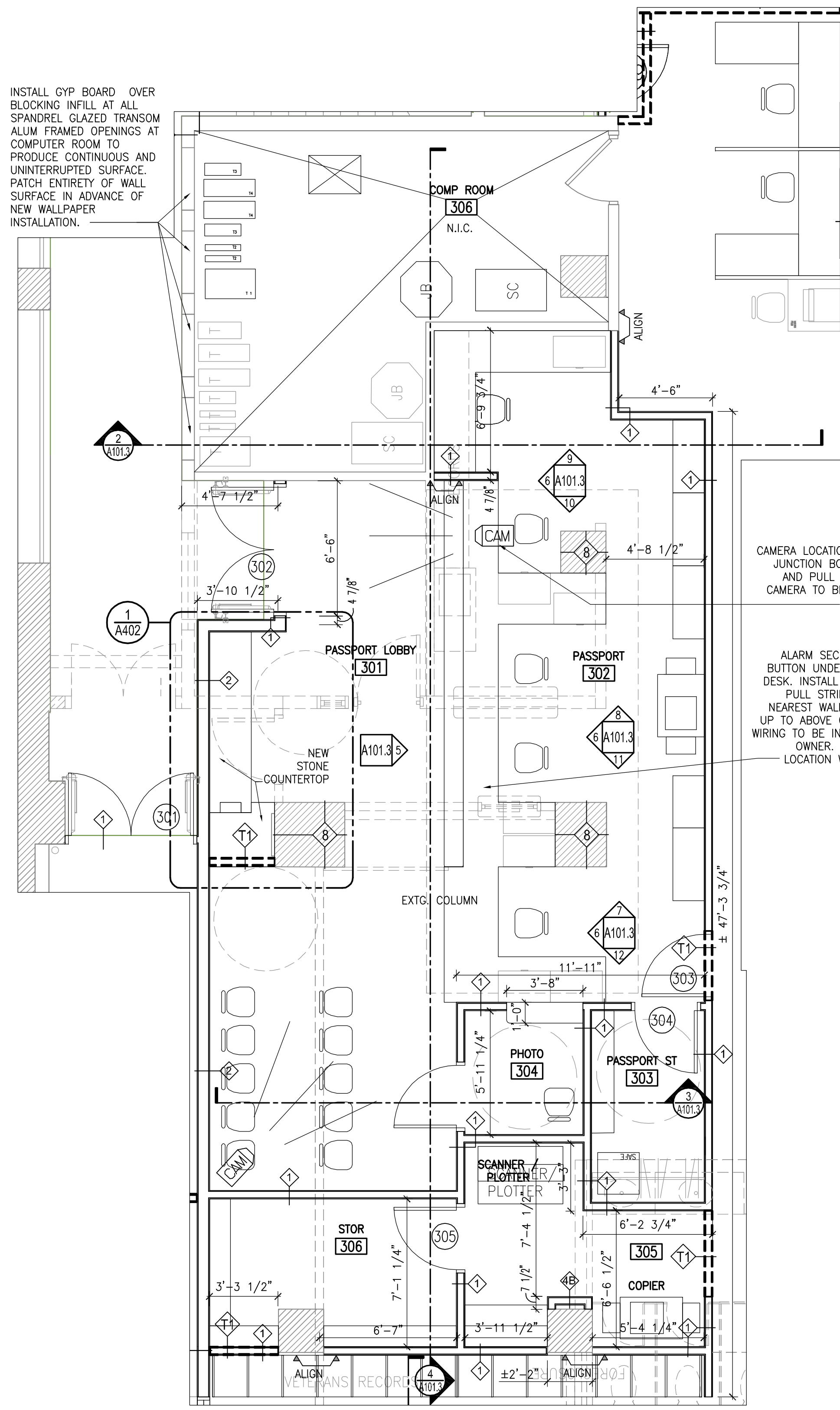
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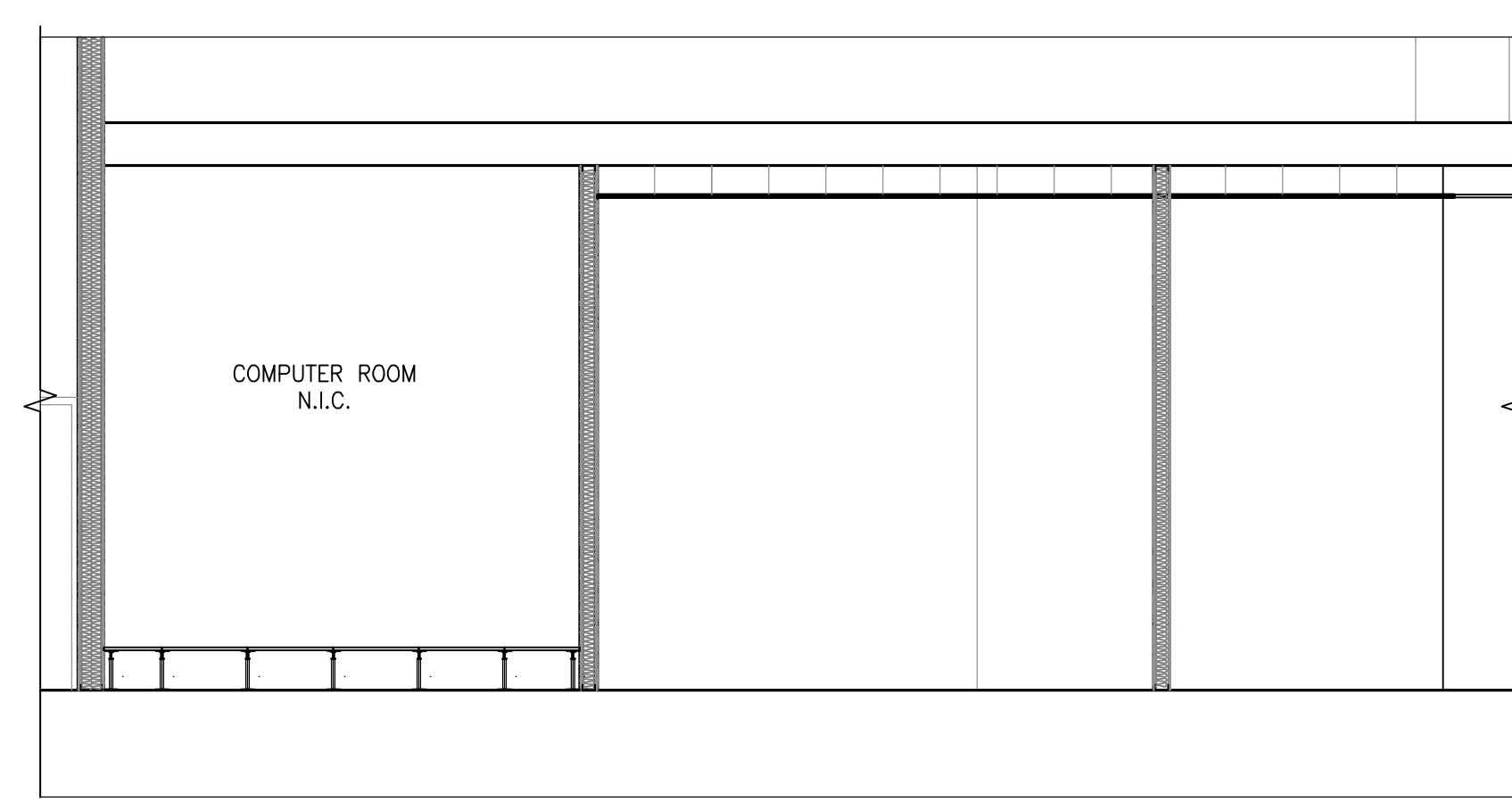
FIRST FLOOR PLAN PHASE 2

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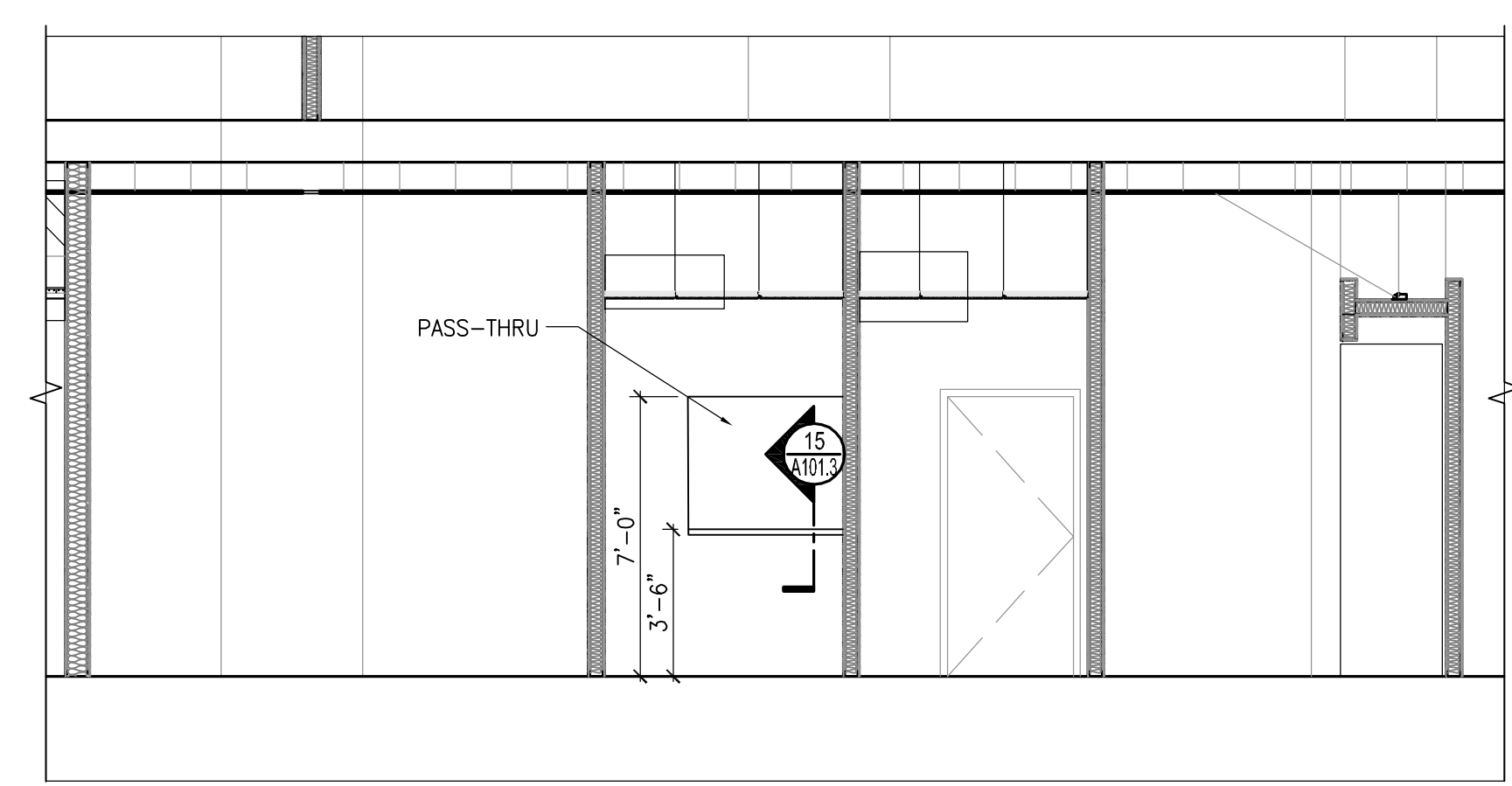
INSTALL GYP BOARD OVER BLOCKING INFILL AT ALL SPANDREL GLAZED TRANSOM ALUM FRAMED OPENINGS AT COMPUTER ROOM TO PRODUCE CONTINUOUS AND UNINTERRUPTED SURFACE. PATCH ENTIRETY OF WALL SURFACE IN ADVANCE OF NEW WALLPAPER INSTALLATION.



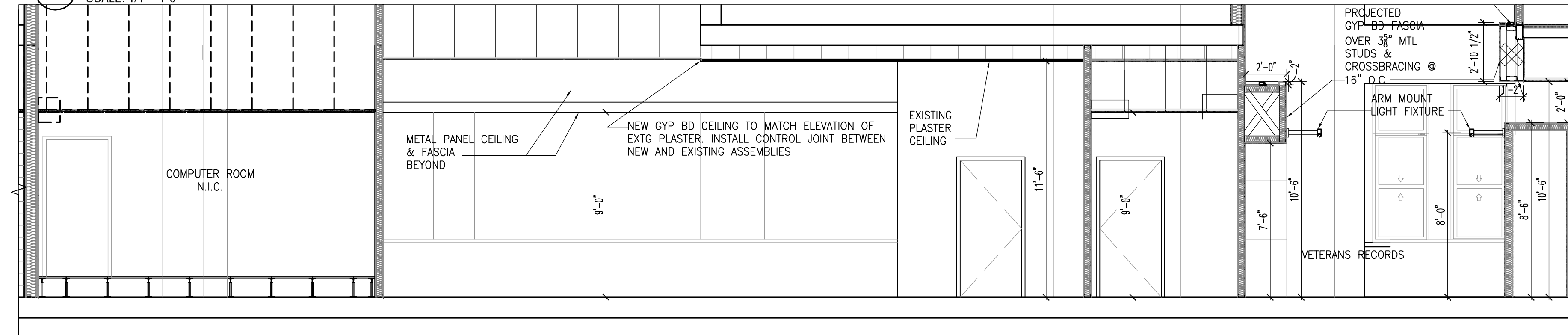
1 PHASE 3 - FLOOR and DIMENSIONING PLAN
SCALE: 1/4" = 1'-0"



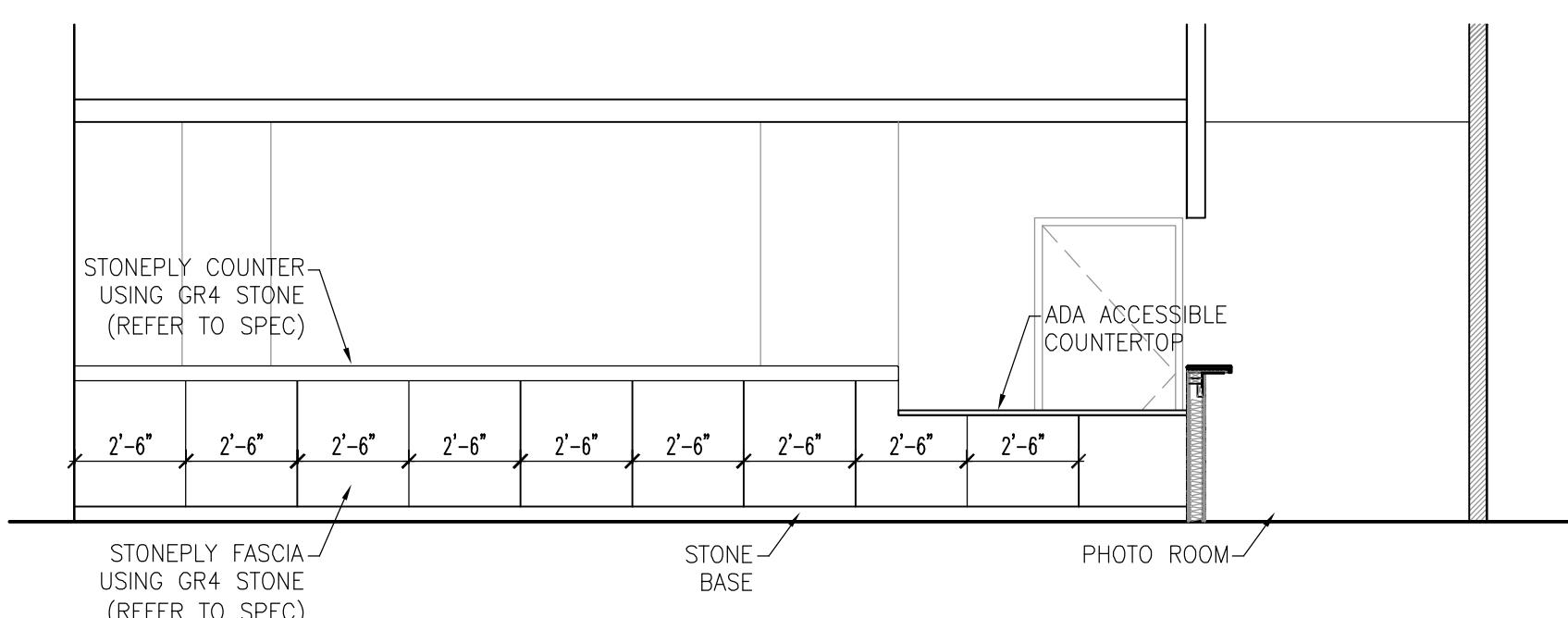
2 PHASE 3 SECTION
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3 PHASE 3 SECTION
SCALE: 1/4" = 1'-0"

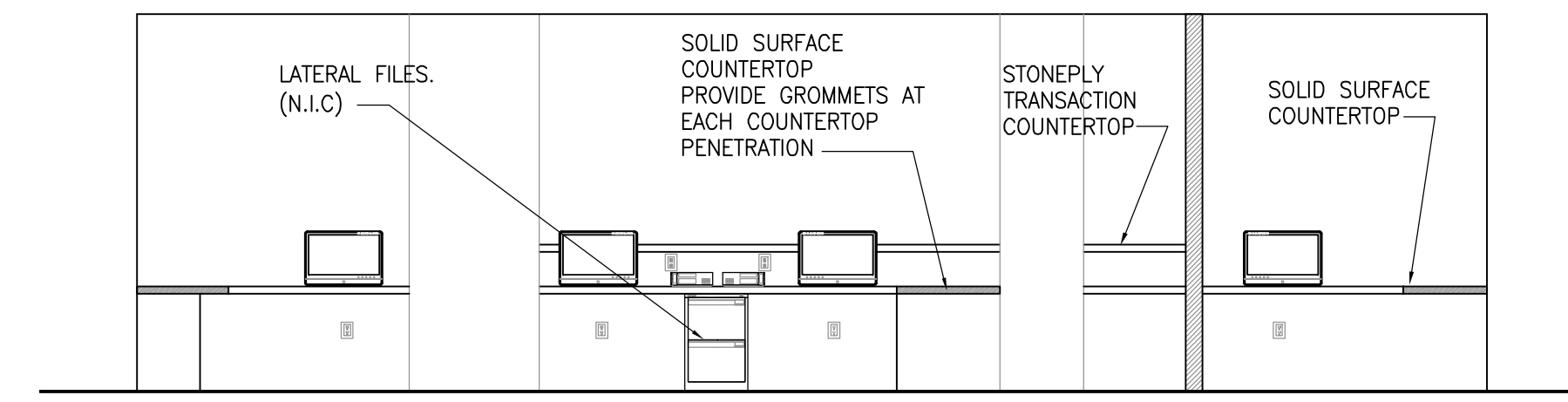


4 PHASE 3 SECTION
SCALE: 1/4" = 1'-0"

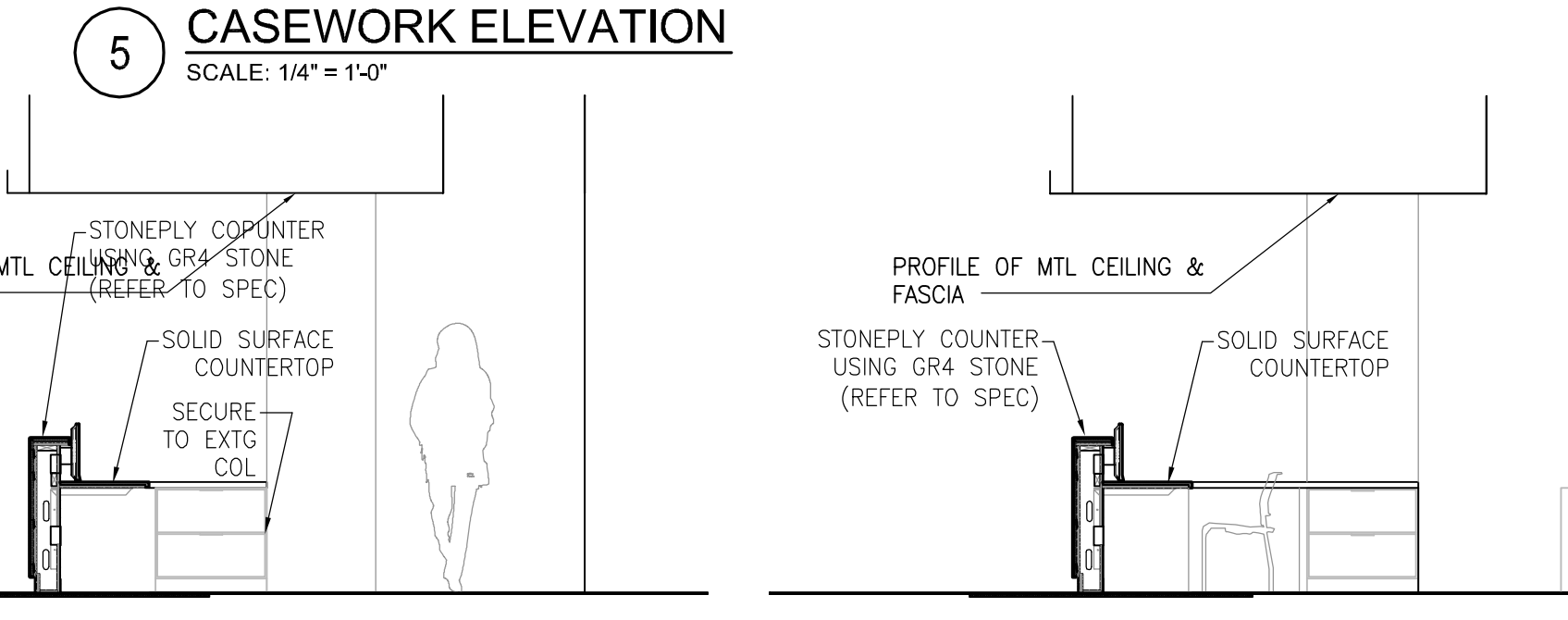


5 CASEWORK ELEVATION
SCALE: 1/4" = 1'-0"

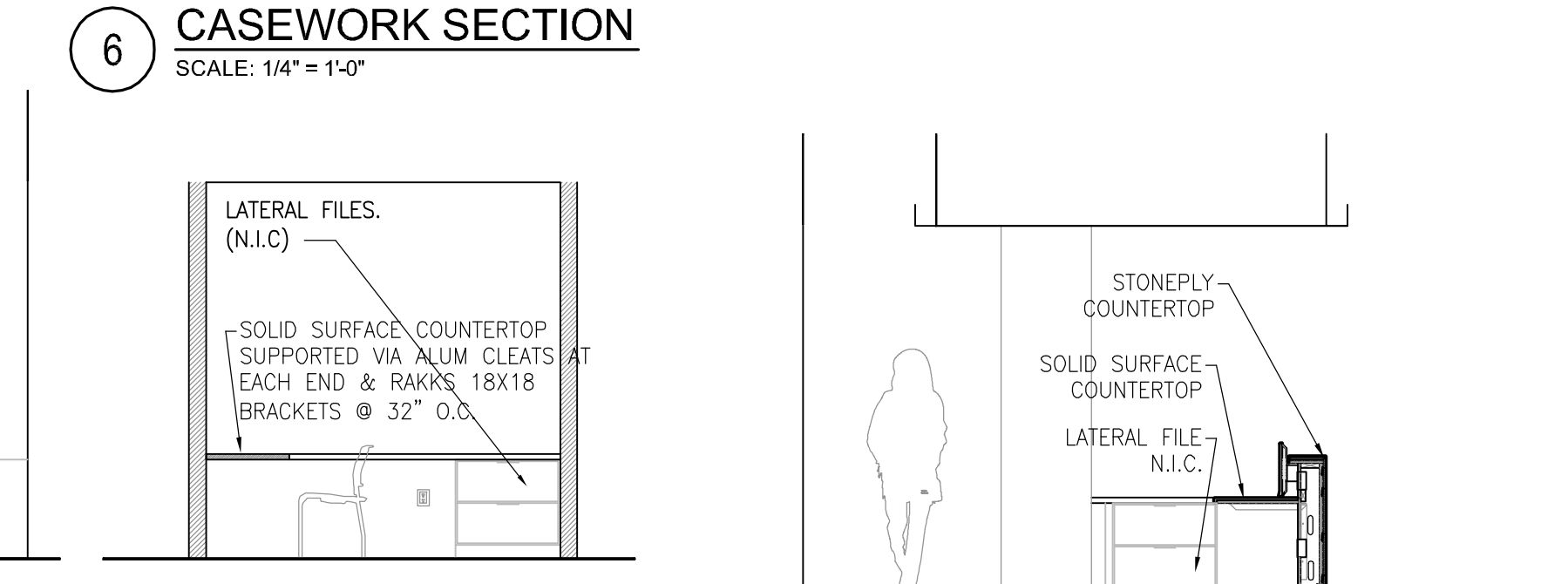
NOTE: AT EACH WORKSTATION, G.C. TO PROVIDE:
A. 1 DUPLEX POWER RECEPTACLE ABOVE COUNTERTOP
B. 1 DUPLEX POWER RECEPTACLE BELOW COUNTERTOP
C. DUPLEX TELEPHONE / DATA PORT ABOVE COUNTERTOP
D. DATA PORT BELOW COUNTERTOP
E. PANIC BUTTON, LOCATION TO BE COORDINATED WITH OWNER



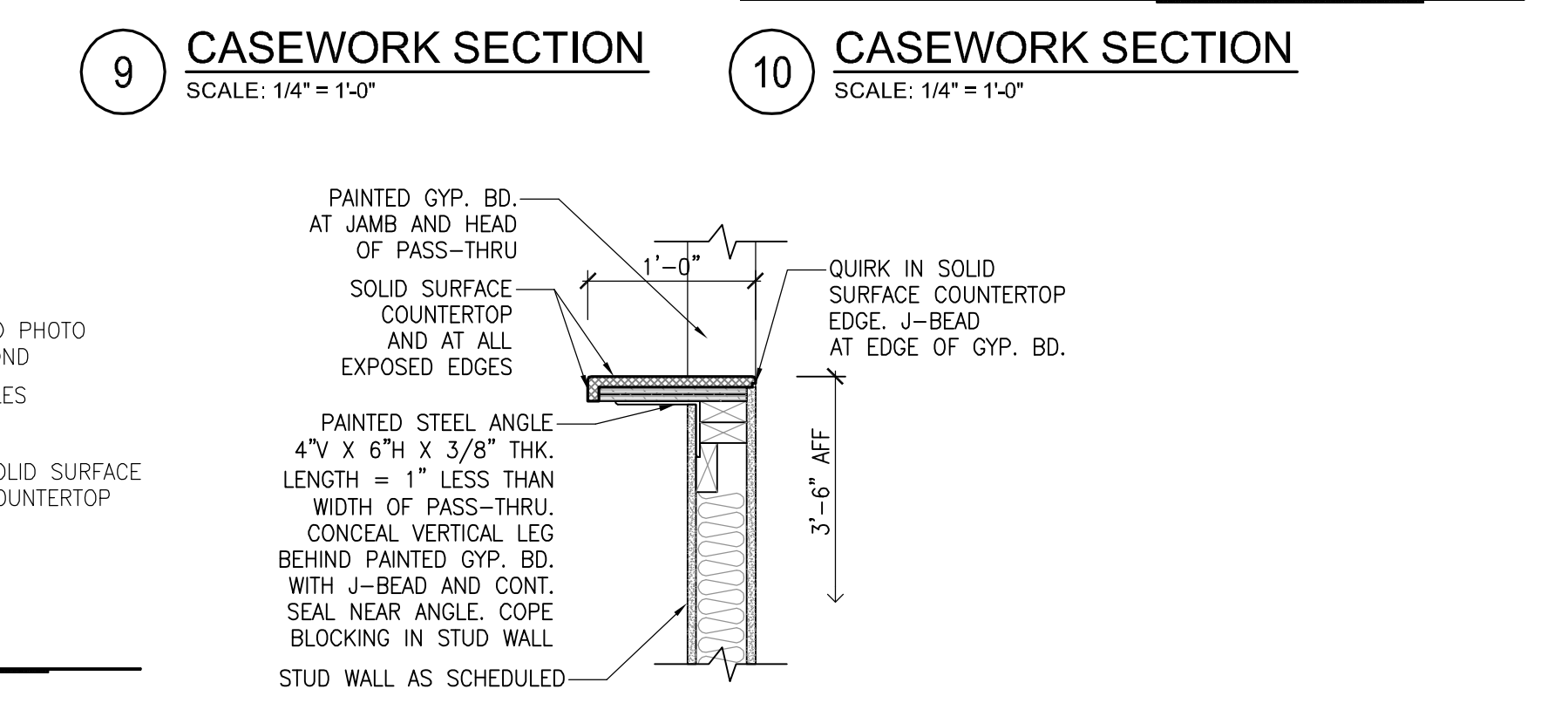
6 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



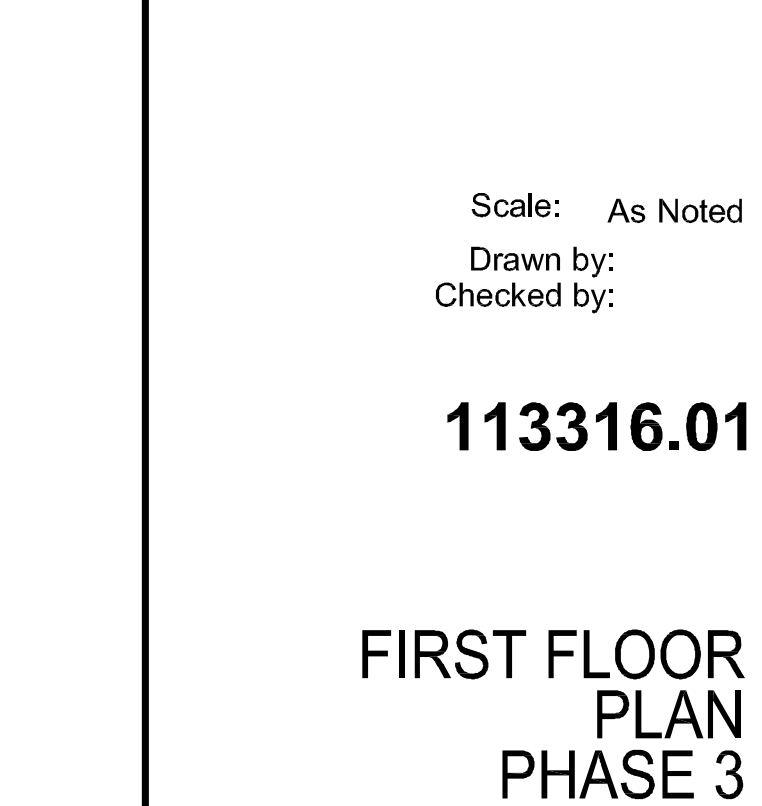
7 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



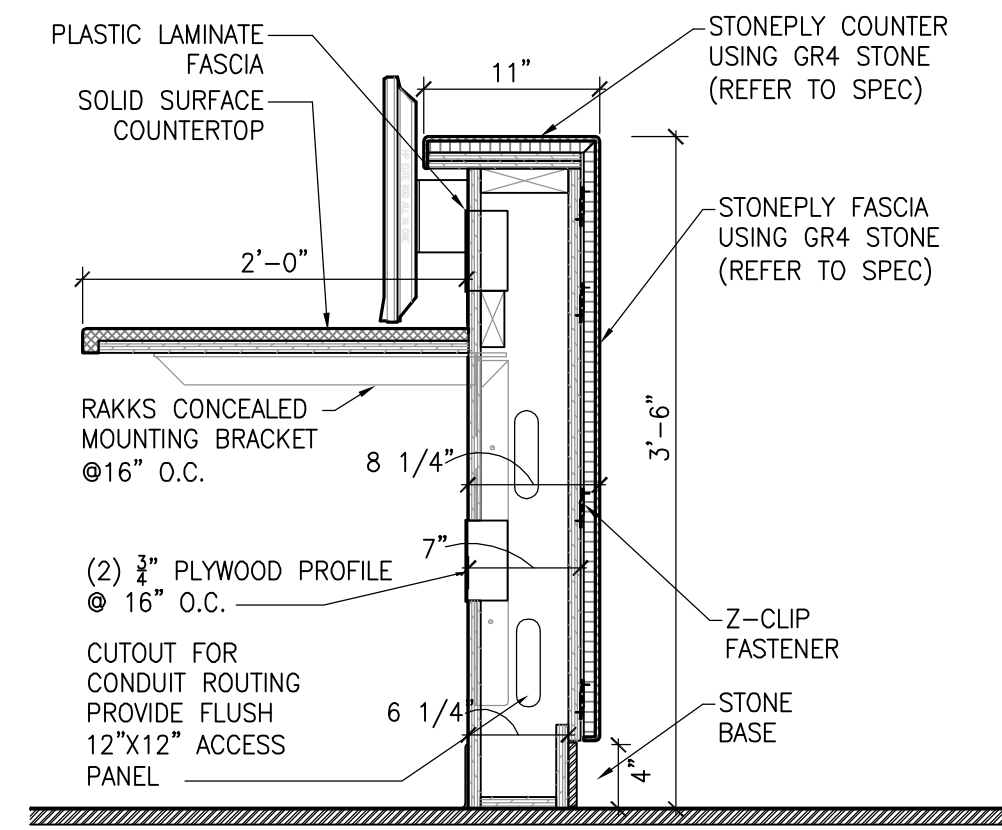
8 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



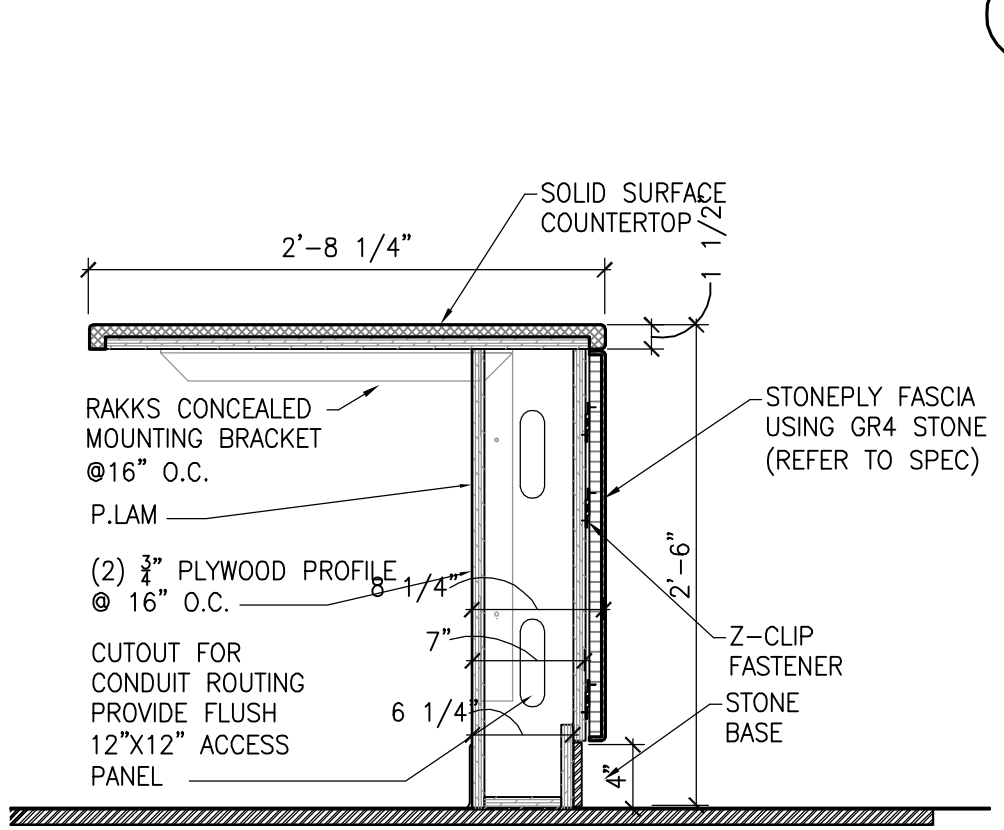
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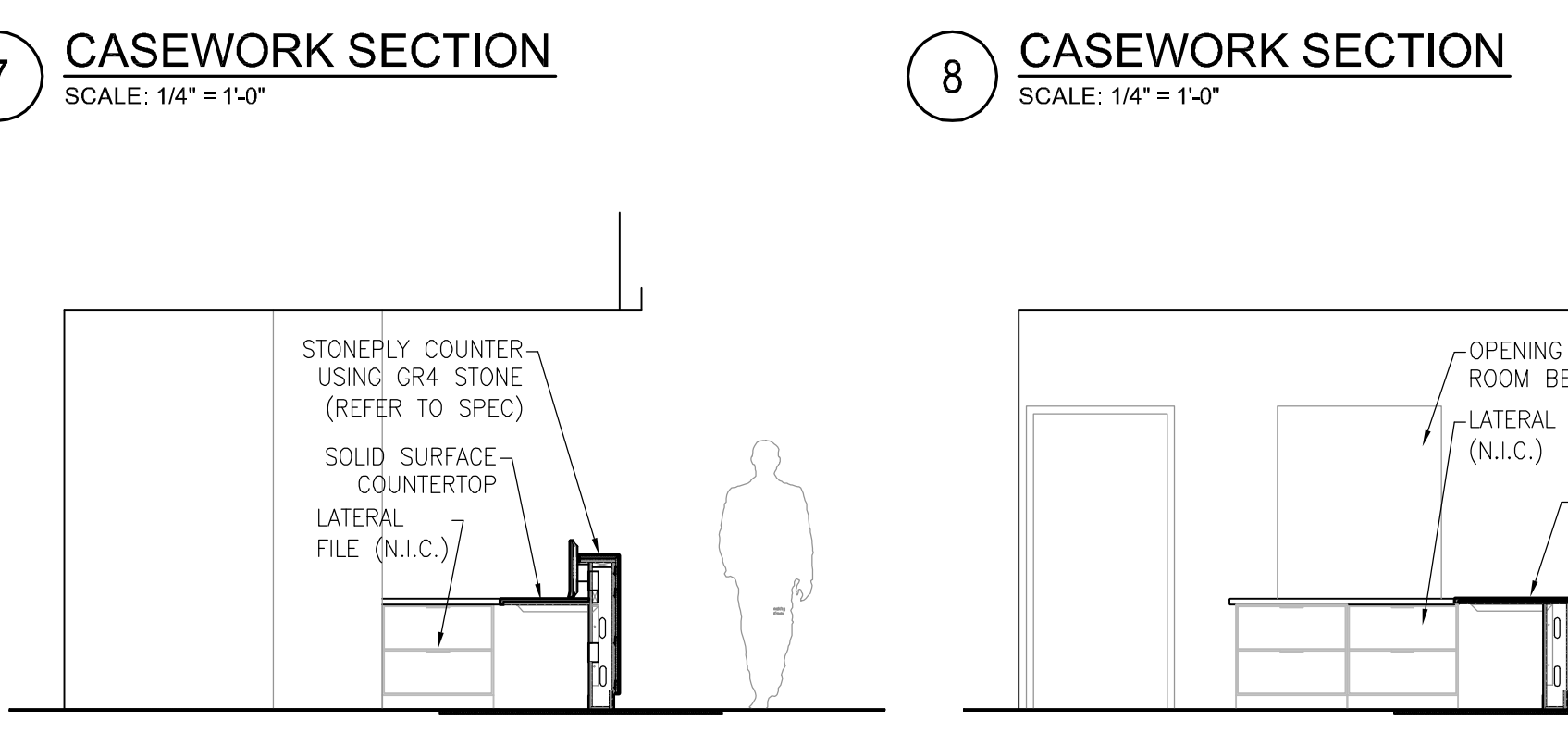
10 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



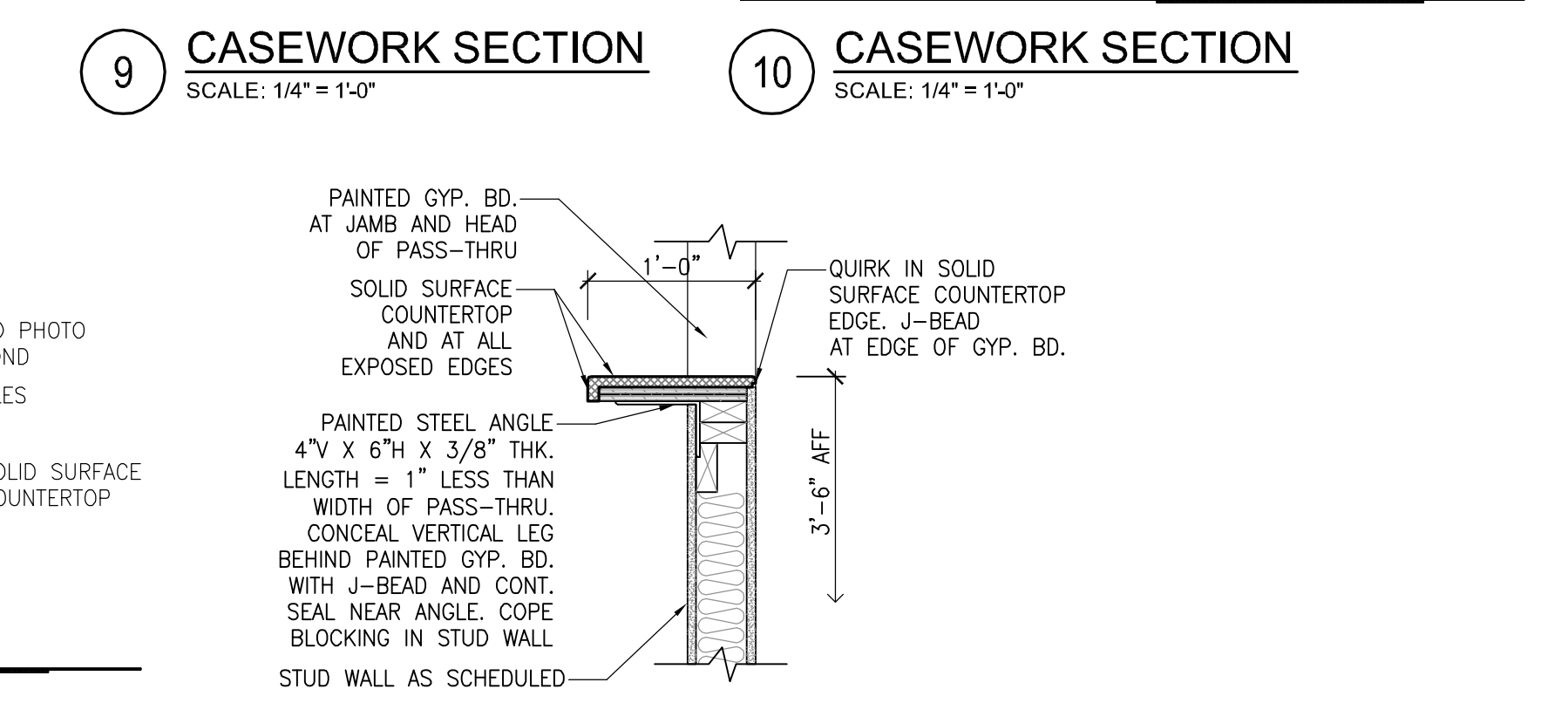
13 PASSPORT CASEWORK SECTION
SCALE: 1" = 1'-0"



14 PASSPORT CASEWORK SECTION
SCALE: 1" = 1'-0"



11 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



12 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



15 PASS-THRU SECTION
SCALE: 1/4" = 1'-0"

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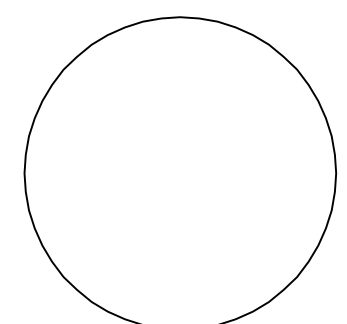
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FIRST FLOOR PLAN
PHASE 3

A101.3

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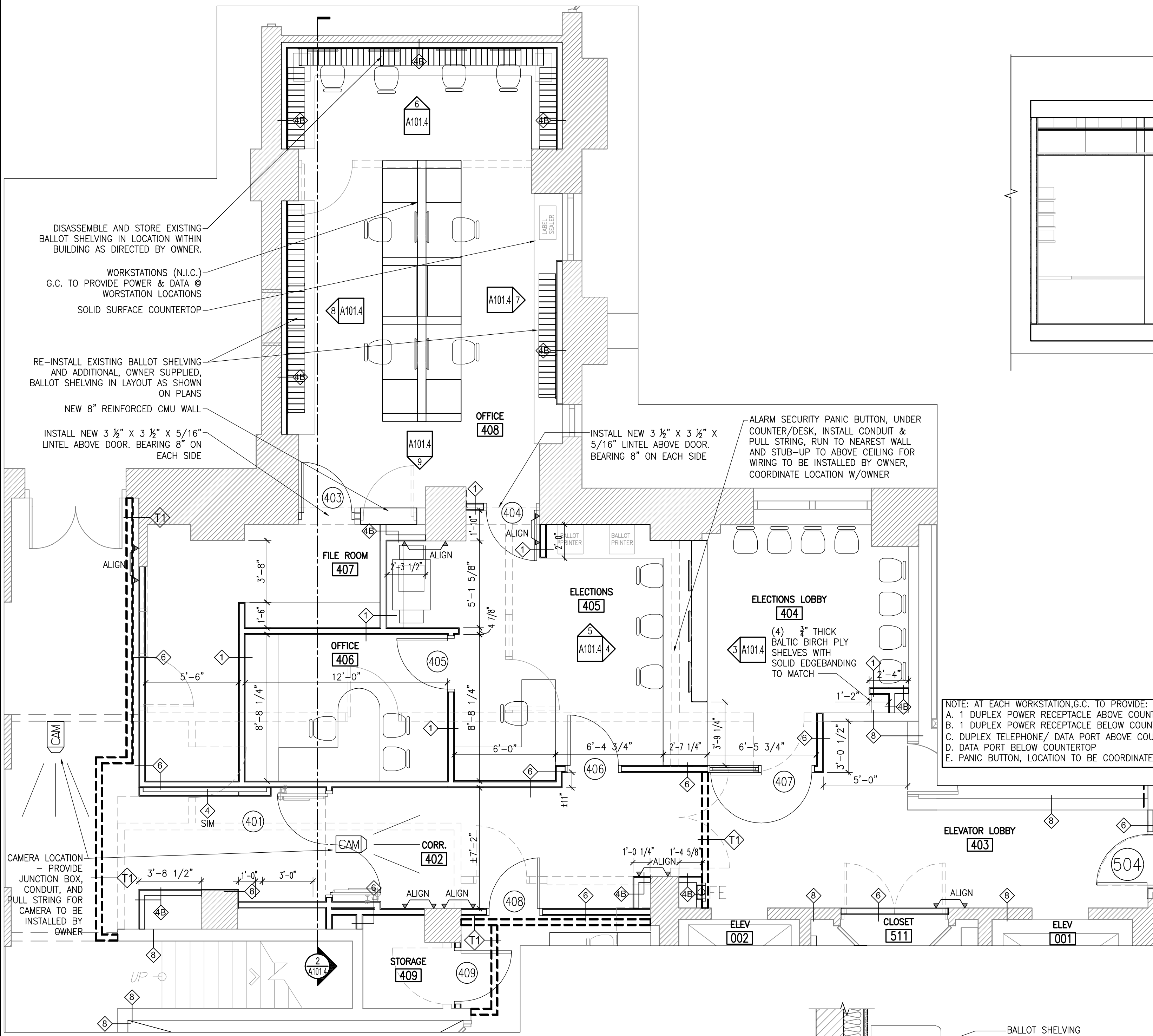
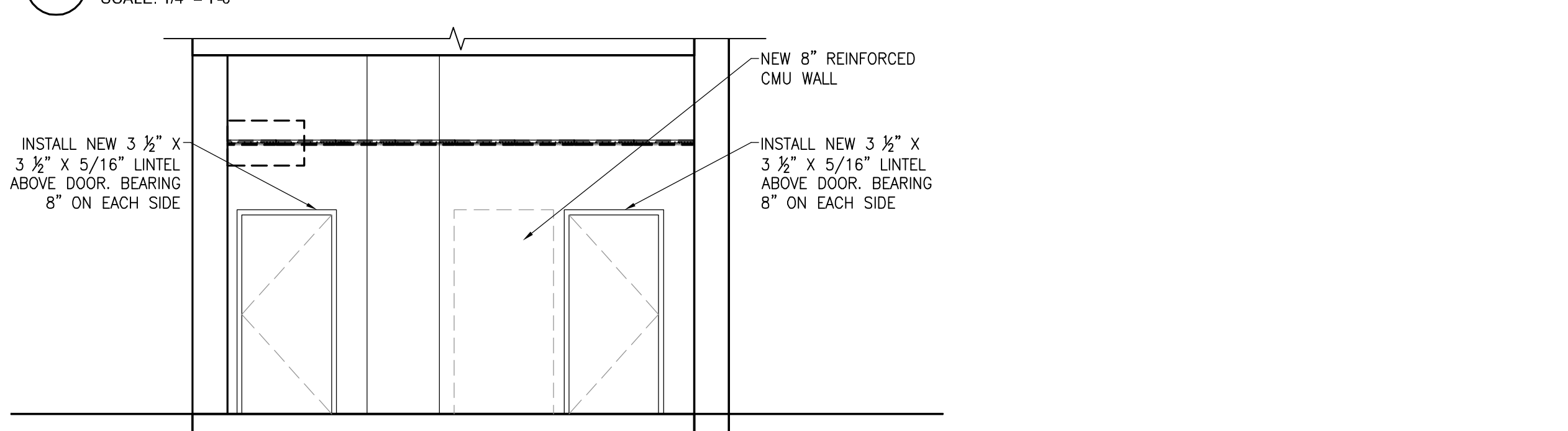
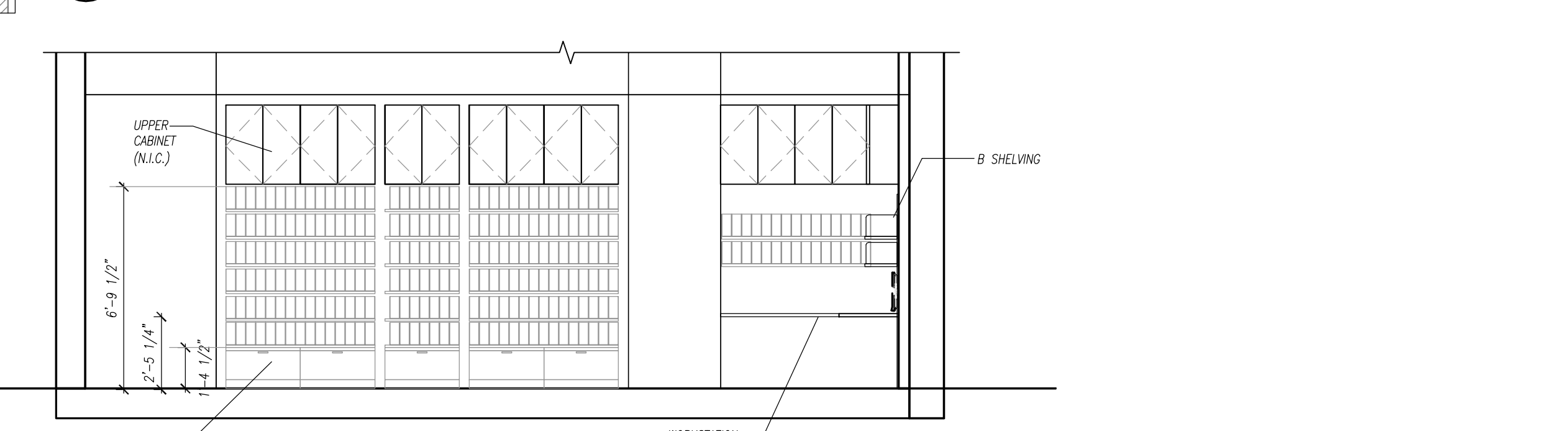
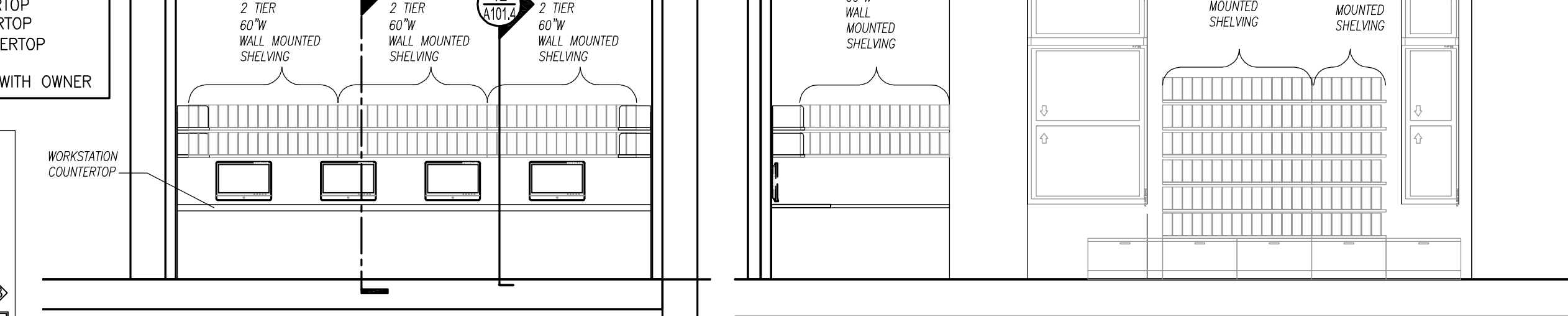
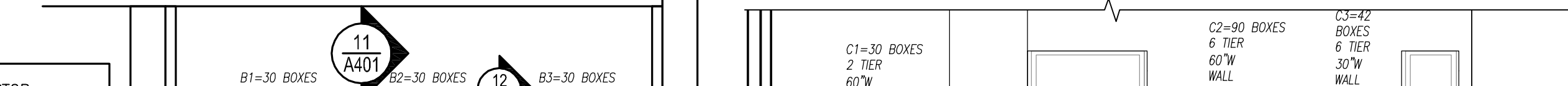
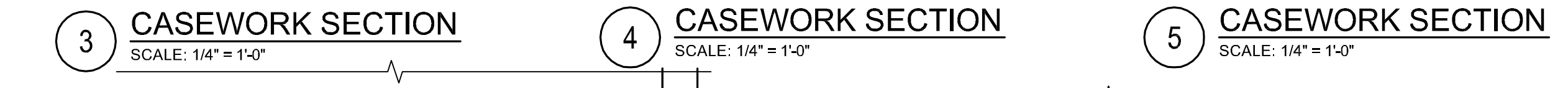
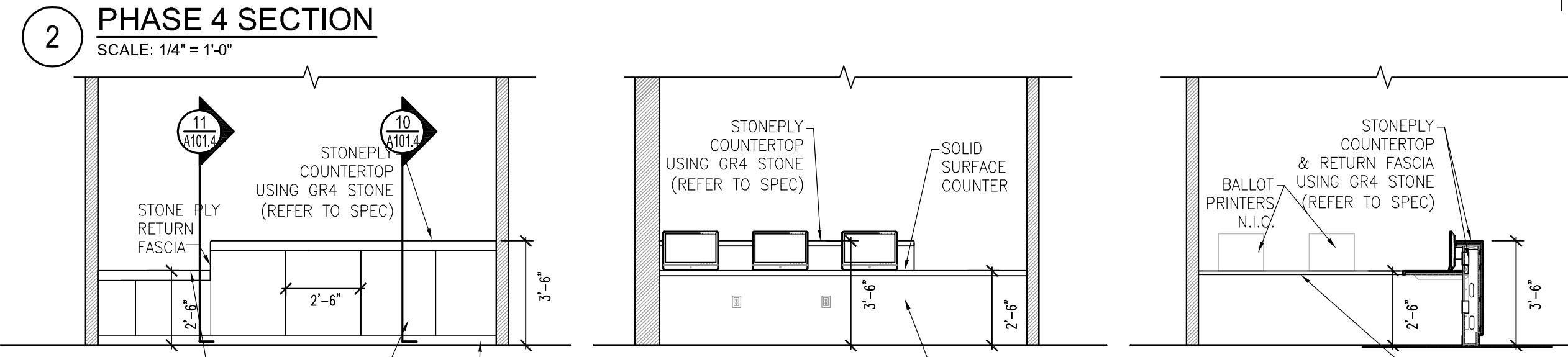
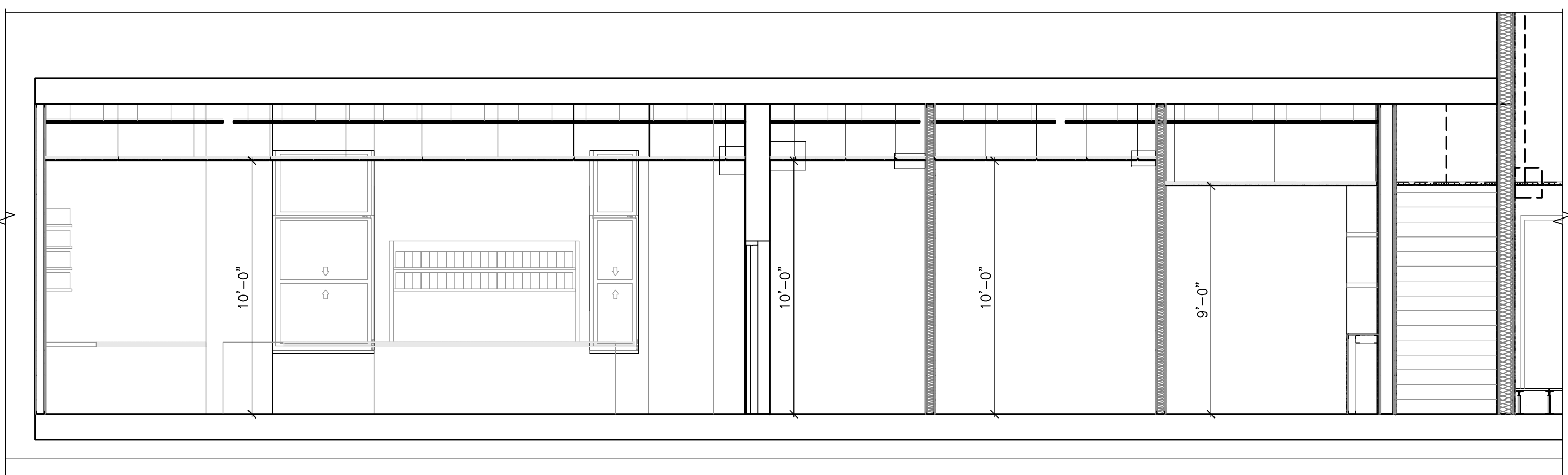
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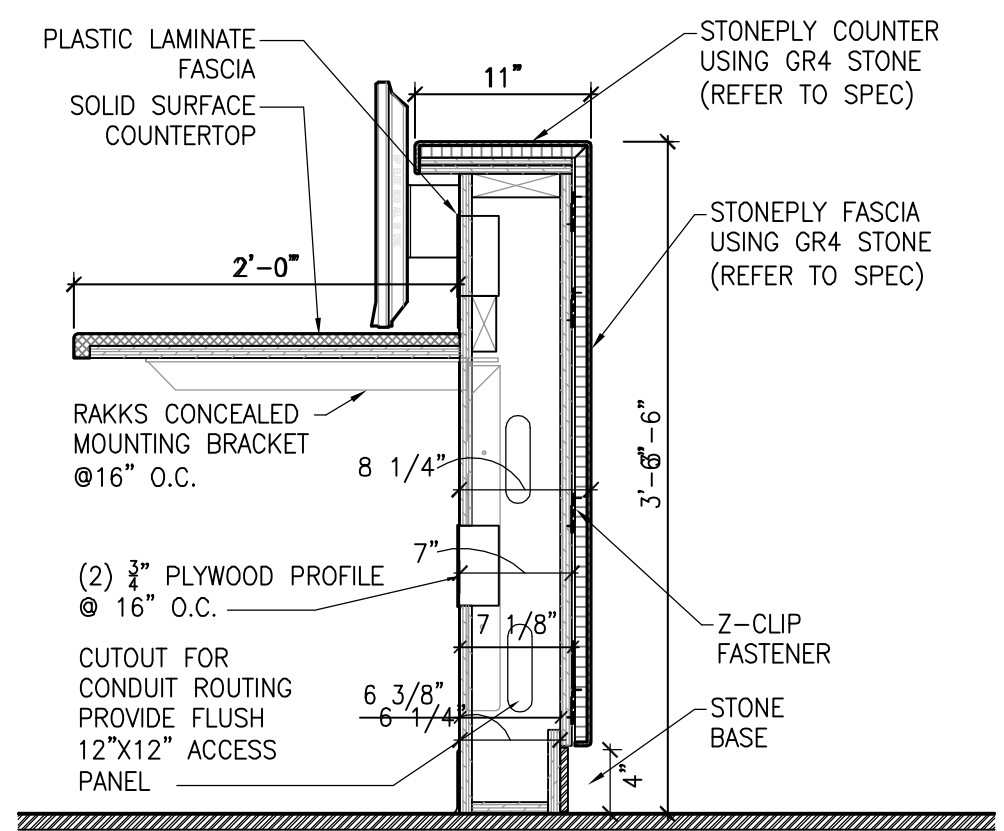
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FIRST FLOOR PLAN PHASE 4

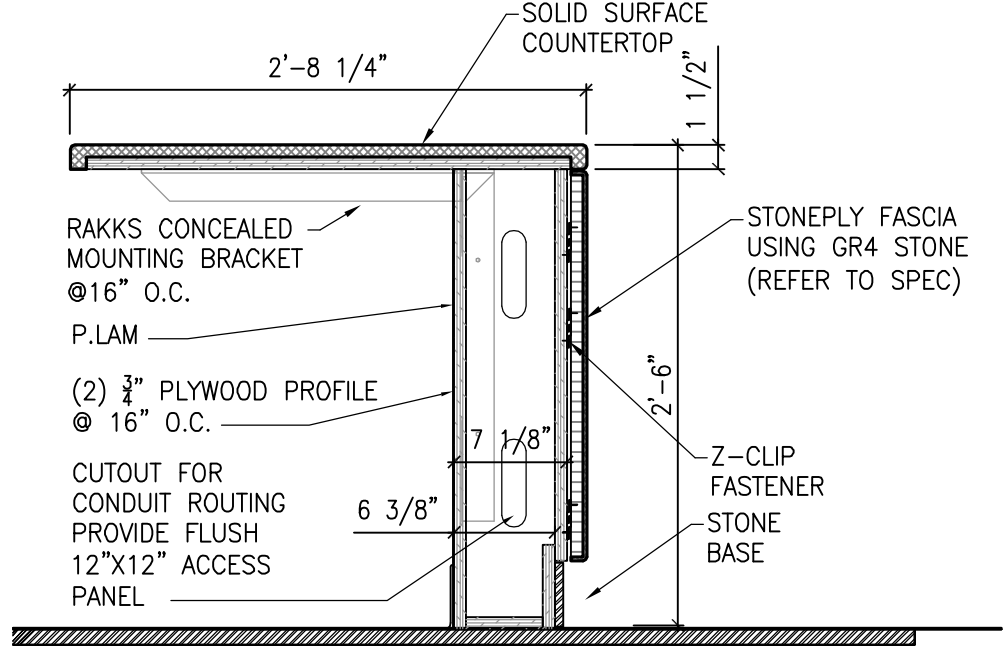
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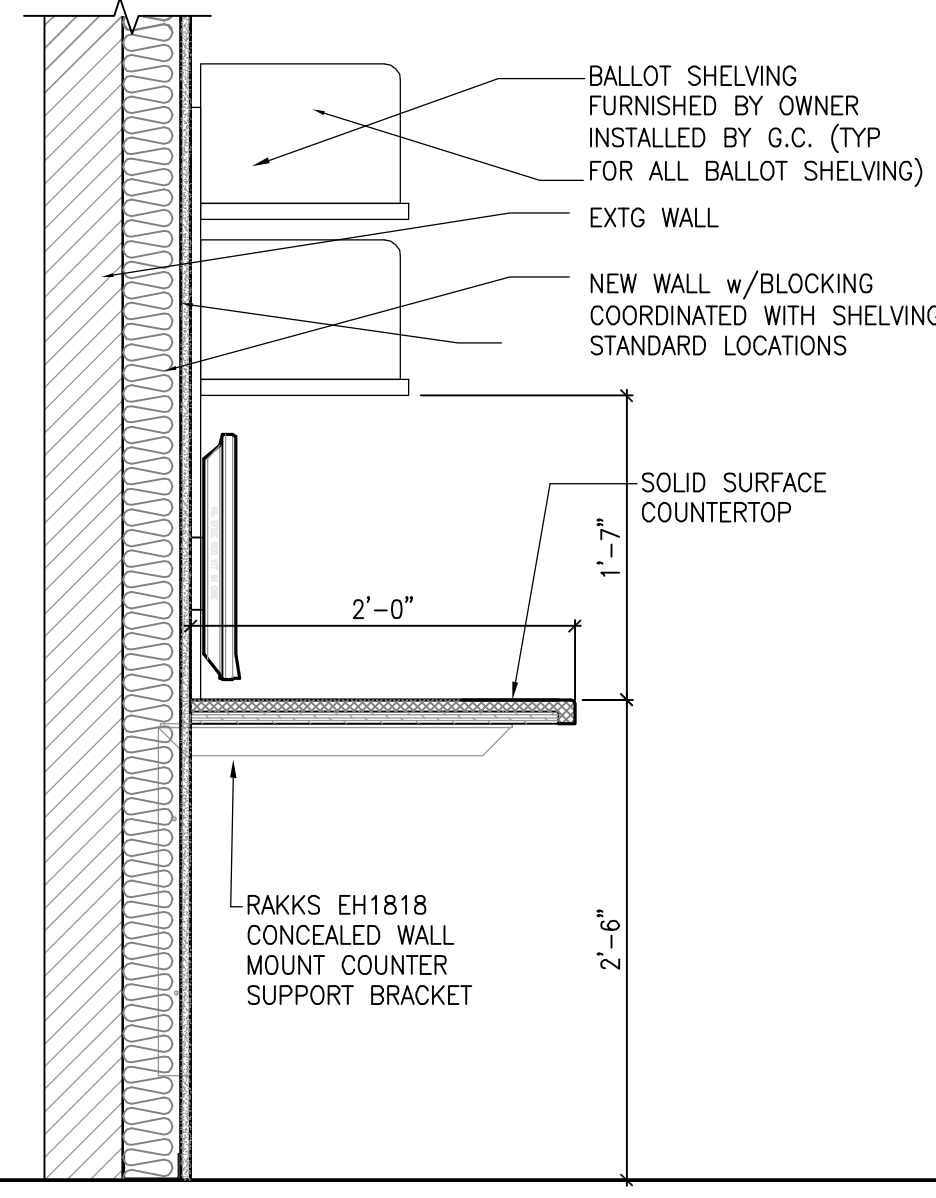
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10 CASEWORK SECTION
 SCALE: 1" = 1'-0"

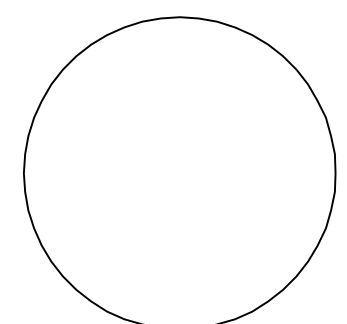


11 CASEWORK SECTION
 SCALE: 1" = 1'-0"



12 CASEWORK SECTION
 SCALE: 1" = 1'-0"

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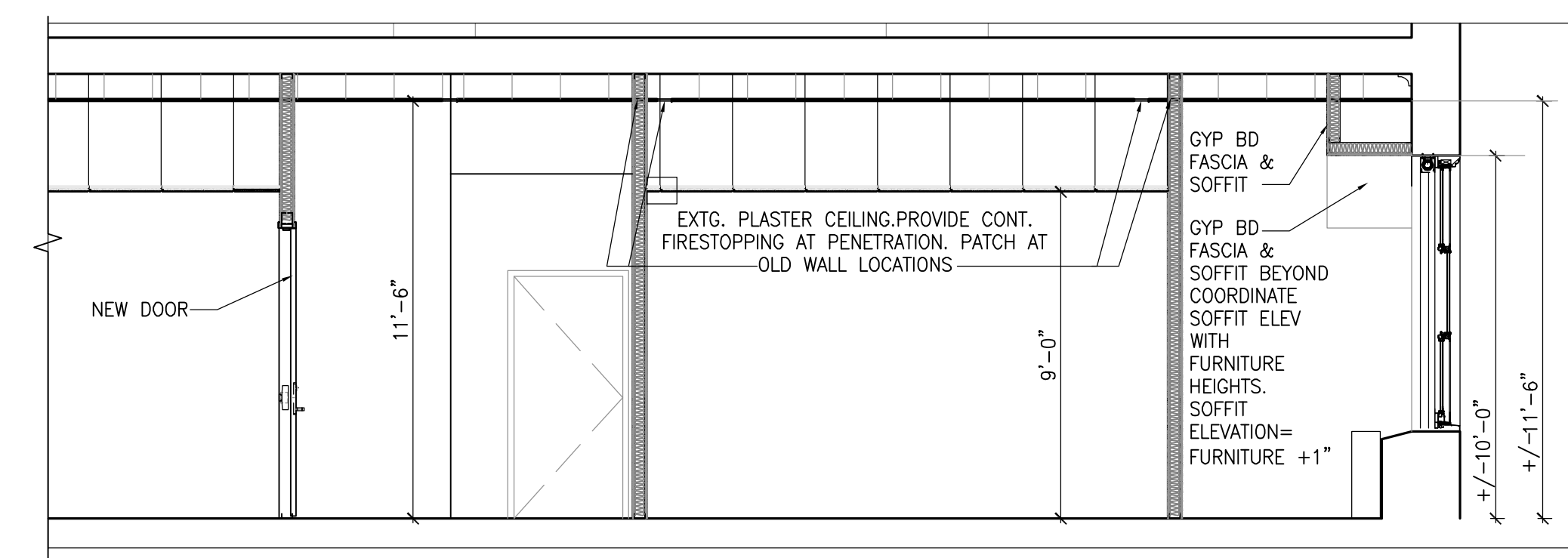
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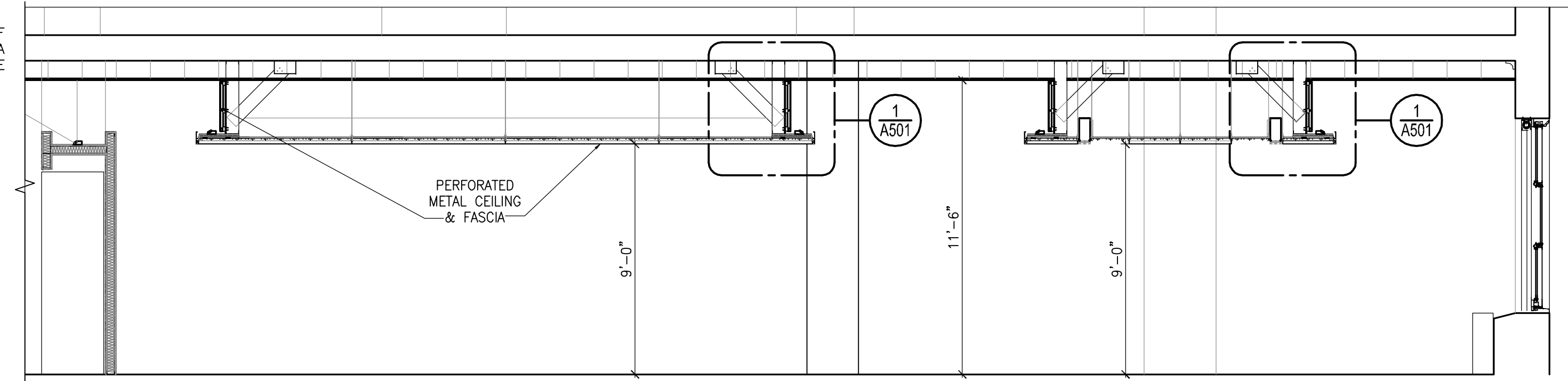
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FIRST FLOOR PLAN
 PHASE 5

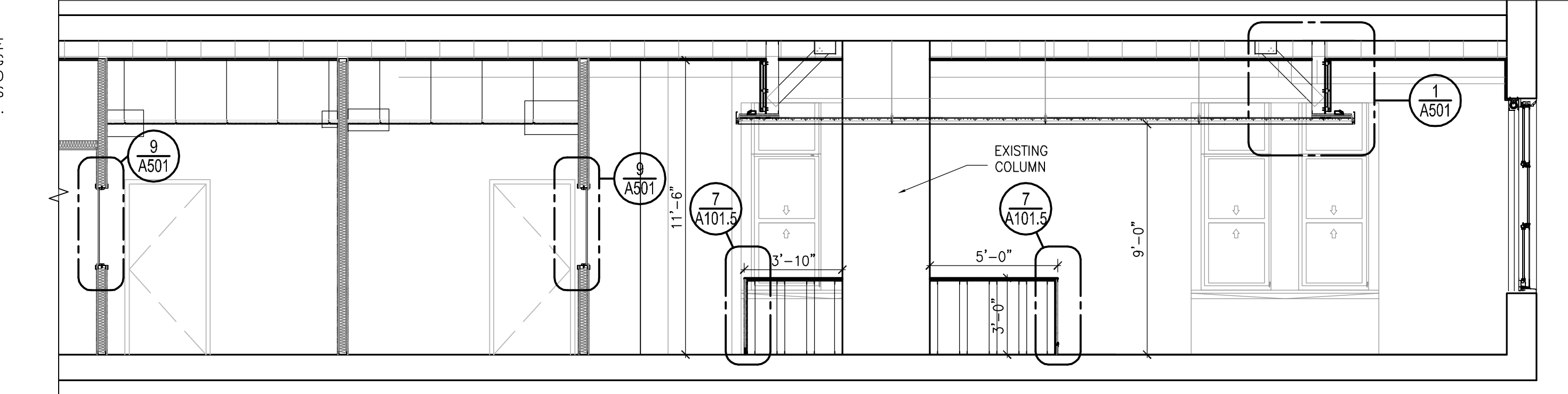
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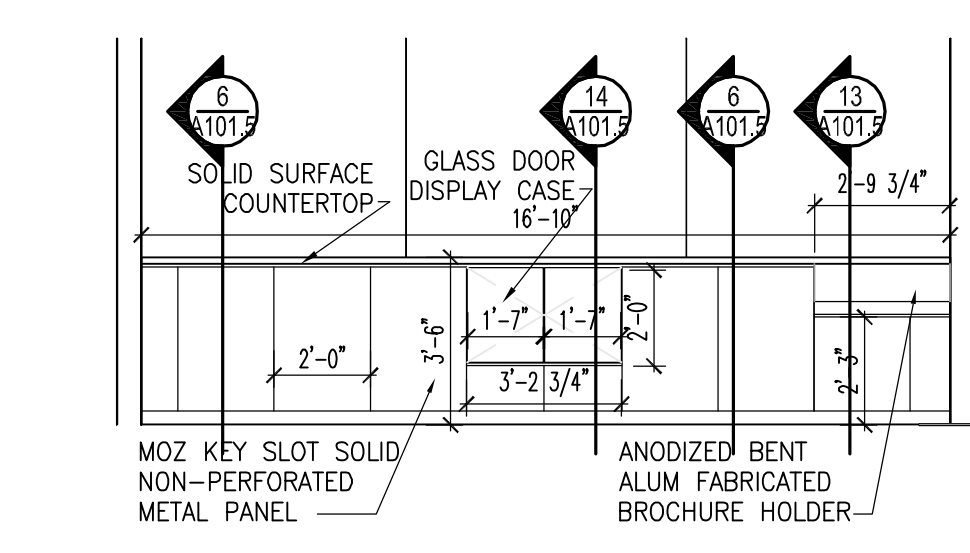
2 PHASE 5 SECTION
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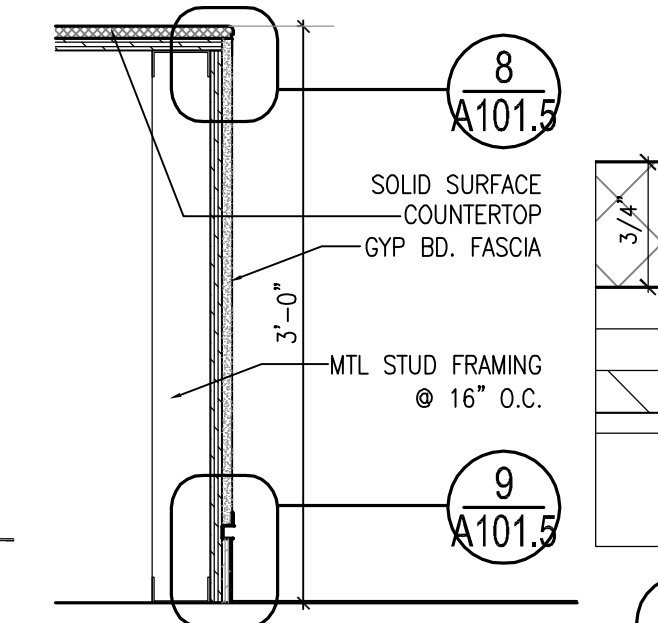
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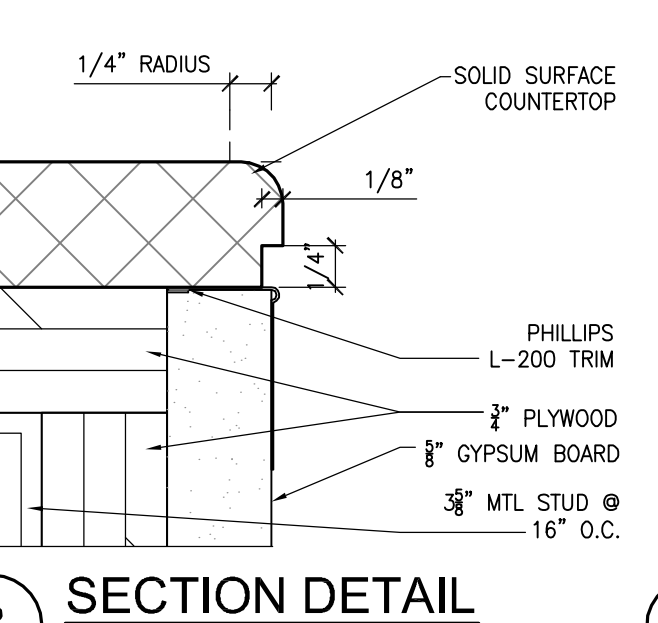
4 PHASE 5 SECTION
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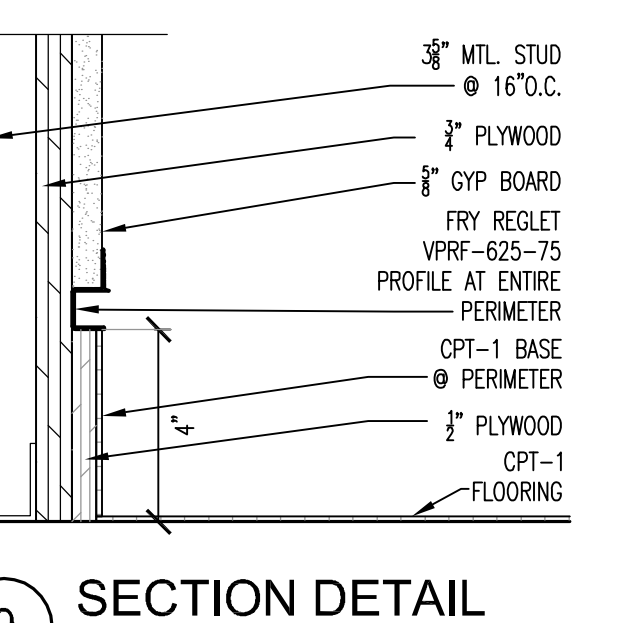
5 CASEWORK ELEVATION
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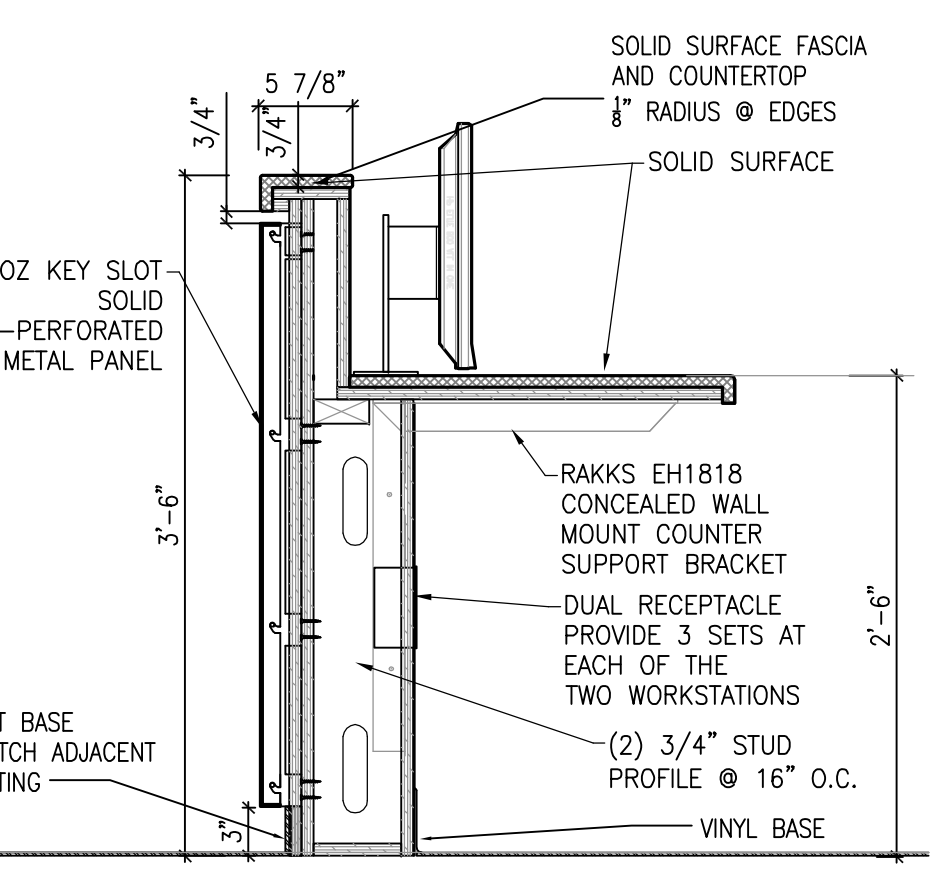
7 SECTION DETAIL
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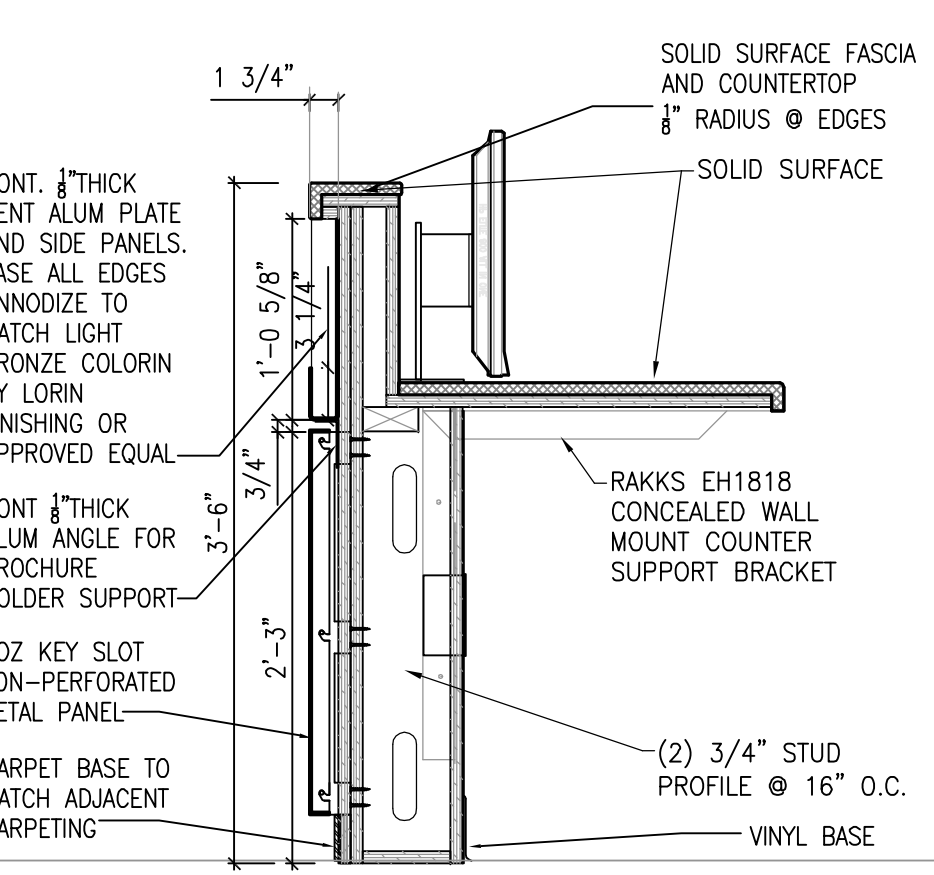
8 SECTION DETAIL
 SCALE: FULL SCALE



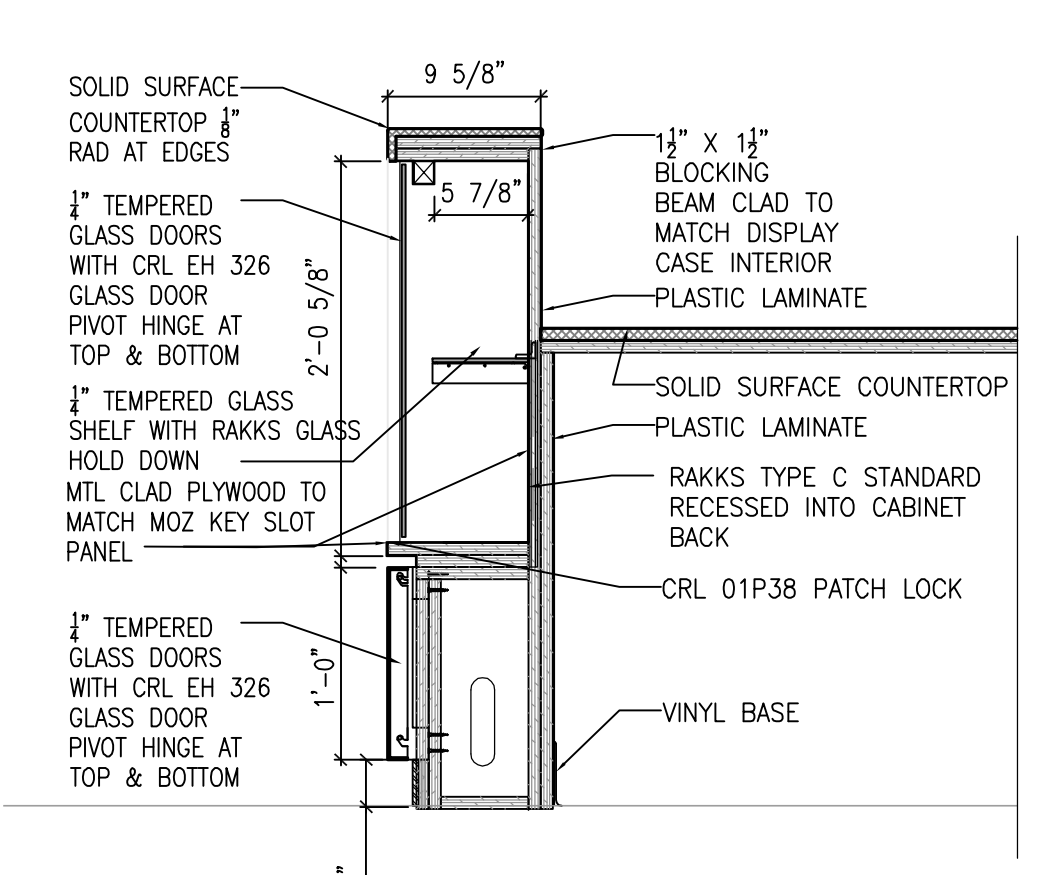
9 SECTION DETAIL
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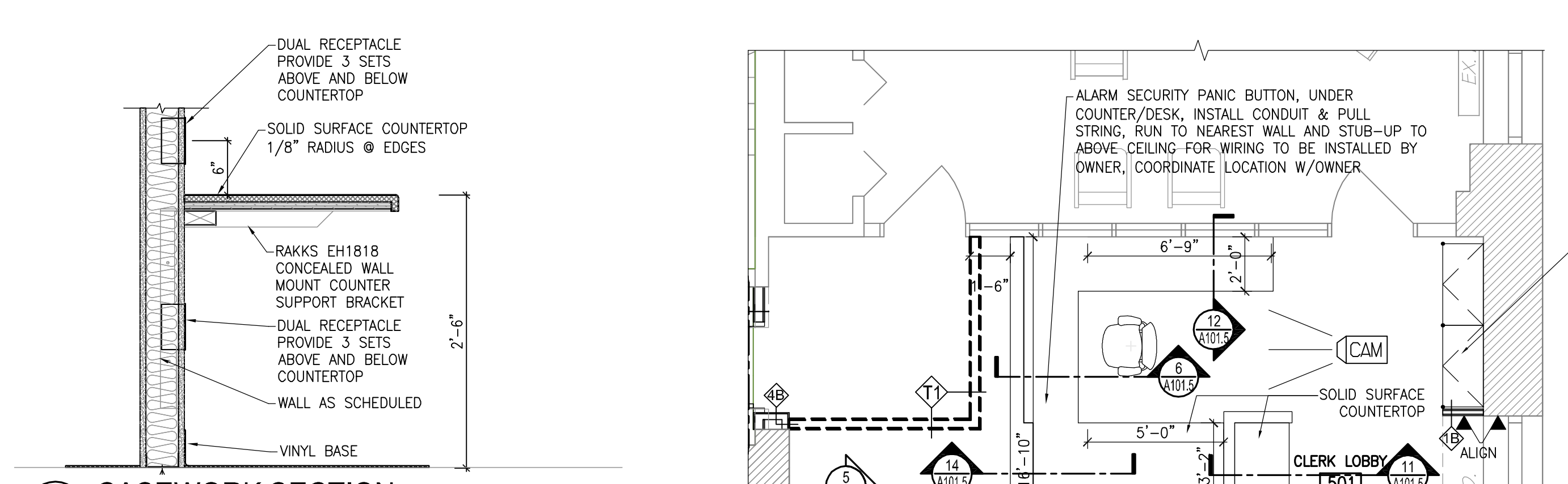
6 CASEWORK SECTION
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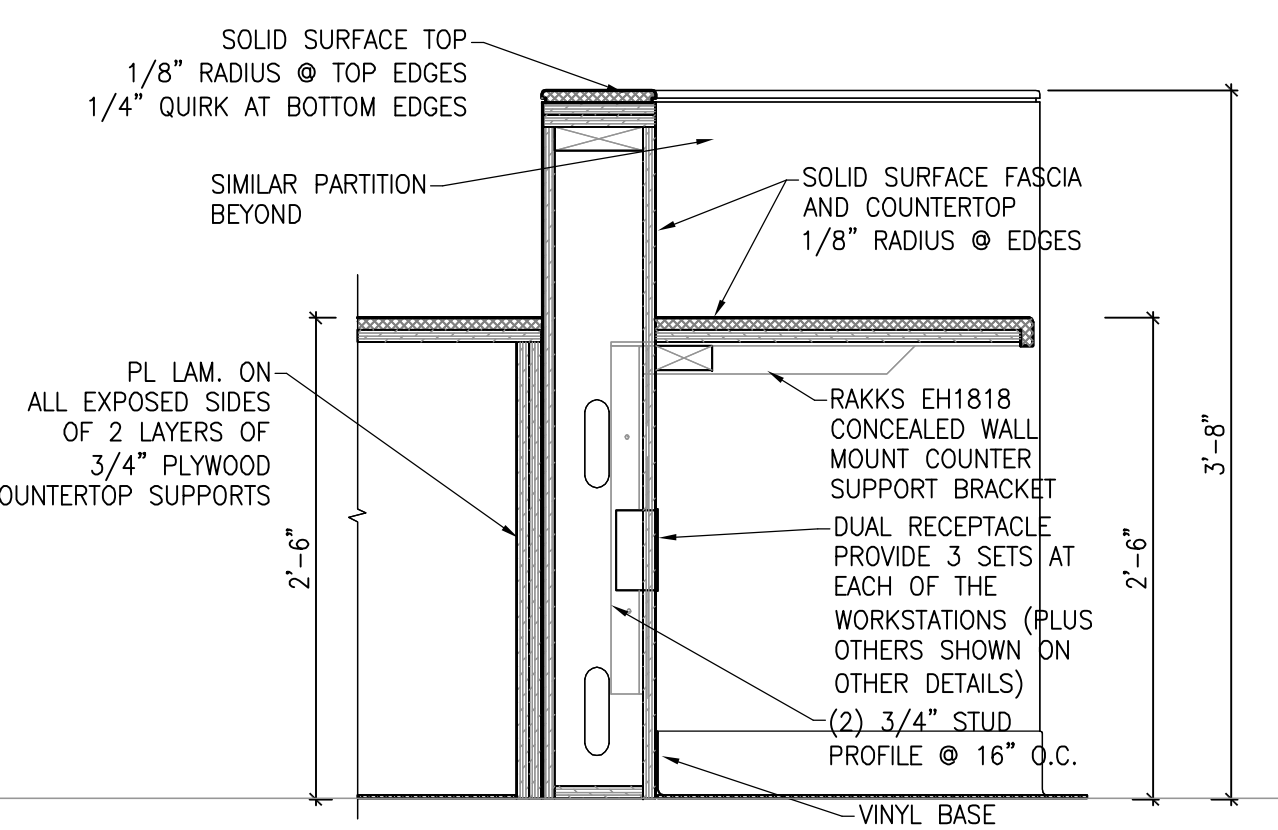
13 SECTION @ BROCHURE HOLDER
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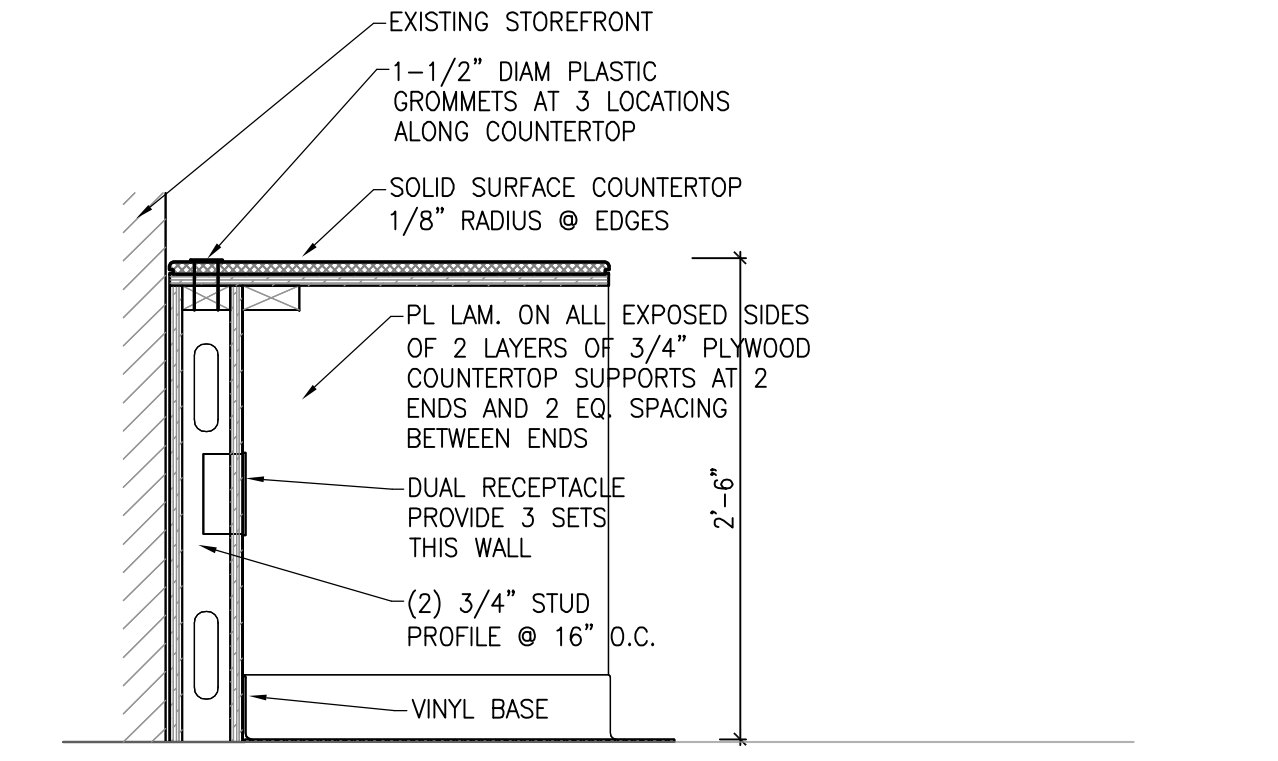
14 SECTION @ DISPLAY CASE
 SCALE: 1" = 1'-0"



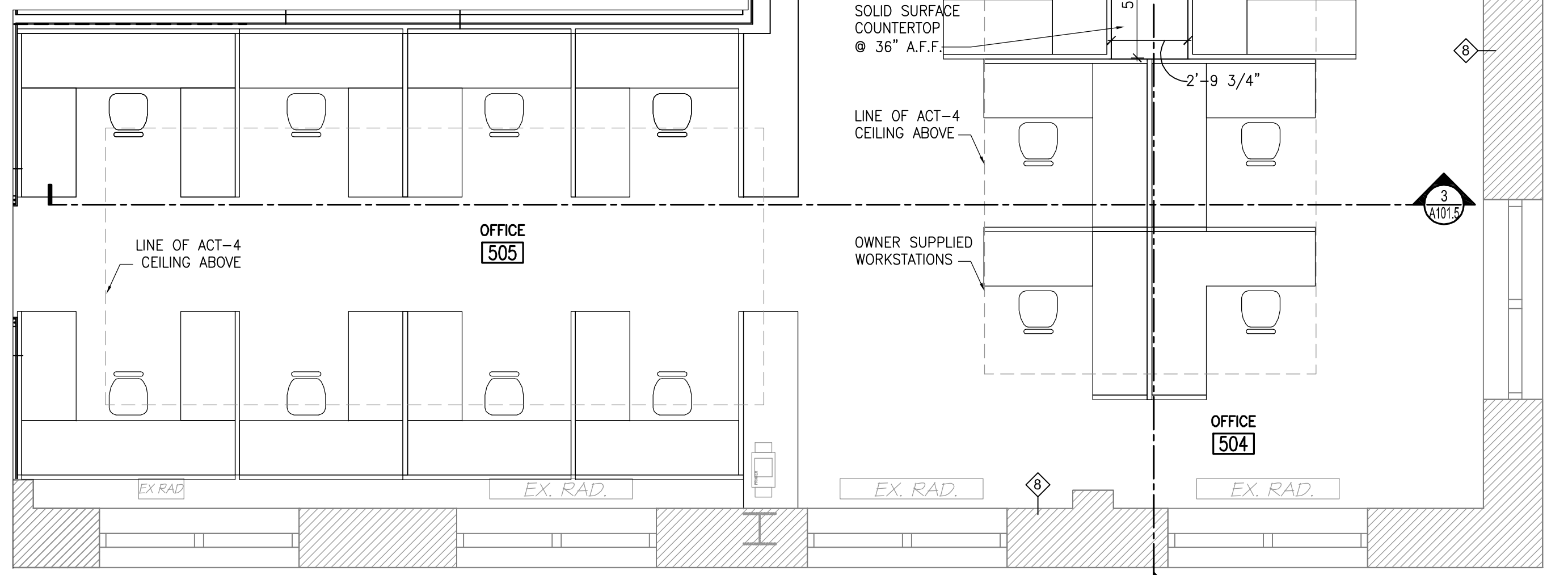
10 CASEWORK SECTION
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11 CASEWORK SECTION
 SCALE: 1" = 1'-0"



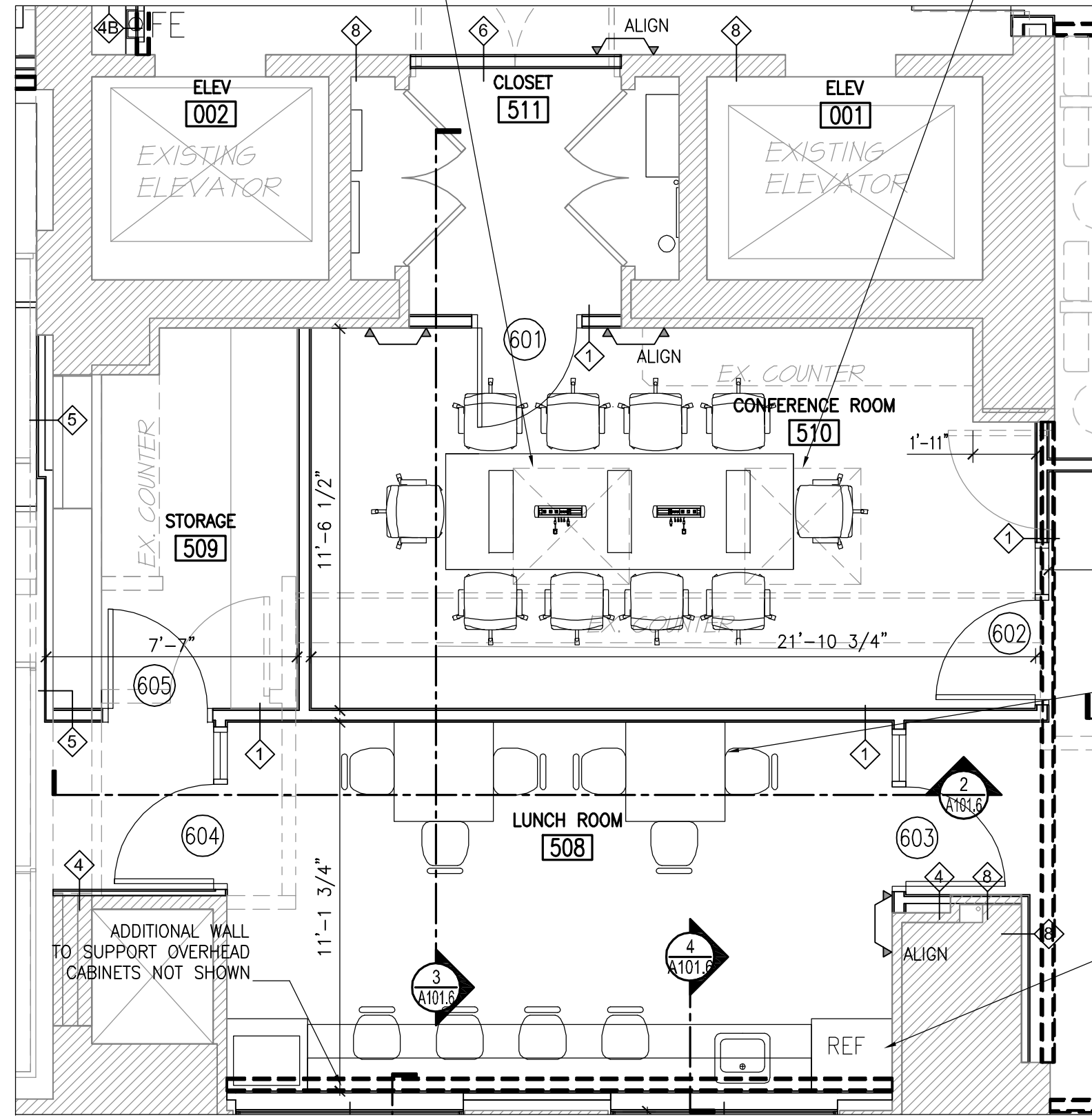
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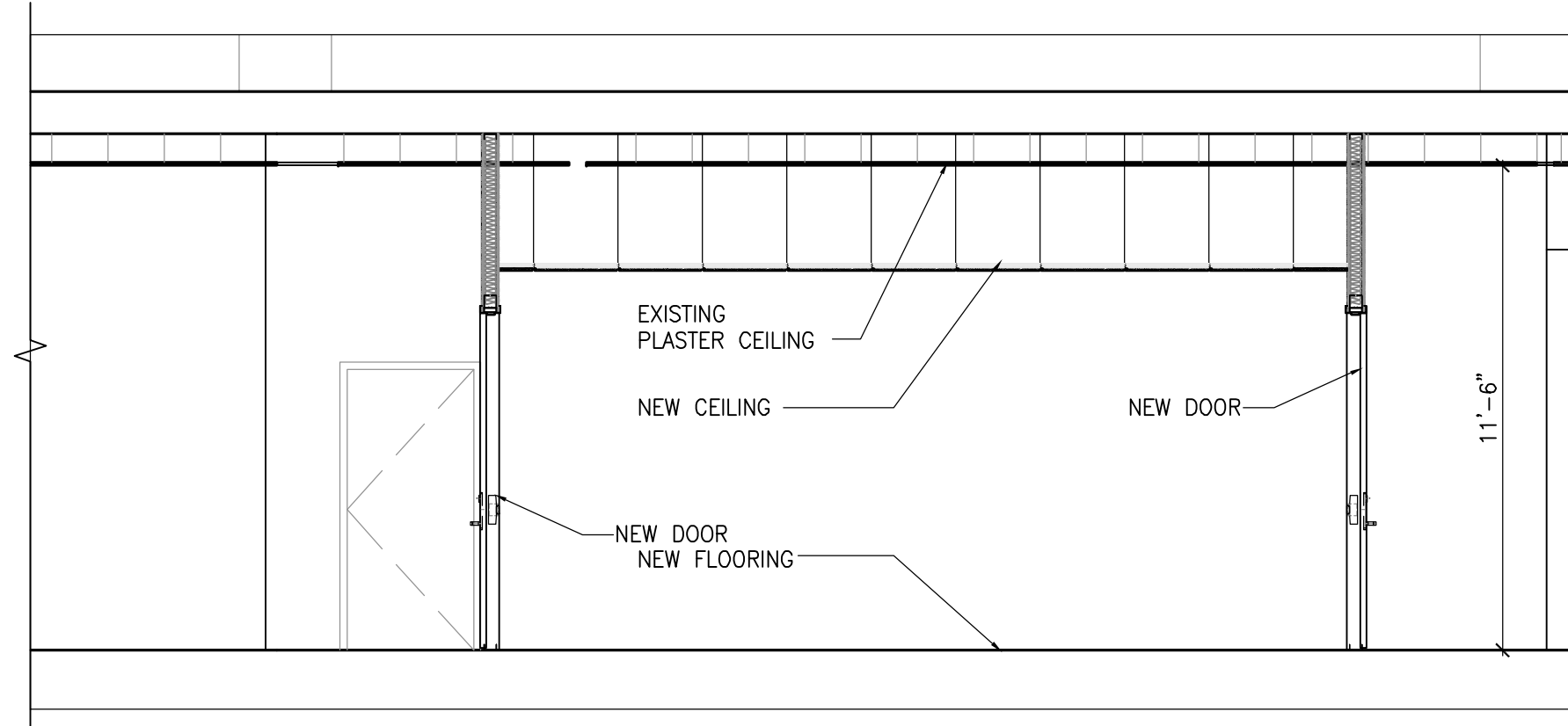
1 PHASE 5 - FLOOR and DIMENSIONING PLAN
 SCALE: 1/4" = 1'-0"

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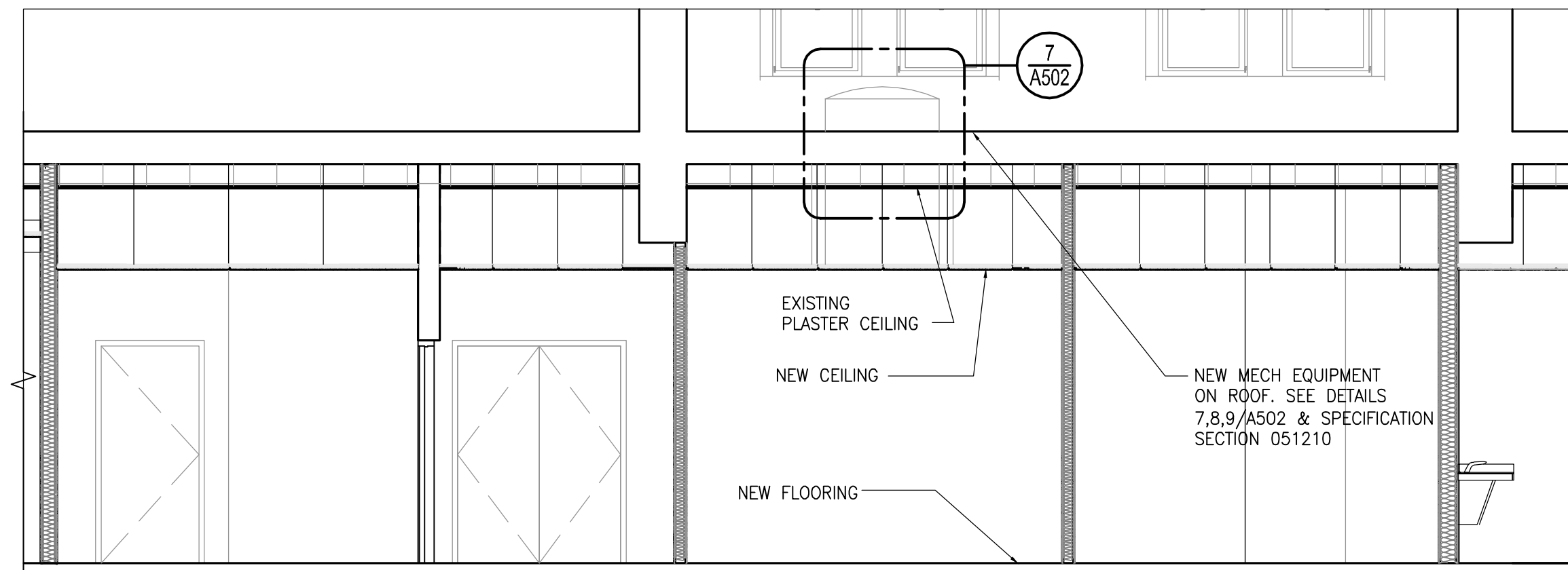
REMOVE EXISTING SKYLIGHTS & CURB. INSTALL NEW INFILL METAL DECKING, ROOF INSULATION & ROOFING SYSTEM IN VOID TO MATCH EXISTING ROOF ASSEMBLY. PATCH & OVERLAP SEAMS WITH NEW ROOFING SYSTEM AT INTERFACE BETWEEN NEW AND EXISTING ROOFING TO ACHIEVE MANUFACTURER'S WARRANTY. COORDINATE PHASING, LOCATIONS, & INSTALLATION OF NEW MECHANICAL UNITS & DUCTWORK WITH ROOFING INFILL & CONSTRUCTION.



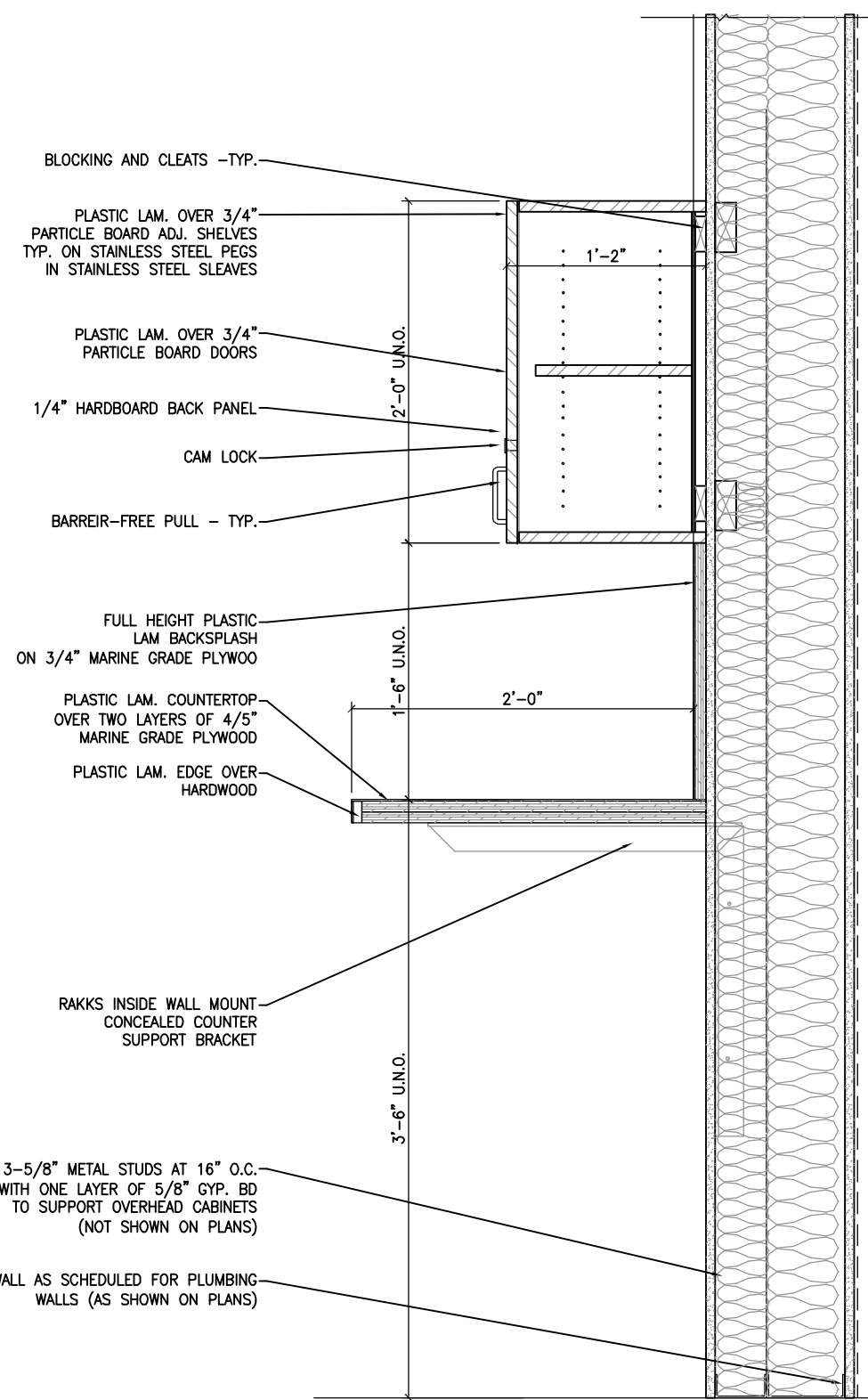
1 PHASE 6 - FLOOR and DIMENSIONING PLAN
SCALE: 1/4" = 1'-0"



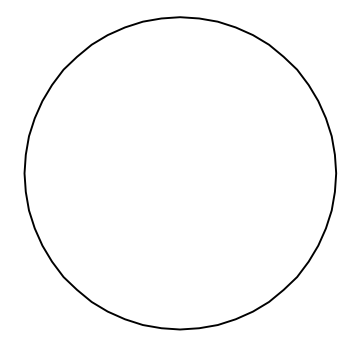
2 PHASE 6 SECTION
SCALE: 1/4" = 1'-0"



3 PHASE 6 SECTION
SCALE: 1/4" = 1'-0"



4 SECTION DETAIL
SCALE: 1" = 1'-0"



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FIRST FLOOR PLAN
PHASE 6

A101.6

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GENERAL NOTES- ALL CEILING SYSTEMS

1. GYPSUM BOARD CEILING AND SUSPENSION GRID SHALL BE ADJUSTED AS REQUIRED TO ACCOMMODATE LIGHT FIXTURES AND ACCESS DOORS. COORDINATE WITH ALL CONTRACTORS.
2. SUSPENDED CEILING GRID SYSTEMS SHALL BE CENTERED WITHIN THE ROOM IN BOTH DIRECTIONS UNLESS NOTED OTHERWISE. COORDINATE WITH ARCHITECT FOR FINAL CEILING GRID LAYOUT.
3. FOR LIGHTING FIXTURE TYPES, REFER TO ELECTRICAL DRAWINGS
4. FOR SUPPLY AND RETURN DIFFUSER TYPES, REFER TO MECHANICAL DRAWINGS
5. REFER TO FINISH SCHEDULE FOR CEILING HEIGHTS UNLESS OTHERWISE NOTED.
6. INSTALL SEISMIC RESTRAINTS AS REQUIRED BY IBC SEISMIC HAZARD ZONE 2
7. EACH INDIVIDUAL FIXTURE AND ATTACHMENTS WITH A COMBINED WEIGHT OF 56 LBS. OR LESS SHALL HAVE TWO #12 GAGE WIRE HANGERS ATTACHED AT DIAGONAL CORNERS OF THE FIXTURE. THESE WIRES MUST BE SLACK, ANY FIXTURE AND ATTACHMENTS WITH A COMBINED WEIGHT GREATER THAN 56 LBS. MUST BE INDEPENDENTLY SUPPORTED FROM THE STRUCTURE.
8. THE MAIN RUNNER/ CROSS RUNNER INTERSECTIONS AND ALL GRID SPLICES MUST HAVE AN AVERAGE ULTIMATE TEST STRENGTH OF 60 LBS. OR MORE IN BOTH TENSION AND COMPRESSION. THE TENSILE TEST MUST ALLOW FOR A 5 DEGREE OFFSET OF THE CONNECTION IN ANY DIRECTION.
9. THE ACTUAL AVERAGE WEIGHT OF THE CEILING SYSTEM INCLUDING GRID, PANEL OR TILE, LIGHT FIXTURES, AND AIR TERMINALS MUST BE 2.5 LBS. PER SQUARE FOOT OR LESS. SERVICES MUST BE SUPPORTED INDEPENDENTLY FROM THE CEILING SYSTEM. DEVIATION OR VARIATIONS MUST BE SUBSTANTIATED BY VERIFIABLE ENGINEERING.
10. THE CEILING SYSTEM CANNOT BE USED TO PROVIDE LATERAL SUPPORT FOR WALLS OR PARTITIONS. WALLS OR PARTITIONS MAY BE ATTACHED TO THE CEILING GRID PROVIDED THEY ALLOW THE CEILING MEMBRANE TO MOVE Laterally TO ACCOMMODATE THE REQUIRED CLEARANCE AS SPECIFIED BELOW.
11. ALL PERIMETER CLOSURE ANGLES OR CHANNELS MUST PROVIDE A SUPPORT LEDGE OF APPROXIMATELY 2" OR GREATER. A TERMINAL END OF A GRID MEMBER (OR TILE) MUST REST ON THE LEDGE OR MOLDING WITH AT LEAST 3/8" CLEARANCE FROM AN EDGE OR WALL. REVEAL (SHADOW) EDGE WALL CLOSURES SHOULD ACCOMMODATE THESE CLEARANCES. FOR PERIMETER CLOSURE ANGLES THAT PROVIDE A SUPPORT LEDGE OF LESS THAN NOTED ABOVE, THE TERMINAL EDGES OF EACH MAIN OR CROSS RUNNER SHALL BE INDEPENDENTLY SUPPORTED WITHIN 8 INCHES FROM EACH WALL OR CEILING DISCONTINUITY. THIS SUPPORT MAY BE #12 GAGE HANGER WIRE OR OTHER SUPPORT THAT PREVENTS THE GRID FROM FALLING. THIS WIRE DOES NOT NEED TO BE VERTICAL, BUT SHOULD NOT HAVE A SLOPE GREATER THAN 1 IN 6 OUT-OF-PLUMB. A 3/8" GRID END CLEARANCE FROM A WALL SHOULD BE MAINTAINED. ALL CEILING PENETRATIONS (COLUMNS, SPRINKLERS, ETC.) AND INDEPENDENTLY SUPPORTED FIXTURES OR SERVICES ARE TO BE CONSIDERED AS PERIMETER CLOSURES THAT ALSO MUST ALLOW THE NOTED CLEARANCES BY USING SUITABLE ESCUTCHEONS OR CLOSURE DETAILS.
12. AT WALL CLOSURE LEDGES, THE MAIN AND CROSS RUNNER ENDS SHALL BE PREVENTED FROM SPREADING APART FROM EACH OTHER. PERMANENT ATTACHMENT (I.E. POP RIVETS) FOR GRID ALIGNMENT PURPOSES SHALL NOT BE PERMITTED.

CEILING TYPES

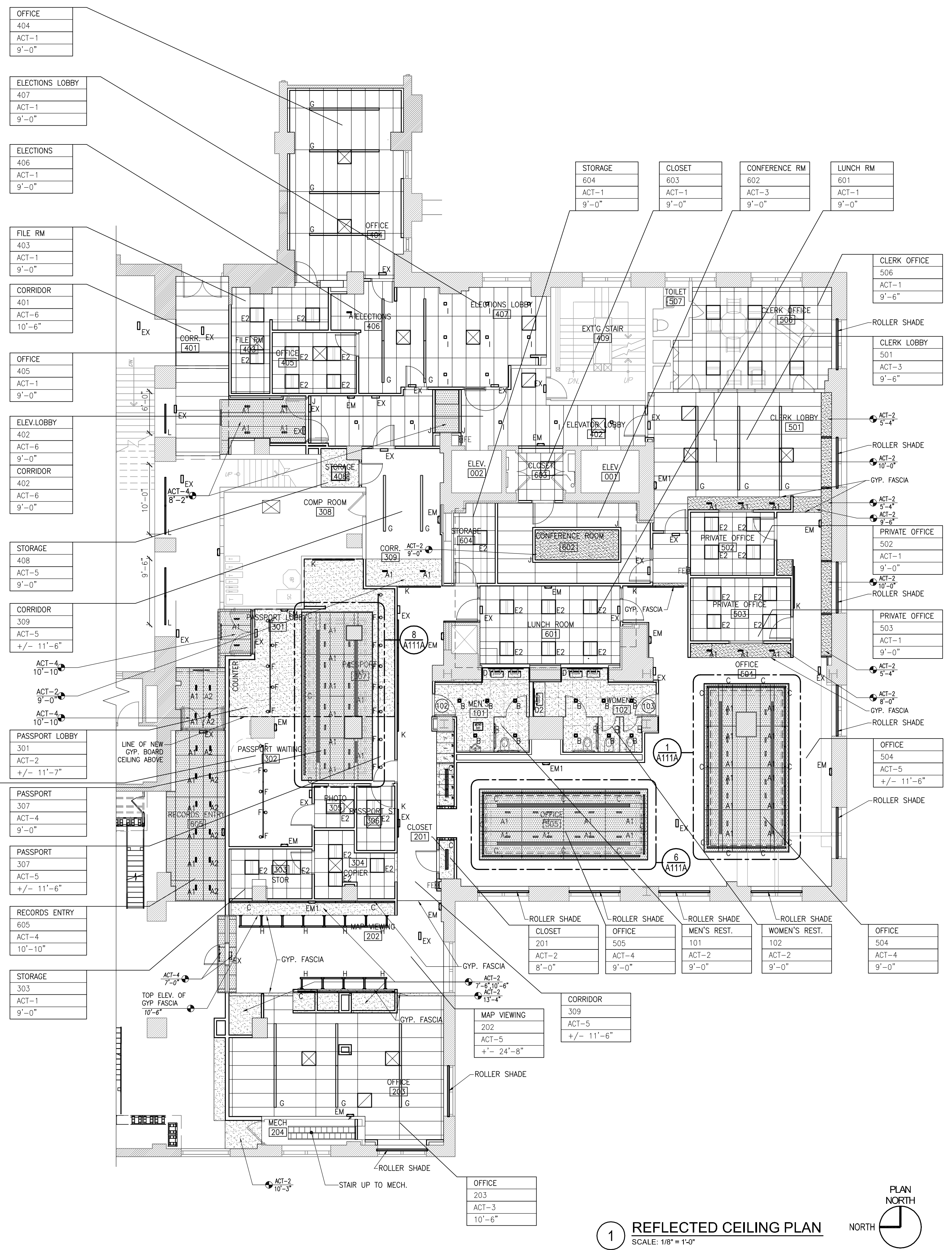
- ACT-1 (ARMSTRONG OPTIMA PB 2x2) 3/8" Suprafine Grid
- ACT-2 GYPSUM BOARD SUSPENDED CEILING
- ACT-3 ARMSTRONG OPTIMA PB SQUARE TEGULAR 24"x72" w/ 3/8" Suprafine grid
- ACT-4 ARMSTRONG METAL WORKS PERFORATED TORSION SPRING SEE PLANS FOR SIZES w/ SLOTTED 1/2" GRID
- ACT-5 PAINTED EXISTING PLASTER CEILING
- ACT-6 ARMSTRONG OPTIMA PB SQUARE TEGULAR 24"x 96" w/ 3/8" Suprafine grid

LEGEND

- LINEAR SUPPLY AIR DIFFUSER
- RETURN AIR DIFFUSER
- 22" x 30" ACCESS DOOR
- SPRINKLER HEAD
- SUPPLY AIR DIFFUSER
- ROLLER SHADE

LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE	SYMBOL	MANUFACTURER	DESCRIPTION AND MANUFACTURER'S CAT.NO.	REMARKS
A1	—	USA1	MICRO DOWNLIGHT WITH TRIM - MDF MDF06-21H1-35KS-50-BZ-WHNC-UNV-D2-CB27-J9	
A2	—	USA1	MICRO DOWNLIGHT WITH TRIM - MDF MDF06-21H1-35KS-30-BZ-NC-UNVD2-CB27-J9	
B	□	USA1	BEVELED 2.2 GLOW - B4SD GLOW 4.5" SQUARE DOWNLIGHT B4SDL-24C3-35KS-M-G1-WH-WH-NCUNV-D6E-CB27-J9	
C	—	FINELITE	SERIES 11 LED FINELITE MICRO PROFILE COVE S11-LED-MP-XX-V-835-SC-96W-ADV-TXL-J9	REFER TO PLANS FOR LENGTHS
D1	—	ELECTRIC MIRROR	ELECTRIC MIRROR - SERENITY LED LIGHTED MIRROR SER2-60.00X36.00-L7CSD-NB-30KJ9	
D2	—	ELECTRIC MIRROR	ELECTRIC MIRROR - SERENITY LED LIGHTED MIRROR SER2-36.00X36.00-L7CSD-NB-30KJ9	
E2	□	FINELITE	HPR RECESSED LED HPR LED-A-2X2-SCO-S-835-ADV-SCCX-J9	
F1	—	TIMES SQUARE LIGHTING	G-SERIES VOLT TRACK G/HTEK-XX-W-HTEK11/XTSA21/XTSA41-J9	CONTRACTOR RESPONSIBLE FOR A COMPLETE OPERATING SYSTEM INCLUDING ALL HARDWARE COMPONENTS AND DRIVERS AND CONTROL TO PROVIDE THE LAYOUT AS SHOWN ON PLANS
F1	□	TIMES SQUARE LIGHTING	CCR SERIES CREE LED CCR-25-80-35-W-120-60-CABLE W/CANOPY-010-J9	
G	—	FINELITE	HP4 PENDANT DIRECT /INDIRECT LED HP-4-P-RG-ID-SEE PLANS-S-835-WSOTG-L-RG-D-96LG-120-SC-FC-1X-FA50-C2-FE-SW-J9	REFER TO PLANS FOR LENGTHS
H	—	FINELITE	HP2 ARM MOUNT HP-2-AM-ID-SEE PLANS-S-835-ASY-L-RG-D-96LG-120-SC-FC-1X-AM18-FE-W-J9	
I	□	USA1	BEVELED 2.2 TRIMLESS ACOUSTICAL B4SDP-16C3-35KS-50-S-AC-NC-UNVD6E-CAX-J9	CONTRACTOR TO COORDINATE WITH CEILING MANUFACTURER TO PRODUCE PRE-CUT CEILING TILES TO PRODUCE LAYOUT AS SHOWN ON PLANS
J	—	FINELITE	HP4 RECESSED LINEAR LED HP-4-R-RG-D-SEE PLANS-S-835-RG-D-96LG-120-SC-FC-1X-CX-FE-CTBS-J9	REFER TO PLANS FOR LENGTHS. FIXTURES INTERFACE WITH MULTIPLE CEILING TYPES. COORDINATE CEILING HARDWARE WITH ADJACENT CEILING TYPES
K	—	FINELITE	HP2 WALL MOUNT REGRESSED LINEAR LED HP-2-WM-RG-ID-XX-SEE PLANS-S-835-ASY-L-RG-D-96LG-120-SC-FC-1X-FE-CTBS-J9	REFER TO PLANS FOR LENGTHS
L	—	CORONET	LINEAR PENDANT MAF-TRK-SEE PLANS FOR LENGTHS-NA-27-LTG1-UNV-DB-DR90-BLK AC. MAGNETIC FIXTURE: MAG-X-XX-27-LTG1-BLK-EM120V	UTILIZE EXISTING CIRCUITS AND CONDUIT OF EXISTING RED PENDANT LIGHT IN ATRIUM. SEE PLANS FOR LENGTHS
EM1	□	EVENLITE	EMERGENCY LED FIXTURE TEBLW-SD-J9	
EX	□	EVENLITE	LED EXIT SIGN TEXZ EM R URC J9	REFER TO DRAWING A002 FOR ADDITIONAL INFORMATION



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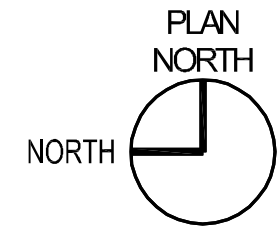
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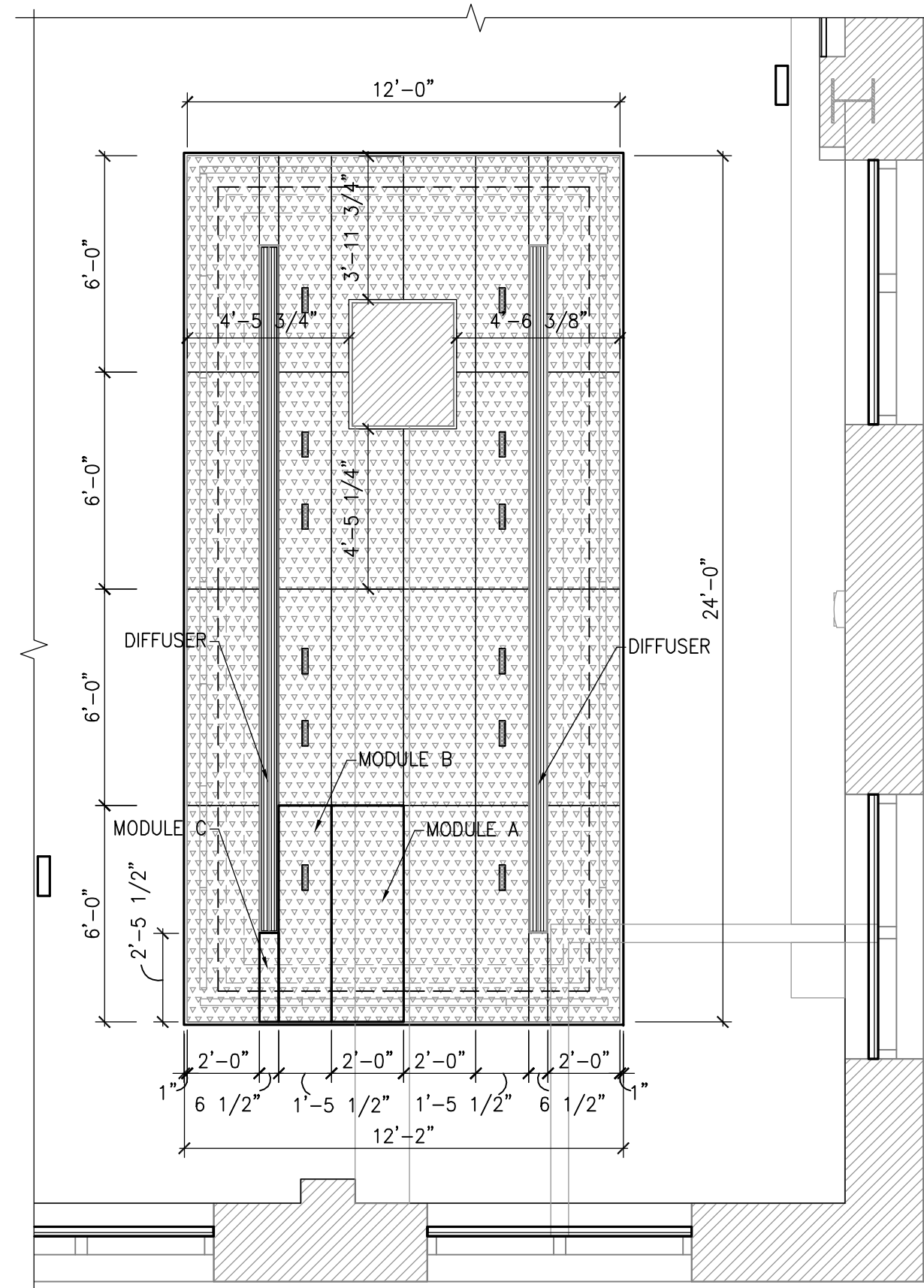
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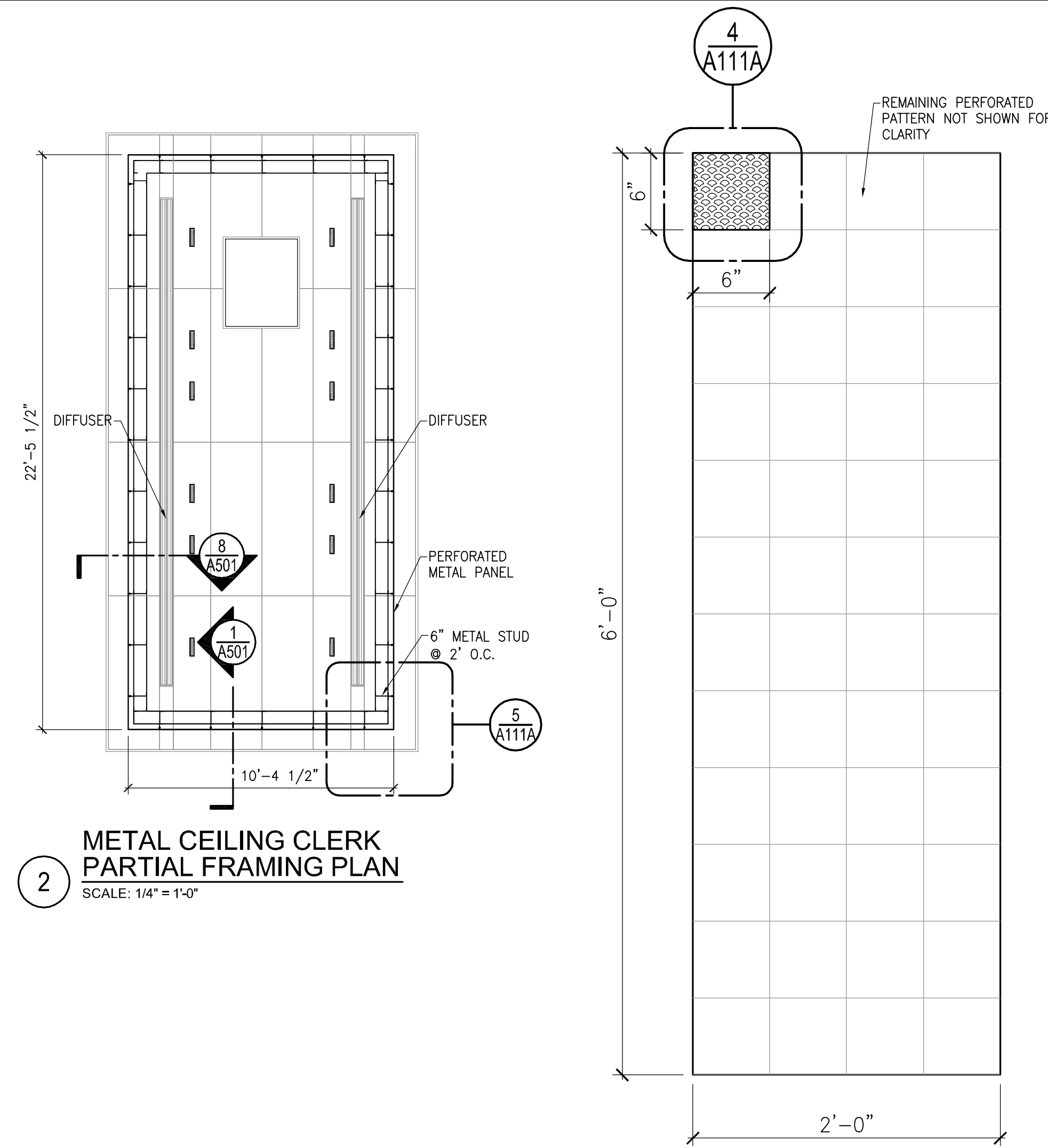
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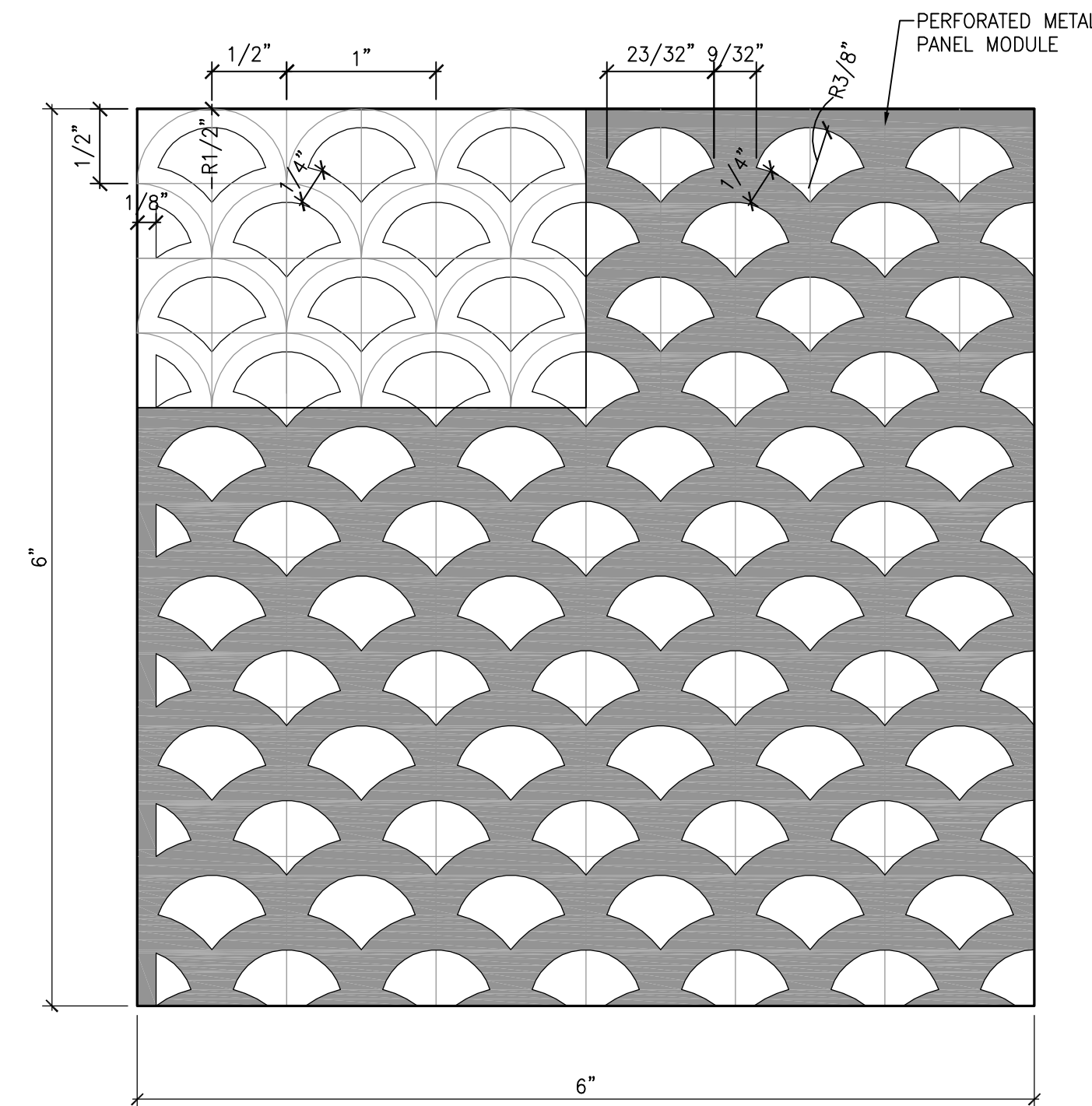
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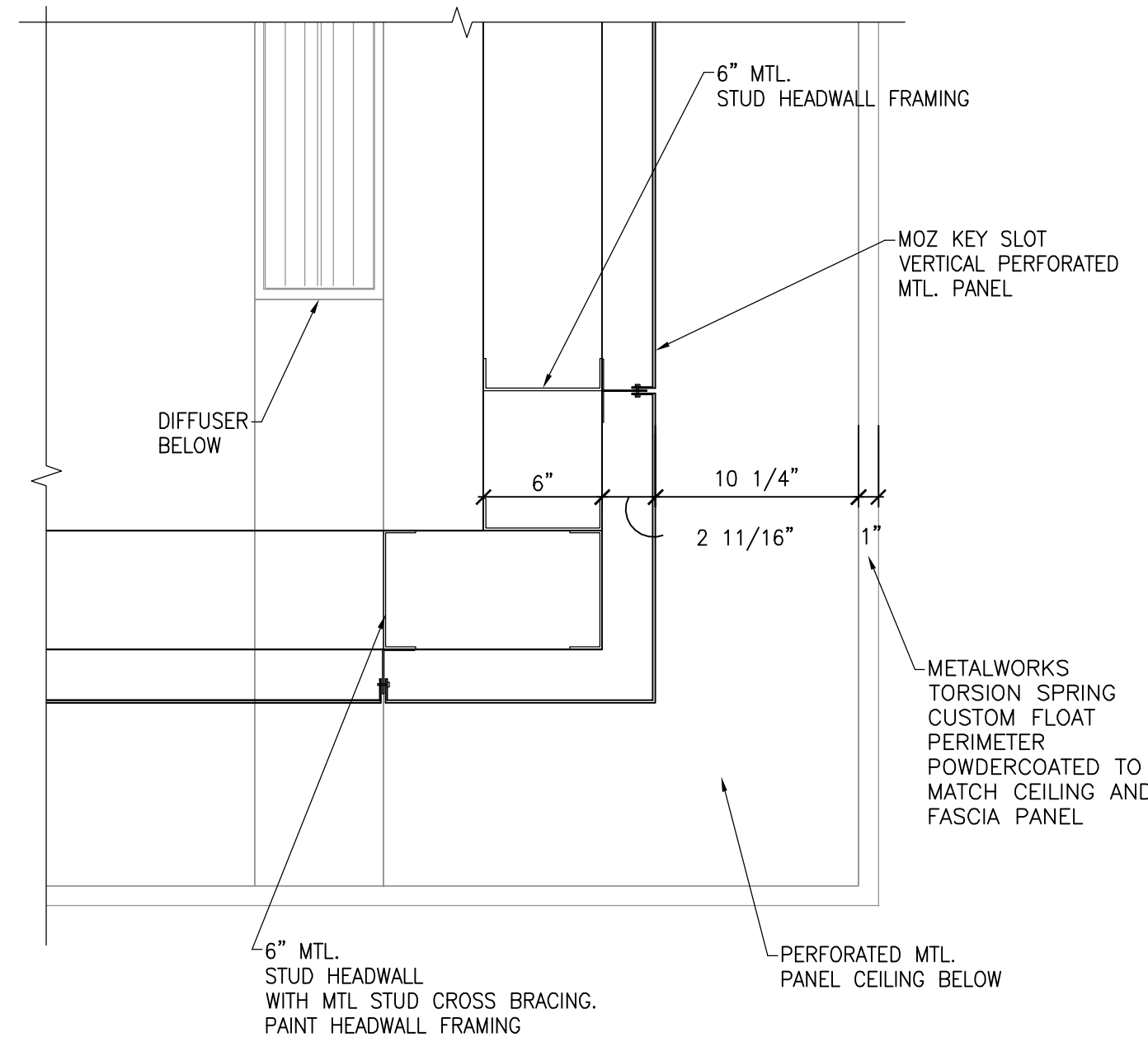
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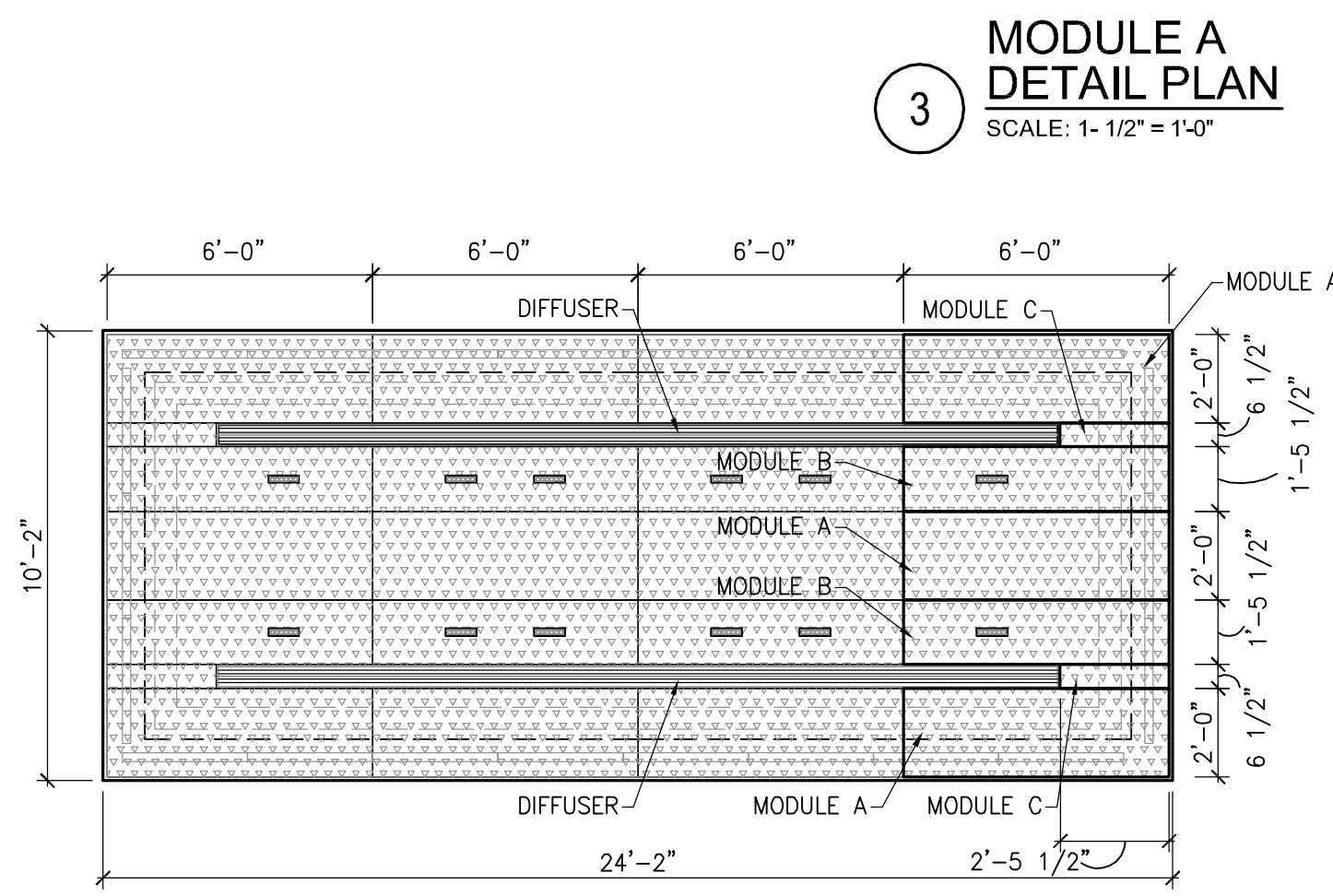
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4 METAL PANEL PERFORATION DETAIL
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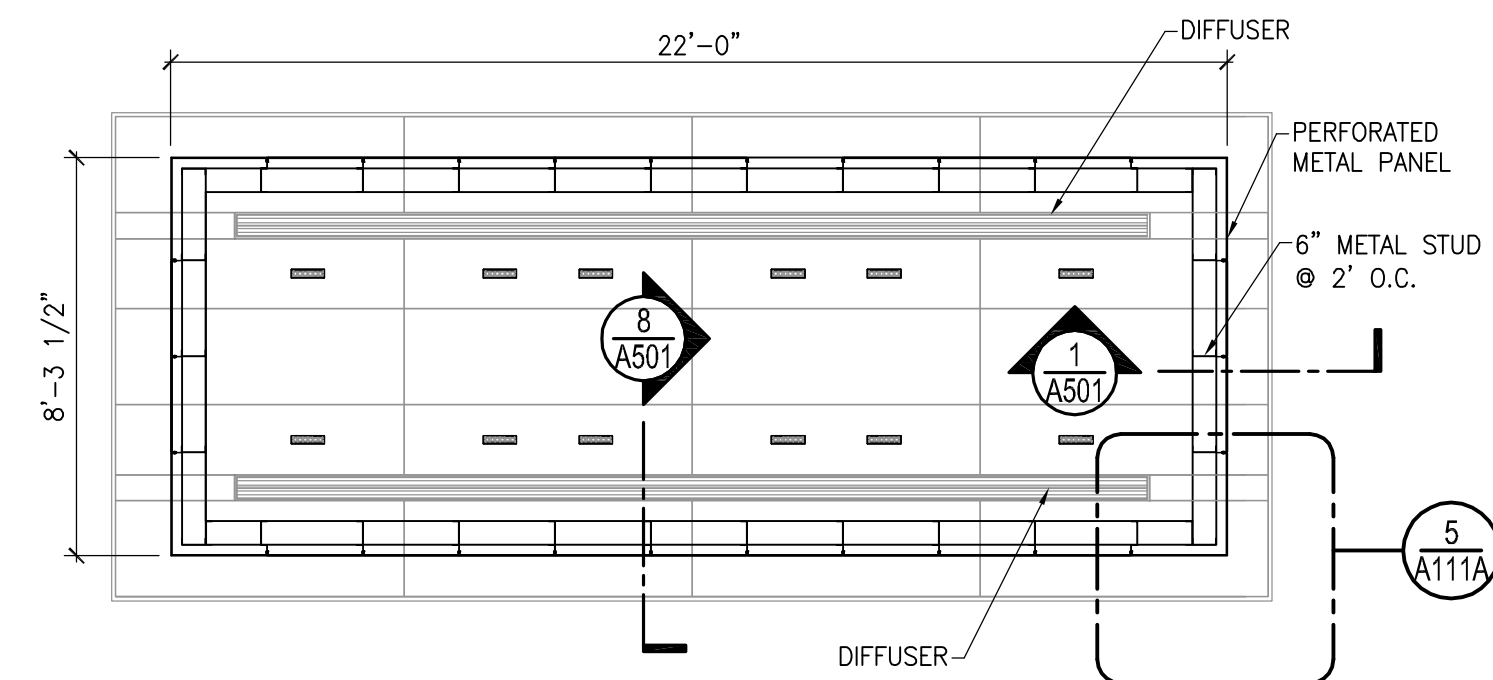


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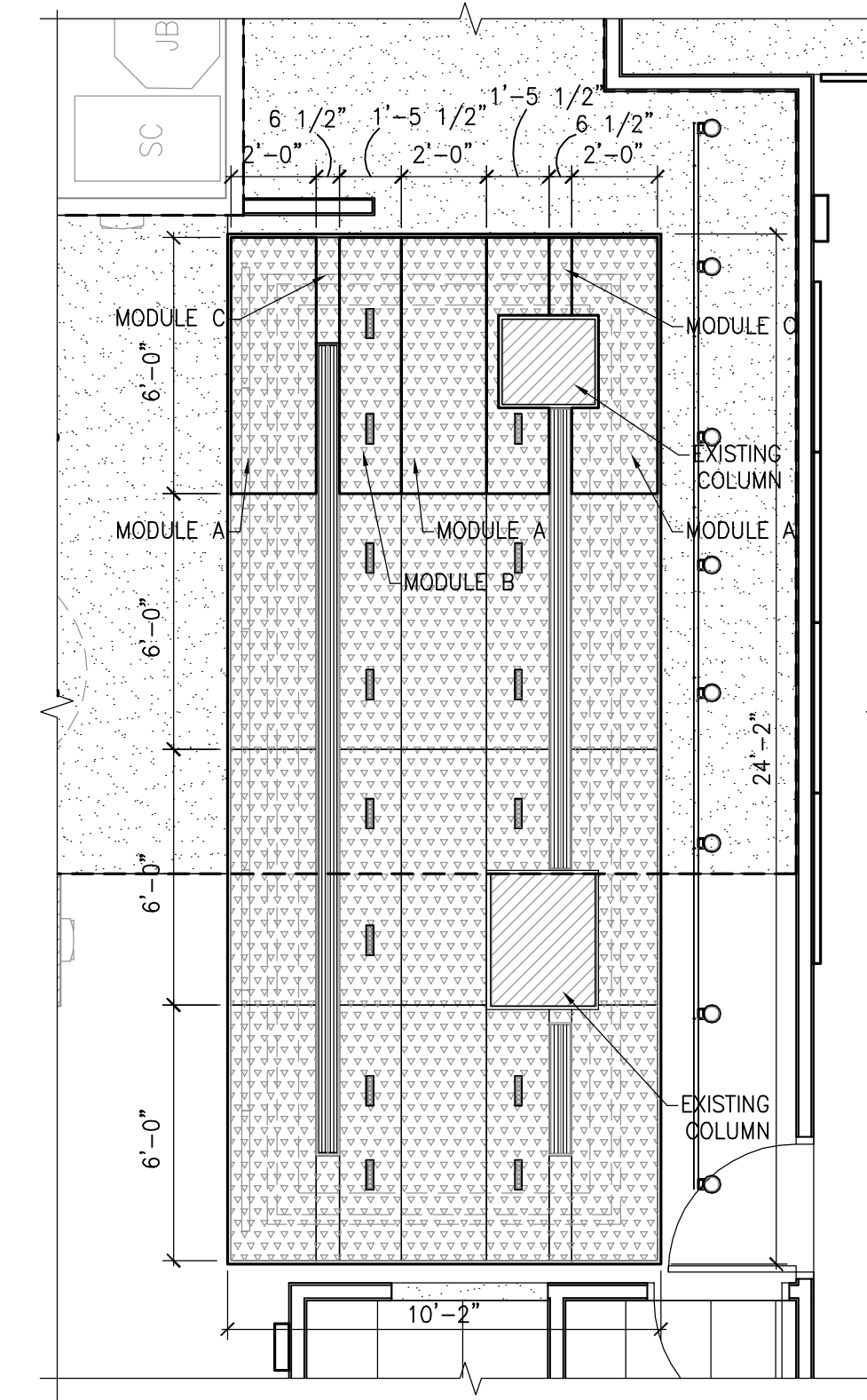


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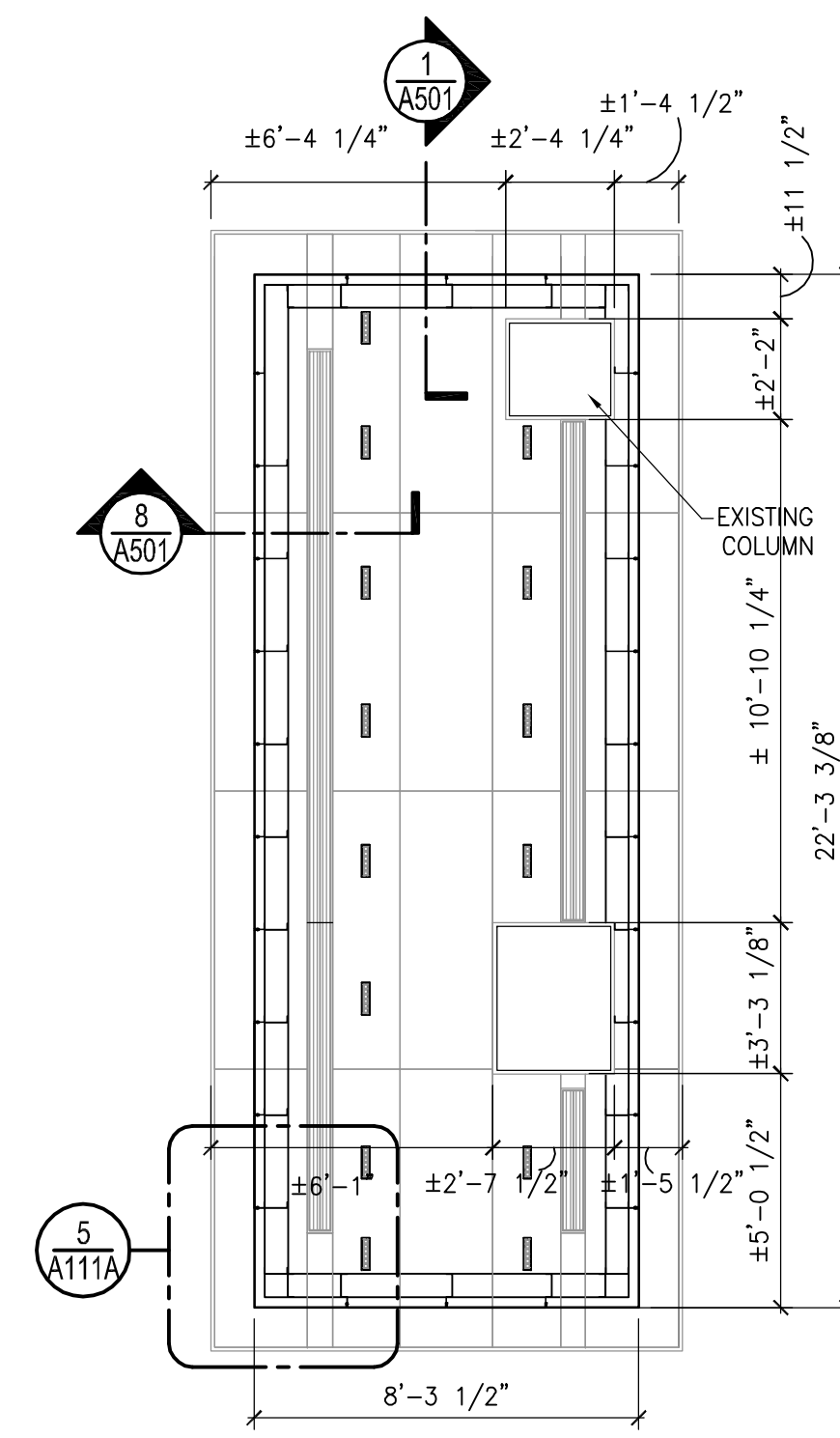
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SCALE: 1/4" = 1'-0"



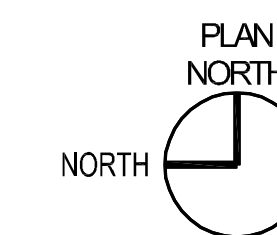
7 METAL CEILING CLERK PARTIAL PLAN
SCALE: 1/4" = 1'-0"



8 REFLECTED CEILING PASSPORT PARTIAL PLAN
SCALE: 1/4" = 1'-0"



9 METAL CEILING PASSPORT PARTIAL PLAN
SCALE: 1/4" = 1'-0"



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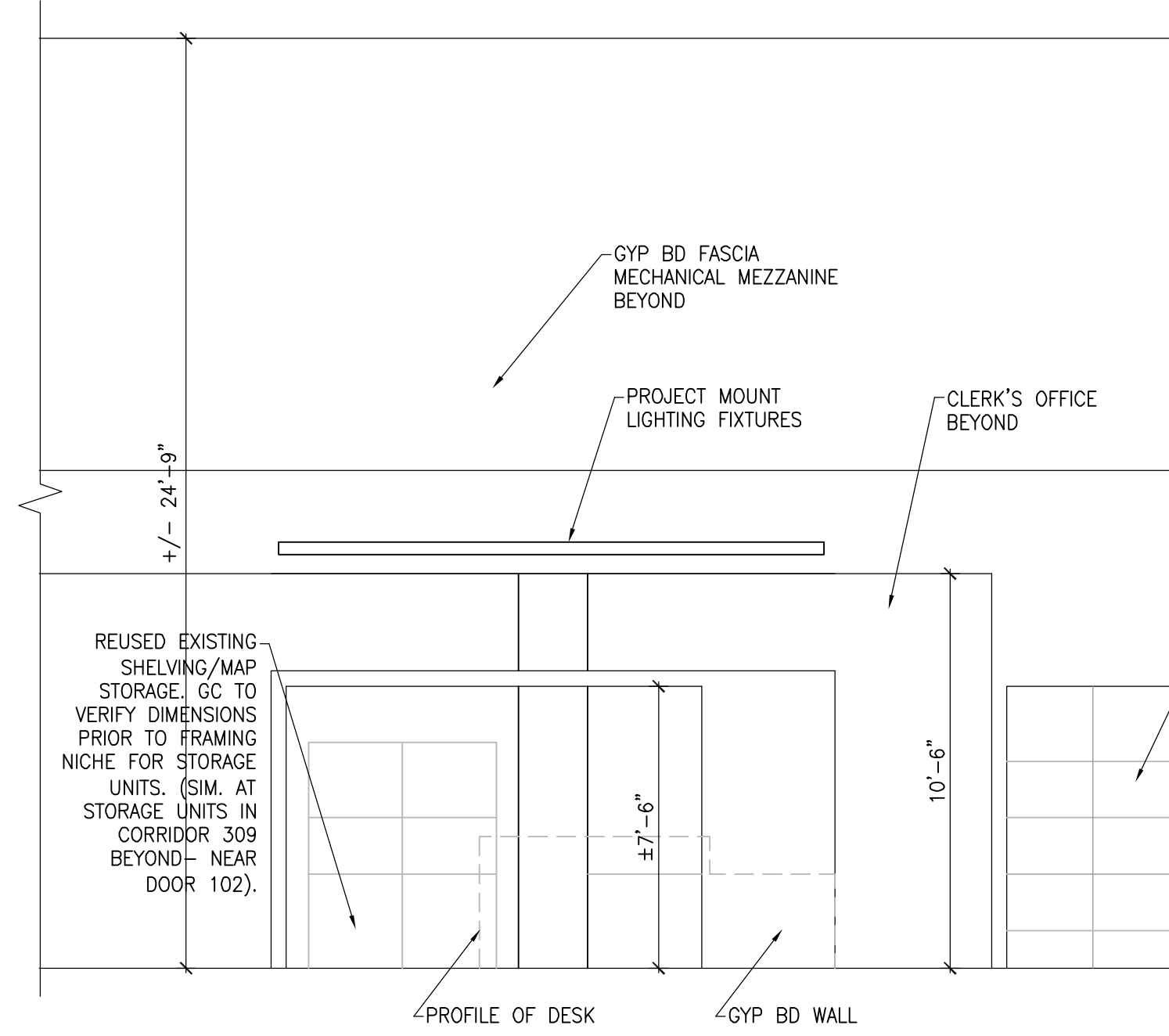
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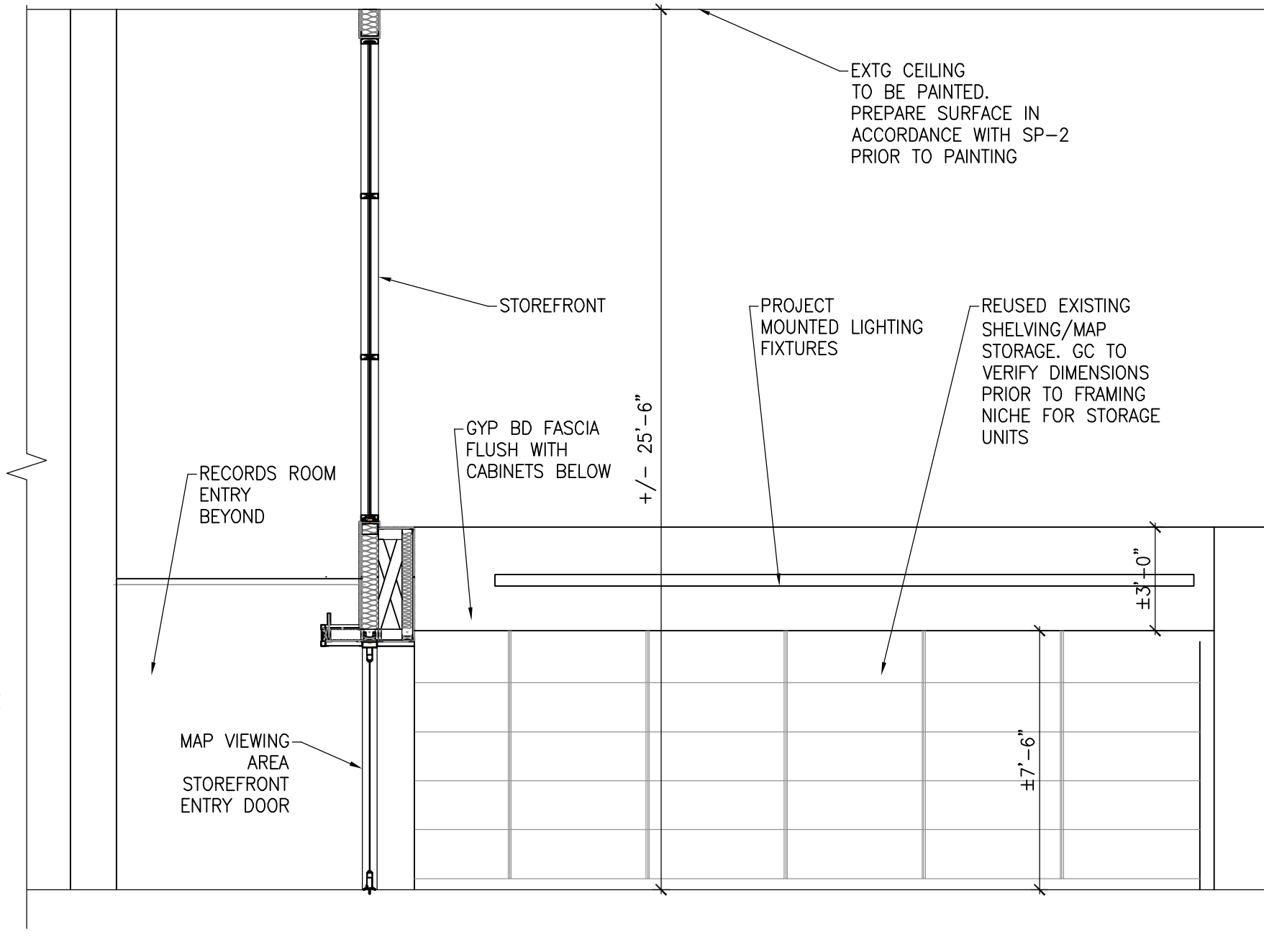
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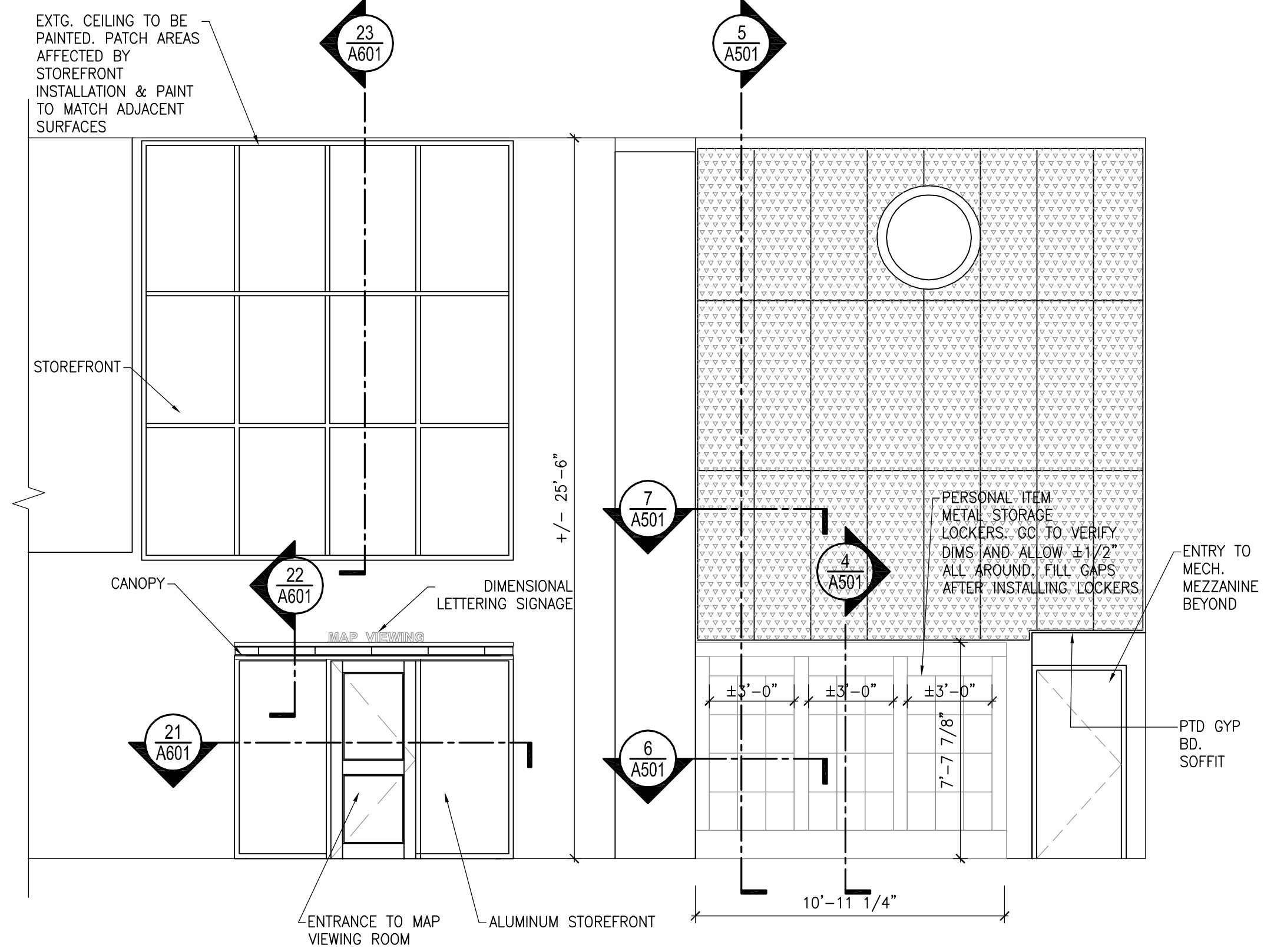
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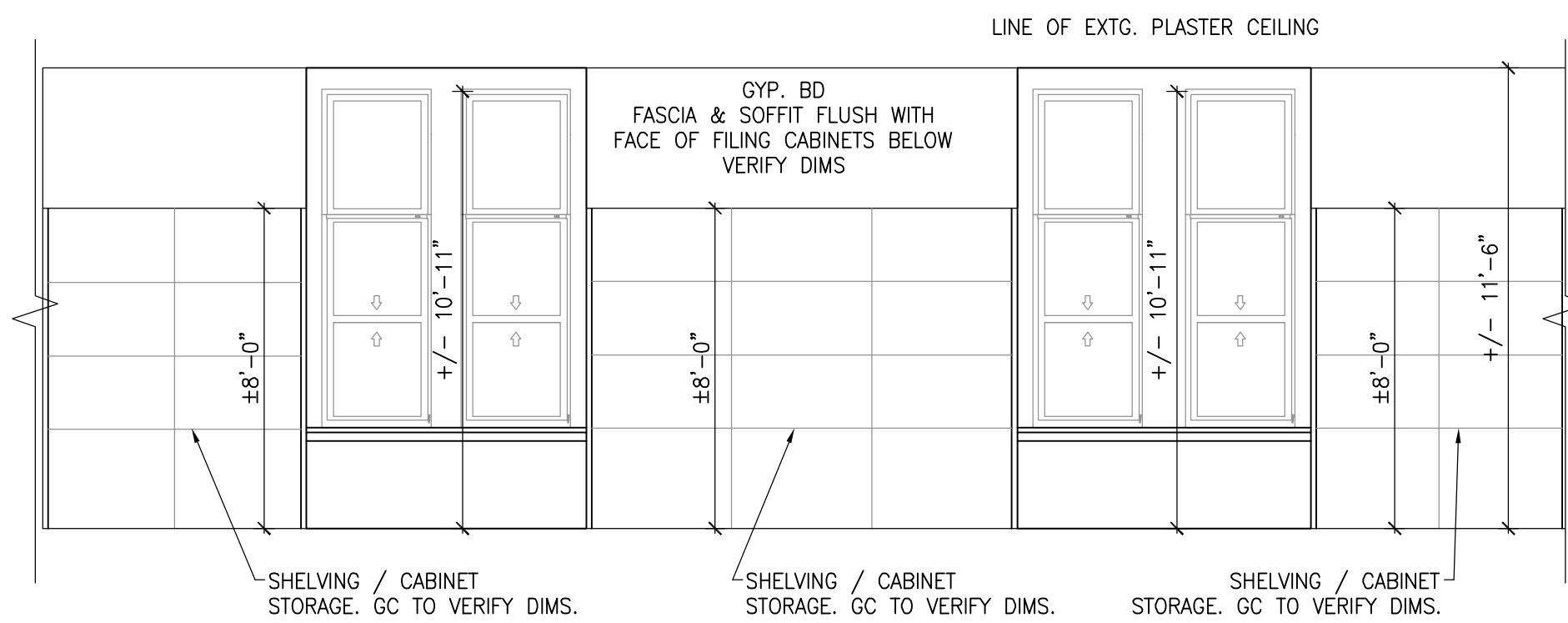
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2 MAP VIEWING ROOM ELEVATION
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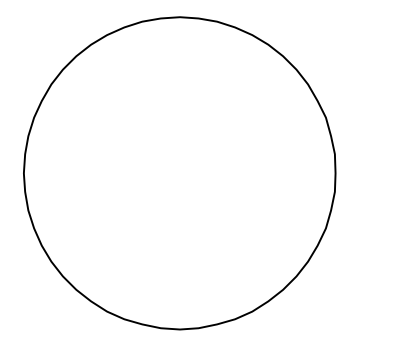


3 RECORDS ROOM ELEVATION
SCALE: 1/4" = 1'-0"



4 CLERKS OFFICE ELEVATION
SCALE: 1/4" = 1'-0"

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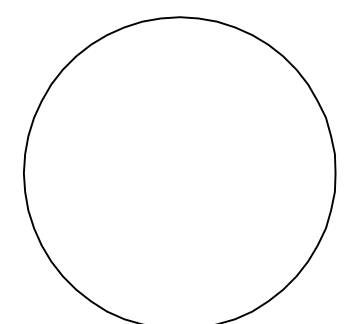
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ELEVATIONS

A201



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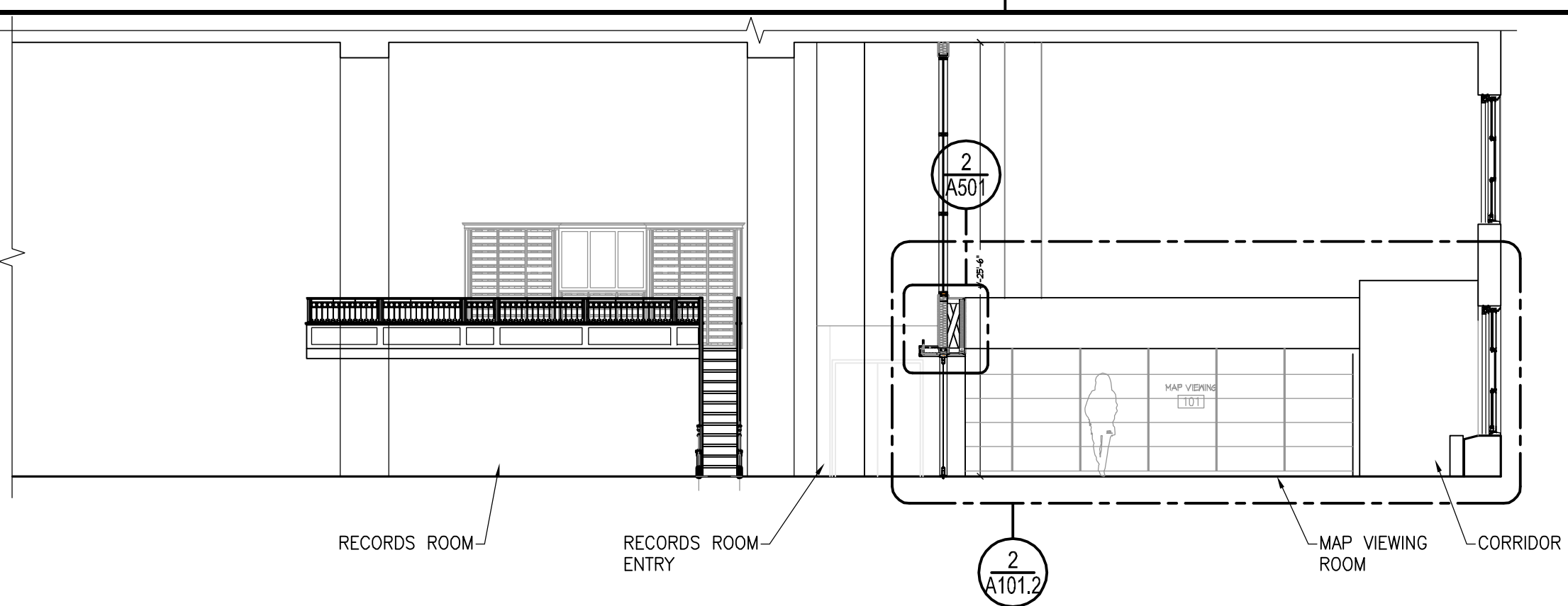
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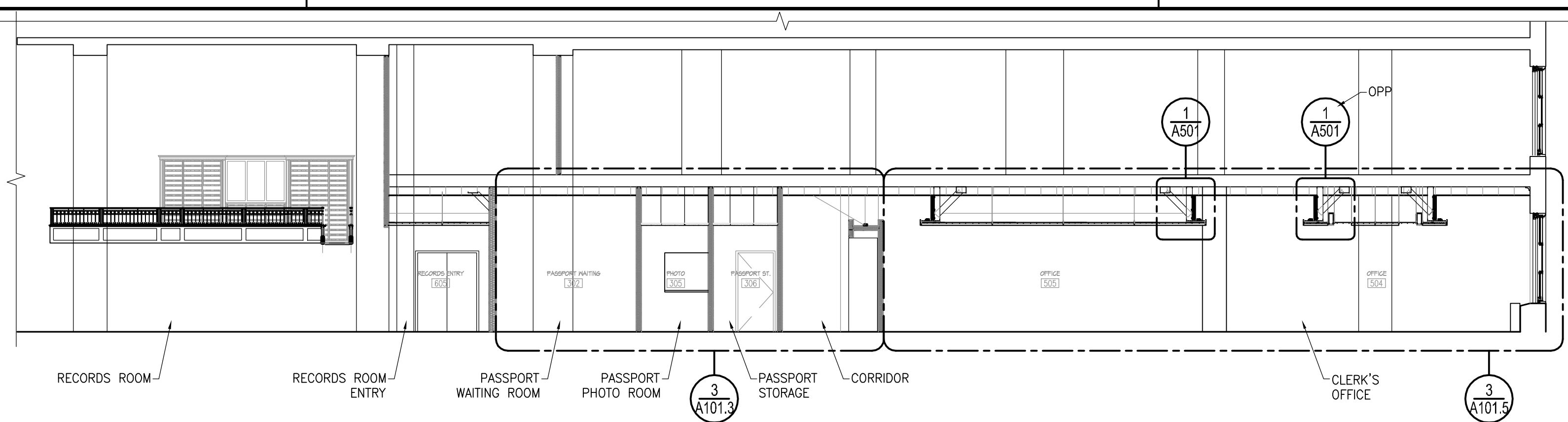
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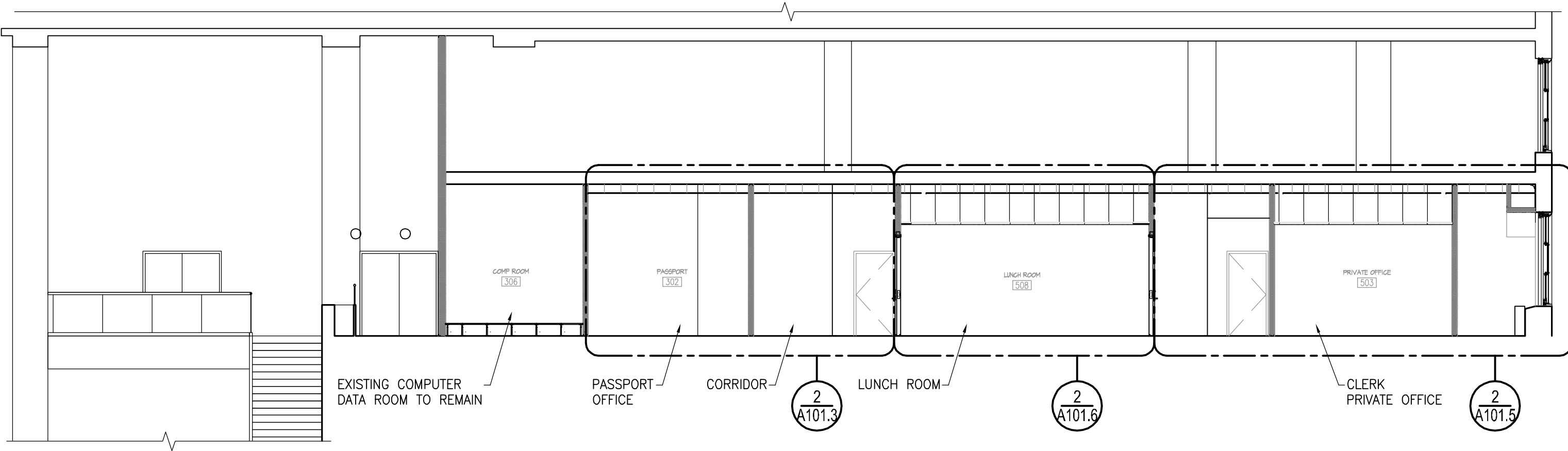
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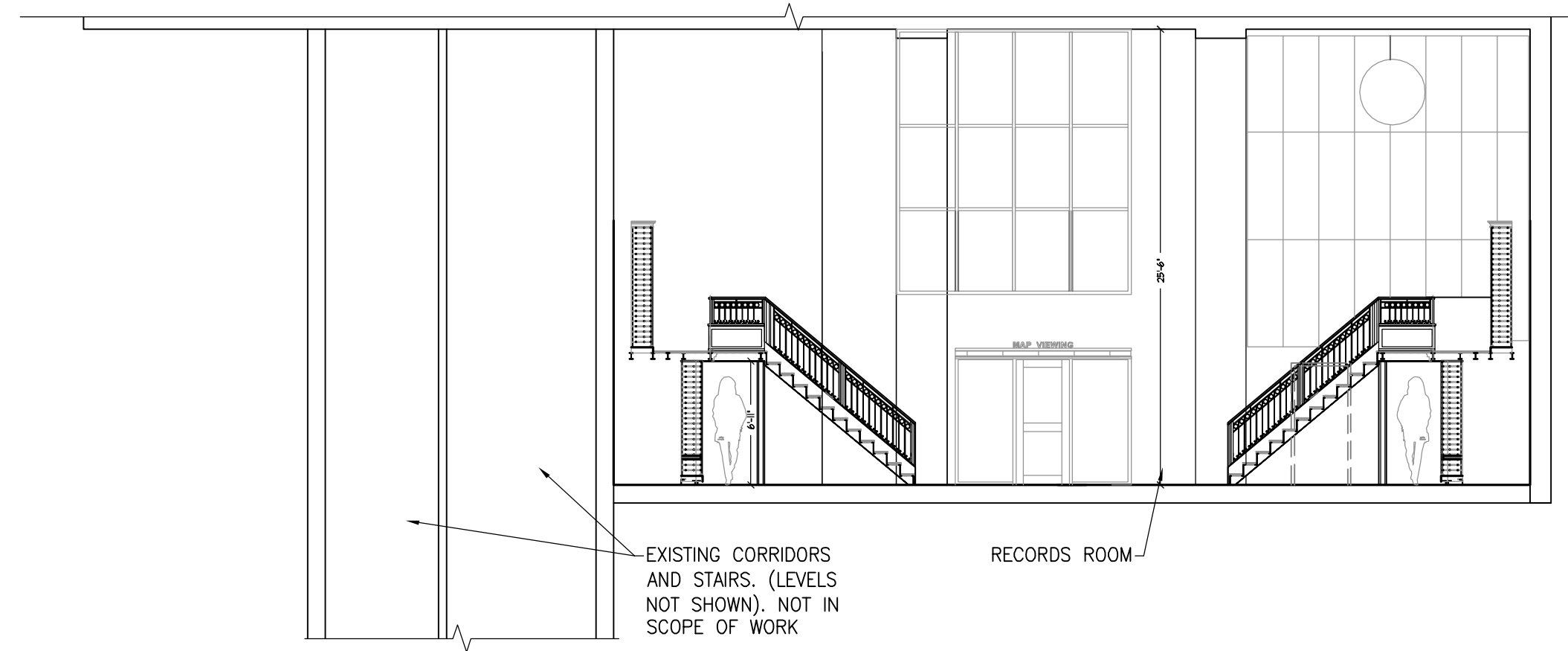
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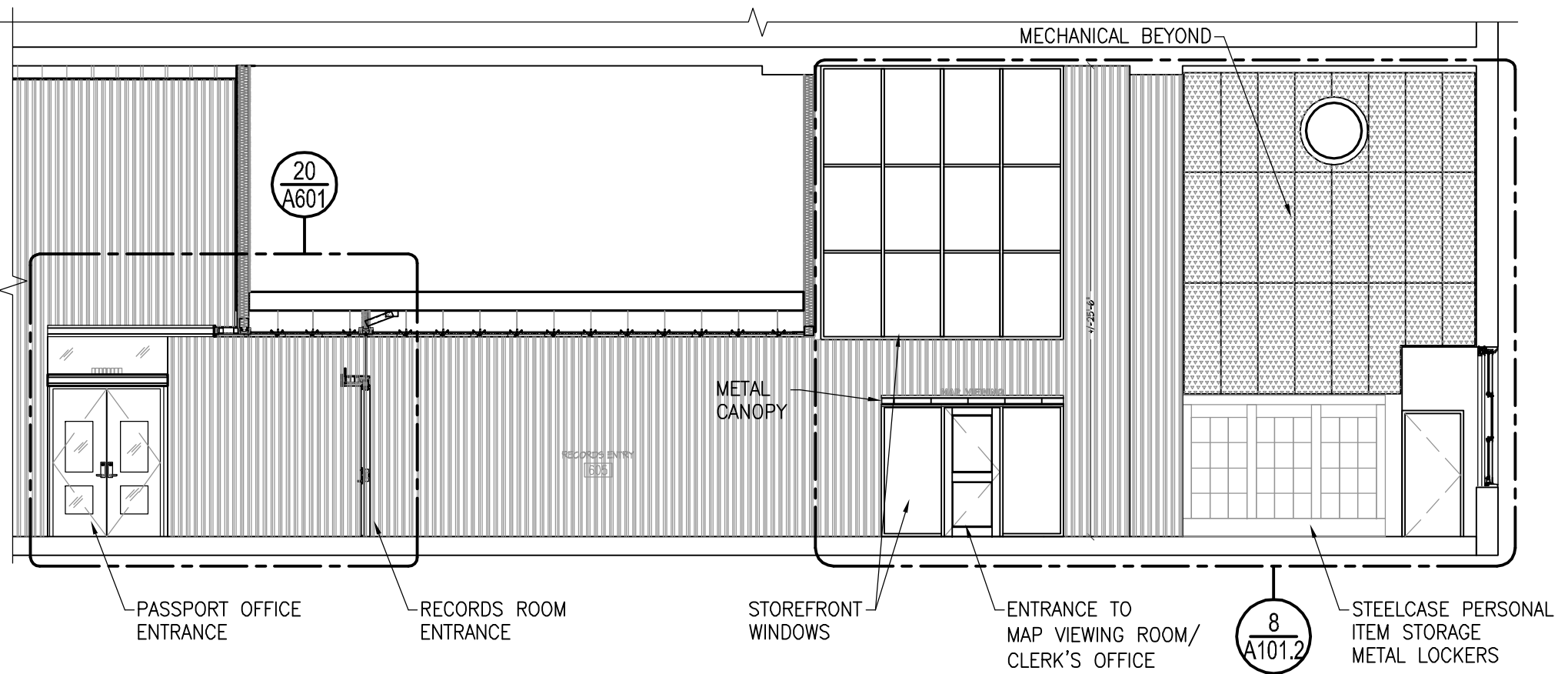
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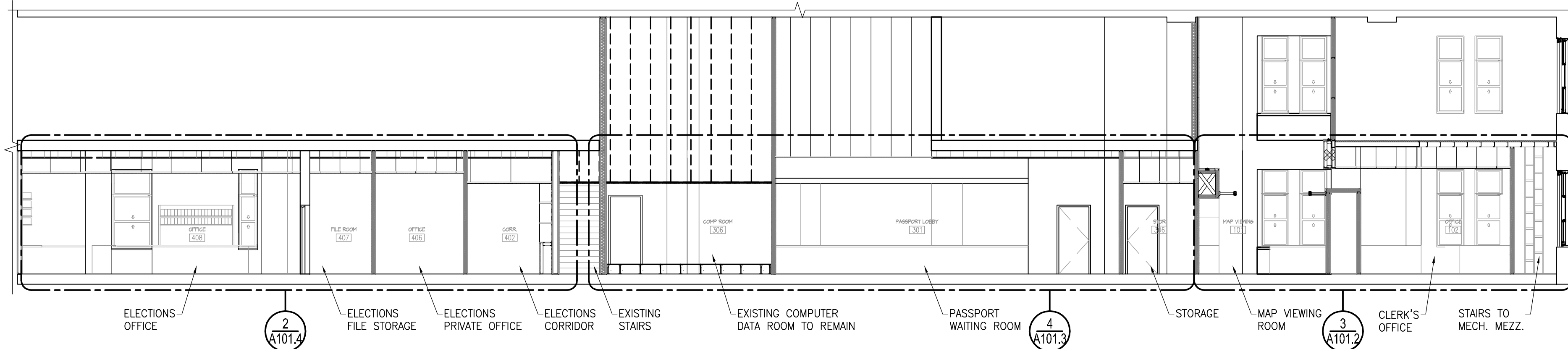
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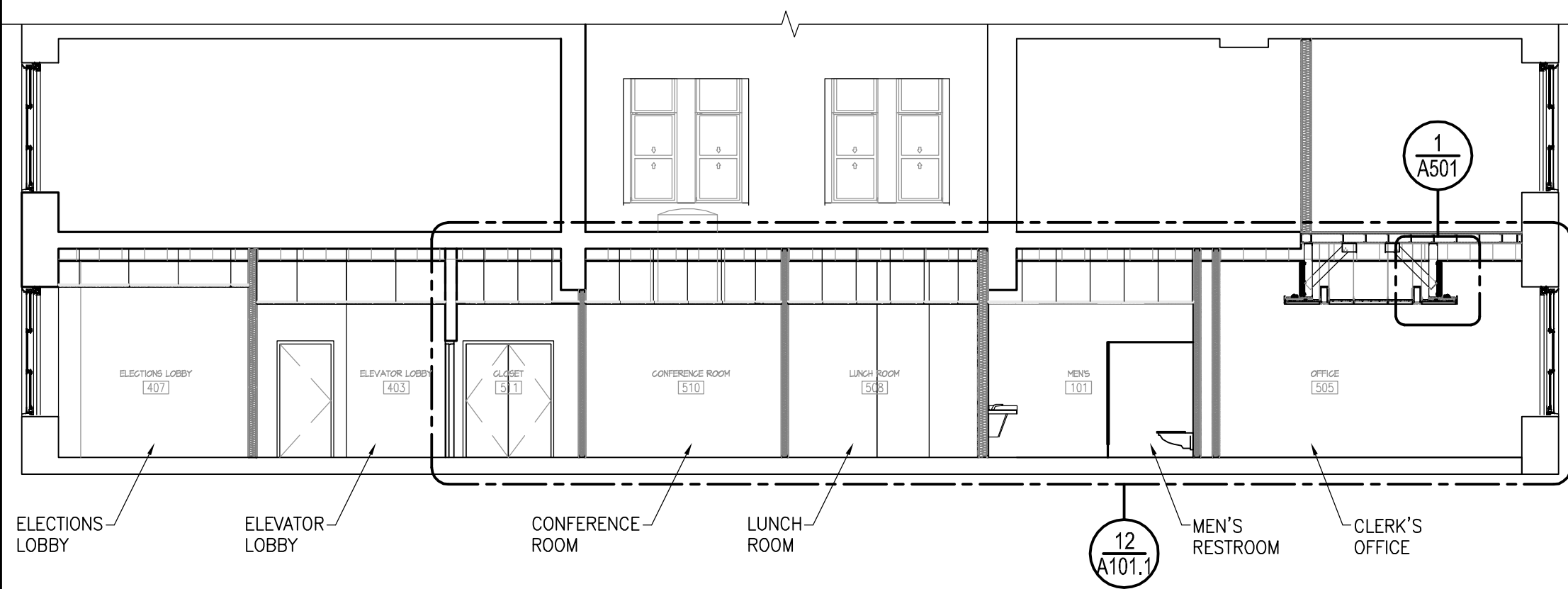
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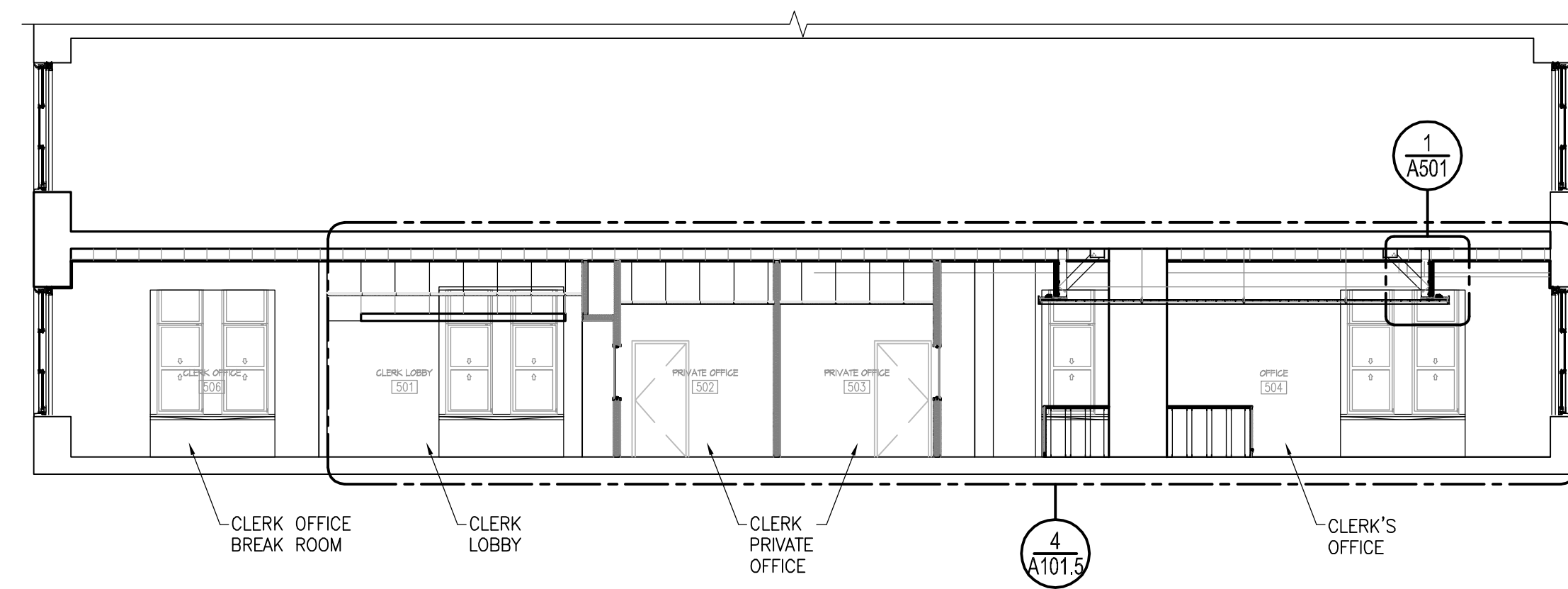
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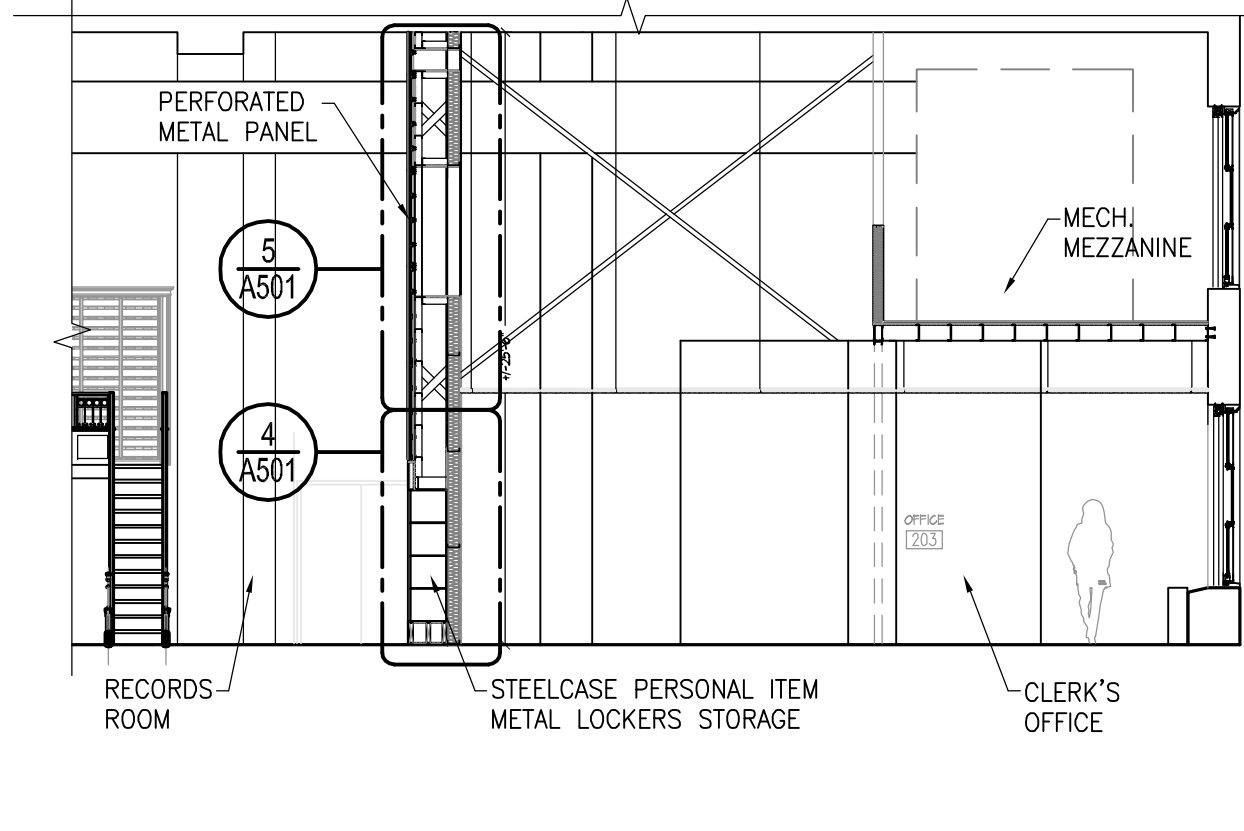
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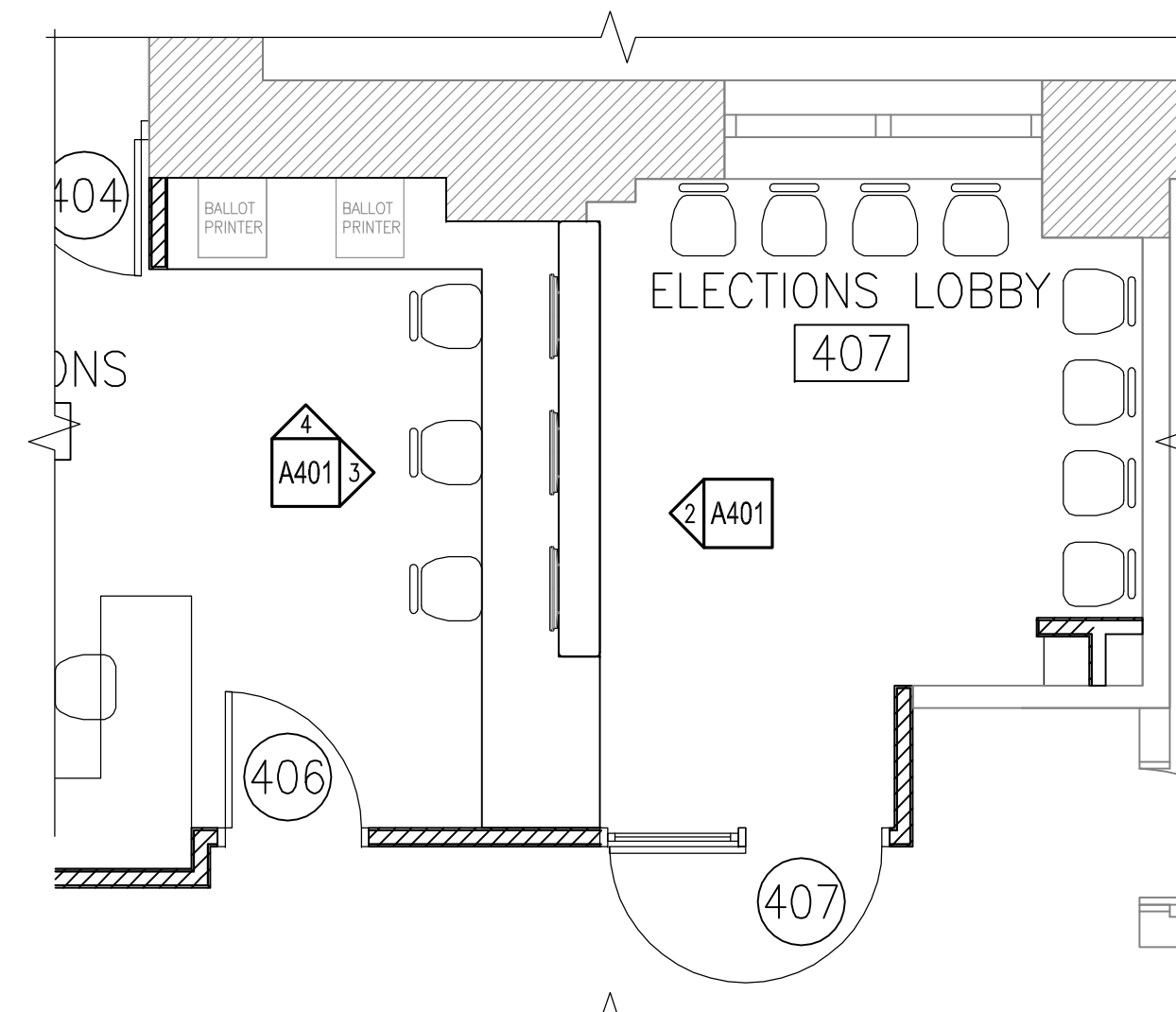


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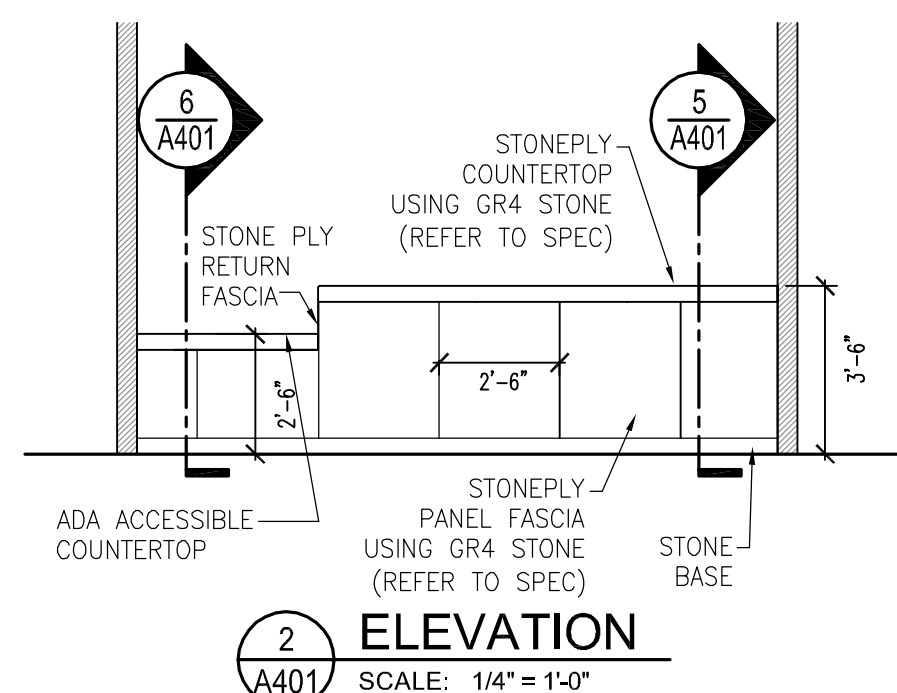


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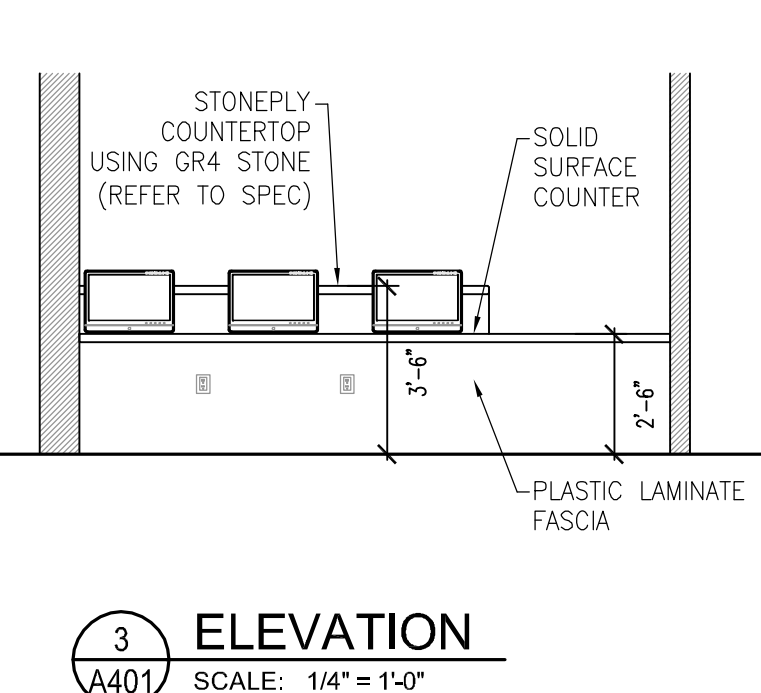
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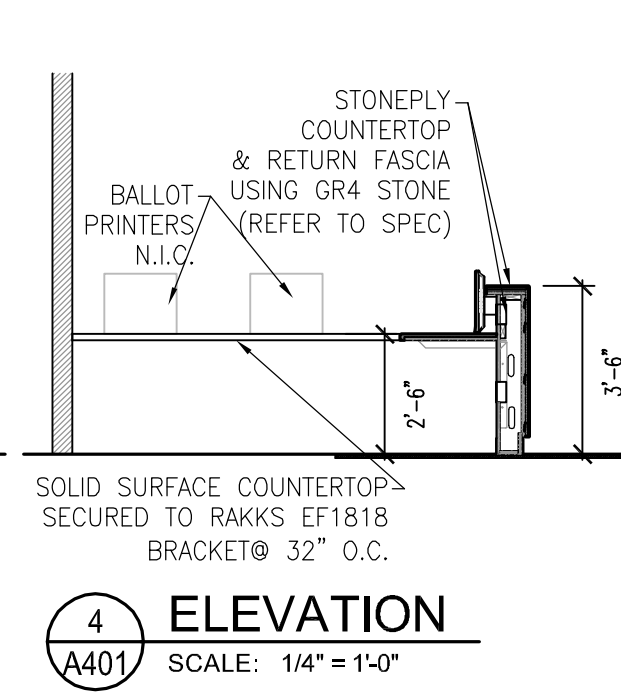
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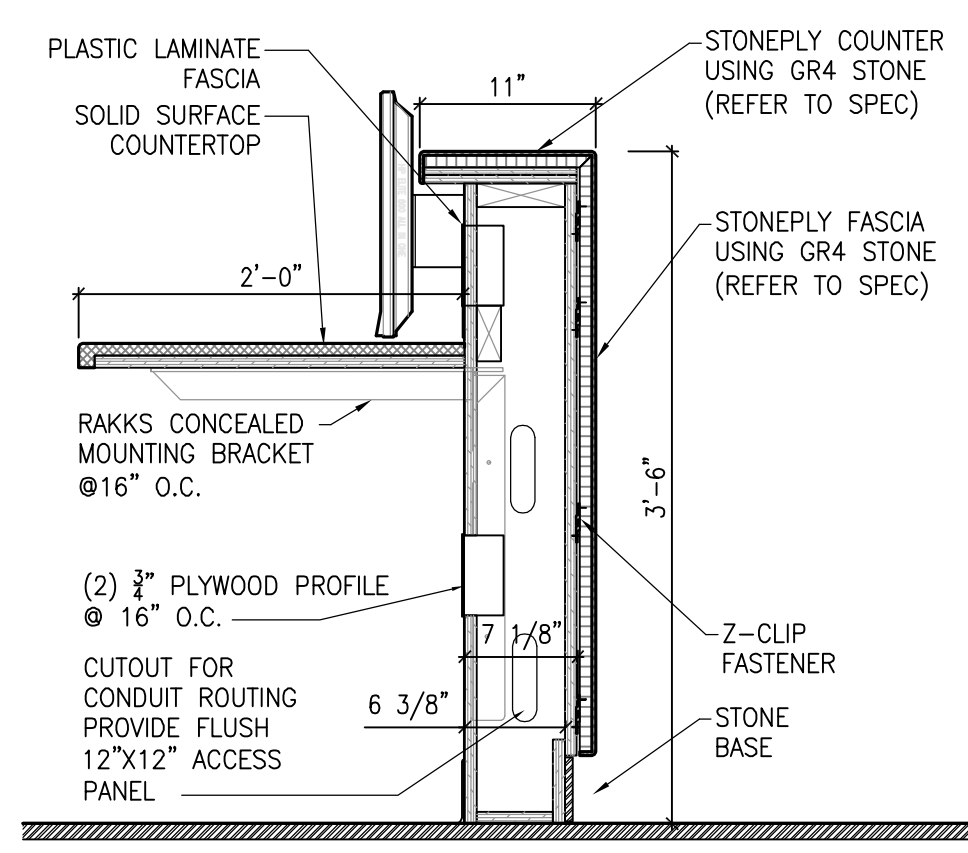
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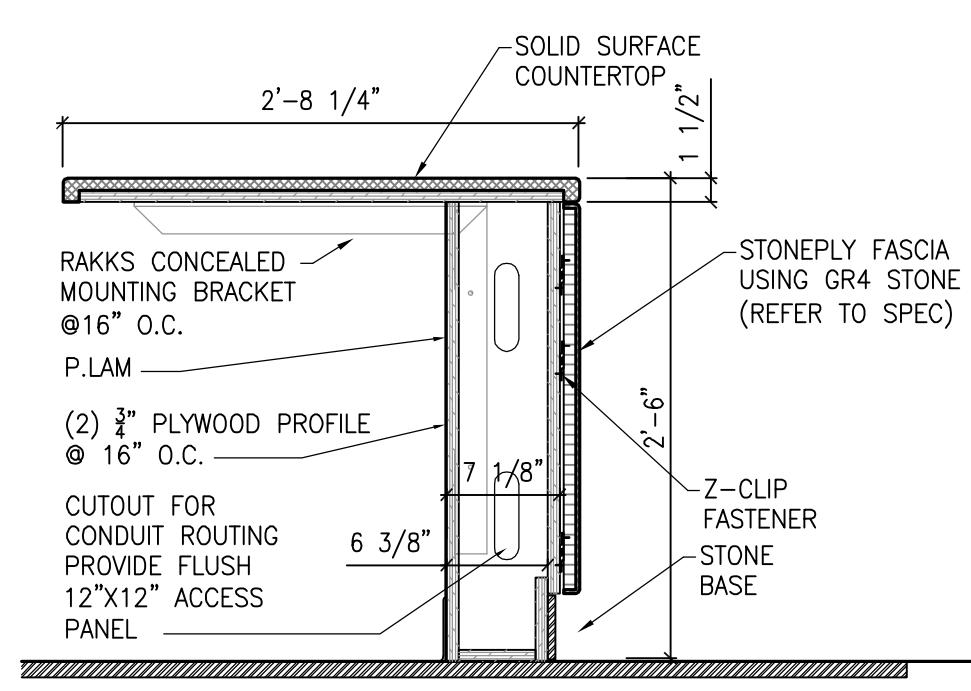
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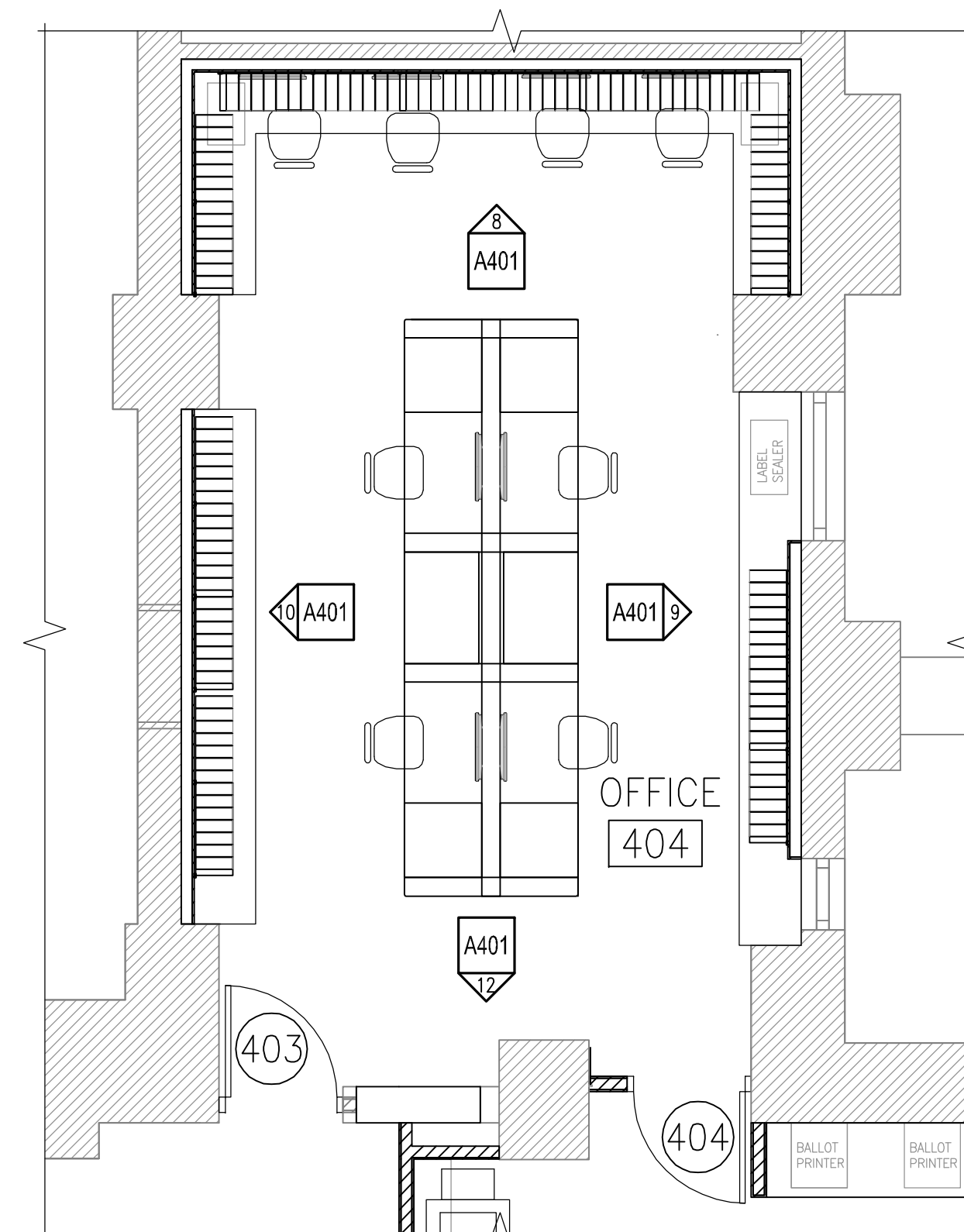
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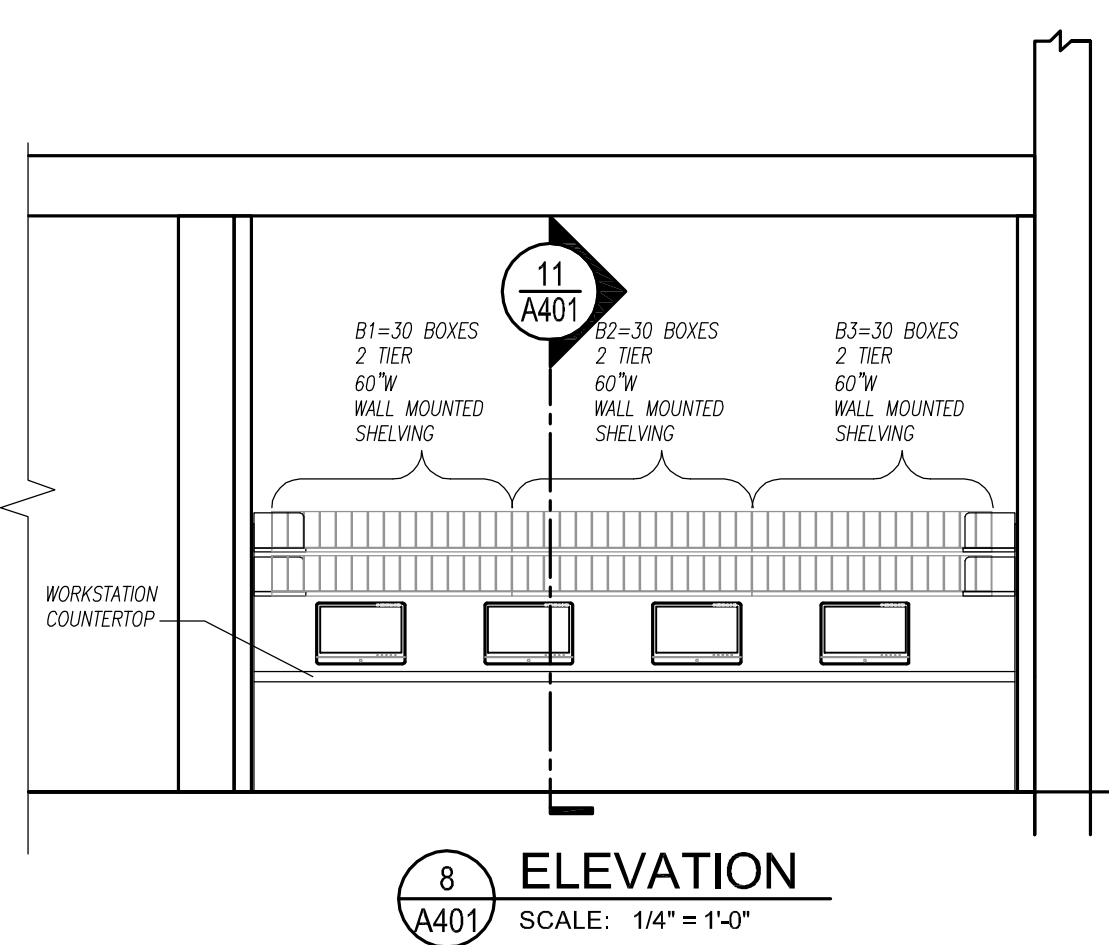
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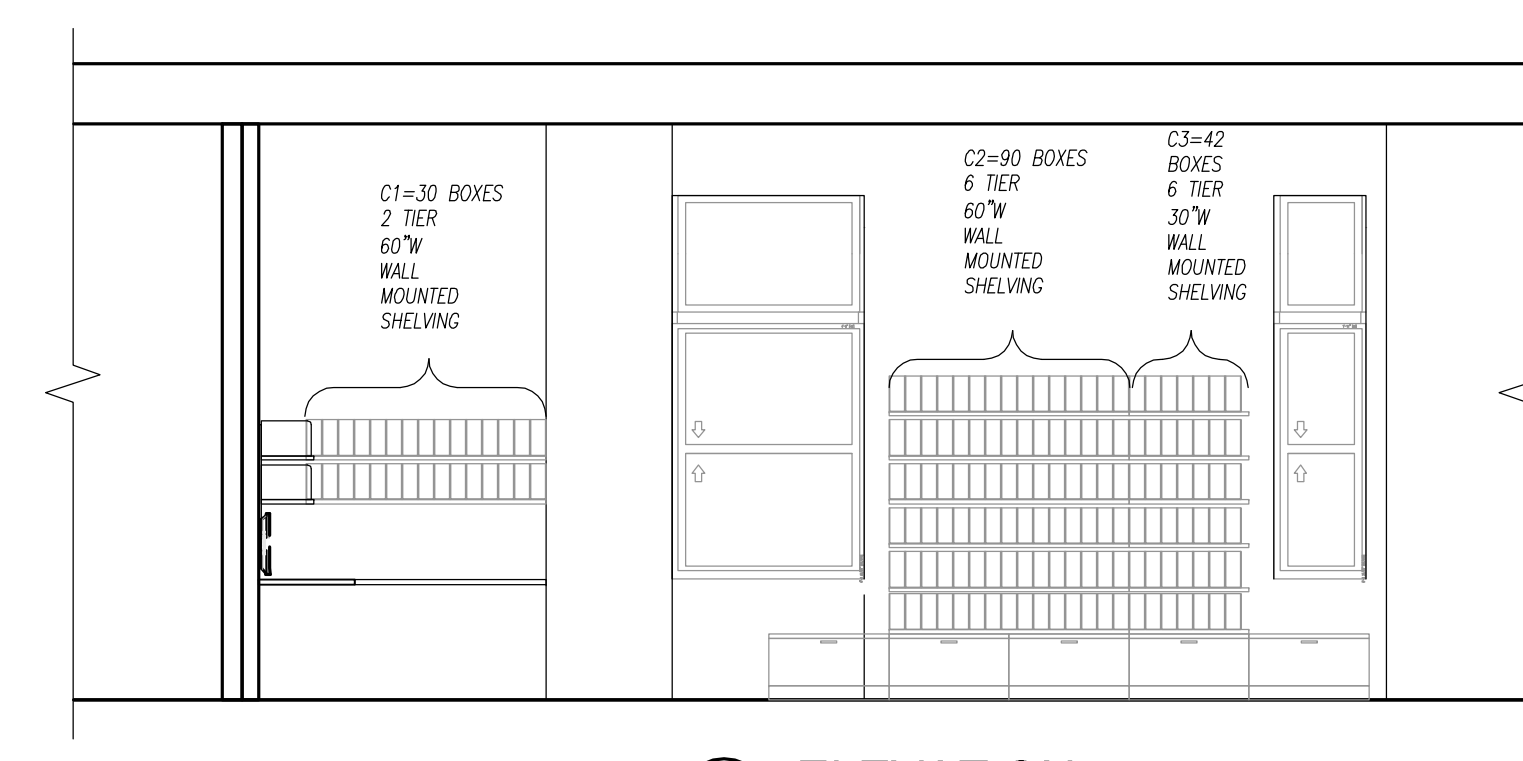
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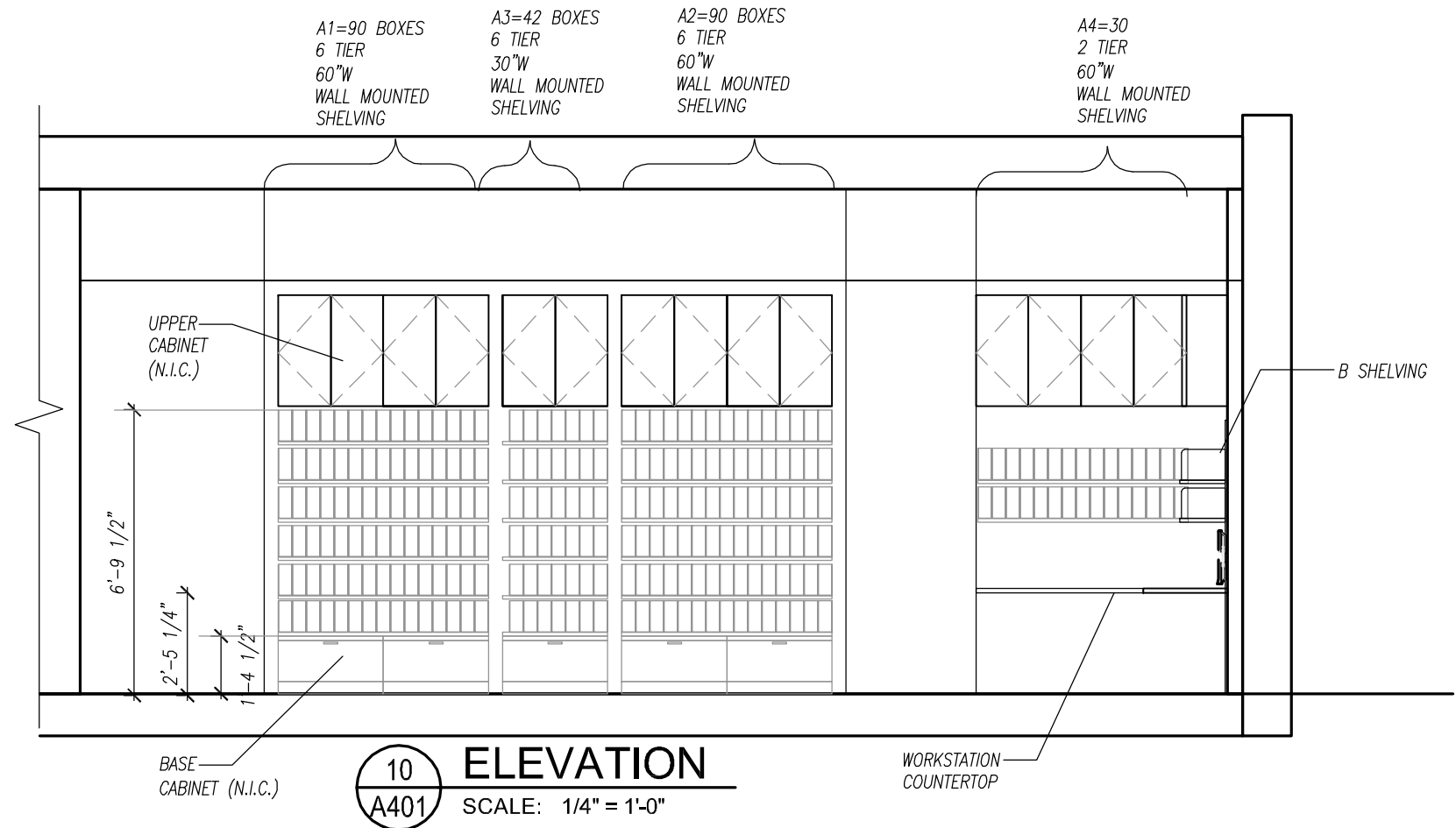
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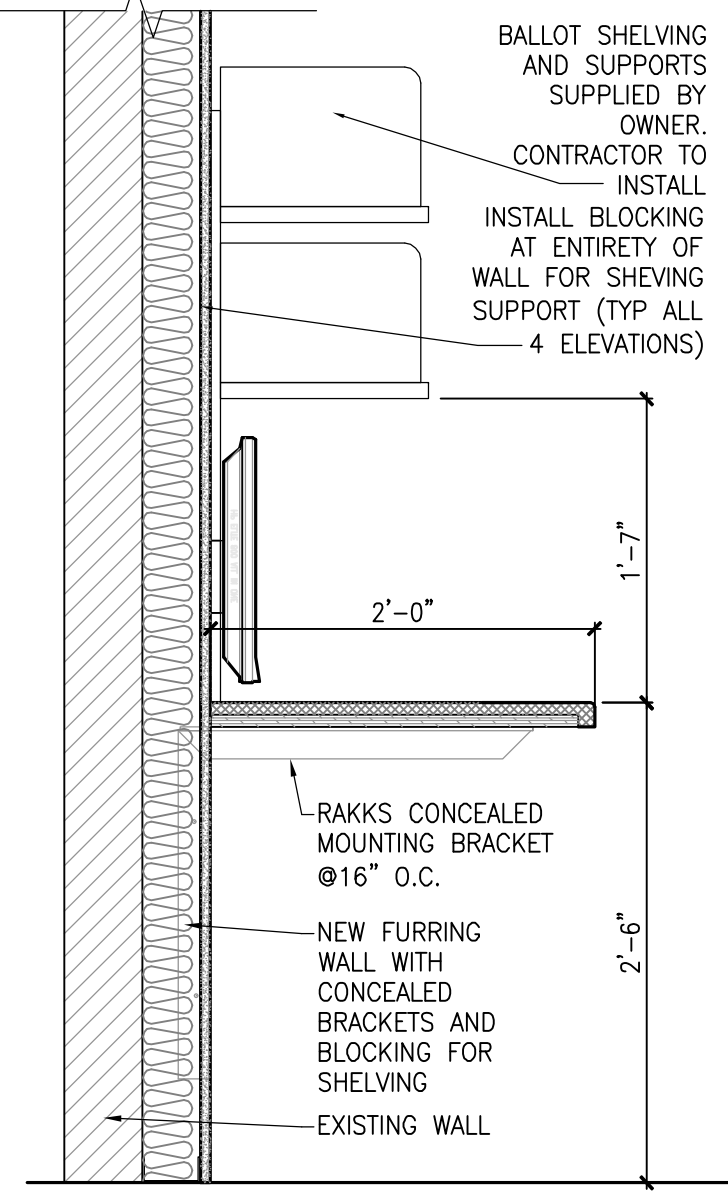
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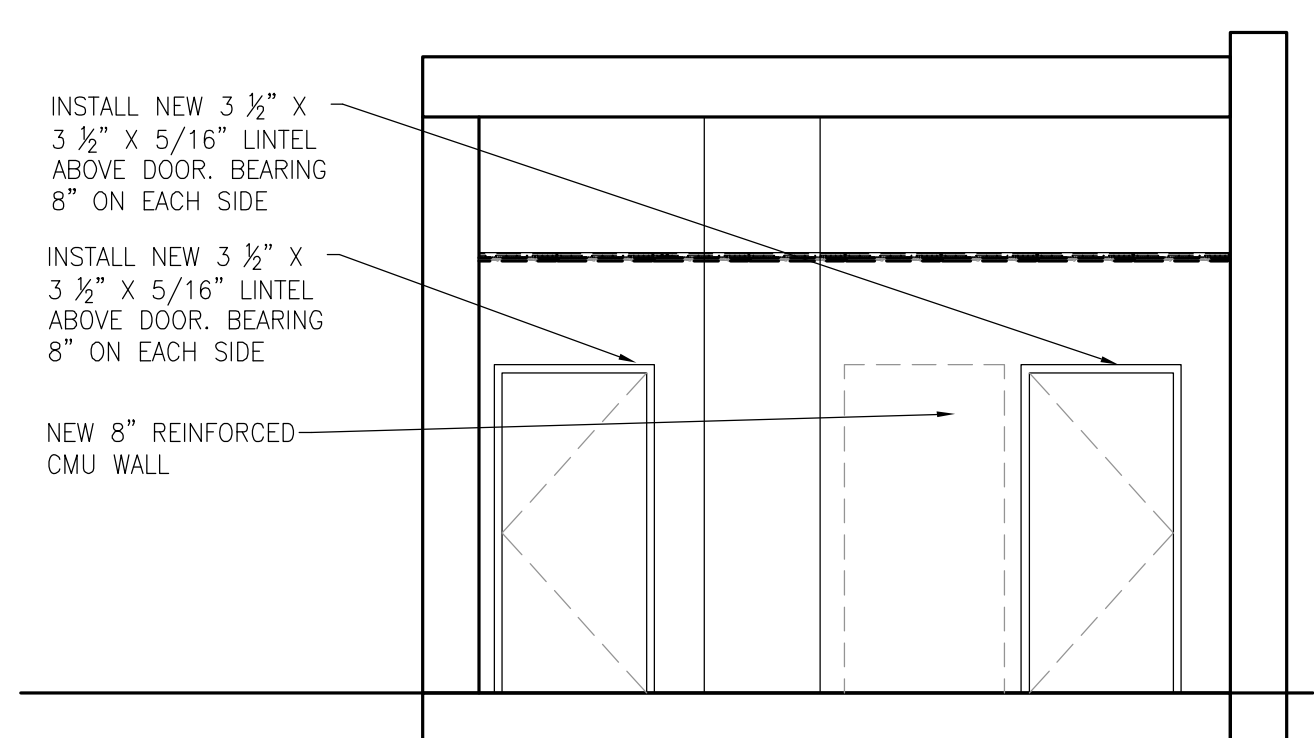
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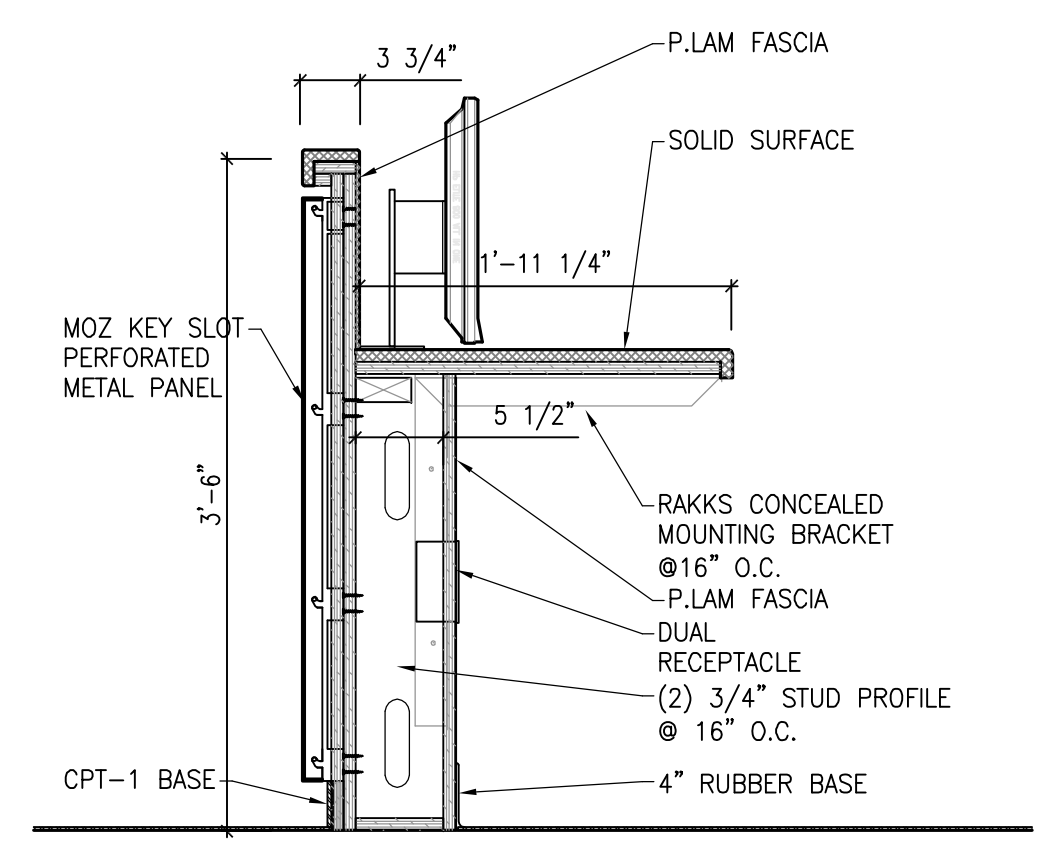
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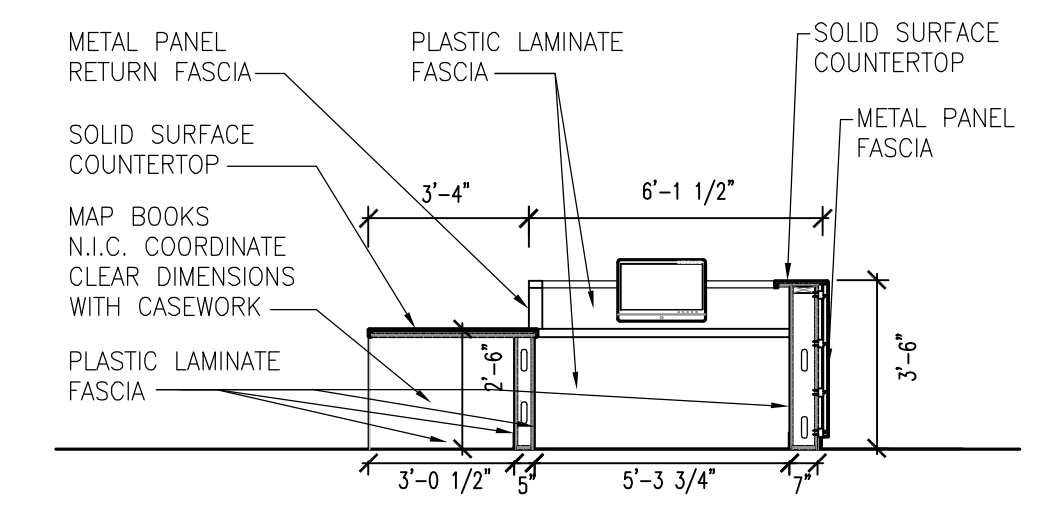
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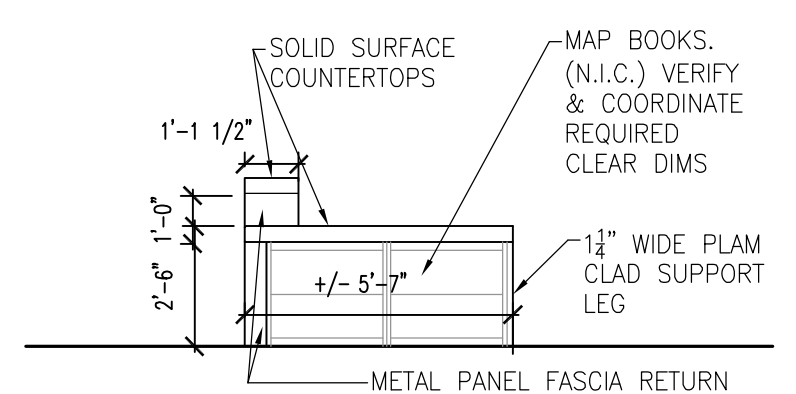
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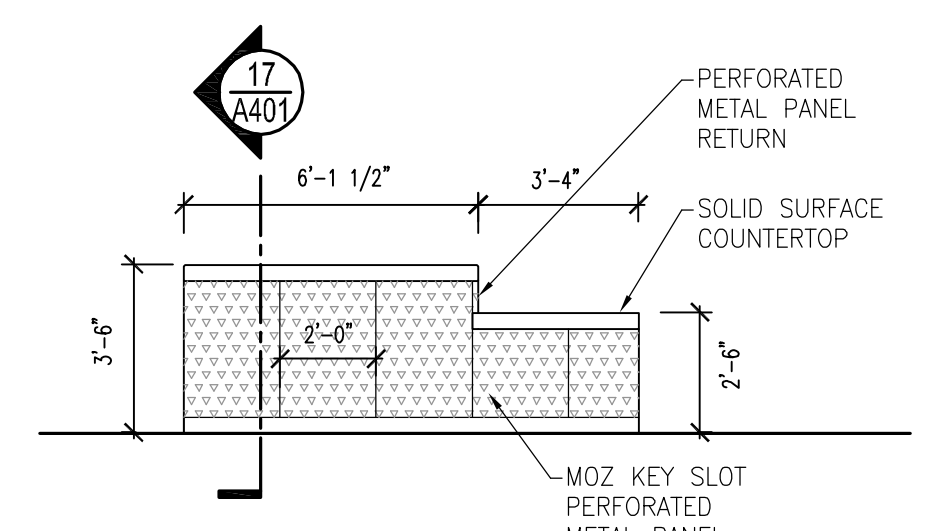
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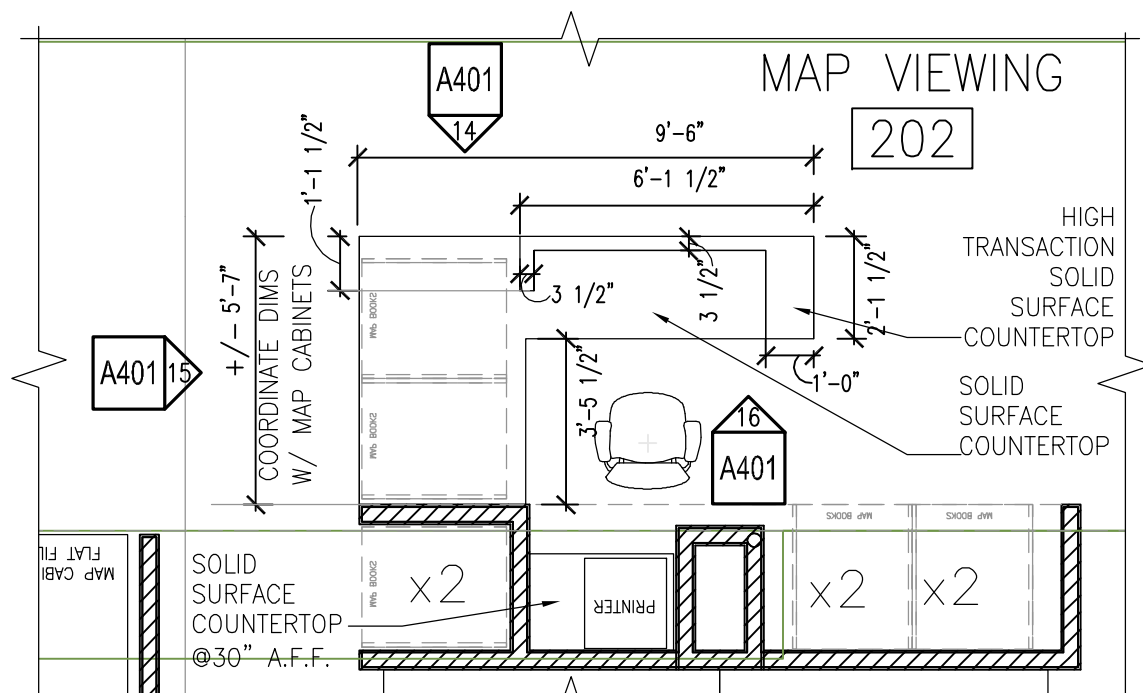
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15 ELEVATION
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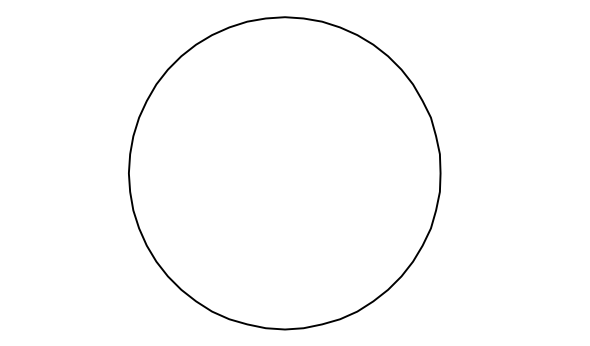


14 ELEVATION
SCALE: 1/4" = 1'-0"



13 MAP VIEWING ROOM PARTIAL PLAN
SCALE: 1/4" = 1'-0"

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Elizabeth, NJ 07201

SEPTEMBER 2021

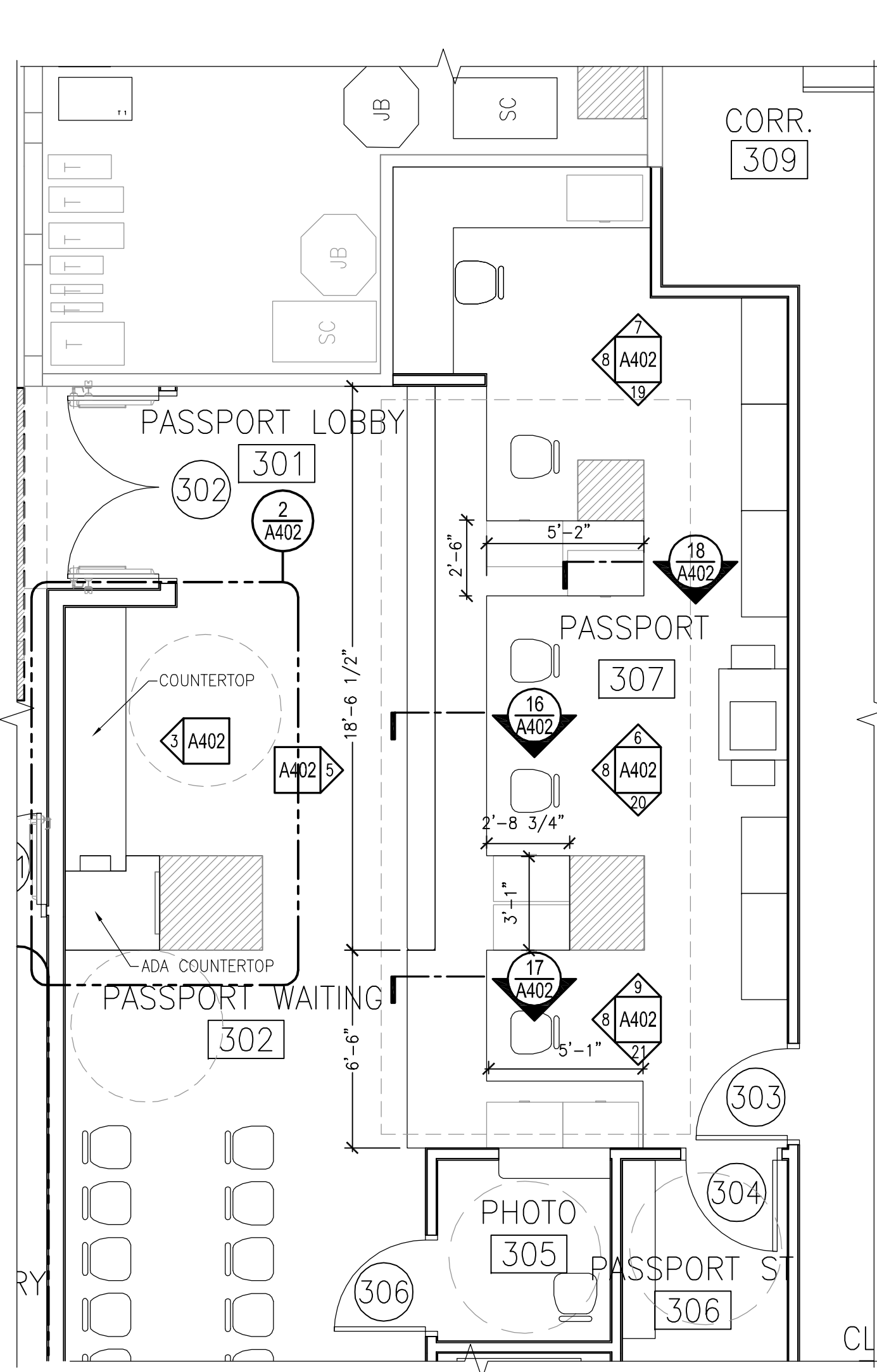
No.	Revision Description	Date

Scale: As Noted
Drawn by:
Checked by:

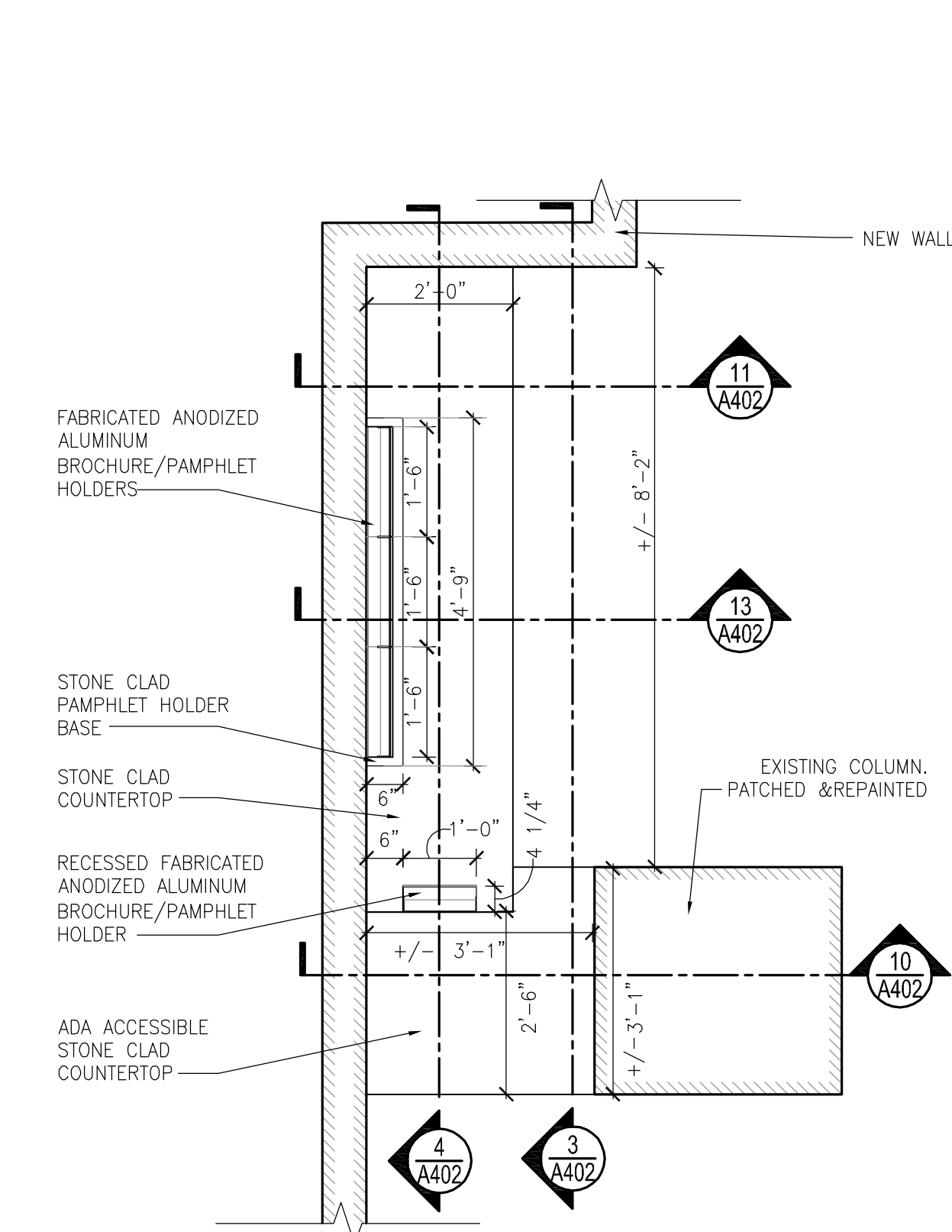
**113316.01
MAP VIEWING &
ELECTIONS
OFFICE
CASEWORK
DETAILS**

A401

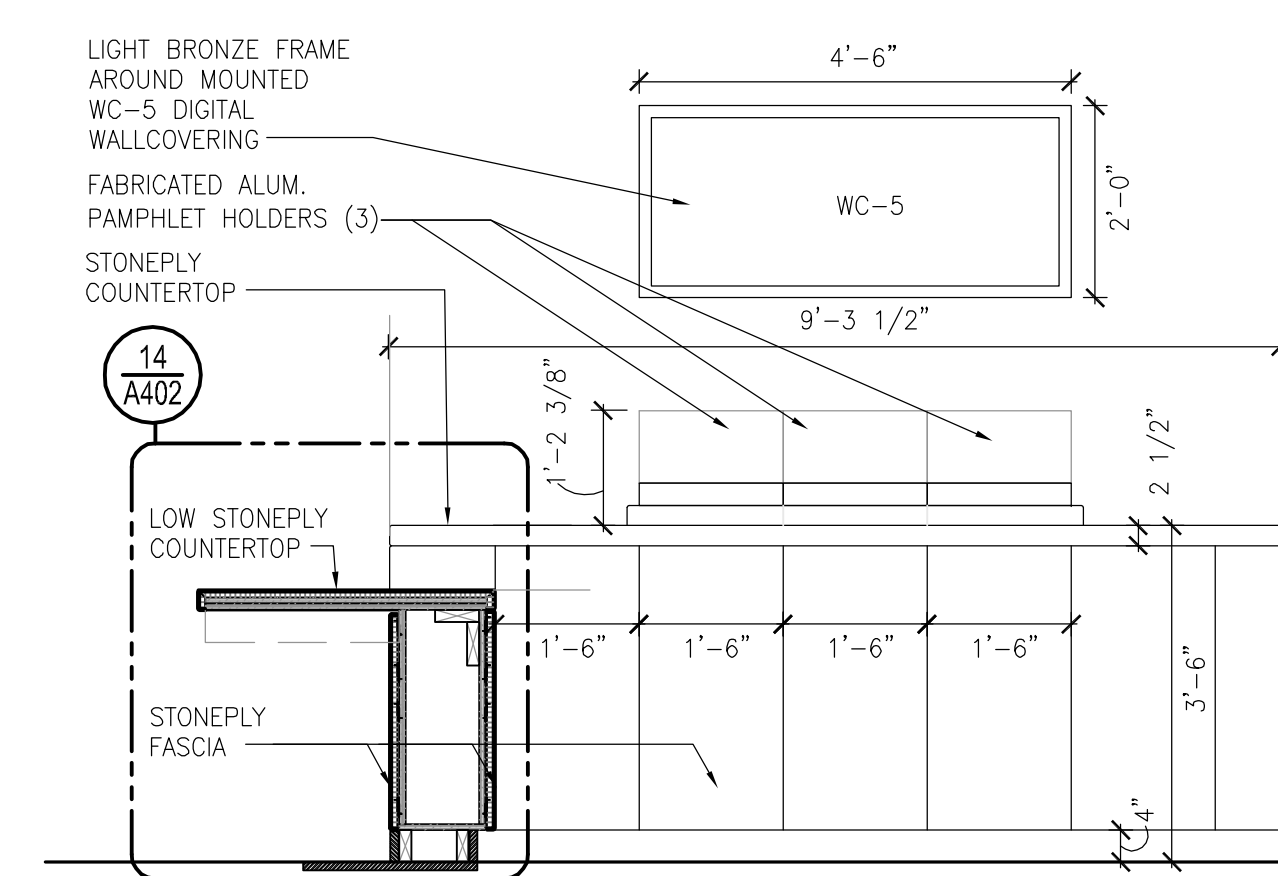
ORIGINAL
IF IT IS RED IT IS AN ORIGINAL



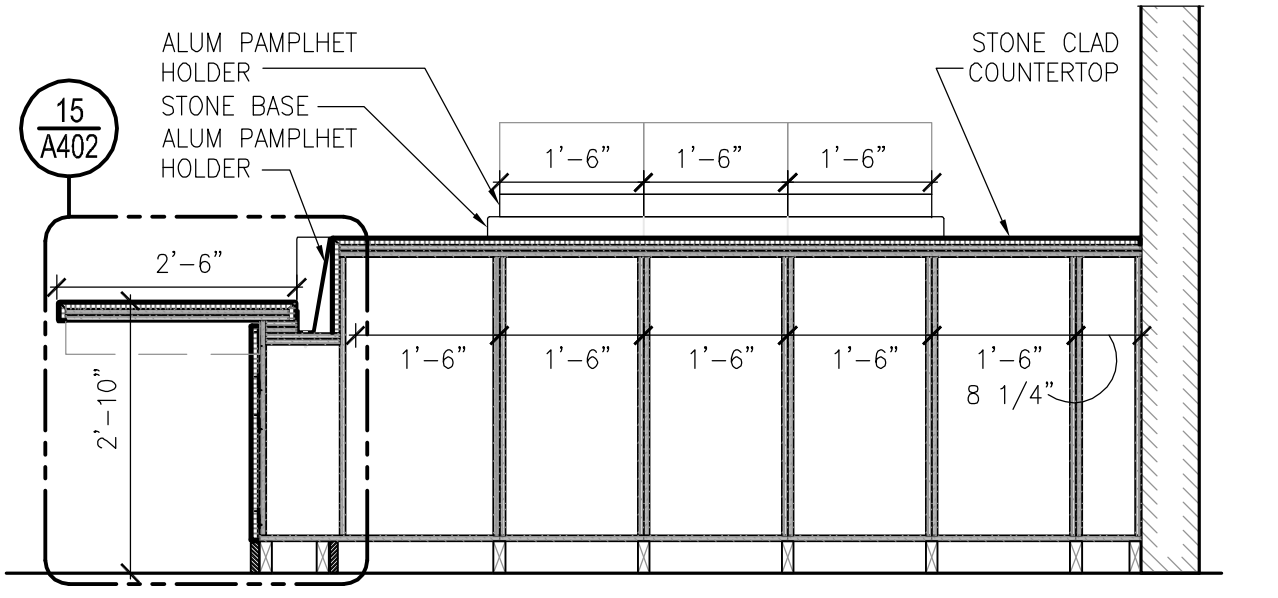
1 PASSPORT OFFICE PARTIAL PLAN
SCALE: 1/4" = 1'-0"



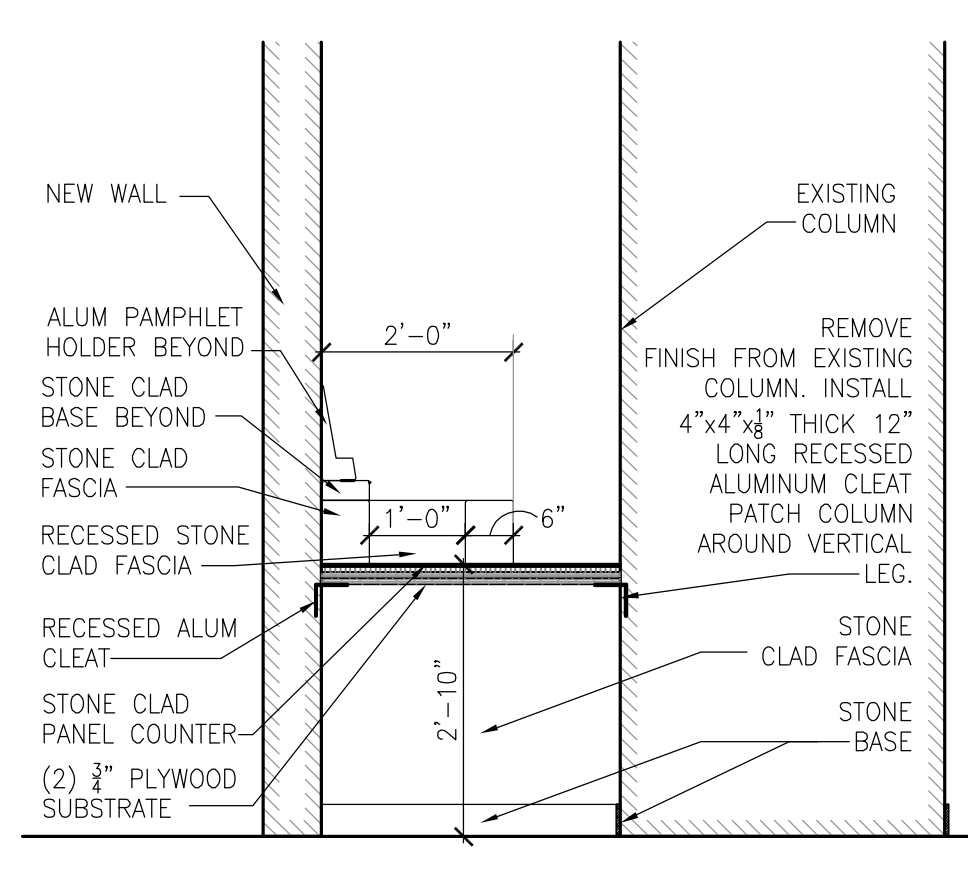
2 PASSPORT COUNTER DETAIL PLAN
SCALE: 1/2" = 1'-0"



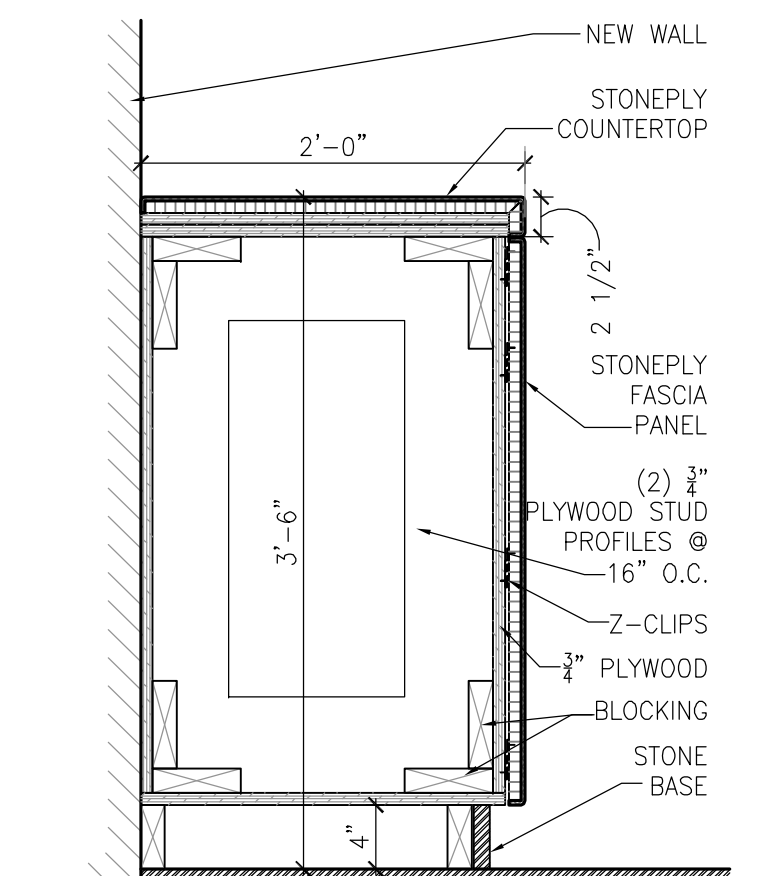
3 PASSPORT COUNTER ELEVATION
SCALE: 1/2" = 1'-0"



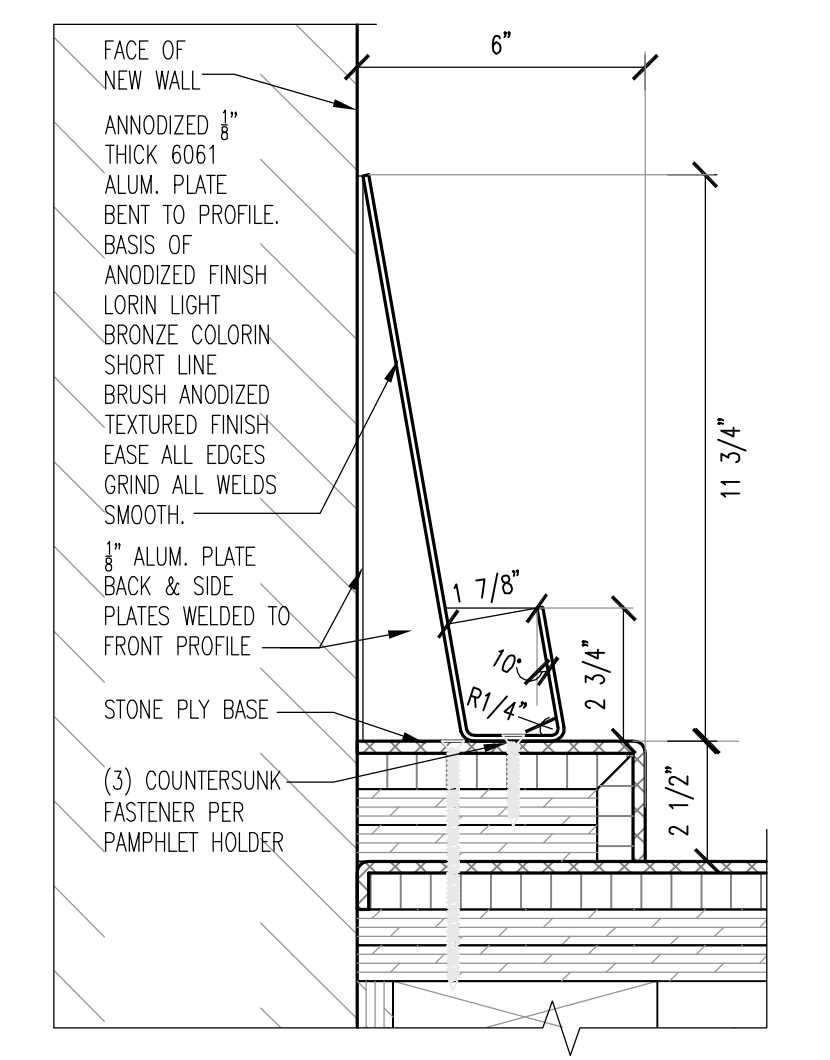
4 PASSPORT COUNTER SECTION
SCALE: 1/2" = 1'-0"



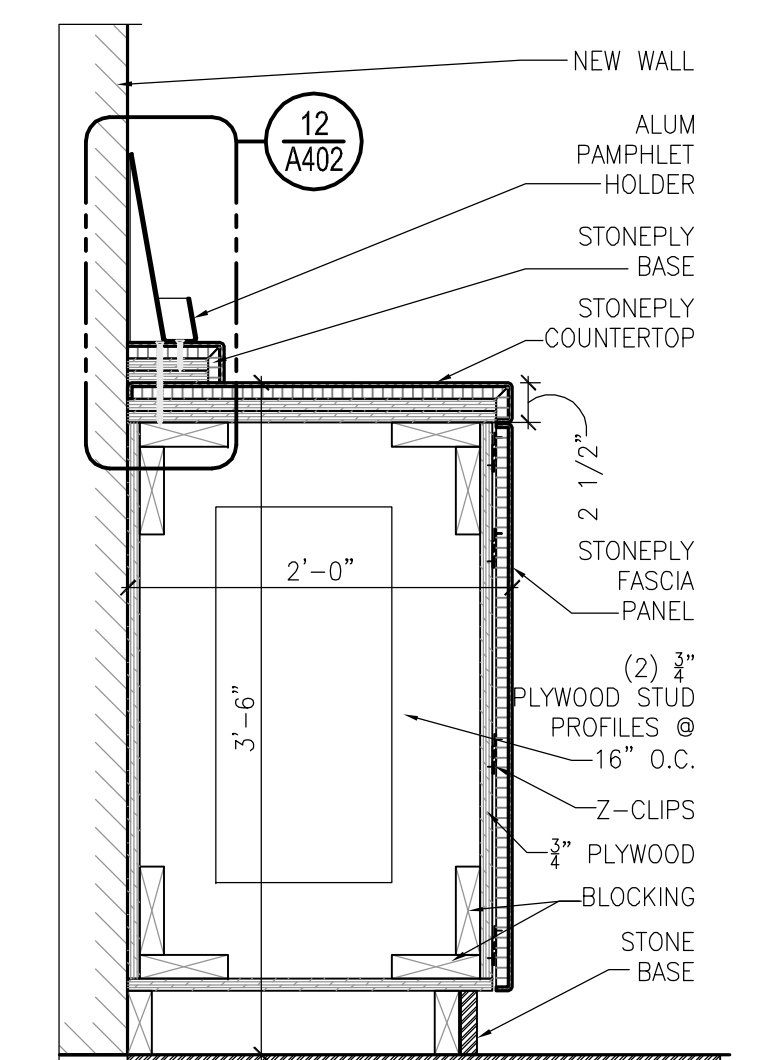
10 COUNTER SECTION
SCALE: 1/2" = 1'-0"



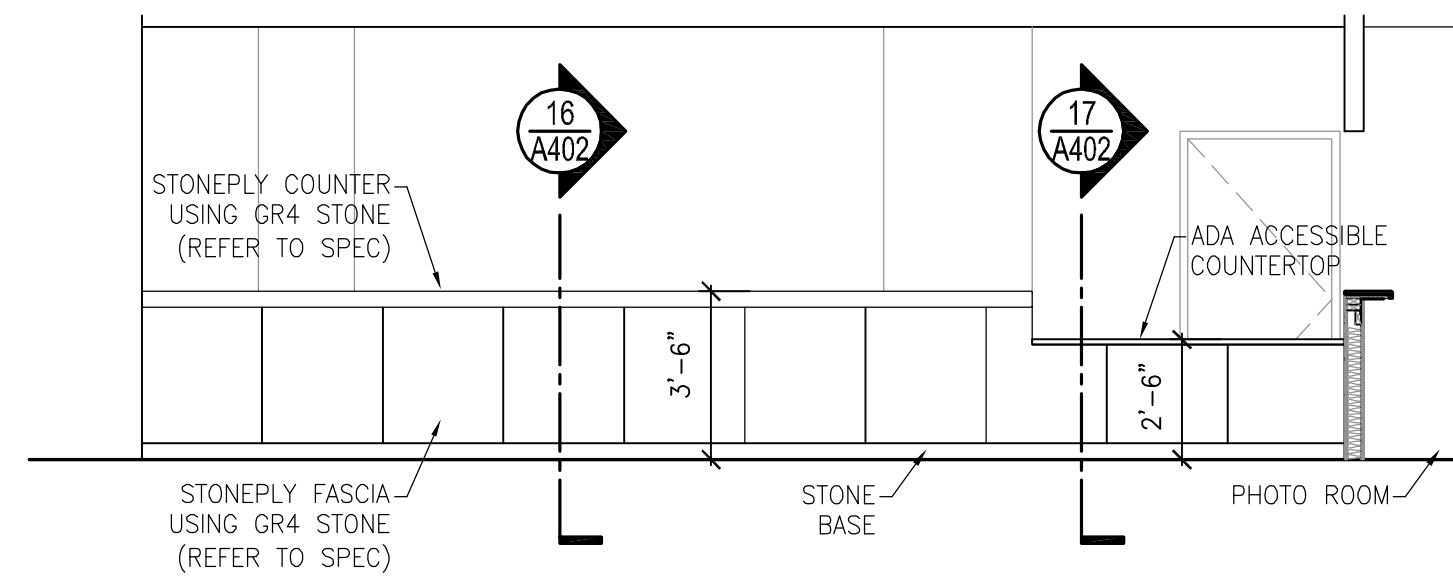
11 COUNTER SECTION
SCALE: 1/2" = 1'-0"



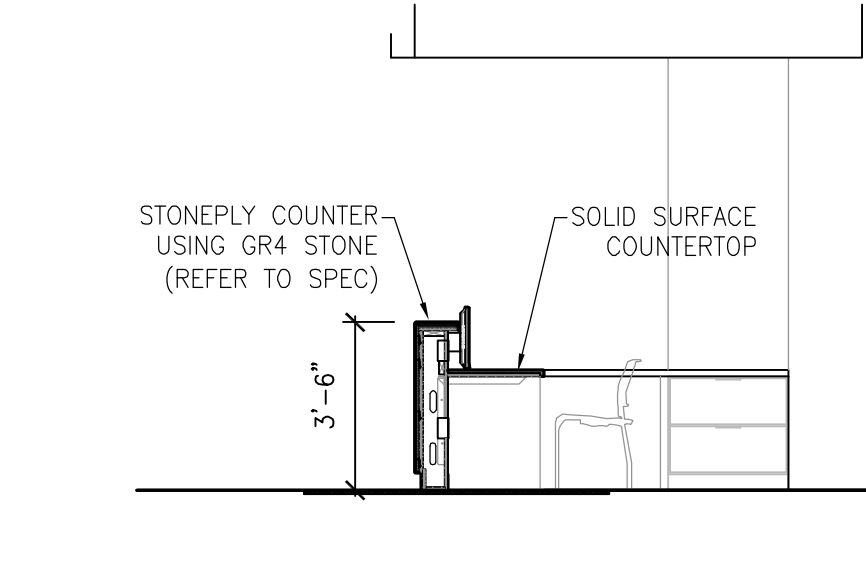
12 SECTION DETAIL
SCALE: 3" = 1'-0"



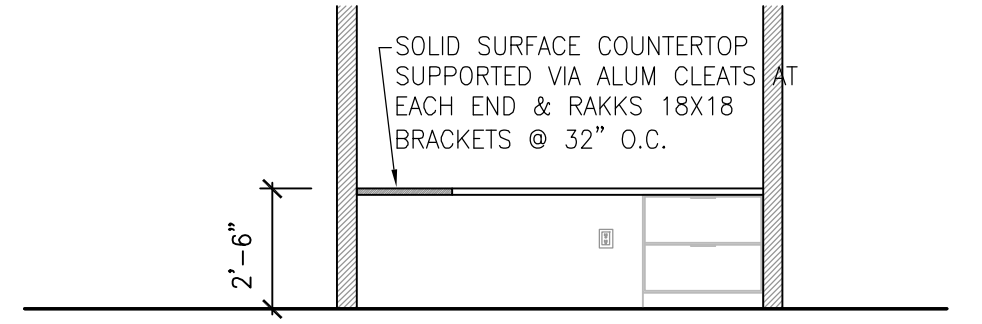
13 COUNTER SECTION
SCALE: 1/2" = 1'-0"



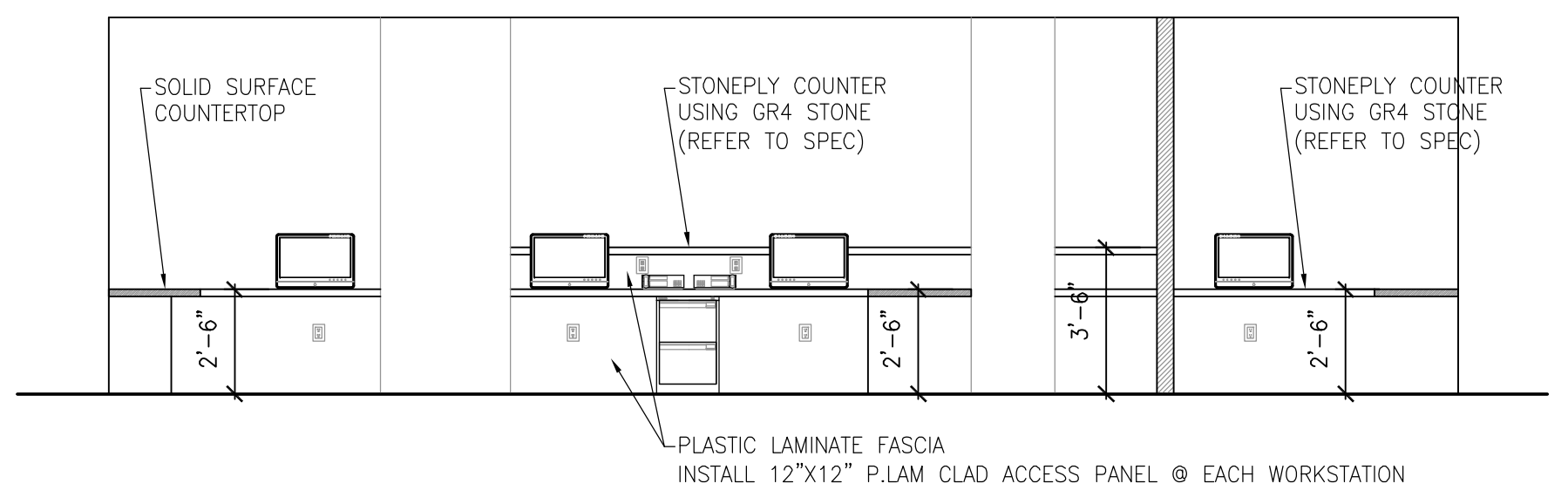
5 PASSPORT OFFICE CASEWORK
SCALE: 1/4" = 1'-0"



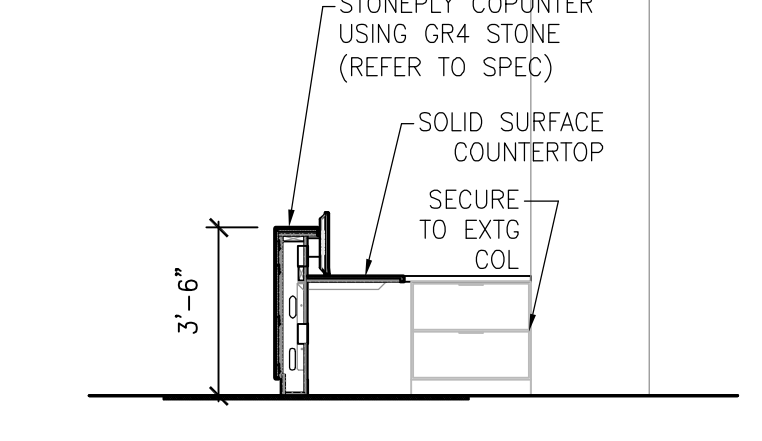
6 PASSPORT OFFICE CASEWORK
SCALE: 1/4" = 1'-0"



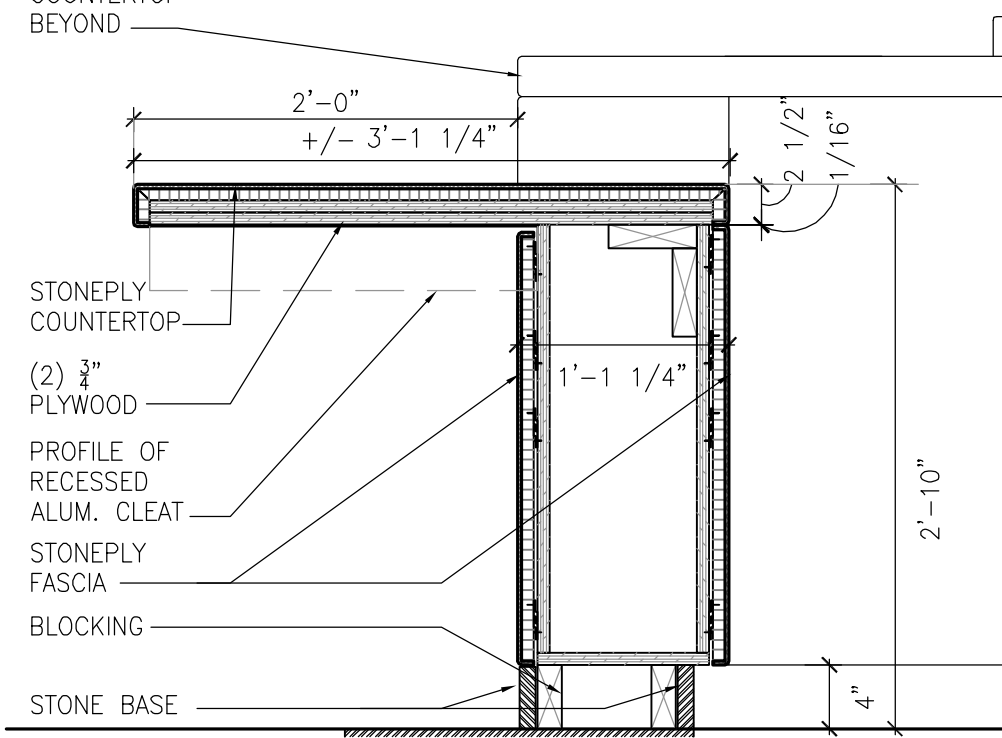
7 PASSPORT OFFICE CASEWORK
SCALE: 1/4" = 1'-0"



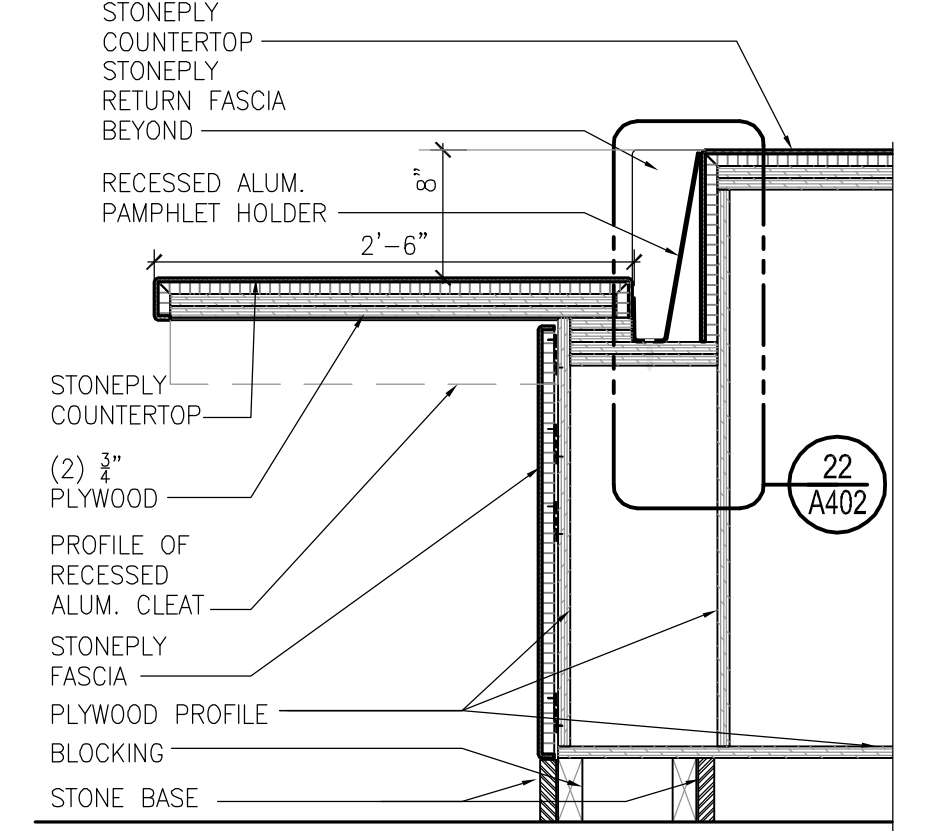
8 PASSPORT OFFICE CASEWORK
SCALE: 1/4" = 1'-0"



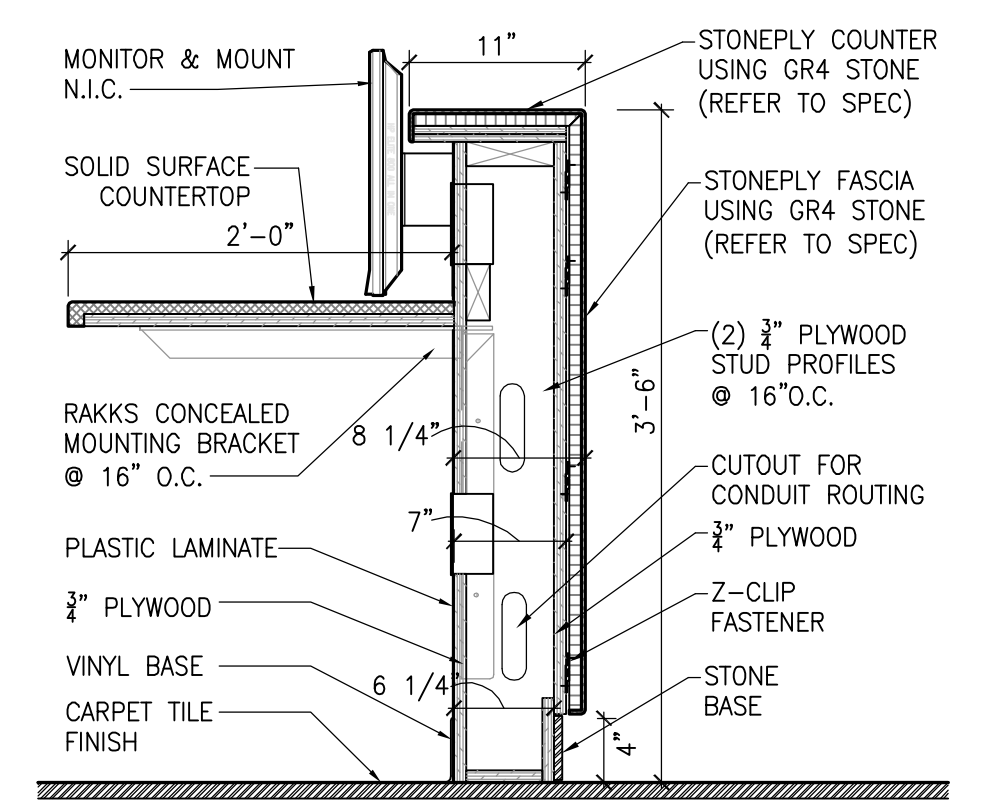
9 PASSPORT OFFICE CASEWORK
SCALE: 1/4" = 1'-0"



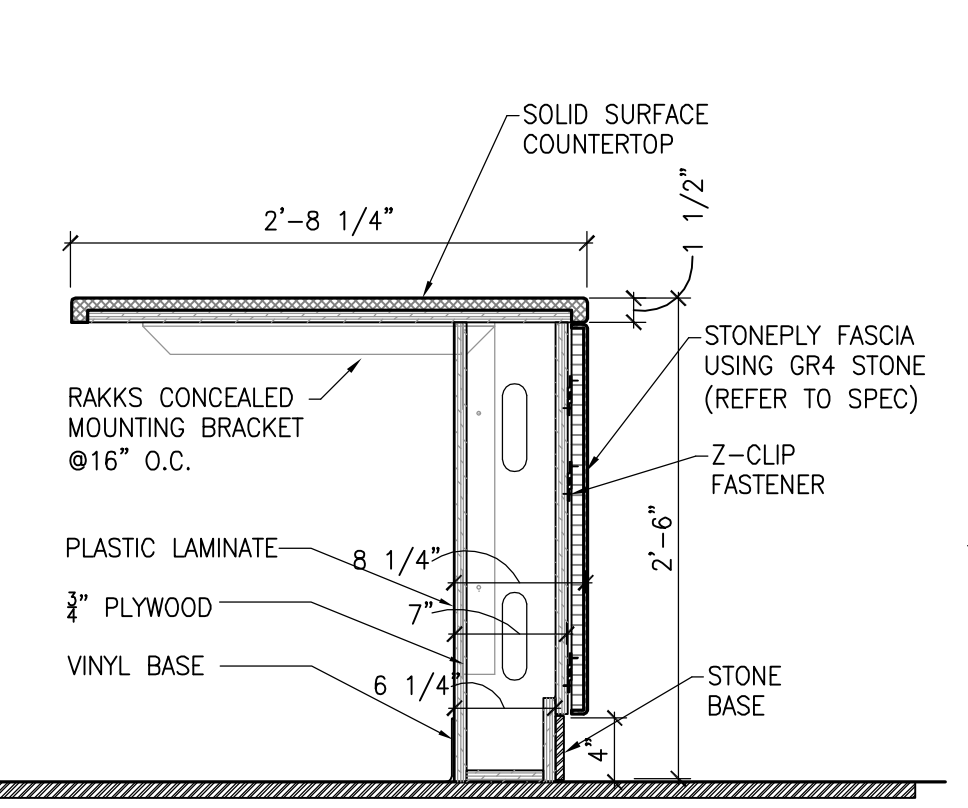
14 SECTION DETAIL
SCALE: 1" = 1'-0"



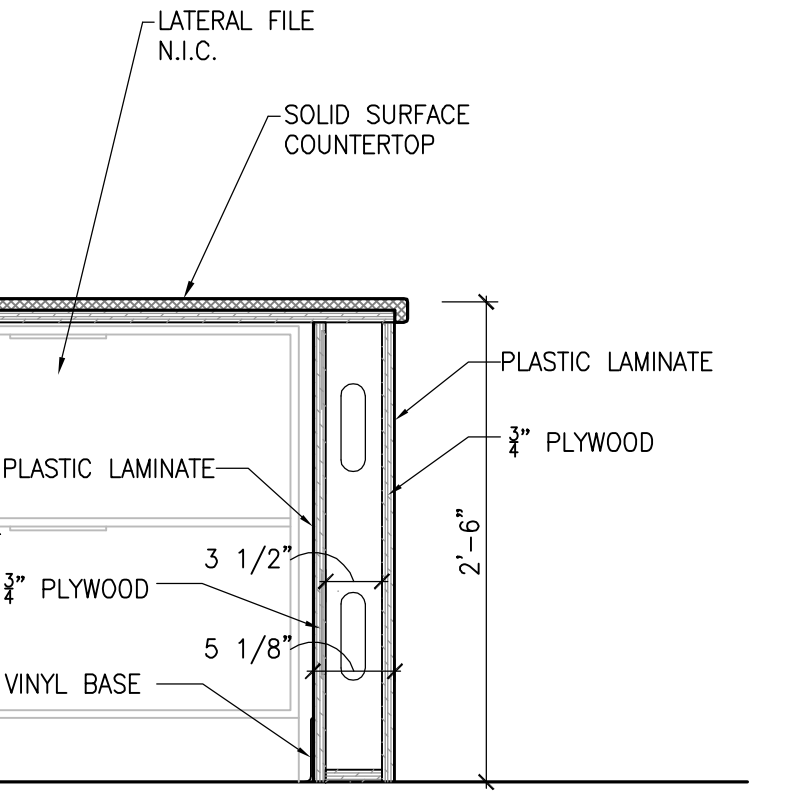
15 SECTION DETAIL
SCALE: 1" = 1'-0"



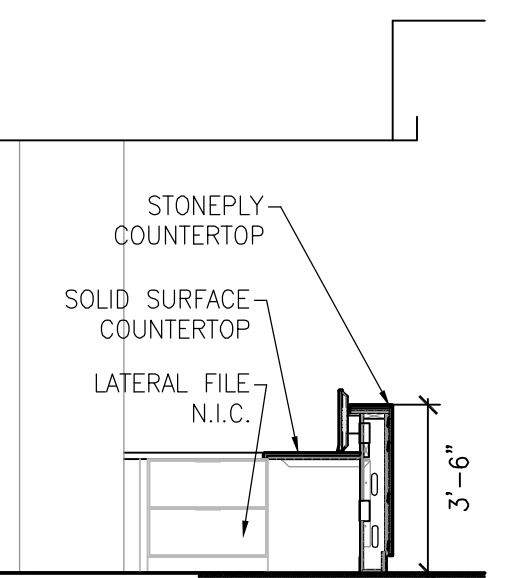
16 PASSPORT CASEWORK SECTION
SCALE: 1" = 1'-0"



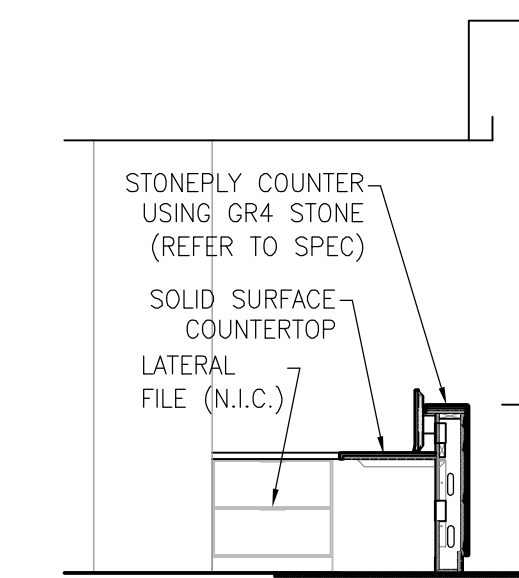
17 PASSPORT CASEWORK SECTION
SCALE: 1" = 1'-0"



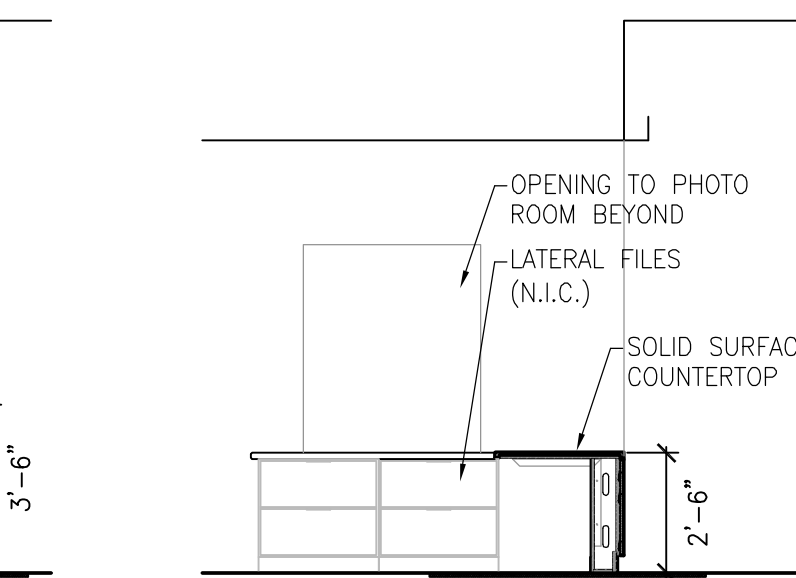
18 CASEWORK SECTION
SCALE: 1" = 1'-0"



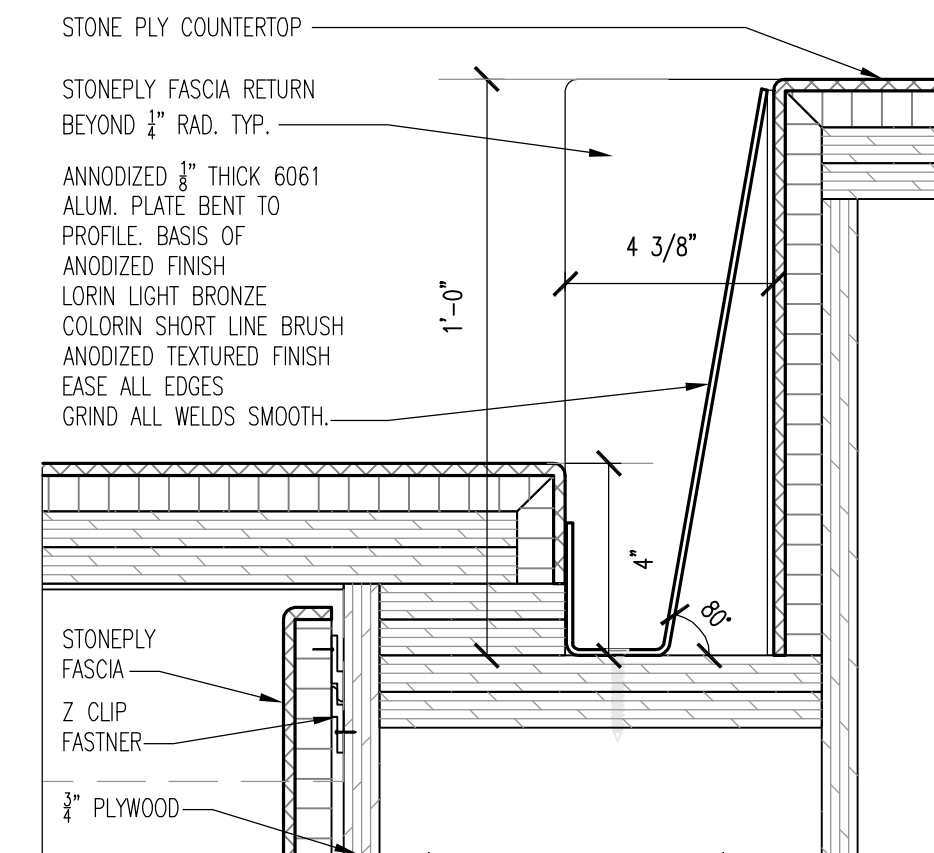
19 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



20 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



21 CASEWORK SECTION
SCALE: 1/4" = 1'-0"



22 SECTION DETAIL
SCALE: 3" = 1'-0"

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SEPTEMBER 2021

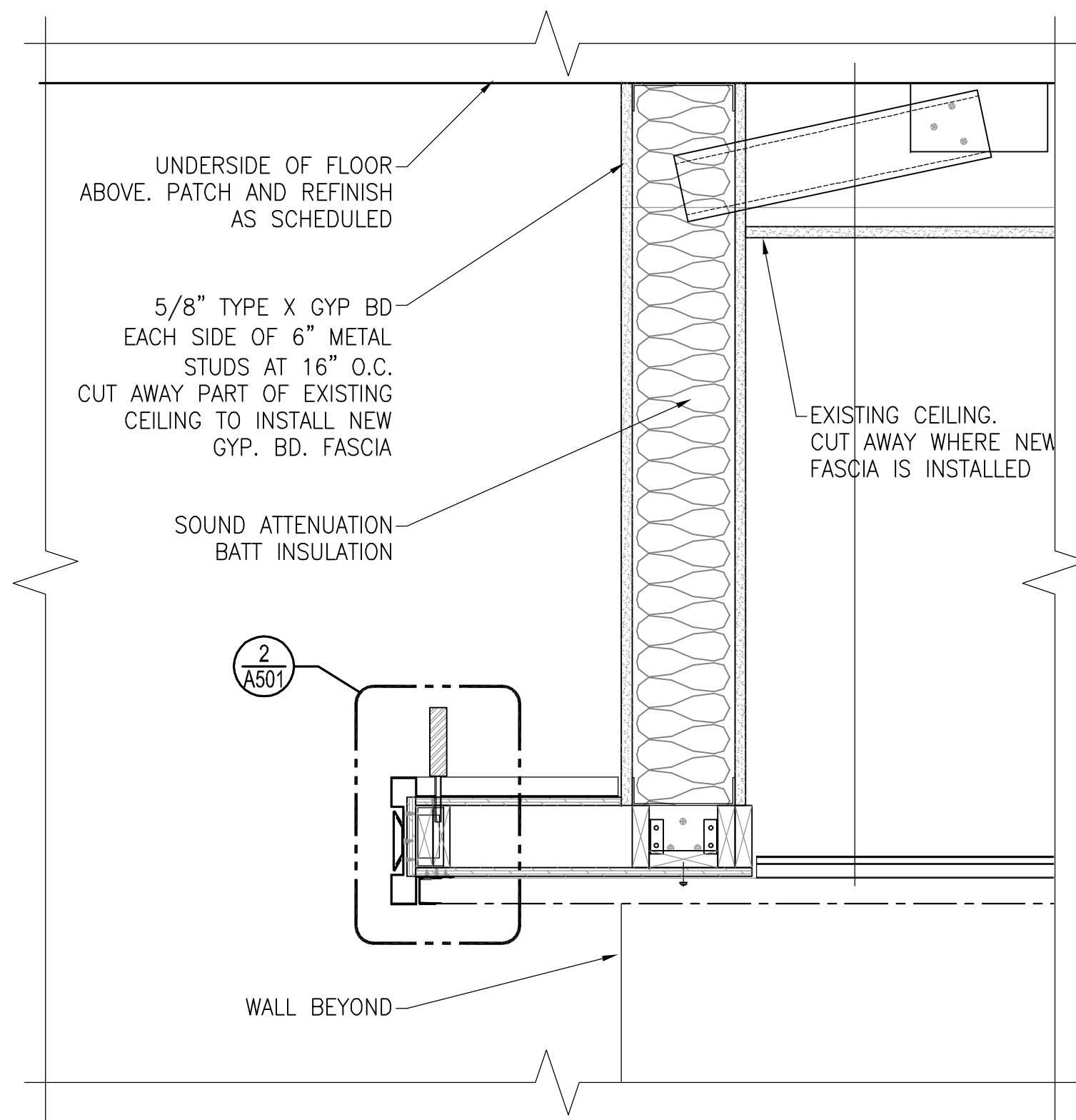
No. Revision Description Date

Scale: As Noted
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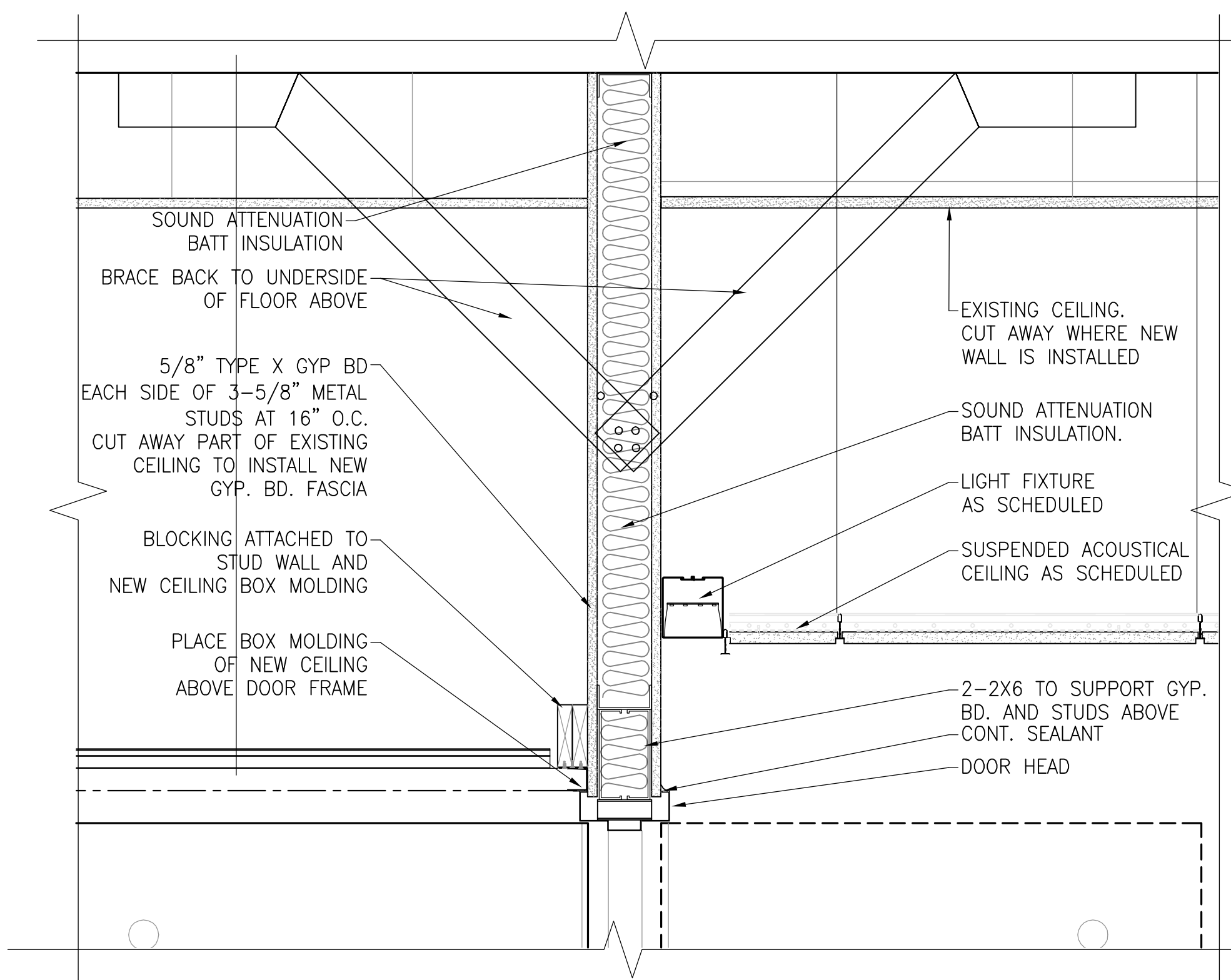
113316.01

PASSPORT
CASEWORK
DETAILS

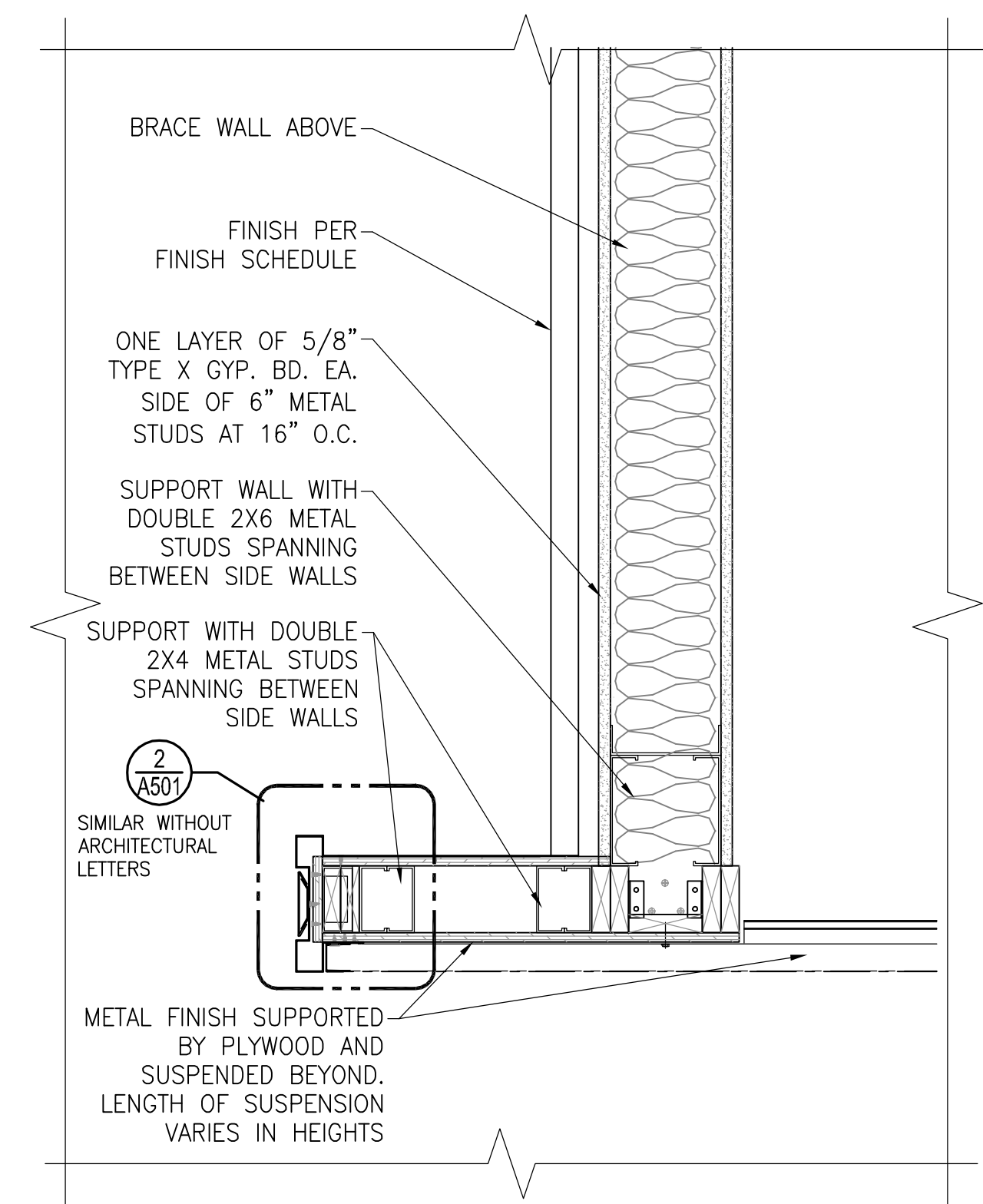
A402



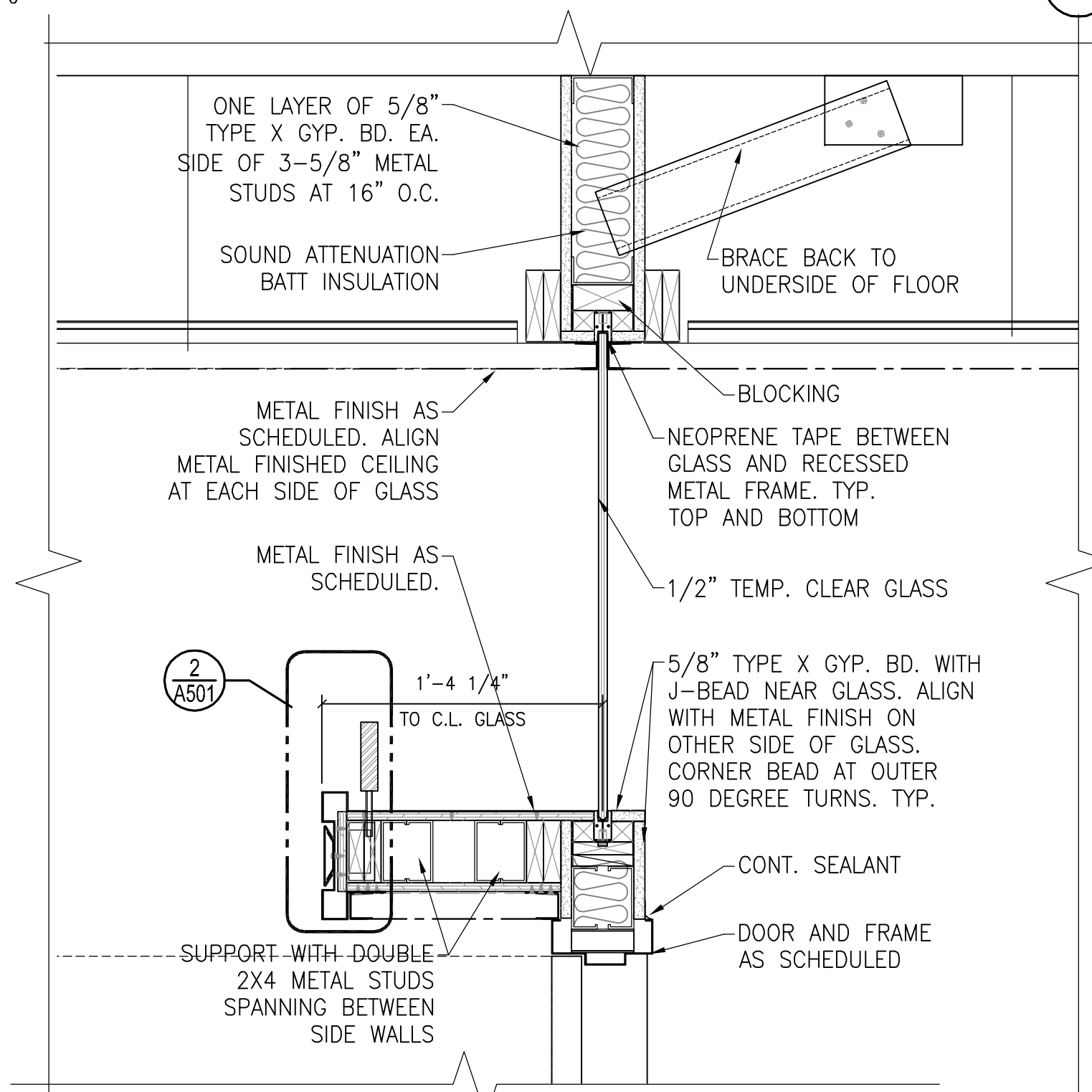
1 SECTION DETAIL
SCALE: 1-1/2"=1'-0"



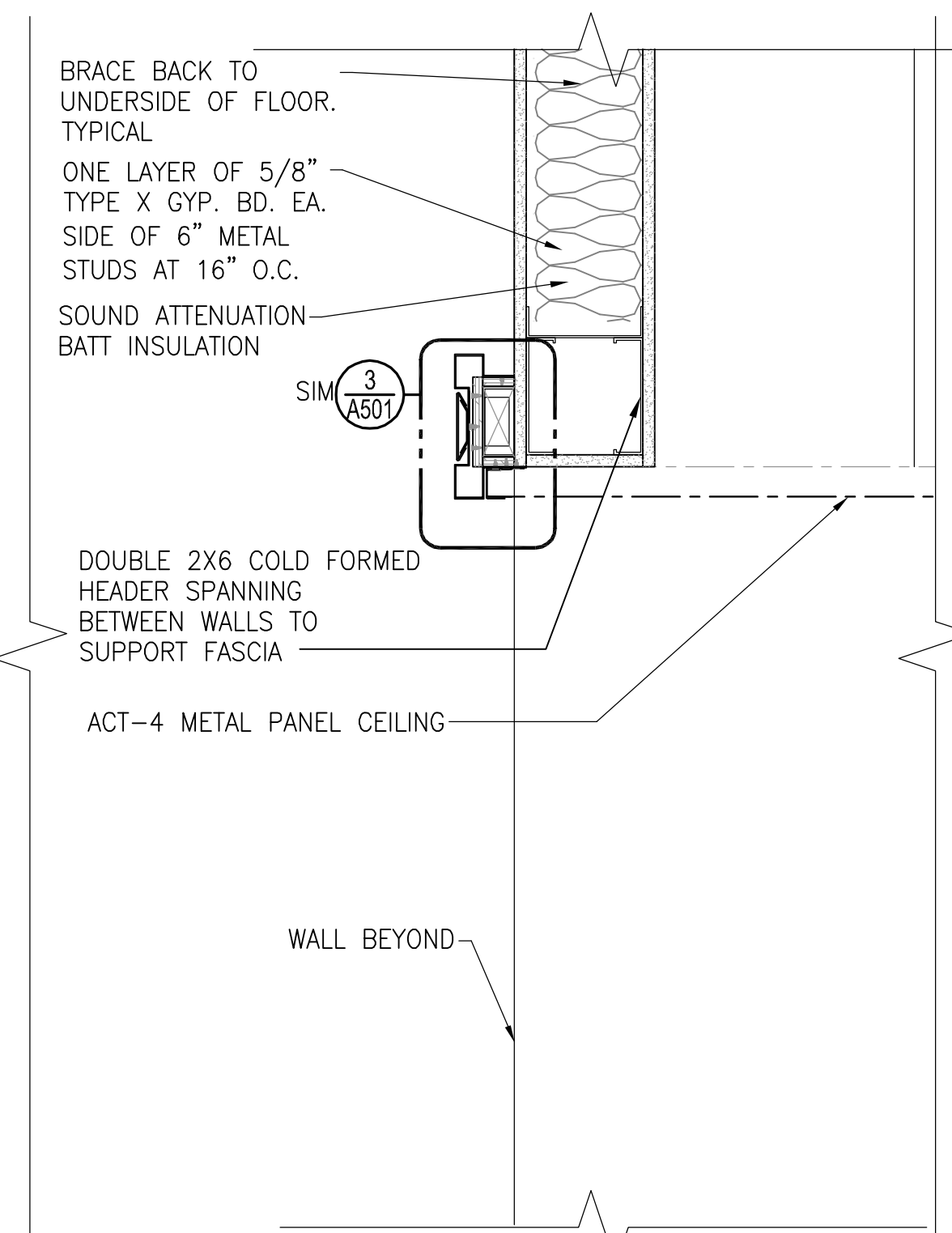
2 SECTION DETAIL
SCALE: 1-1/2"=1'-0"



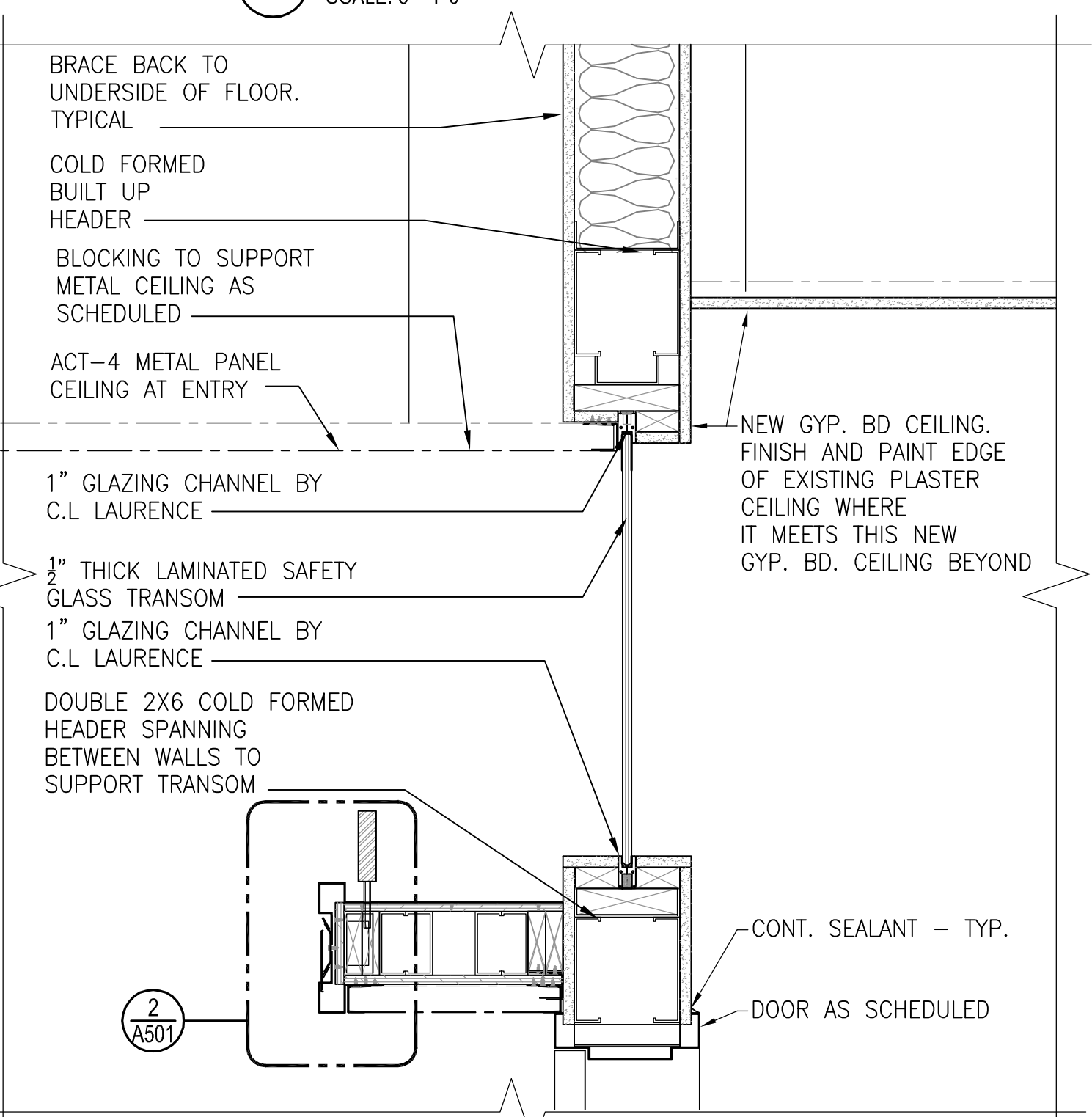
3 SECTION DETAIL
SCALE: 6"=1'-0"



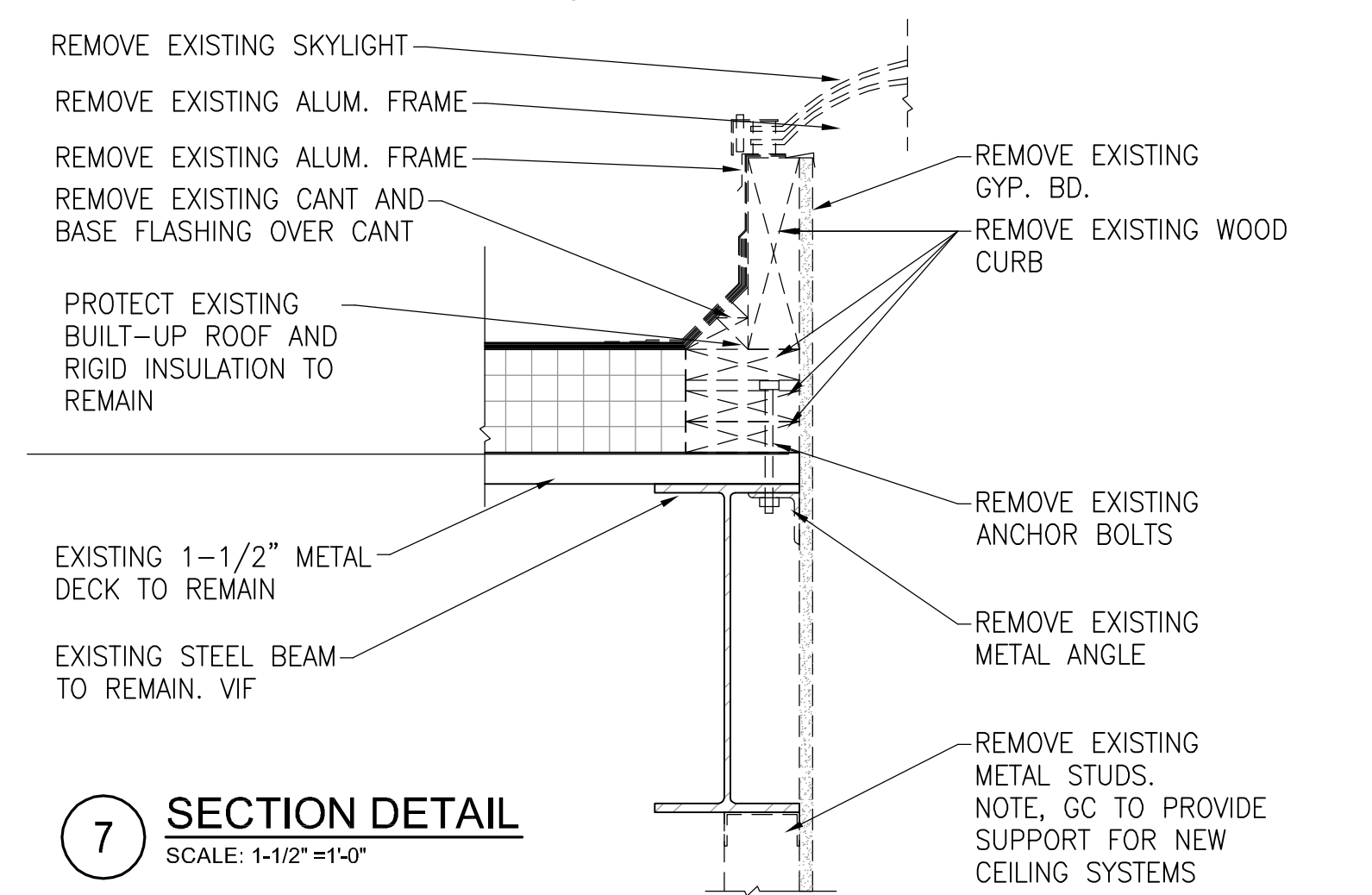
4 SECTION DETAIL
SCALE: 1-1/2"=1'-0"



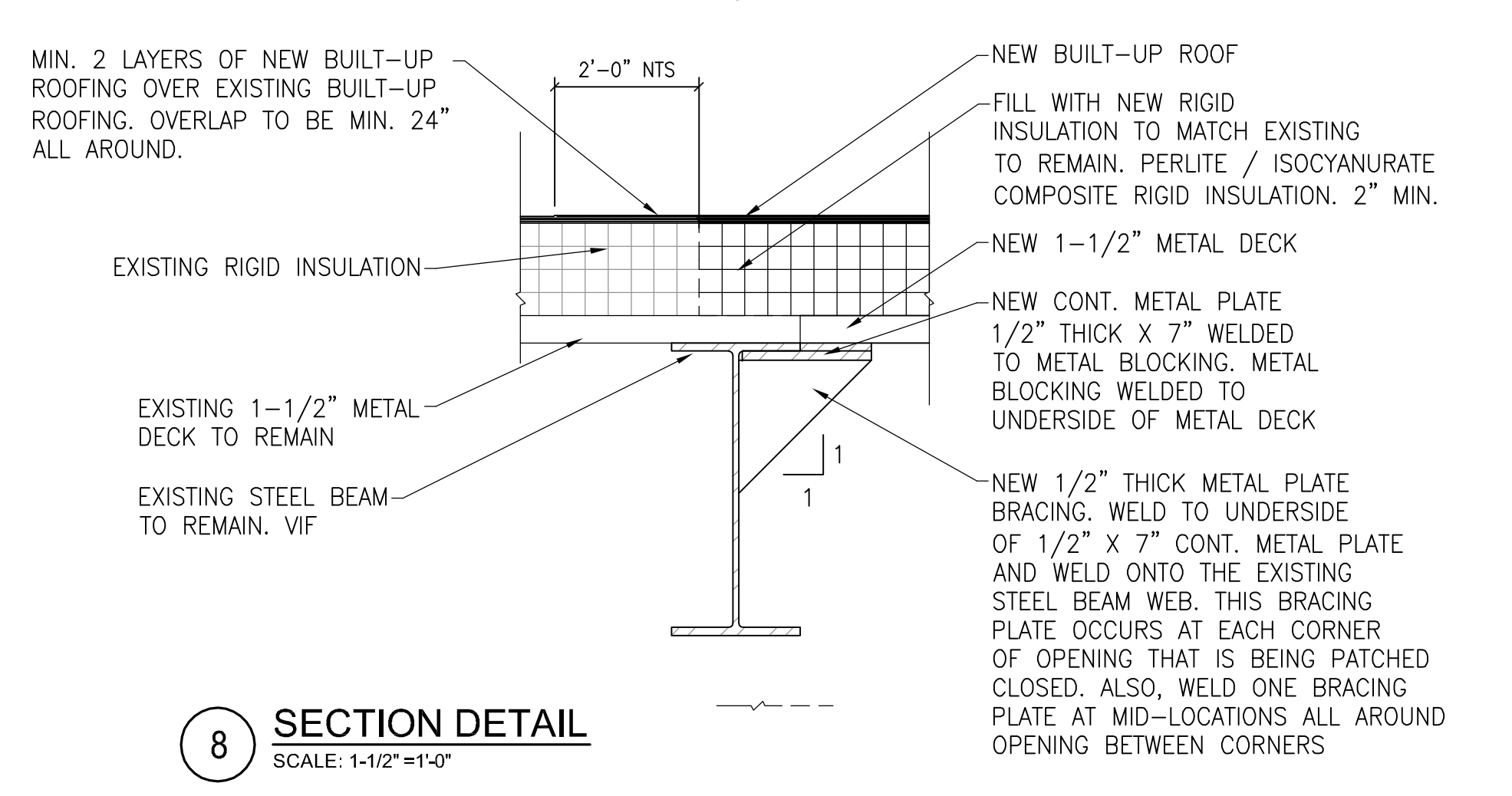
5 SECTION DETAIL
SCALE: 1-1/2"=1'-0"



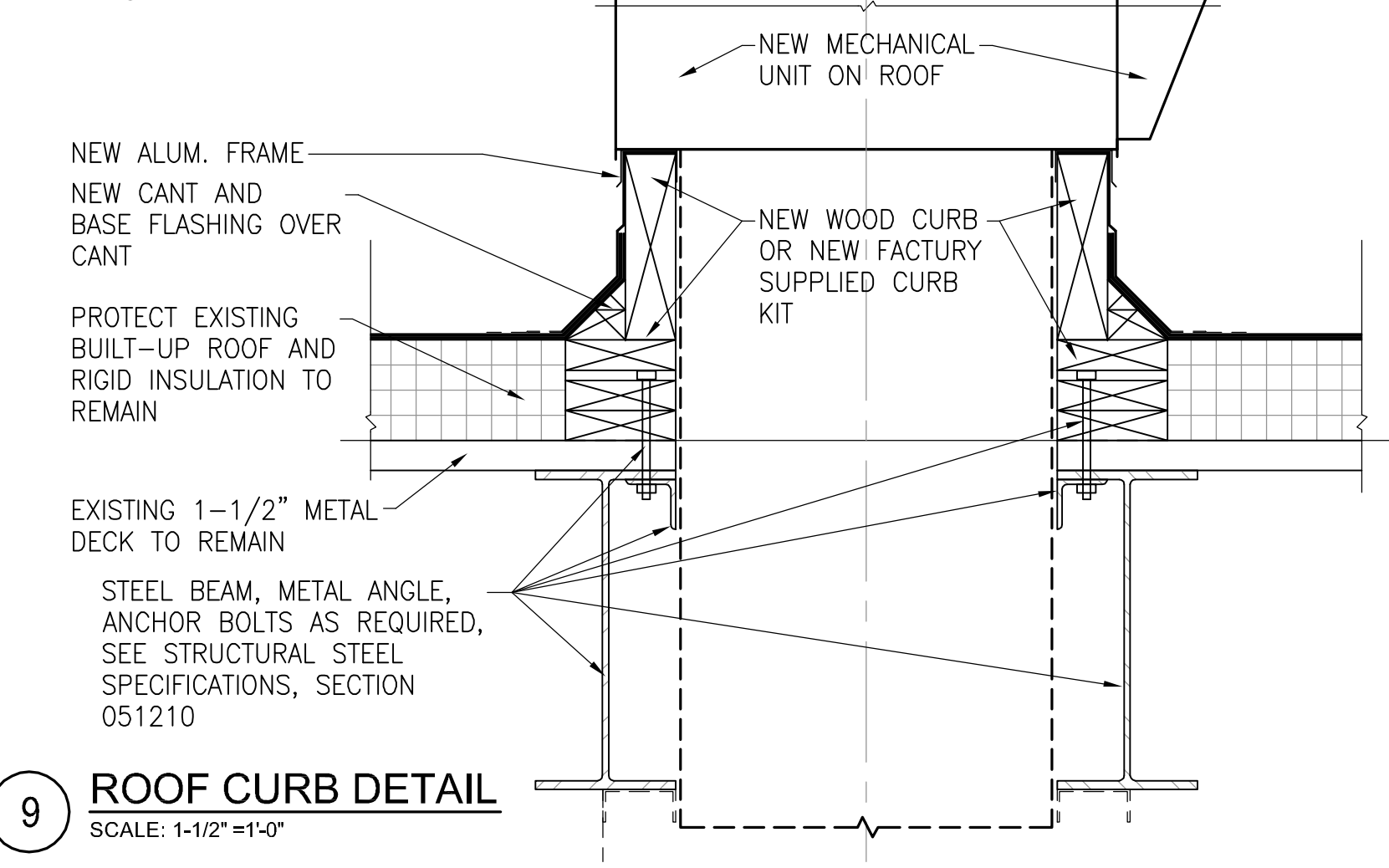
6 SECTION DETAIL
SCALE: 1-1/2"=1'-0"



7 SECTION DETAIL
SCALE: 1-1/2"=1'-0"

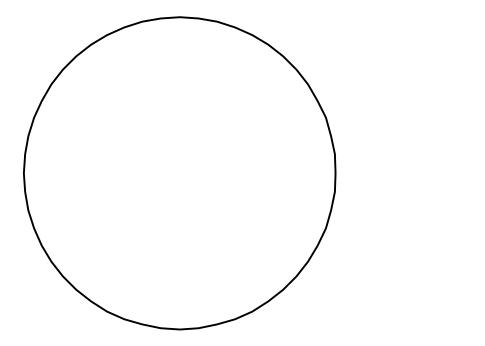


8 SECTION DETAIL
SCALE: 1-1/2"=1'-0"



9 ROOF CURB DETAIL
SCALE: 1-1/2"=1'-0"

REFER TO DRAWING A601 FOR LOCATION OF SECTIONS 1-5 ON THIS DRAWING



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SEPTEMBER 2021

No.	Revision Description	Date

Scale: As Noted
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SECTION DETAILS

A502

ORIGINAL
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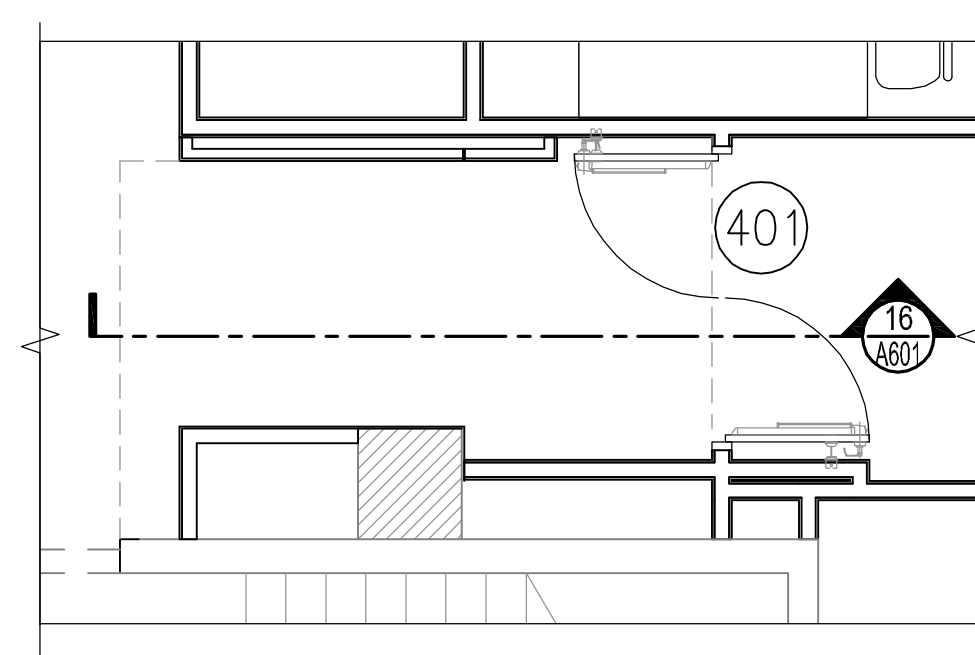
DOOR AND FRAME SCHEDULE

DOOR NO.	DOOR				FRAME				FIRE RATING LABEL	NOTES
	TYPE	WD	HGT	THK	MATL	HEAD	JAMB	SADDLE		
101	E	3'-0"	7'-0"	1 3/4"	AL/GL	ALUM.	4	9		W/FIRE RATED GYP BD ABOVE
102	A	3'-0"	7'-0"	1 3/4"	SCWD	HM	3	8	14	
103	A	3'-0"	7'-0"	1 3/4"	SCWD	HM	3	8	14	
201	A	3'-0"	7'-0"	1 3/4"	HM	HM	3	8		
301	D	6'-0"	8'-0"	1 3/4"	HM	HM	5	11	60 MIN	ELECTRIC HOLD OPEN
302	D	6'-0"	8'-0"	1 3/4"	HM	HM	5	11	60 MIN	ELECTRIC HOLD OPEN
303	A	3'-0"	7'-0"	1 3/4"	HM	HM	3	8		
304	A	3'-0"	7'-0"	1 3/4"	HM	HM	3	8		
305	A	3'-0"	7'-0"	1 3/4"	HM	HM	3	8		
306	A	3'-0"	7'-0"	1 3/4"	HM	HM	3	8		
401	G	6'-0"	8'-0"	1 3/4"	HM	HM	5	11	60 MIN	ELECTRIC HOLD OPEN
402	--	6'-0"	8'-0"	1 3/4"	--	--	--	--	--	NOT USED
403	A	3'-0"	7'-0"	1 3/4"	SCWD	HM	7	12		
404	A	3'-0"	7'-0"	1 3/4"	SCWD	HM	7	12		
405	A	3'-0"	7'-0"	1 3/4"	SCWD	HM	3	8		
406	C	3'-0"	7'-0"	1 3/4"	HM	HM	5	11	20 MIN	
407	F	3'-0"	7'-0"	1 3/4"	HM	HM	5	11	20 MIN	
408	A	3'-0"	7'-0"	1 3/4"	HM	HM	5	11	20 MIN	
409	A	3'-0"	7'-0"	1 3/4"	SCWD	HM	3	8		
501	E	3'-0"	7'-0"	1 3/4"	AL/GL	ALUM.	6	10		
502	E	3'-0"	7'-0"	1 3/4"	AL/GL	ALUM.	6	10		
503	E	3'-0"	7'-0"	1 3/4"	AL/GL	ALUM.	6	10		
504	--	3'-0"	7'-0"	1 3/4"	--	--	--	--	--	EXISTING TO REMAIN TRIMLESS
601	A	3'-0"	7'-0"	1 3/4"	SCWD	HM	5	11		
602	E	3'-0"	7'-0"	1 3/4"	AL/GL	ALUM.	6	10		
603	E	3'-0"	7'-0"	1 3/4"	AL/GL	ALUM.	6	10		WITH SIDELITE
604	E	3'-0"	7'-0"	1 3/4"	AL/GL	ALUM.	6	10		WITH SIDELITE
605	A	3'-0"	7'-0"	1 3/4"	HM	HM	3	8		

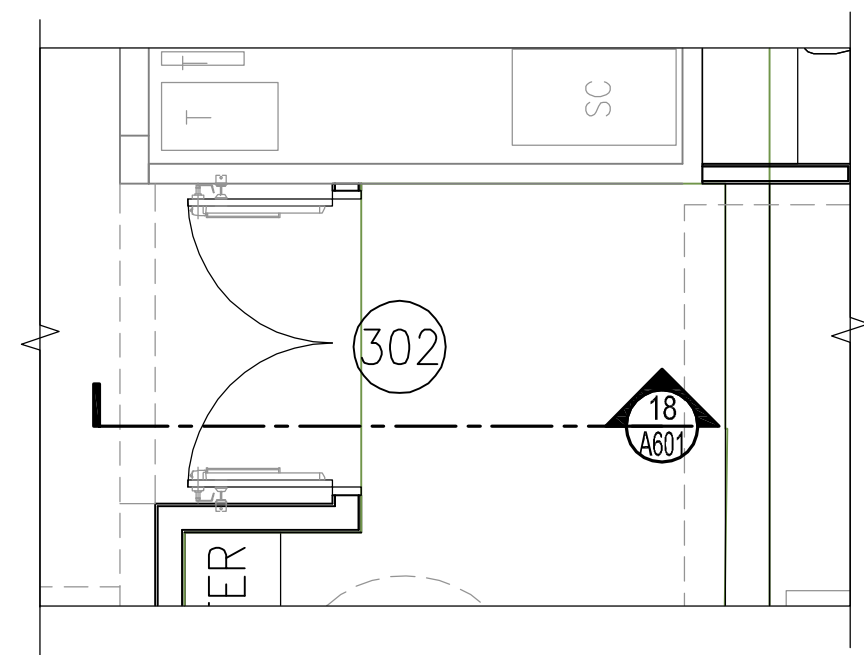
TEMPORARY DOOR #1 (SEE DRAWING 2/AP101) TO BE DOOR TYPE G; 3'-0"W X 7'-0"H X 1-3/4" THK; HM DOOR HM FRAME; HEAD DTL 3/A601; JAMB DTL 8/A601

1 DOOR SCHEDULE
SCALE: N.T.S.

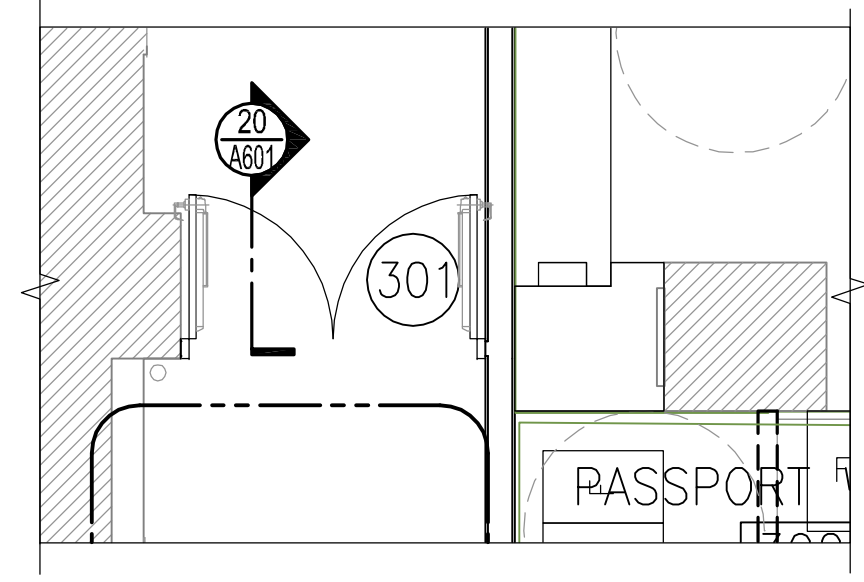
LEGEND:
M = MARBLE
PTD = PAINTED
AL = ALUMINUM
AL/GL = ALUMINUM, GLASS
HM = HOLLOW METAL
INSUL = INSULATED
SCWD = SOLID CORE WOOD
STF = STAIN FINISH
TEMP = TEMPERED



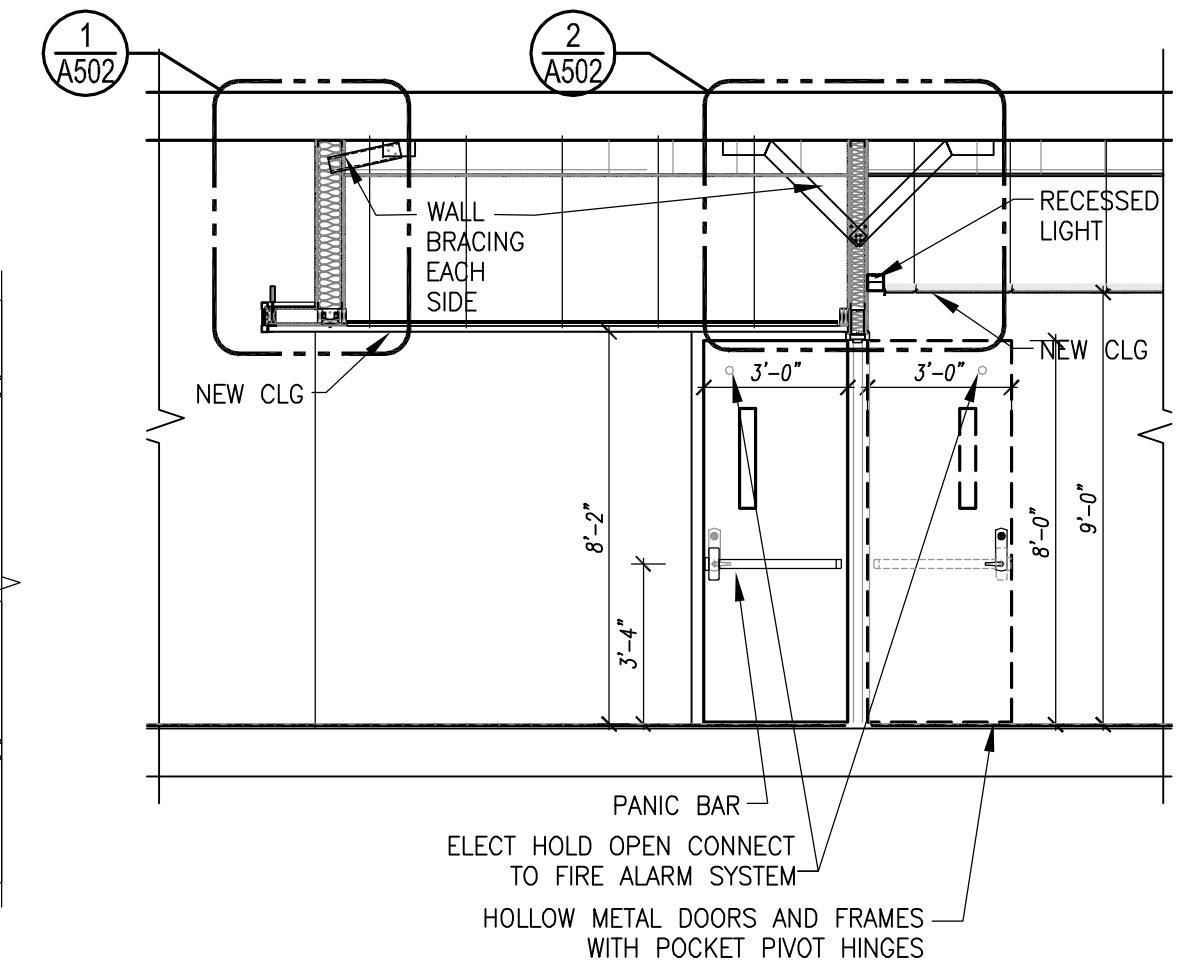
15 ENLARGED PLANS
SCALE: 1/4"=1'-0"



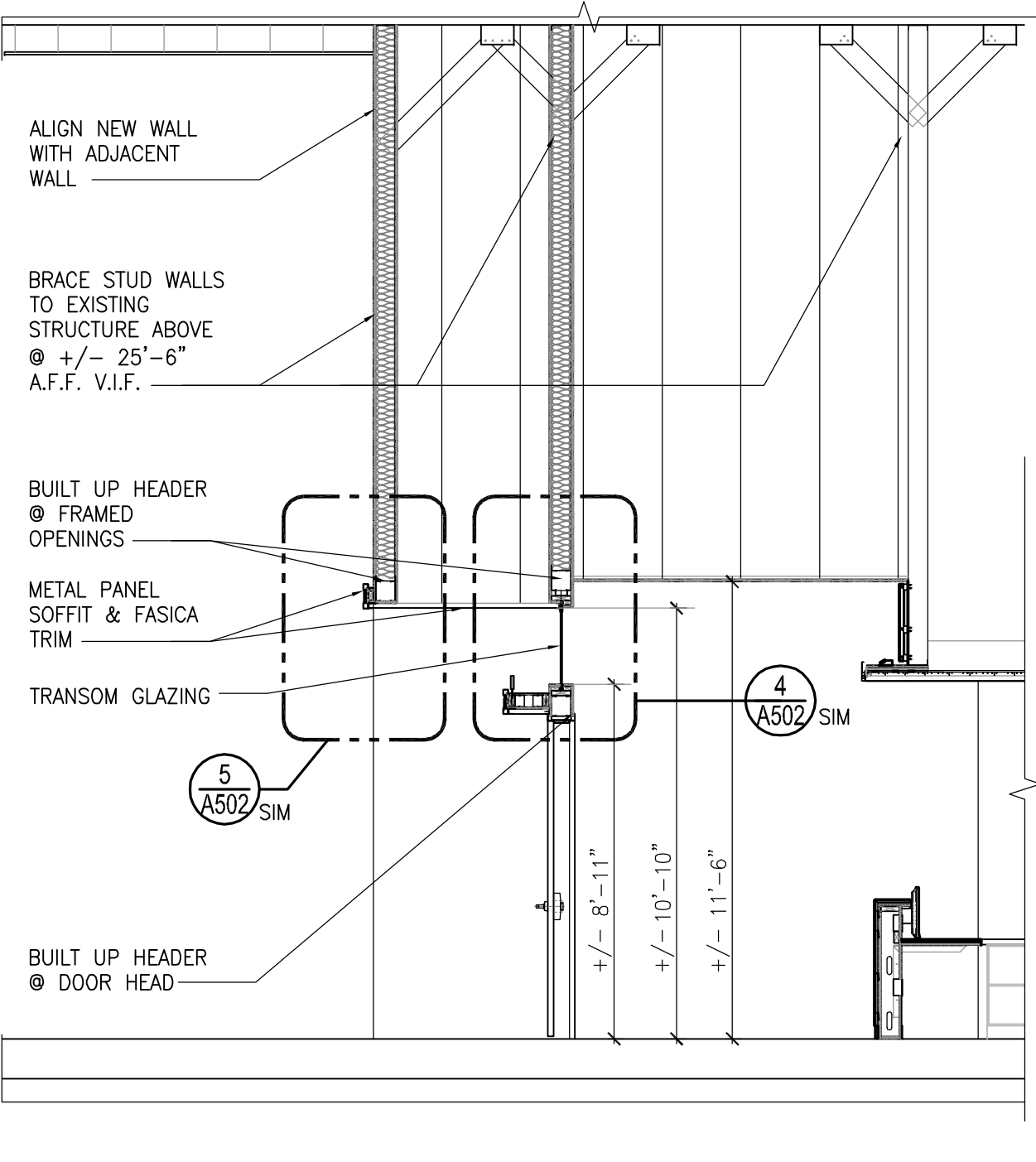
17 ENLARGED PLANS
SCALE: 1/4"=1'-0"



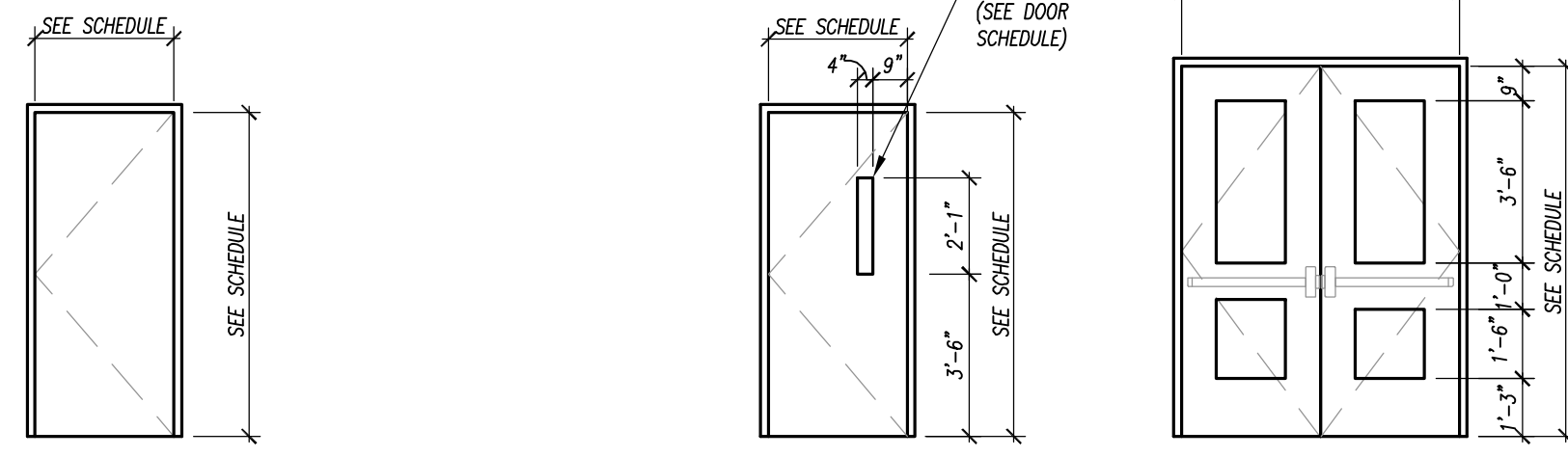
19 ENLARGED PLANS
SCALE: 1/4"=1'-0"



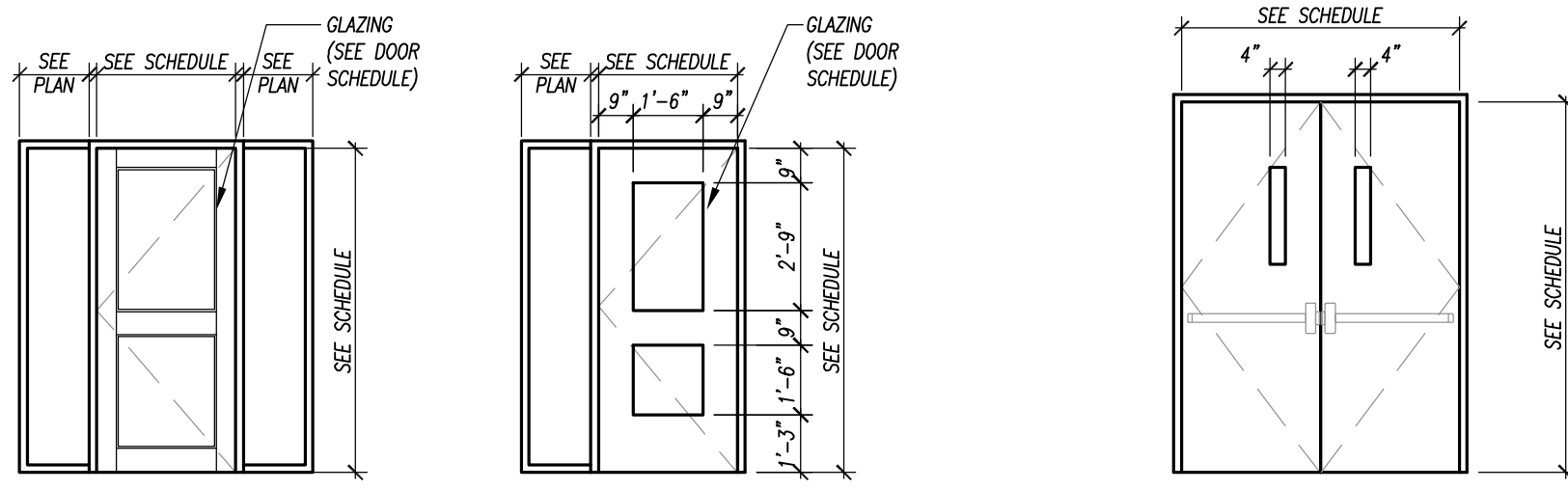
16 SECTION
SCALE: 1/4"=1'-0"



18 SECTION THROUGH PASSPORT ENTRY DOOR
SCALE: 1/4"=1'-0"

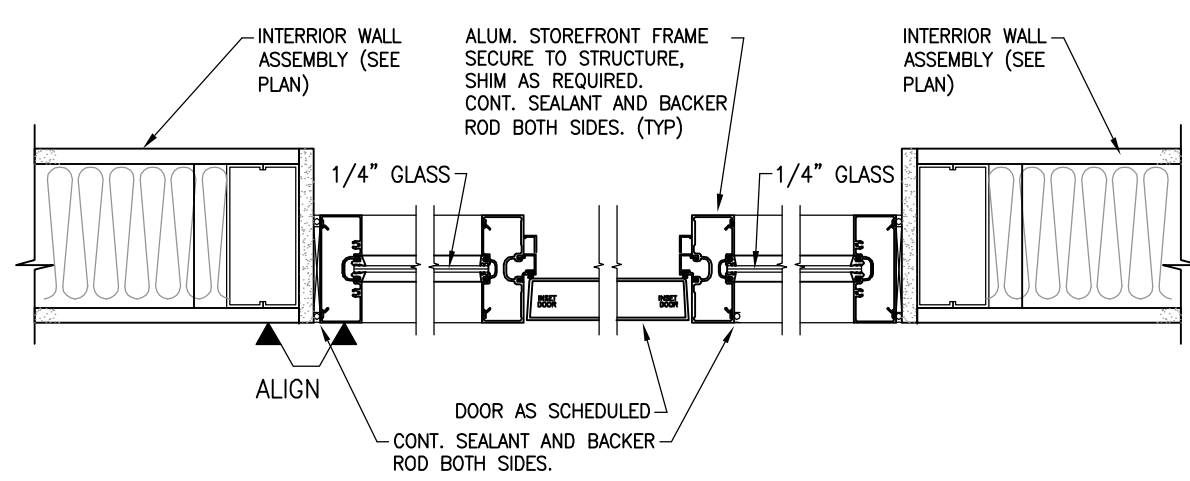


TYPE "A" TYPE "B" (NOT USED) TYPE "C" TYPE "D"

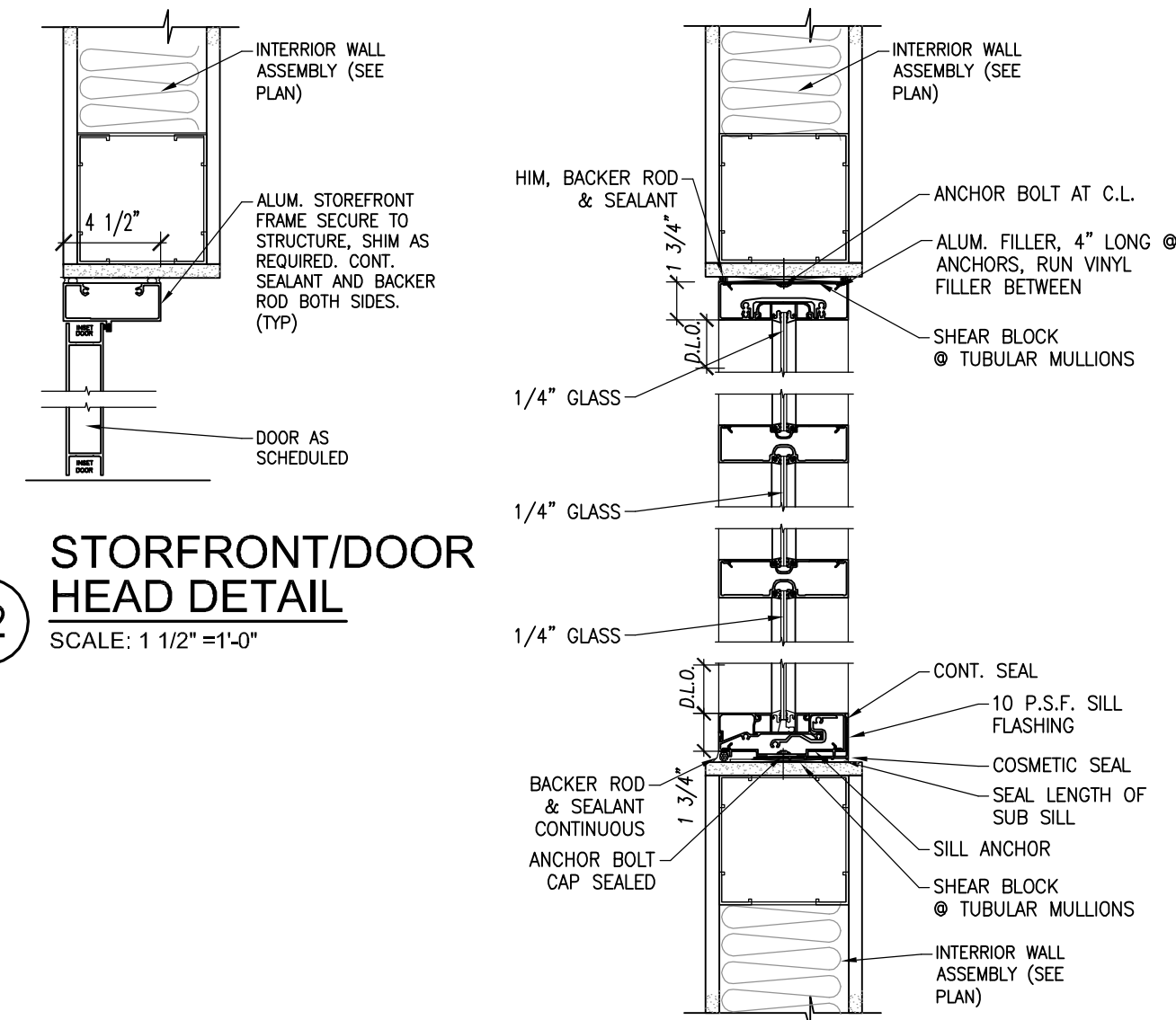


TYPE "E" TYPE "F" TYPE "G"

2 DOOR TYPES
SCALE: 1/4"=1'-0"

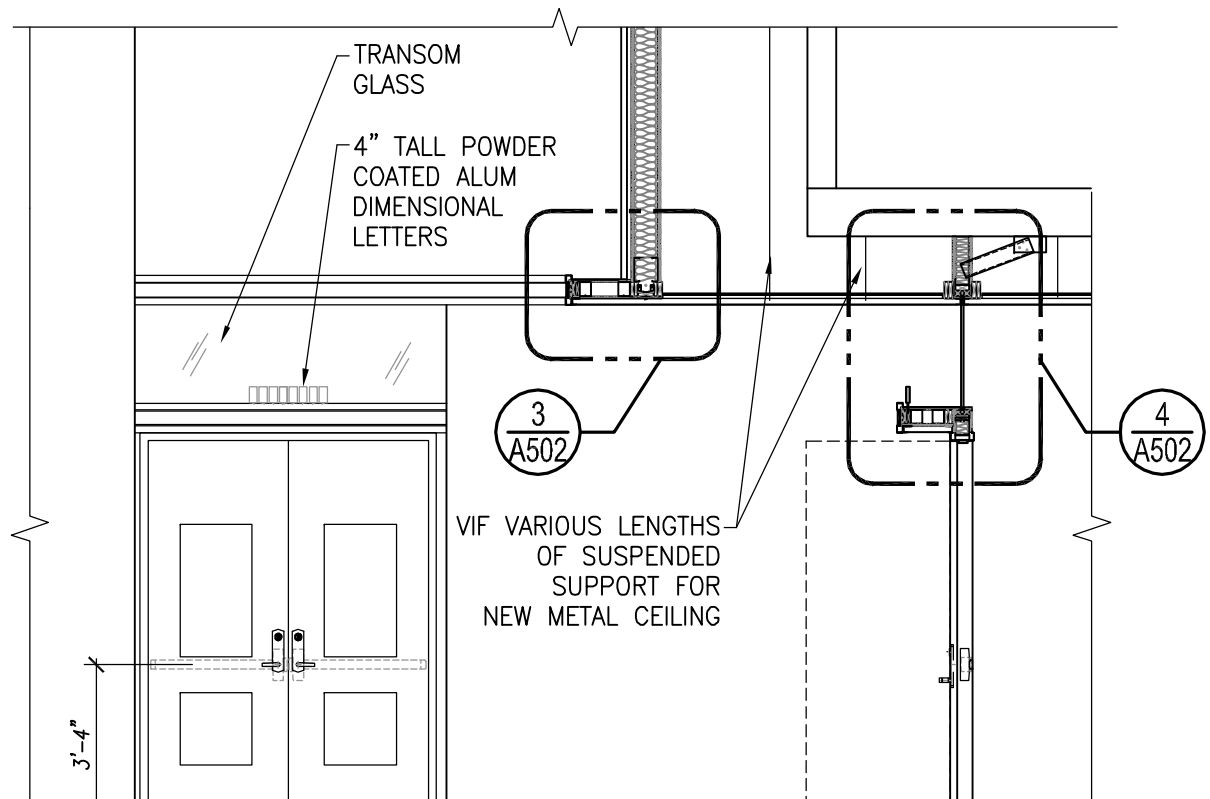


21 STOREFRONT/DOOR JAMB DETAIL
SCALE: 1 1/2"=1'-0"

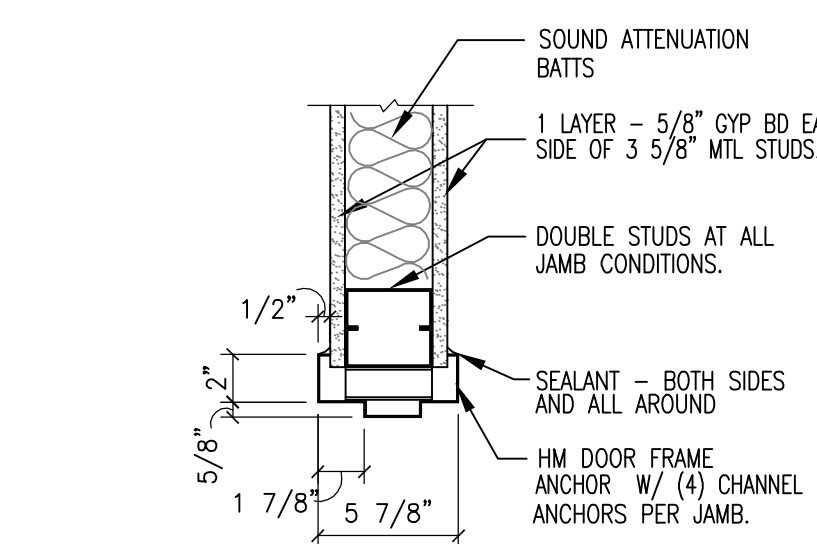


22 STOREFRONT/DOOR HEAD DETAIL
SCALE: 1 1/2"=1'-0"

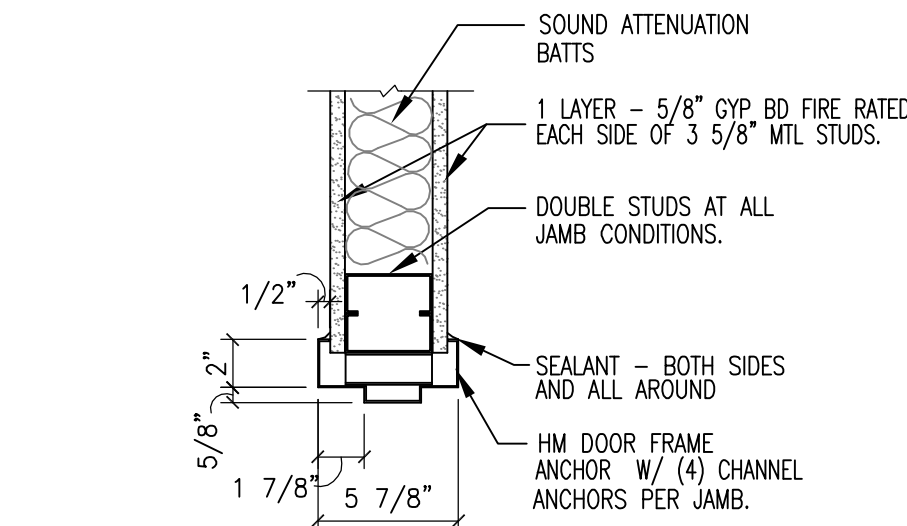
23 STOREFRONT DETAIL
SCALE: 1 1/2"=1'-0"



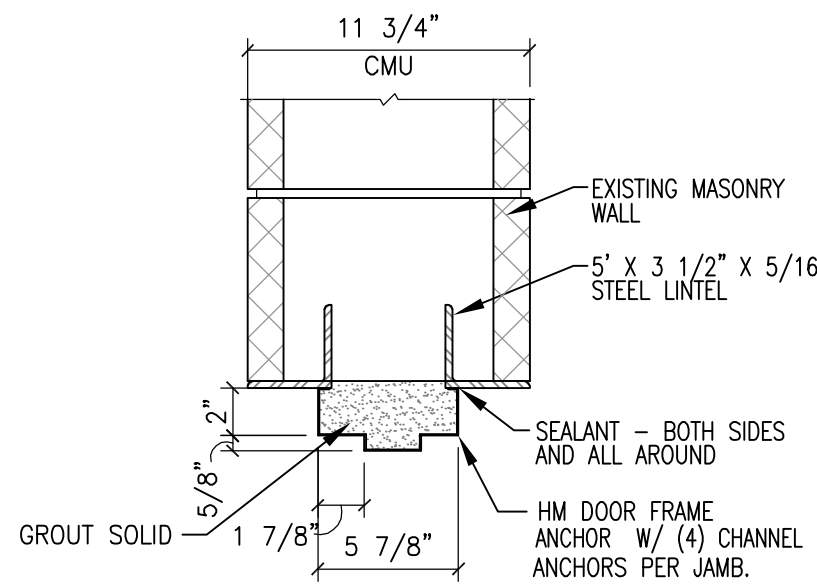
20 SECTION
SCALE: 1/4"=1'-0"



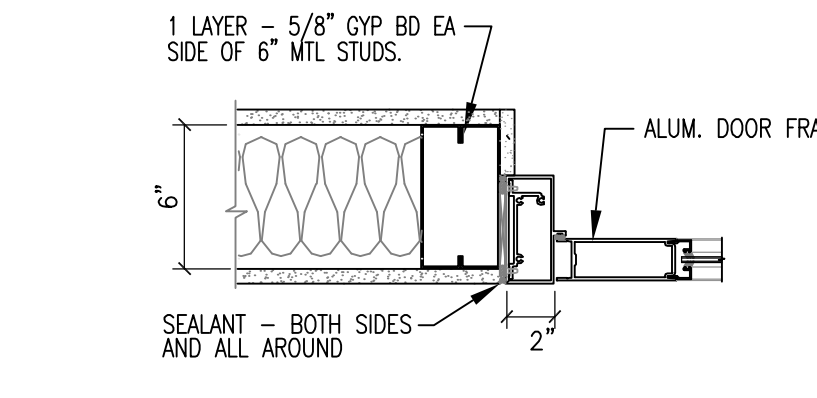
3 HEAD DETAIL
SCALE: 1 1/2"=1'-0"



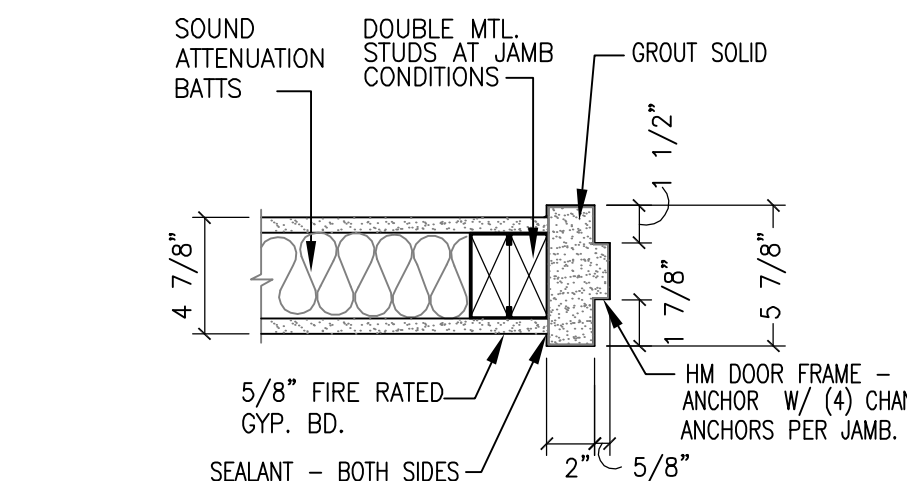
5 HEAD DETAIL
SCALE: 1 1/2"=1'-0"



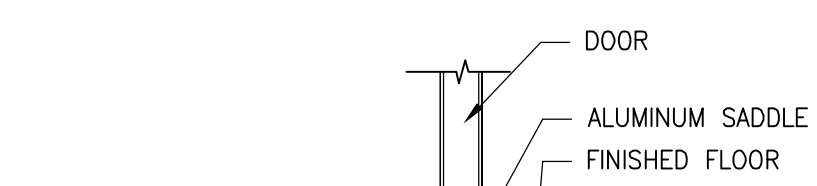
7 HEAD DETAIL
SCALE: 1 1/2"=1'-0"



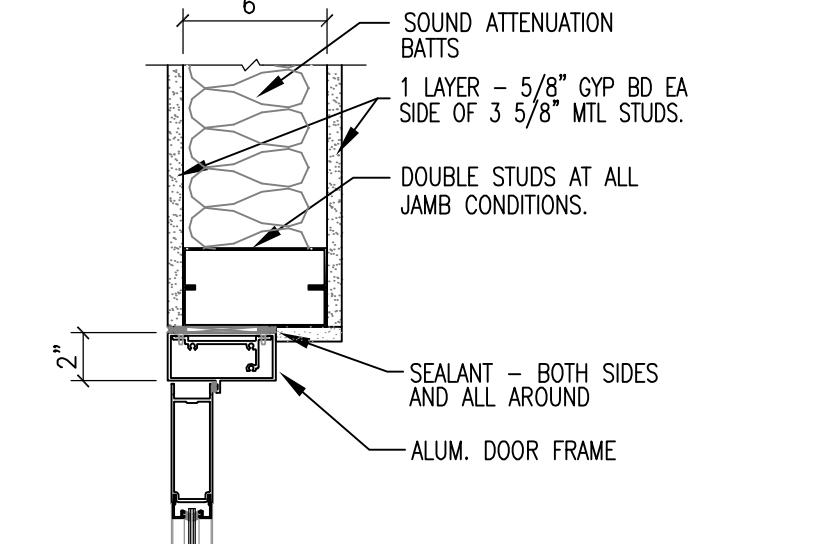
9 JAMB DETAIL
SCALE: 1 1/2"=1'-0"



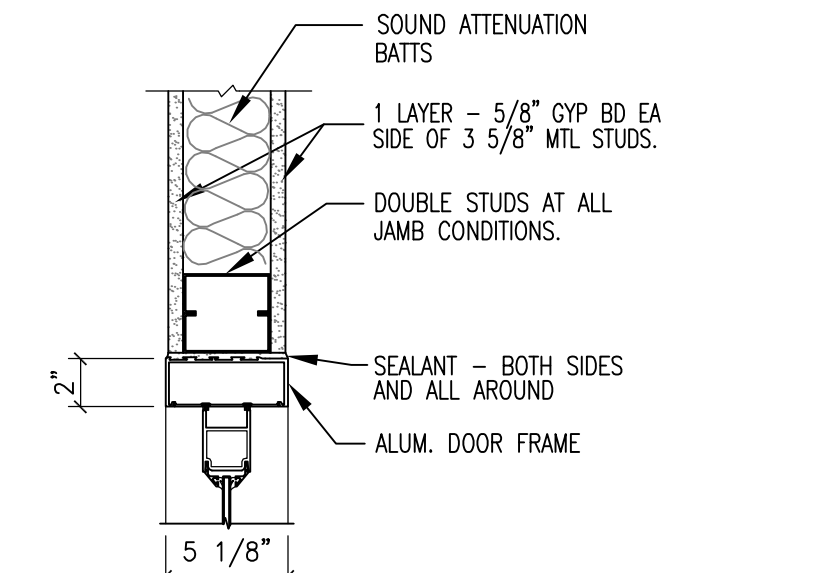
11 JAMB DETAIL
SCALE: 1 1/2"=1'-0"



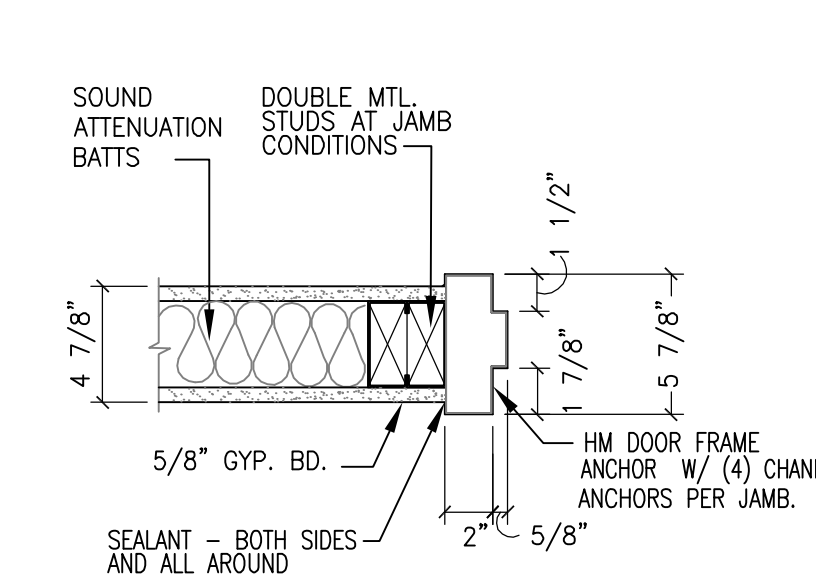
13 SADDLE DETAIL
SCALE: 1 1/2"=1'-0"



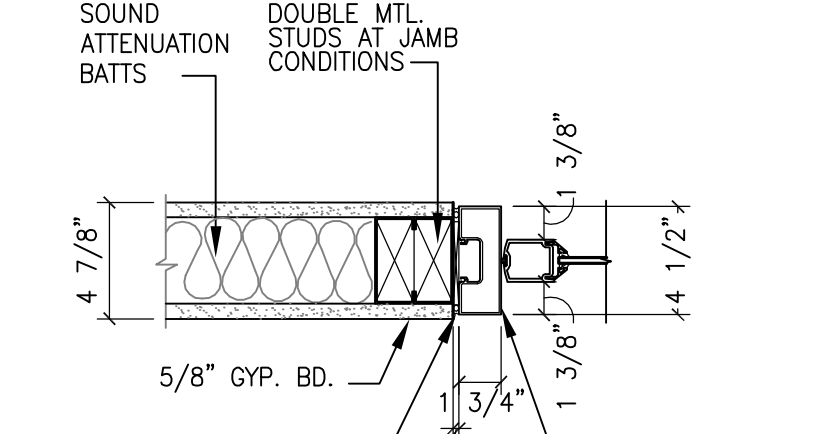
4 HEAD DETAIL
SCALE: 1 1/2"=1'-0"



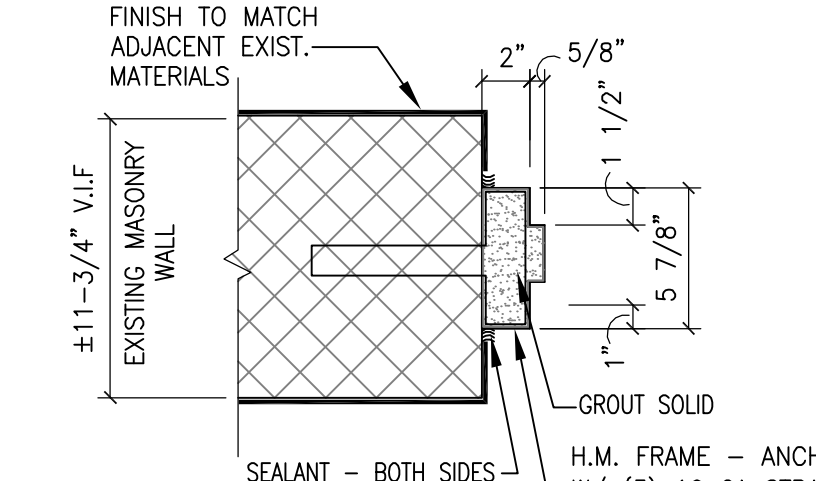
6 HEAD DETAIL
SCALE: 1 1/2"=1'-0"



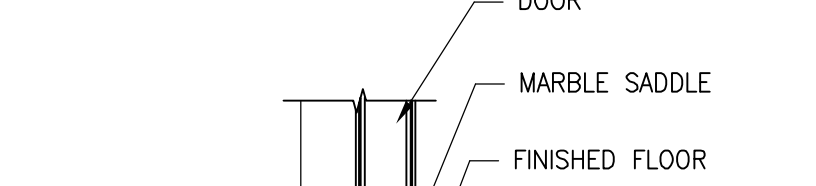
8 JAMB DETAIL
SCALE: 1 1/2"=1'-0"



10 JAMB DETAIL
SCALE: 1 1/2"=1'-0"



12 JAMB DETAIL
SCALE: 1 1/2"=1'-0"



14 SADDLE DETAIL
SCALE: 1 1/2"=1'-0"

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SEPTEMBER 2021

No. Revision Description Date

Scale: As Noted
 Drawn by:
 Checked by:

113316.01

DOOR SCHEDULE & DETAILS

A601

ORIGINAL
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ROOM NO	ROOM NAME	FLOOR	BASE	WALL	CEILING	REMARKS
101	MEN'S	TILE	TILE	TILE	ACT-2	
102	WOMEN'S	TILE	TILE	TILE	ACT-2	
201	CLOSET	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-2	
202	MAP VIEWING	CARPET TILE	RUBBER	PTD G.B. / GLASS	ACT-5	
203	OFFICE	CARPET TILE	RUBBER	PTD G.B. / GLASS	ACT-3	
204	MECH	NIC	NIC	NIC	ACT-2 SOFFIT @ ENTRY	
301	PASSPORT LOBBY	STONE	STONE	PTD. GYP. BD. / WALLCOVERING	ACT-2	
302	PASSPORT WAITING	STONE	STONE	PTD. GYP. BD. / WALLCOVERING	ACT-5	DIGITAL PRINT WALLCOVERING
303	STOR	VCT	RUBBER	PTD. GYP. BD.	ACT-1	
304	COPIER	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-1	
305	PHOTO	STONE	STONE	PAINTED GYP BOARD	ACT-1	
306	PASSPORT ST	VCT	RUBBER	PTD. GYP. BD.	ACT-1	
307	PASSPORT	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-4, ACT-5	
308	COMP ROOM	NIC	NIC	NIC	NIC	
309	CORR.	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-5	
401	CORR.	EXTG. & NEW STONE	EXTG. & NEW STONE	WALLCOVERING	ACT-6	
402	ELEVATOR LOBBY	STONE	STONE	PAINTED GYP BOARD	ACT-6, ACT-4 SOFFITS	
403	FILE RM	VCT	VINYL	PAINTED GYP BOARD	ACT-1	
404	OFFICE	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-3	
405	OFFICE	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-1	
406	ELECTIONS	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-3	
407	ELECTIONS LOBBY	STONE	STONE	PAINTED GYP BOARD / WALLCOVERING	ACT-3	DIGITAL PRINTED WALL COVERING
408	STORAGE	VCT	RUBBER	PAINTED GYP BOARD	ACT-5	
409	EXT'G STAIR			PAINTED	PAINTED EXTG.	TOUCH UP PAINT AS REQUIRED AT INTERFACE BETWEEN NEW WORK AND EXISTING CONDI
501	CLERK LOBBY	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-3	ACT-2 SOFFITS
502	PRIVATE OFFICE	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-1	
503	PRIVATE OFFICE	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-1	
504	OFFICE	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-4, ACT-5	ACT-2 SOFFITS
505	OFFICE	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-4, ACT-5	
506	CLERK OFFICE	CARPET TILE	RUBBER	NIC	ACT-1	
507	TOILET	NIC	NIC	NIC	NIC	
601	LUNCH ROOM	VCT	RUBBER	PAINTED GYP BOARD	ACT-1	
602	CONFERENCE ROOM	CARPET TILE	RUBBER	PAINTED GYP BOARD	ACT-3, ACT-2	
603	CLOSET	VCT	RUBBER	PAINTED GYP BOARD	ACT-1	
604	STORAGE	VCT	RUBBER	PTD. GYP. BD.	ACT-1	
605	RECORDS ENTRY	STONE	STONE	PTD. GYP BD / MTL. PANEL / WALLCOVERING	ACT-4	PATCH CEILING IN RECORDS ROOM AT INTERFACE WITH NEW WALL

1 FINISH SCHEDULE
SCALE: N.T.S.

WALL COVERING LEGEND:

CUSTOM DIGITAL PRINT VINYL WALLCOVERING
BASIS OF DESIGN: WOLF GORDON.COM

- WC-1 HISTORIC IMAGERY TO BE PROVIDED FOR DIGITAL PRINTED VINYL WALLCOVERING #1
DIMENSION: 9'-0"H x 8'-4" W
- WC-2 HISTORIC IMAGERY TO BE PROVIDED FOR DIGITAL VINYL WALLCOVERING #2
DIMENSION: 12'x12'
- WC-3 BASIS OF DESIGN TO BE RAMPART WALL FORGE BY WOLF GORDON, INC. REFER TO 3/A602 FOR DIMENSIONS.
- WC-4 BASIS OF DESIGN TO BE RAMPART WALL FORGE BY WOLF GORDON, INC. DIMENSION: 18'-0"H x 30'-10"W
- WC-5 HISTORIC IMAGERY TO BE PROVIDED FOR DIGITAL VINYL WALLCOVERING #5
DIMENSION 2'-0"H x 4'-6"W
- WC-6 HISTORIC IMAGERY TO BE PROVIDED FOR DIGITAL VINYL WALLCOVERING #6
DIMENSION 7'-0"H x 14'-6"W

GRANITE TYPE LEGEND:

- GR-1 STONE VARIETY: IRIDIAN
FINISH: GR-1 RUB & SAND
GR-1A DIAMOND 8
- GR-2 STONE VARIETY: RADIANT RED
FINISH: POLISHED
- GR-3 STONE VARIETY: MESABI BLACK
FINISH: POLISHED
- GR-4 STONE VARIETY: SIERRA WHITE
FINISH: DIAMOND 5

ART & PHOTOGRAPH DISPLAY SYSTEM LEGEND

PROVIDE ART HANGING AND DISPLAY SYSTEMS.
BASIS OF DESIGN ACRYLIC POCKET DISPLAY BY ASHANGING.COM. PROVIDE MATERIALS AND COMPONENTS REQUIRED TO CONSTRUCT A COMPLETE SYSTEM BY AS HANGING DISPLAY SYSTEMS. MOUNTING TECHNIQUE: CABLE SYSTEM WITH WALL TRACK.
ARTICULATED PIERS
POCKET: PROVIDE ENOUGH MATERIAL TO ACCOMMODATE 11"x17" PHOTO POCKETS IN PORTRAIT ORIENTATION.
PROVIDE PRO SLIDE CLAMP FITTINGS SINGLE SIDED.
PHOTO BANK #1: 15 PHOTO POCKETS
PHOTO BANK #2: 15 PHOTO POCKETS
PHOTO BANK #3: 4 PHOTO POCKETS

WC-3 NEW WALLCOVERING IN CORRIDOR 401, PASSAGES & RECORDS 605. BASIS OF DESIGN RAMPART WALL FORGE BY WOLF GORDON, INC.

CONTINUE WALLCOVERING OVER PASSAGE OPENING AND INTO PASSAGE

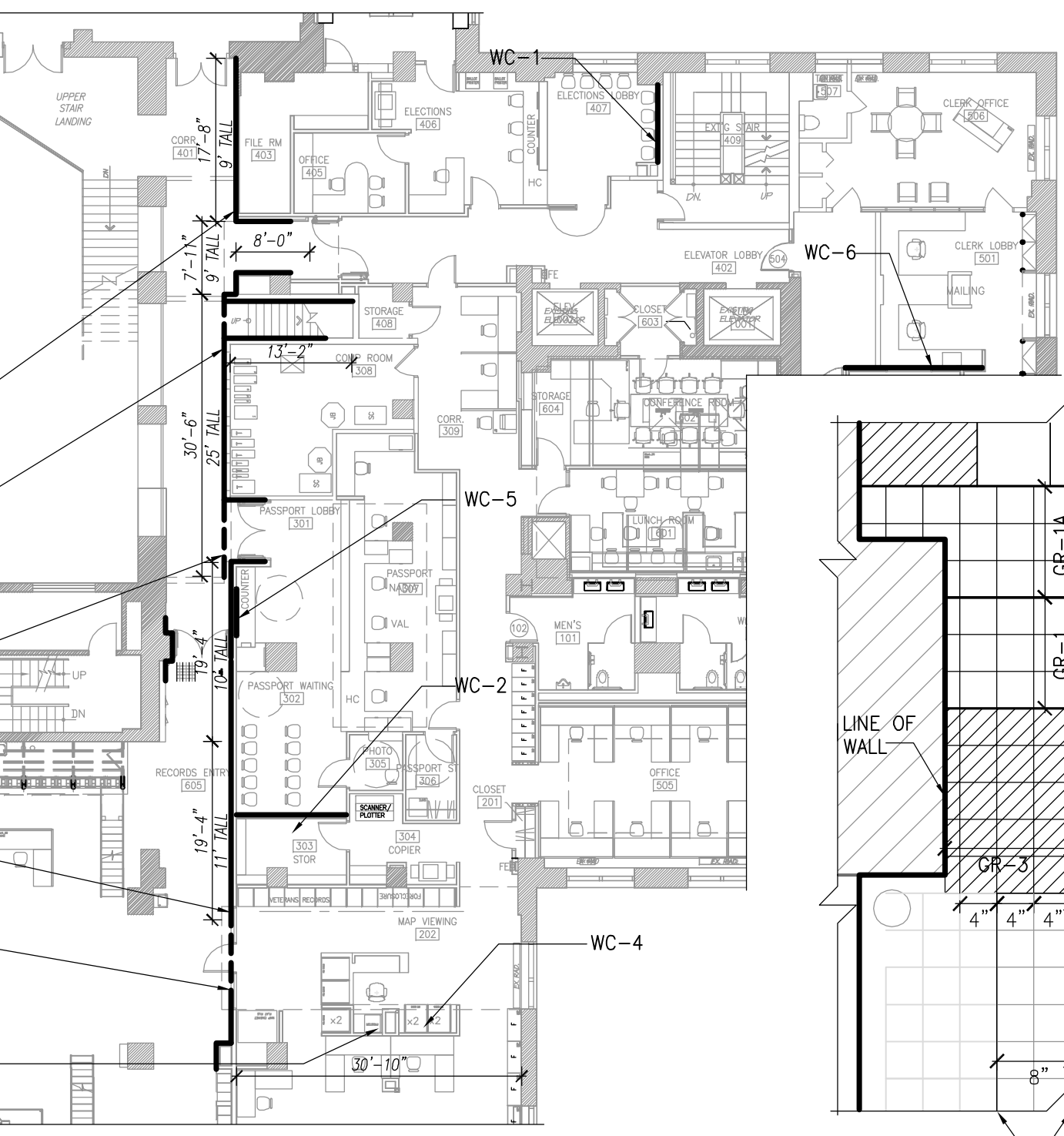
RETURN @ DOOR 302 CONTINUE WALLCOVERING OVER PASSAGE

EXTENT OF NEW WALLCOVERING IN RECORDS ENTRY 605. BASIS OF DESIGN RAMPART WALL FORGE BY WOLF GORDON, INC.

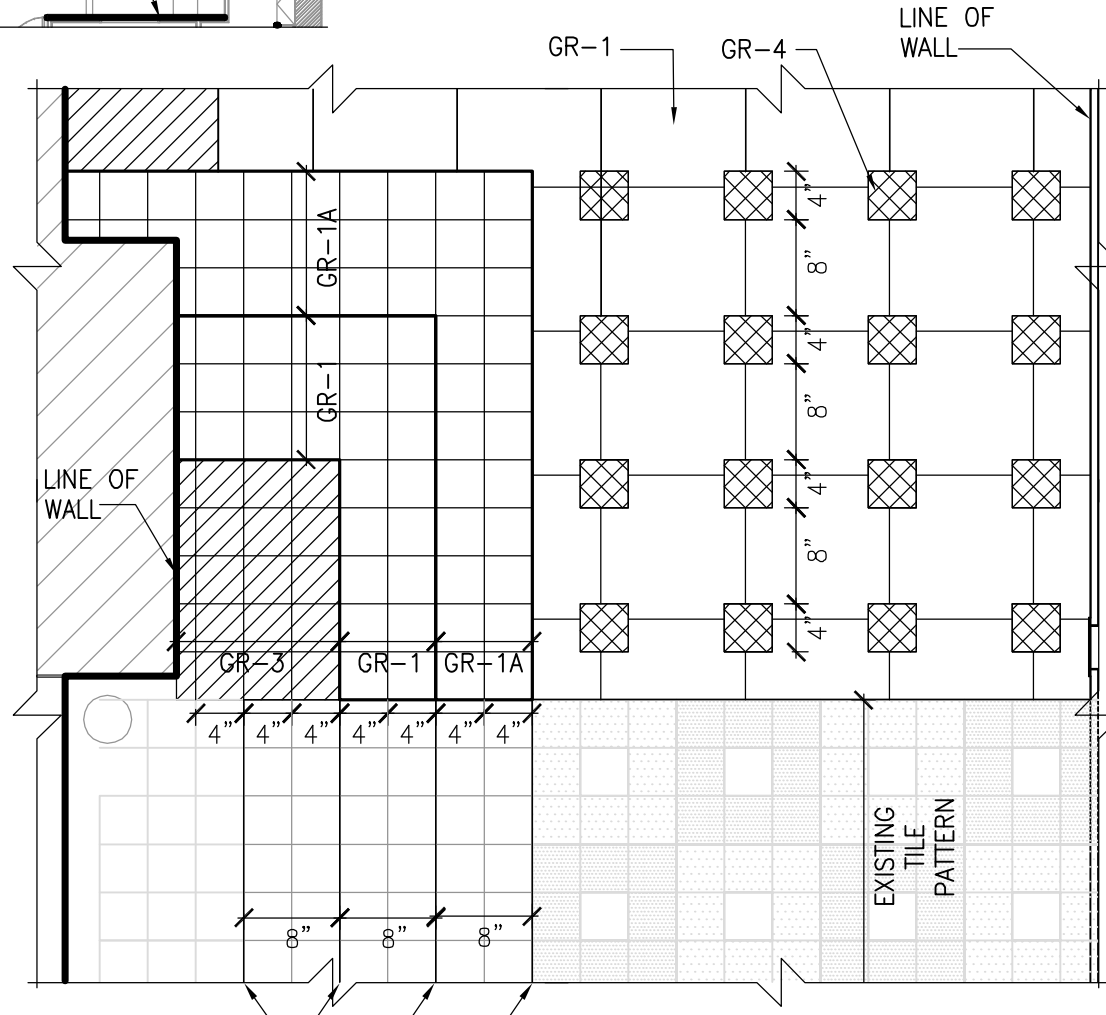
WALLCOVERING TO CONTINUE OVER PASSAGE AND UNDER STOREFRONT

WALLCOVERING AT HIGH FASCIA AT OFFICE 203. BASIS OF DESIGN RAMPART WALL FORGE BY WOLF GORDON, INC.

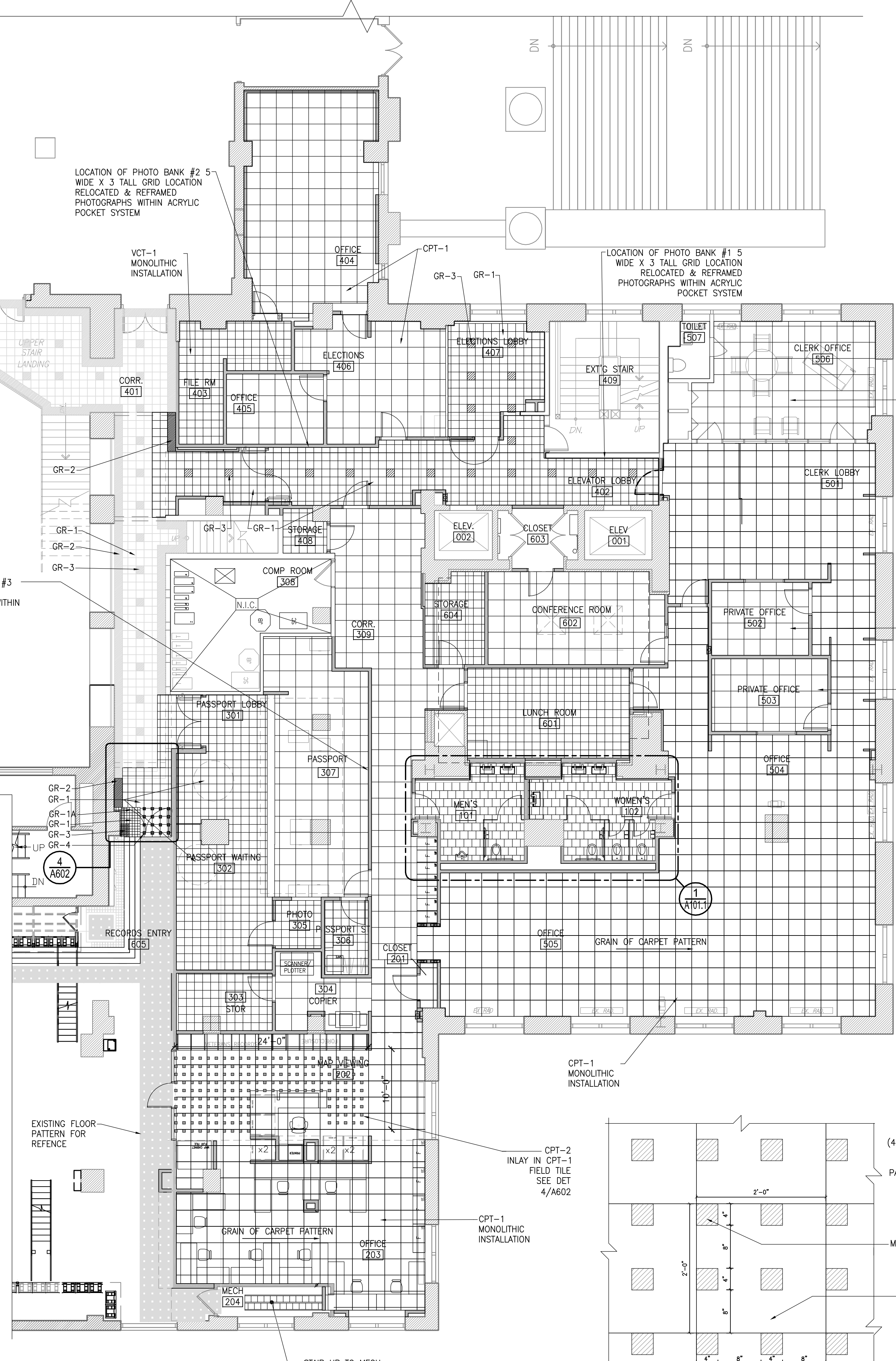
NOTE:
CONTRACTOR TO REMOVE EXISTING WALLCOVERING FROM CORRIDOR WALL. CONTRACTOR TO PATCH, REPAIR & PREPARE WALL SUBSTRATE AS REQUIRED TO BE IN ACCORDANCE WITH NEW WALL COVERING MANUFACTURER'S REQUIREMENTS



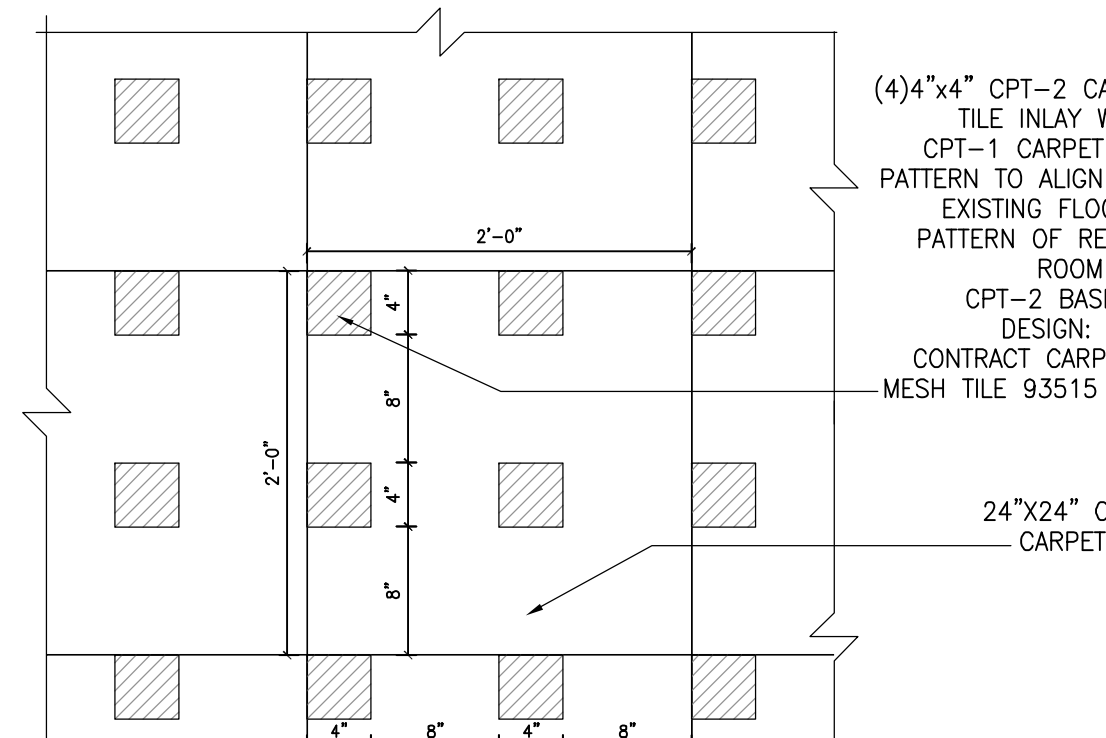
3 WALLCOVERING KEY PLAN
SCALE: 1/16"=1'-0"



4 STONE INLAY DETAIL
SCALE: 3/4"=1'-0"



2 FLOORING PATTERN PLAN
SCALE: 1/8"=1'-0"



4 CARPET TILE INLAY DETAIL
SCALE: 1"=1'-0"

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113316.01

FINISH PLAN, SCHEDULE & DETAILS

A602

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PLUMBING DEMOLITION NOTES:

THE CONTRACTOR SHALL SURVEY THE AREAS IN THE SCOPE OF WORK WITH DRAWINGS AND SPECS TO DETERMINE THE EXTENT OF DEMOLITION REQUIRED, AND TO CONFIRM EXISTING CONDITIONS PRIOR TO ALTERATION.

IF ANY HAZARDOUS MATERIALS ARE ENCOUNTERED, NOTIFY THE OWNER AND ARCHITECT BEFORE STARTING DEMOLITION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL OF DUST, NOISE, DEBRIS, ETC. AND SHALL SUBMIT A PROPOSED SCHEDULE OF DEMOLITION OF ACTIVITIES FOR APPROVAL BY OWNER.

THE CONTRACTOR SHALL REPORT TO THE ARCHITECT ANY UNFORESEEN CONDITIONS ENCOUNTERED DURING DEMOLITION.

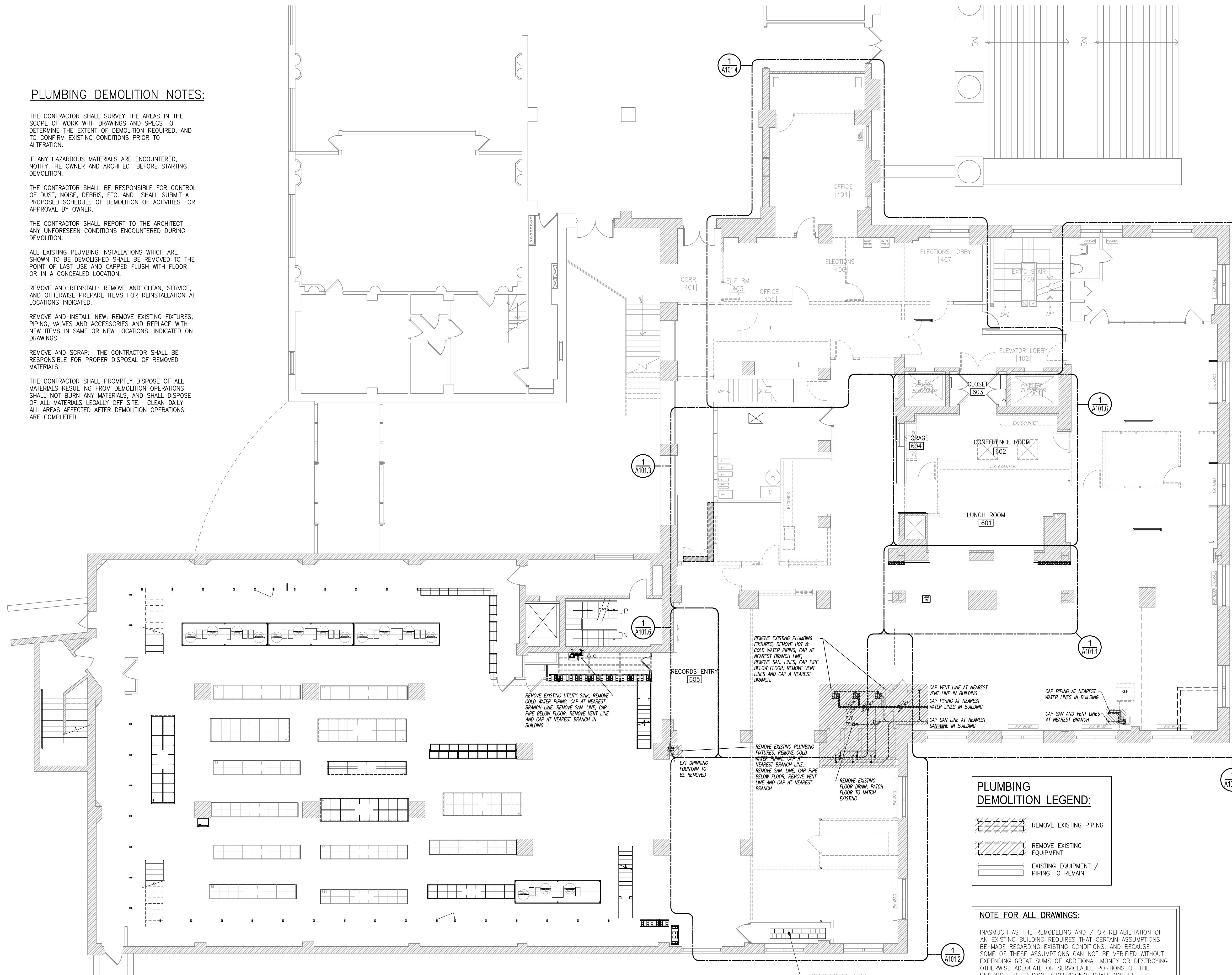
ALL EXISTING PLUMBING INSTALLATIONS WHICH ARE SHOWN TO BE DEMOLISHED SHALL BE REMOVED TO THE POINT OF LAST USE AND CAPPED FLUSH WITH FLOOR OR IN A CONCEALED LOCATION.

REMOVE AND REINSTALL: REMOVE AND CLEAN, SERVICE, AND OTHERWISE PREPARE ITEMS FOR REINSTALLATION AT LOCATIONS INDICATED.

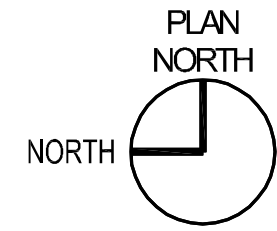
REMOVE AND INSTALL NEW: REMOVE EXISTING FIXTURES, PIPING, VALVES AND ACCESSORIES AND REPLACE WITH NEW ITEMS IN SAME OR NEW LOCATIONS, INDICATED ON DRAWINGS.

REMOVE AND SCRAP: THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF REMOVED MATERIALS.

THE CONTRACTOR SHALL PROMPTLY DISPOSE OF ALL MATERIALS RESULTING FROM DEMOLITION OPERATIONS, SHALL NOT BURN ANY MATERIALS, AND SHALL DISPOSE OF ALL MATERIALS LEGALLY OFF SITE. CLEAN DAILY ALL AREAS AFFECTED AFTER DEMOLITION OPERATIONS ARE COMPLETED.



1
1
PD101
DEMOLITION
FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"



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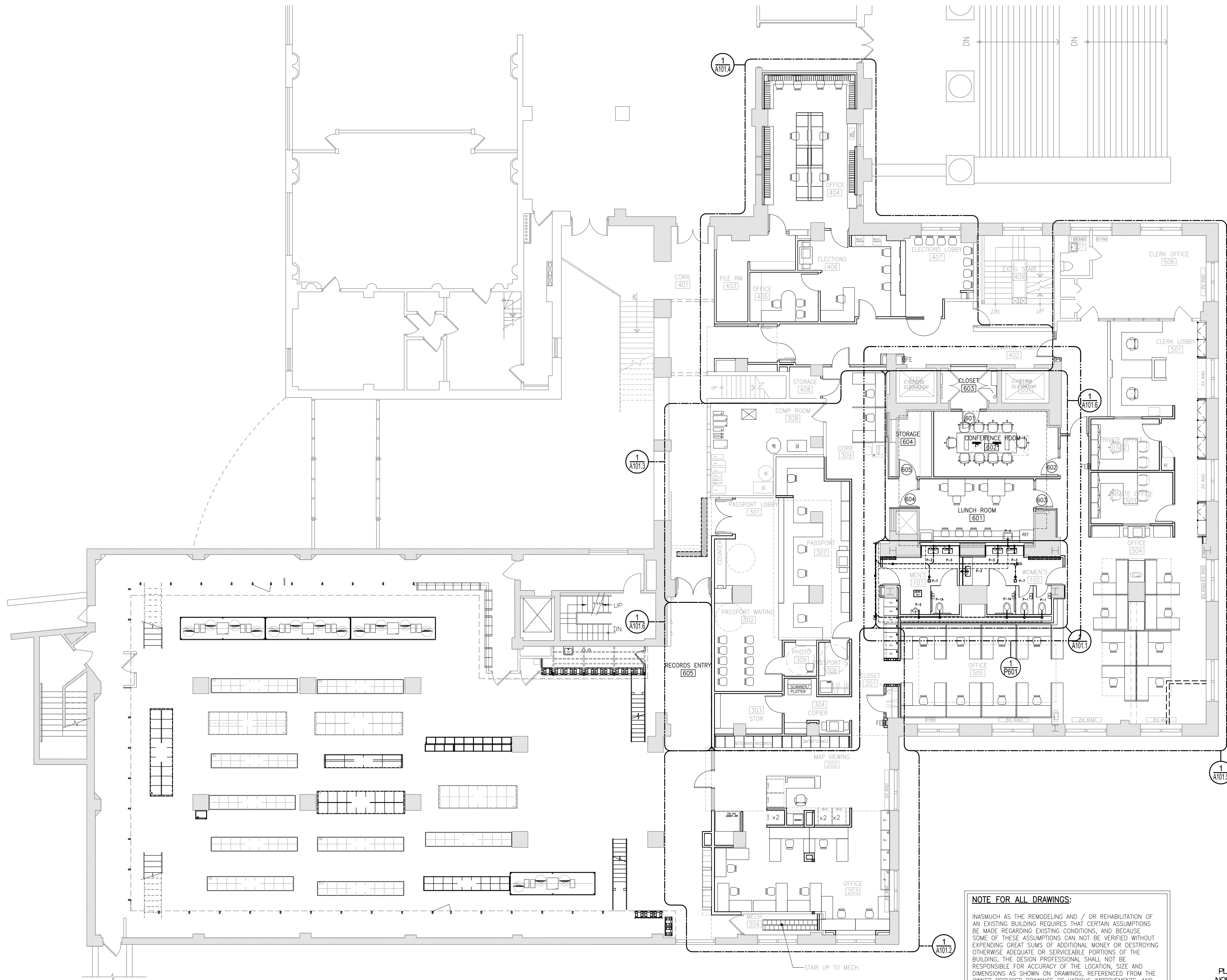
Scale: 1/8" = 1'-0"
Drawn by:
Checked by:

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PLUMBING DEMOLITION FIRST FLOOR PLAN

PD101

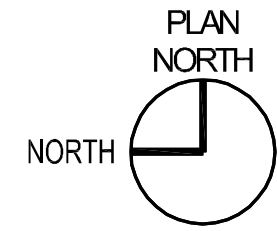
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1 FIRST FLOOR PLAN
P101 SCALE: 1/8" = 1'-0"

NOTE FOR ALL DRAWINGS:
INASMUCH AS THE REMODELING AND / OR REHABILITATION OF AN EXISTING BUILDING REQUIRES THAT CERTAIN ASSUMPTIONS BE MADE REGARDING EXISTING CONDITIONS, AND BECAUSE SOME OF THESE ASSUMPTIONS CAN NOT BE VERIFIED WITHOUT EXPENDING GREAT SUMS OF ADDITIONAL MONEY OR DESTROYING OTHERWISE ADEQUATE OR SERVICEABLE PORTIONS OF THE BUILDING, THE DESIGN PROFESSIONAL SHALL NOT BE RESPONSIBLE FOR ACCURACY OF THE LOCATION, SIZE AND DIMENSIONS AS SHOWN ON DRAWINGS, REFERENCED FROM THE OWNER PROVIDED DRAWINGS OF VARIOUS IMPROVEMENTS, AND CHANGES TO THE MECHANICAL SYSTEMS, THAT WHICH COULD NOT BE DETERMINED BY REASONABLE INVESTIGATION.



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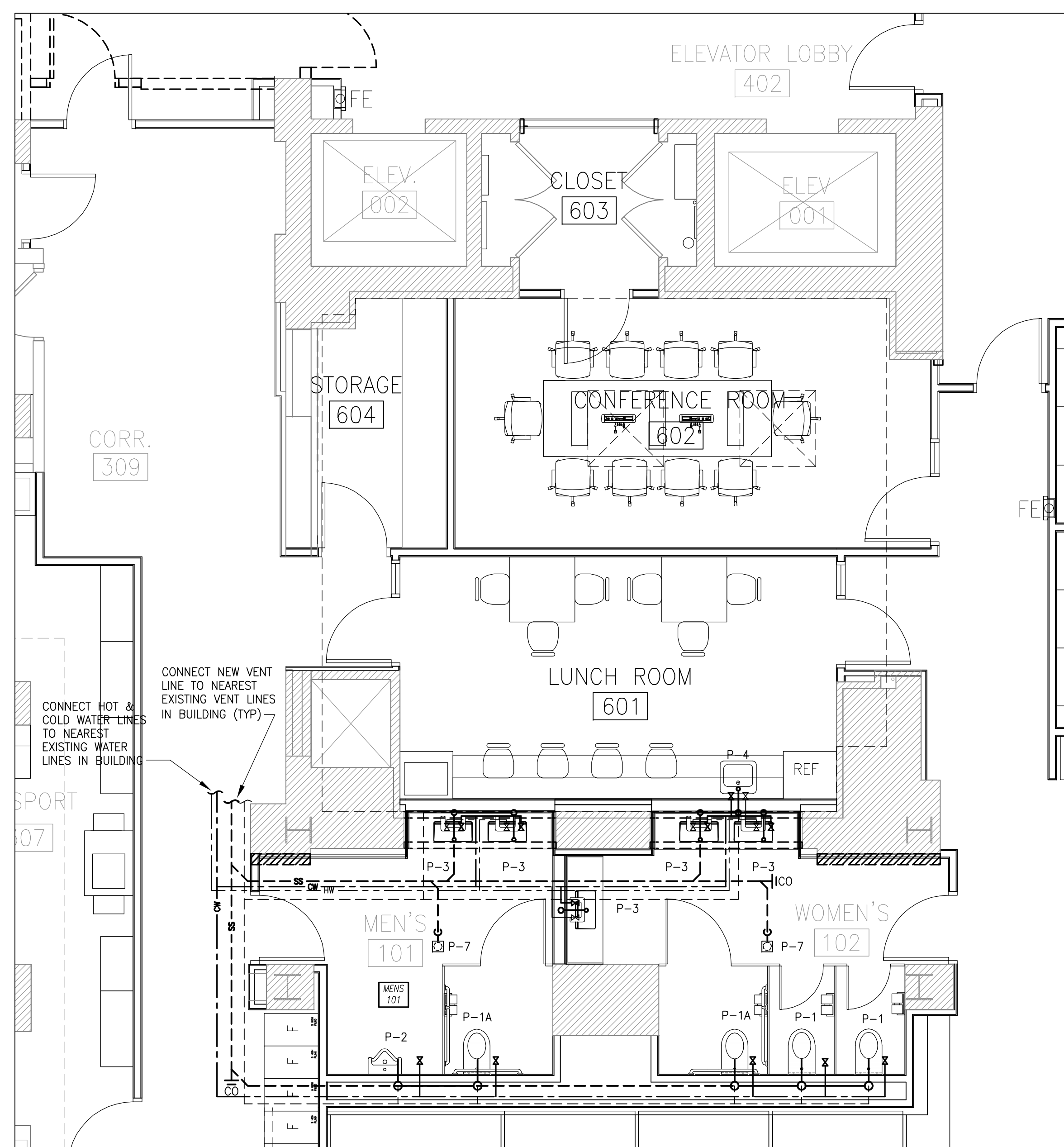
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PLUMBING
FIRST FLOOR PLAN

P101



ENLARGED TOILET PLAN
 1 P601 SCALE: 1/4" = 1'-0"

SYMBOL	FIXTURE
P-1	COMBINATION SLOAN WALL HUNG WATER CLOSET AND FLUSHOMETER - WALL MOUNTED, VIT. CHINA, ELONGATED BOWL; CHURCH #295C SOLID PLASTIC OPEN FRONT SEAT. PROVIDE WITH CARRIER; WITH CONCEALED SENSOR ACTIVATED FLUSHOMETER - SLOAN MODEL WETS-2060.1311-0.125 ES-S; WITH ONE(1) EL-154 TRANSFORMER (120VAC/24VAC-50VA) FOR ALL WC AND URINALS
P-1A	SAME AS ABOVE, EXCEPT HANDICAPPED - ADA COMPLIANT, MT 17"-19" AFF.
P-2	COMBINATION SLOAN HIGH EFFICIENCY URINAL AND FLUSHOMETER - VITREOUS CHINA, 125 GPF; WITH SENSOR ACTIVATED FLUSHOMETER - SLOAN MODEL WEUS-1000.1301-1.125 ES-S.
P-3	LAV - BRADLEY MODEL #LD-5010-2, OMMIDECK WITH WASHBAR 5000 SERIES, TERREON SURFACE, CUSTOM CONFIGURATION, ADA COMPLIANT, 2 BOWL, WASHBAR #WB1, ALL-IN-ONE W/ TOUCH FREE SOAP #L, WATER #L, AND HAND DRYER #HD1, W/MOUNTING BRACKET #BRKT, AND P-TRAP #S-CHROME. PROVIDE DEDICATED 120V, 20A GFCI OUTLET PER STATION.
P-4	SINK - ELKAY CAT. #PSLVR-1917603, LKA-2447HB FAUCET & LK-35 STRAINER.
P-5	NOT USED
P-6	NOT USED
P-7	FLOOR DRAIN - J.R. SMITH FLOOR DRAIN, FIG 2010C-ANB-B W/ ROUND NICKEL PLATED STRAINER & SEDIMENT BUCKET.
F.C.O.	FLOOR CLEANOUTS TO BE JAY R SMITH FIG #4020, 4140, OR 4180 AS REQUIRED.
W.C.O.	WALL CLEANOUTS TO BE JAY R SMITH FIG #4436-NB OR 4472 AS REQUIRED.
WHA	WATER HAMMER ARRESTER HYDROTRON BY JAY R SMITH MFG. #5010
*HCAP - PROVIDE MCGUIRE PROWRAP PW-2150 FOR INSULATION ON EXPOSED PIPING FOR ALL HANDICAPPED FIXTURES.	

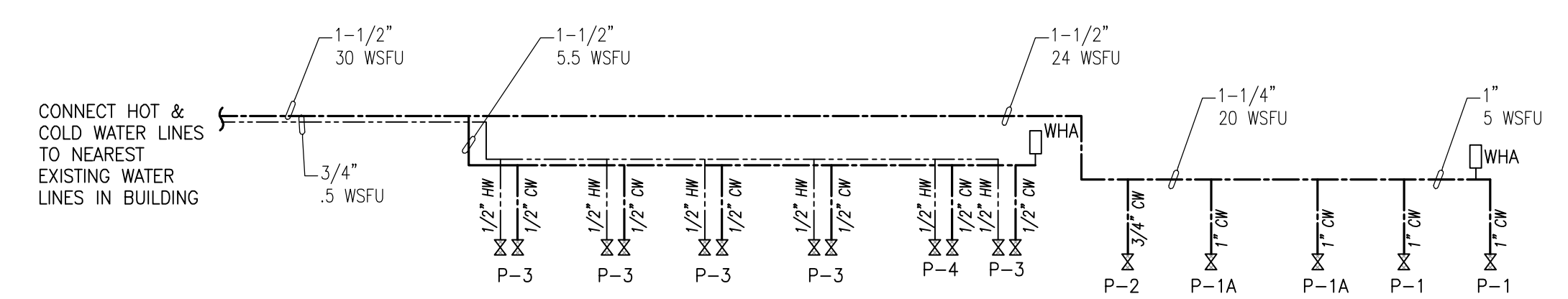
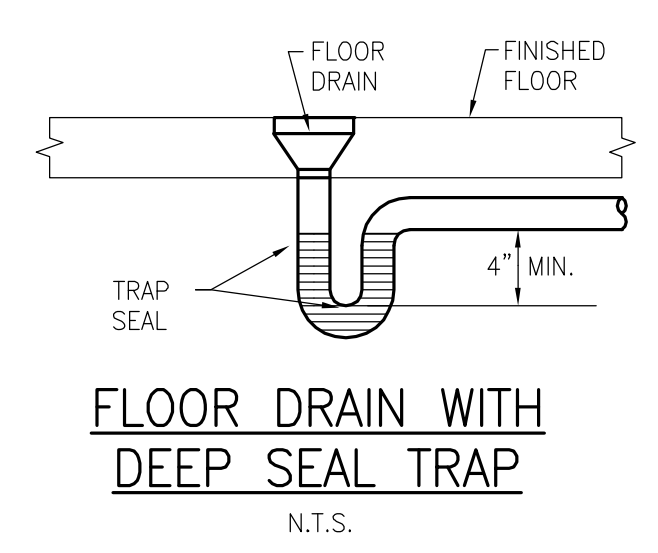
DESIGN.	ABBR	FIXTURE	CONNECTION SIZES (IN)				WSFU	DFU
			DRAIN	VENT	CW	HW		
P-1,1A	WC	WATER CLOSET	4	2	1	-	5.0	- 6.0
P-2	UR	URINAL	2	1 1/2	3/4	-	4.0	- 5.0
P-3	LAV	LAVATORY	1 1/2	1 1/4	1/2	1/2	0.8	0.8 1.0
P-4	SK	SINK	1 1/2	1 1/2	1/2	-	0.8	0.8 2.0
P-5	EWC	ELECT. WATER COOLER	1 1/4	1 1/4	1/2	-	0.5	- 0.5
P-6	MB	MOP BASIN	3	1 1/2	3/4	3/4	2.3	2.3 3.0
P-7	FD	FLOOR DRAIN	3	1 1/2	-	-	-	- 0.0
	WH	HOSE BIBB	-	-	3/4	-	2.5	- -
	WB	WALL HYDRANT	-	-	3/4	-	2.5	- -
	WSFU	WATER SUPPLY FIXTURE UNIT VALUE						
	DFU	DRAINAGE FIXTURE UNIT VALUE						

PLUMBING ABBREVIATIONS	
AFF	ABOVE FINISHED FLOOR
CONN	CONNECT
C.O.	CLEAN OUT
C.O.D.P.	CLEAN OUT, DECK PLATE
CW	COLD WATER
ERD	EMERGENCY (OVERFLOW)
ORD	ROOF DRAIN
E/ETG	EXISTING
EWC	ELECTRIC WATER COOLER
F.C.O.	FLOOR CLEAN OUT
F.D.	FLOOR DRAIN
FHC	FIRE HOSE CABINET
FL	FLOOR
G	NATURAL GAS
GT	GREASE TRAP
GWH	NATURAL GAS WATER HEATER
HB	HOSE BIBB
HW	HOT WATER
HWR	HOT WATER RECIRCULATING
INV. EL.	INVERT ELEVATION
MTD.	MOUNTED
N.T.S.	NOT TO SCALE
PSI	POUNDS PER SQUARE INCH
RD	ROOF DRAIN
S.I.	SOLIDS INTERCEPTOR
SS/SAN	SANITARY SEWER
ST	STORM SEWER
V	VENT
VIF	VERIFY IN FIELD
VTR	VENT THRU ROOF
W.C.O.	WALL CLEAN OUT
WH	WALL HYDRANT
WHA	WATER HAMMER ARRESTER
WTR	WATER

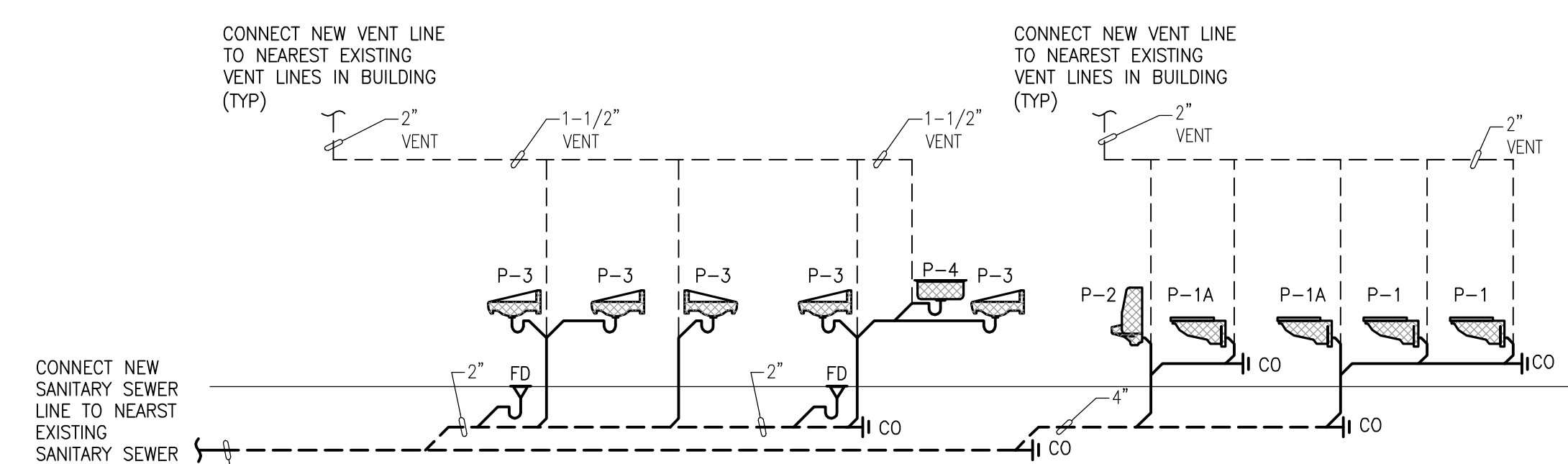
LEGEND	
---	SANITARY OR WASTE DRAINAGE LINE
---	DRAINAGE LINE UNDERGROUND
---	SANITARY VENT LINE
---	STORM WATER LINE
---	COLD WATER LINE
---	HOT WATER SUPPLY
---	HOT WATER RECIRCULATING
---	NEW NATURAL GAS LINE

PLUMBING NOTES:

- ALL PLUMBING WORK SHALL BE DONE IN ACCORDANCE WITH THE 2015 NATIONAL STANDARD PLUMBING CODE AS AMENDED BY THE NEW JERSEY UNIFORM CONSTRUCTION CODE, THE PLUMBING SUBCODE, AND LOCAL AUTHORITIES HAVING JURISDICTION.
- THE PLUMBING CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, INSPECTIONS AND CORRECTIVE WORK REQUIRED TO OBTAIN FINAL APPROVAL FROM THE PLUMBING SUB-CODE OFFICIAL.
- ALL PIPING SHOWN ON PLANS AND RISERS IS SCHEMATIC IN NATURE.
- THE PLUMBING CONTRACTOR SHALL VERIFY IN THE FIELD ALL HOT, COLD, VENT AND WASTE LINES TO WHICH THE NEW PIPING SHALL BE CONNECTED.
- WHERE ALL EXPOSED PIPING PASSES THROUGH FINISHED WALLS, CEILINGS AND FLOORS THE PLUMBING CONTRACTOR SHALL PROVIDE CHROME PLATED ESCUTCHEONS.
- WHERE EXISTING PLUMBING FIXTURES AND ACCESSORIES IN THE ROOMS ARE TO BE REMOVED, THEY SHALL EITHER BE TURNED OVER TO THE OWNER OR DISPOSED OF AS DIRECTED BY THE OWNER.
- REUSE EXISTING OR INSTALL NEW HOT (TEMPERED), AND COLD, WATER, SANITARY, VENT PIPING SHOWN AND CONNECT TO EXISTING PIPING SERVING THE ROOMS. CONNECTIONS TO EXISTING TO BE PIPE OF SAME MATERIAL. PROVIDE SHUT-OFF VALVE AT POINT OF CONNECTION ON ALL HOT, COLD WATER LINES.
- ALL LAVATORIES DESIGNATED AS HANDICAPPED ACCESSIBLE SHALL HAVE THE TRAP ASSEMBLY INSULATED WITH FLEXIBLE VINYL INSULATION (WHITE) AS MANUFACTURED BY: "TRUEBRO" MDL# 102 OR APPROVED EQUAL.
- PLUMBING CONTRACTOR SHALL FIRESTOP ALL THROUGH WALL AND FLOOR PENETRATIONS WITH "U.L." LISTED FIRE STOPPING MATERIAL.
- ALL PIPING INDICATED ON PLANS IS EXISTING EXCEPT WHERE SHOWN NEW.
- THE PLUMBING CONTRACTOR SHALL BE REQUIRED TO PROPERLY IDENTIFY ALL NEW PIPING WITH PREMOULDED PLASTIC SLEEVES MARKED "COLD WATER", "HOT WATER", "TEMPERED WATER" AS MANUFACTURED BY "SETON SIGN COMPANY" (MDL "SETMARK") OR APPROVED EQUAL.
- ALL EXISTING PLUMBING INSTALLATIONS WHICH ARE OR BECOME ABANDONED AS A RESULT OF THIS WORK SHALL BE REMOVED. ABANDONED PIPING SHALL BE REMOVED TO THE POINT OF LAST USE AND CAPPED.
- SANITARY PIPING INSTALLED WITHIN THE BUILDING ABOVE GROUND SHALL BE SAME AS EXISTING. VENT PIPING SHALL BE SAME AS EXISTING.
- NEW WATER PIPING ABOVE FLOOR IS TO BE HARD DRAWN TYPE "L" COPPER TUBE (TYPE "K" BELOW FLOOR) WITH SOLDER JOINTS USING WROUGHT FITTINGS AND LEAD FREE SOLDER. NEW NATURAL GAS PIPING IS TO MATCH EXISTING.
- PROVIDE ALL WATER PIPING WITH SELF-SEALING ALL PURPOSE JACKETED FIBERGLASS PIPE INSULATION WITH "ZESTON" PREFORMED FITTING COVERS. MINIMUM OF 1" THICK ON COLD WATER AND 1-1/2" THICK ON HOT WATER LINES. PROVIDE SADDLES AT ALL PIPE SUPPORTS.
- ALL HORIZONTAL PIPING SHALL BE SUPPORTED ON CLEVIS STYLE HANGERS, SIZED TO ACCOMMODATE INSULATION, AND SELECTION OF HANGERS AND SUPPORT SYSTEMS SHALL COMPLY WITH EARTHQUAKE ZONE 2 REQUIREMENTS. PROVIDE SADDLES BELOW ALL INSULATED PIPING.
- THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR FLUSHING AND SANITIZING THE POTABLE WATER SYSTEM UPON COMPLETION OF ALL WORK. THIS WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE "NATIONAL STANDARD PLUMBING CODE" WITH THE WATER TESTED BY AN INDEPENDENT LABORATORY LICENSED IN THE STATE OF NEW JERSEY. THE PLUMBING CONTRACTOR SHALL PROVIDE TO THE ARCHITECT (3) COPIES OF THE RESULTS (SIGNED AND SEALED) FOR REVIEW.
- SHOULD THE INITIAL TESTING NOT MEET THE MINIMUM STANDARDS, ANY ADDITIONAL SANITIZING AND TESTING REQUIRED SHALL BE PAID FOR BY THE PLUMBING CONTRACTOR.
- ALL FLOOR DRAINS TO HAVE DEEP SEAL TRAPS (SEE DEEP SEAL TRAP DETAIL).



DOMESTIC WATER RISER DIAGRAM
N.T.S.



SANITARY RISER DIAGRAM
N.T.S.

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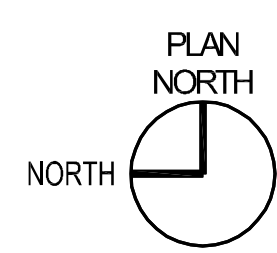
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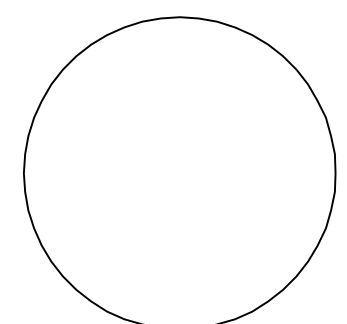
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PLUMBING SCHEDULES NOTES AND DETAILS
P601



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SEPTEMBER 2021

No.	Revision Description	Date

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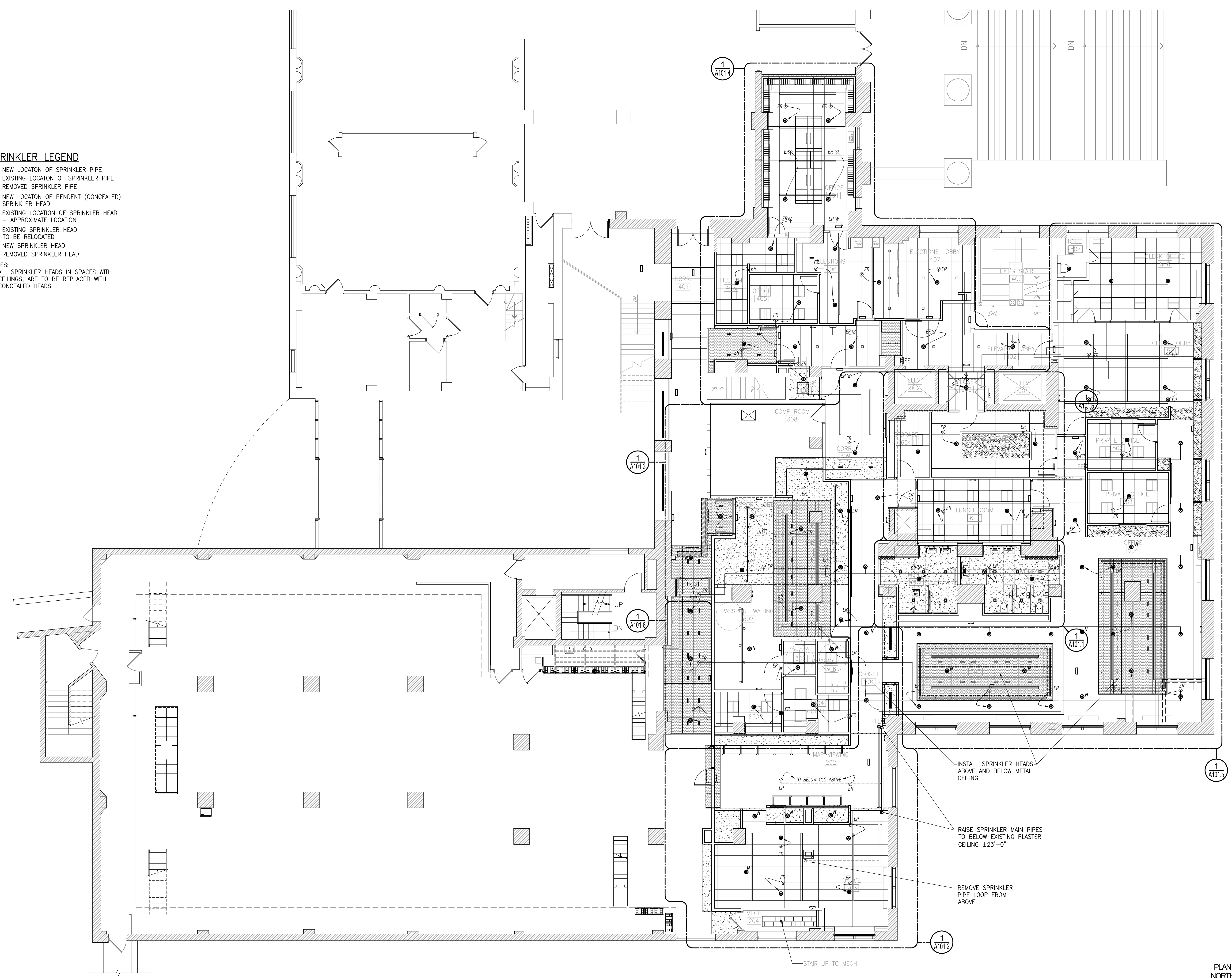
FIRE PROTECTION FIRST FLOOR PLAN

FP101

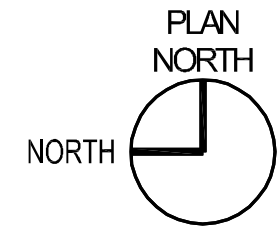
- SPRINKLER LEGEND**
- NEW LOCATON OF SPRINKLER PIPE
 - - - EXISTING LOCATON OF SPRINKLER PIPE
 - - - REMOVED SPRINKLER PIPE
 - ⊙ NEW LOCATON OF PENDENT (CONCEALED) SPRINKLER HEAD
 - ⊗ EXISTING LOCATION OF SPRINKLER HEAD - APPROXIMATE LOCATION
 - ER ○ EXISTING SPRINKLER HEAD - TO BE RELOCATED
 - N ⊙ NEW SPRINKLER HEAD
 - RM ○ REMOVED SPRINKLER HEAD

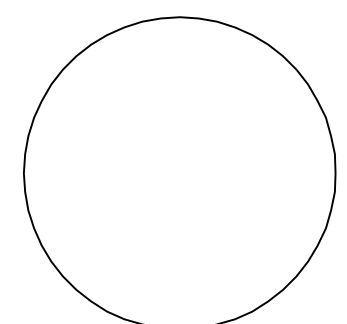
NOTES:
 1. ALL SPRINKLER HEADS IN SPACES WITH CEILINGS, ARE TO BE REPLACED WITH CONCEALED HEADS

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1 FIRST FLOOR PLAN
 FP101 SCALE: 1/8" = 1'-0"





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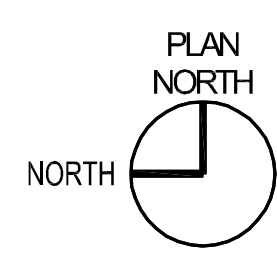
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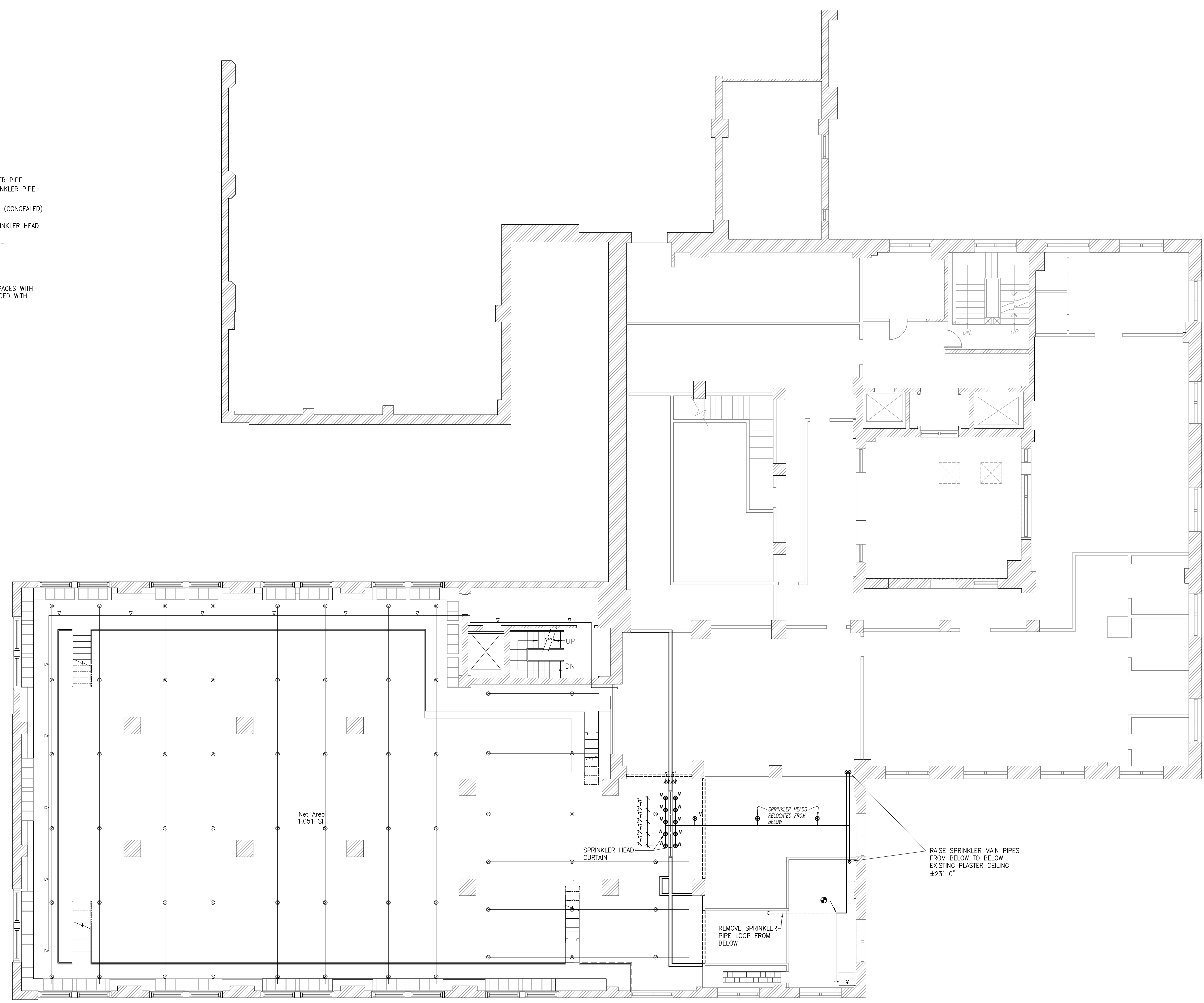
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**FIRE PROTECTION
 MEZZANINE PLAN**

FP102



1 MEZZANINE PLAN
 SCALE: 1/8" = 1'-0"



- SPRINKLER LEGEND**
- NEW LOCATON OF SPRINKLER PIPE
 - EXISTING LOCATON OF SPRINKLER PIPE
 - - - REMOVED SPRINKLER PIPE
 - ⊙ NEW LOCATON OF PENDENT (CONCEALED) SPRINKLER HEAD
 - ⊗ EXISTING LOCATION OF SPRINKLER HEAD - APPROXIMATE LOCATION
 - ER ⊙ EXISTING SPRINKLER HEAD - TO BE RELOCATED
 - N ⊙ NEW SPRINKLER HEAD
 - RM ⊙ REMOVED SPRINKLER HEAD
- NOTES:
 1. ALL SPRINKLER HEADS IN SPACES WITH CEILINGS, ARE TO BE REPLACED WITH CONCEALED HEADS

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GENERAL NOTES

- A. REFER TO THE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DEMOLITION GENERAL NOTES.
- B. THESE DEMOLITION PLAN DRAWINGS WERE CREATED FROM LIMITED FIELD SURVEYS AND ARE INTENDED TO SHOW THE OVERALL SCOPE OF WORK AND GENERAL CONDITIONS WHICH ARE EXPECTED TO OCCUR. ONLY SYSTEM ELEMENTS THAT WERE CLEARLY VISIBLE HAVE BEEN IDENTIFIED. FIELD OBSERVATION OF EXISTING SYSTEMS AND THEIR COMPONENTS MUST BE PERFORMED BY THE CONTRACTOR. PRIOR TO DEMOLITION THE CONTRACTOR MUST ATTEST TO THE ACCURACY OF WORK IDENTIFIED TO BE REMOVED. FIXTURES, WIRING, CONDUIT, DEVICES, ETC. INADVERTENTLY REMOVED SHALL BE REPLACED AT NO ADDITIONAL COST. VERIFY ALL CONDITIONS BEFORE PROCEEDING WITH THE DEMOLITION WORK IN ANY AREA.
- C. CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL CONDITIONS UNDER WHICH HE WILL BE OBLIGATED TO OPERATE AND THAT WILL AFFECT HIS WORK, AND SHALL BE SOLELY RESPONSIBLE FOR SAME. NO ALLOWANCE WILL BE MADE IN THIS REGARD FOR ERROR OR NEGLIGENCE.
- D. GENERAL CONTRACTOR SHALL PROVIDE A TIME TABLE FOR DEMOLITION AND NEW CONSTRUCTION TO THE OWNER AND ARCHITECT FOR APPROVAL PRIOR TO COMMENCEMENT OF ANY WORK.
- E. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES AND OTHER FORMS OF PROTECTION AS REQUIRED TO PROTECT THE OWNER'S PERSONNEL, OTHER TENANTS AND GENERAL PUBLIC FROM INJURY DUE TO DEMOLITION WORK.
- F. CONTRACTOR SHALL PROVIDE AT ALL TIMES ALL PROTECTION REQUIRED WHERE THE NEW WORK OR REMOVALS EXPOSE EXISTING CONSTRUCTION. ALL OPENINGS INTO THE EXISTING BUILDING SHALL BE FULLY SEALED AND PROTECTED TO PREVENT ENTRY OF DIRT, DEBRIS, WEATHER AND EXCESSIVE NOISE.
- G. CONTRACTOR SHALL PROVIDE ALL TEMPORARY SUPPORTS, BRACING, ETC. REQUIRED FOR CONSTRUCTION AND THE SUPPORT OF ANY AND ALL EQUIPMENT RELOCATED OR REINSTALLED.
- H. CONTRACTOR SHALL PATCH AND/OR REPAIR ALL EXISTING ADJACENT CONSTRUCTION AS MAY BE REQUIRED AFTER DEMOLITION TO PROVIDE A COMPLETE FINISHED INSTALLATION. PROVIDE FINISHES TO MATCH EXISTING ADJACENT FINISHES.
- I. CONTRACTOR SHALL DEMOLISH AND REMOVE ALL ITEMS AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY DEMOLITION AND/OR REMOVALS NOT SPECIFICALLY CALLED FOR IN THE DRAWINGS AND SPECIFICATIONS, BUT REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS DELINEATED ON THE DRAWINGS AND SPECIFICATIONS.
- J. ALL MATERIALS AND EQUIPMENT REMOVED FROM THE BUILDING SHALL BE DISPOSED OF BY THE CONTRACTOR (EXCEPT AS REQUESTED BY THE OWNER).
- K. EACH TRADE, WHETHER IT IS THE GENERAL CONTRACTOR OR SUBCONTRACTORS, IS RESPONSIBLE FOR THEIR OWN CUTTING. ALL PATCHING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
- L. BUILDING SHALL REMAIN OPEN DURING RENOVATION. THE CONTRACTOR SHALL SEQUENCE DEMOLITION AND CONSTRUCTION IN ORDER TO ALLOW CONTINUED OPERATIONS. THE CONTRACTOR SHALL ENSURE THAT DEMOLITION WORK DOES NOT INTERFERE WITH OR PROHIBIT THE CONTINUING OCCUPATION OF ADJACENT OPERATIONS WITHIN THE STRUCTURE. THIS INCLUDES, BUT IS NOT LIMITED TO, THE SELECTIVE DEMOLITION OF PARTITIONS, ELECTRICAL AND MECHANICAL SYSTEMS. THE CONTRACTOR SHALL INFORM THE OWNER A MINIMUM OF 72 HOURS PRIOR TO DEMOLITION OF ACTIVITIES THAT WILL AFFECT THE NORMAL OPERATION OF THE FACILITY.
- M. ALL MECHANICAL AND ELECTRICAL EQUIPMENT TO BE REMOVED AS SHOWN AND SHALL BE DISCONNECTED AND ALL PENETRATIONS AND OPENINGS SEALED UNLESS OTHERWISE NOTED.
- N. CONTRACTOR TO REMOVE EXISTING CEILING AS PER ARCHITECTURAL DEMO PLANS. EXISTING DIFFUSER TO BE DISCONNECTED AND SAVE.
- O. DUCTWORK LAYOUTS ARE SCHEMATIC DIAGRAMS AND ARE INTENDED TO SHOW GENERAL ARRANGEMENT, SIZE AND CAPACITY AND DO NOT INDICATE WHICH PIPE OR DUCT IS ABOVE OR BELOW THE OTHER. ALL OFFSETS ARE NOT NECESSARILY SHOWN, CONTRACTOR SHALL ARRANGE AND COORDINATE THE WORK, FURNISH NECESSARY OFFSETS, VALVES, VENTS, AND FITTINGS TO AVOID CONFLICT WITH OTHER MECHANICAL AND ELECTRICAL SERVICES AND STRUCTURAL AND ARCHITECTURAL ELEMENTS WITHOUT ADDITIONAL COST TO THE OWNER. IF AREAS OF CONFLICT ARE ENCOUNTERED, THE ARCHITECT SHALL BE NOTIFIED AND CONTRACTORS RECOMMENDATIONS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL BEFORE WORK HAS BEGUN.
- P. ENTIRE INSTALLATION SHALL COMPLY WITH ALL LOCAL AND STATE CODES AND OTHER AUTHORITIES HAVING JURISDICTION.
- Q. CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS AND SHALL ARRANGE ALL REQUIRED INSPECTIONS.
- R. PROPER FIRE PROTECTION MEASURES, SATISFACTORY TO THE LOCAL FIRE DEPARTMENT SHALL BE TAKEN WHEN WELDING OR CUTTING WITH TORCHES OR ELECTRIC ARC.
- S. PROVIDE FLEXIBLE CONNECTIONS ON ALL ROTATING EQUIPMENT, UNLESS INDICATED OTHERWISE. CONTRACTOR SHALL PROVIDE ALL NECESSARY MISCELLANEOUS STEEL FOR THE SUPPORT OF ALL EQUIPMENT, PIPING, CONDUIT, AND DUCTWORK. SUSPEND FROM SLAB, STEEL, WALL, OR TRUSS WORK.
- T. BALANCE AND CERTIFY ALL AIR SYSTEMS AS PER SPECIFICATIONS. REFER TO DRAWINGS FOR FLOW REQUIREMENTS.
- U. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF WALLS/SLAB REQUIRED AS A RESULT OF HIS WORK.
- V. ALL CONDENSATE DRAIN LINES SHALL COMPLY WITH N.S.P.C. 9.9.2 (AIR CONDITIONING CONDENSATE POINT OF DISCHARGE). NO PLASTIC PIPING SHALL BE INSTALLED. MINIMUM SIZE OF ALL CONDENSATE DRAIN PIPING SHALL BE 3/4". MINIMUM SLOPE SHALL BE 1/8" PER FOOT.
- W. ALL MECHANICAL CONTROLS (THERMOSTATS, ETC.) SHALL BE FURNISHED AND INSTALLED AS PER BARRIER-FREE SUB-CODE OF THE LOCAL GOVERNING CODE.
- X. ALL REMOVED EQUIPMENT, MATERIAL AND DEBRIS SHALL BE LEGALLY DISPOSED OF BY THIS CONTRACTOR. COORDINATE WITH OWNER.
- Y. UNLESS OTHER WISE NOTED ON THE DRAWINGS, ALL MECHANICAL EQUIPMENT SHALL BE MOUNTED ON VIBRATION ISOLATORS TO PREVENT THE TRANSMISSION OF SOUND TO THE BUILDING STRUCTURE. VIBRATION ISOLATORS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND ON ACTUAL WEIGHT DISTRIBUTION OF THE EQUIPMENT FURNISHED. DEFLECTIONS SHALL BE AS NOTED ON THE EQUIPMENT SHOP DRAWING SUBMITTALS.
- Z. ALL PENETRATIONS OF FLOORS (WHETHER OR NOT FIRE RESISTANCE RATED) AND ALL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE PROVIDED WITH A THROUGH PENETRATION PROTECTION SYSTEM (FIRE STOPPING). EACH THROUGH-PENETRATION PROTECTION SYSTEM SHALL BE TESTED IN ACCORDANCE WITH ASTM E814 AND BE LISTED FOR THE TYPE OF FLOOR OR WALL ASSEMBLY PENETRATED AND THE TYPE OF PROTECTION SYSTEM. REFER TO SECTION OF THE SPECIFICATION FOR ADDITIONAL INFORMATION.
- AA. ALL INSULATION PROVIDED FOR THE PROJECT MUST MEET A MAXIMUM FLAME SPREAD RATING OF 25 AND SMOKE DEVELOPED OF 50 OR LESS, AS TESTED IN ACCORDANCE WITH ASTM, NFPA & U.L. GUIDELINES.
- AB. DO NOT SCALE FROM THESE DRAWINGS.
- AC. ALL PIPES, DUCT, CONDUIT AND OTHER PENETRATIONS OF RETURN AIR PLENUM, INCLUDING HANGERS AND SUPPORT SYSTEM PENETRATIONS OF TOP HORIZONTAL SHALL BE SEALED AIRTIGHT; DUCT PENETRATIONS SHALL BE NEATLY FRAMED WITH SHEET METAL.
- AD. HVAC CONTROL WIRING SHALL BE PROVIDED BY MECHANICAL CONTRACTOR.
- AE. COORDINATE MOTOR CONTROLLERS, MOTOR STARTERS & DISCONNECTS FOR EQUIPMENT AND INSTALLATION WORK WITH ELECTRICAL CONTRACTOR.
- AF. PROVIDE FIRE RATED DAMPER THRU RATED WALLS AS REQUIRED PER LOCAL CODE.
- AG. PROVIDE ADDITIONAL SUPPORT FOR ALL EXISTING DUCTWORK AND PIPING TO REMAIN WHICH ARE AFFECTED BY DEMOLITION OF EXISTING CEILING AND WALLS.
- AH. CLEAN EXISTING DUCTWORK PER SMACNA AND NATIONAL AIR DUCT CLEANERS ASSOCIATION GUIDELINES.
- AI. COORDINATE INSTALL OF HVAC EQUIPMENT ABOVE CEILING WITH EXISTING CONDITIONS AND WITH STRUCTURAL ENGINEER.
- AJ. PROVIDE DUCT VOLUME DAMPER AT EACH DUCT BRANCH. PROVIDE ADDITIONAL AS NEEDED TO BALANCE AIR FLOW IN EACH DUCT SYSTEM.

GENERAL DEMOLITION NOTES

- 1. ALL EXISTING HVAC SYSTEMS INCLUDING BUT NOT LIMITED TO HVAC ROOFTOP EQUIPMENT, DUCTWORK, PLUMBING, ELECTRICAL, AIR DISTRIBUTION DEVICES, UNIT HEATER, CONTROL, WIRING ETC. TO REMAIN UNLESS SHOWN OR NOTED OTHERWISE.
- 2. ALL DEMOLITION WORK SHALL BE COORDINATED WITH THE ARCHITECT AND OWNER'S REPRESENTATIVE AND ALSO MUST BE COORDINATED WITH ALL ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL AND STRUCTURAL SYSTEMS.
- 3. EXISTING CONDITIONS, EQUIPMENT, MATERIALS & SIZES ARE SHOWN FOR REFERENCE ONLY. VERIFY EXISTING CONDITIONS & BRING ANY DISCREPANCIES TO THE ENGINEER'S ATTENTION IN WRITING PRIOR TO BID SUBMISSION.
- 4. THE CONTRACTOR MUST VISIT THE SITE TO CAREFULLY EXAMINE AND FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS PRIOR TO BIDDING. SUBMISSION OF A PROPOSAL WILL BE CONSIDERED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN PERFORMED. LATER CLAIMS FOR EXTRA LABOR OR MATERIALS REQUIRED DUE TO DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED.
- 5. G.C. TO PATCH ALL UNUSED ROOF, WALL OR FLOOR OPENINGS TO MATCH EXISTING.
- 6. DISPOSE OF ALL MATERIALS AS DIRECTED BY OWNER'S REPRESENTATIVE.
- 7. CONTRACTOR SHALL INSPECT EXISTING EQUIPMENT AND BELTS CHANGE ALL FILTERS AND ADJUST/REPLACE BELTS AS REQUIRE TO MAINTAIN THE EXISTING CONDITIONS AND ASSOCIATED DEVICES/EXISTING EQUIPMENT TO REMAIN.
- 8. ALL SYSTEMS TO BE REMOVED ARE NOT SHOWN. CONTRACTOR SHALL BECOME FAMILIAR WITH TOTAL SCOPE OF DEMOLITION WORK PRIOR TO SUBMITTING BID.
- 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE DEMOLITION WORK AND NEW WORK WITH THE PHASING REQUIREMENTS OF THIS PROJECT.
- 10. INDICATED EXISTING MECHANICAL SYSTEMS AND COMPONENTS ARE TO BE REMOVED. THIS INCLUDES EQUIPMENT, DUCTWORK, PIPING, AND OTHER MATERIALS. ENSURE ALL ITEMS HAVE BEEN MADE SAFE PRIOR TO CUTTING OR DISCONNECTING; ELECTRICAL POWER HAS BEEN REMOVED, PRESSURE RELIEVED, TEMPORARY SUPPORTS AND BRACES ARE IN PLACE. ALL REMOVALS ARE TO BE MADE IN A SAFE AND LEGAL MANNER, DISPOSED OF IN APPROPRIATE, LEGAL LOCATIONS OFF THE SITE.
- 11. BEFORE AND AFTER MODIFICATION OF AIR SYSTEMS CONTACTOR SHALL REPLACE AIR FILTERS AND ADJUST/REPLACE BELTS AS REQUIRED TO CONFIRM THAT THE RTU IS PROVIDING THE INDICATED AIR QUANTITIES. PROVIDE THREE (3) COPIES OF CERTIFIED INDEPENDENT AIR BALANCE REPORTS FOR ALL UNITS WORKED ON UNDER THIS CONTRACT BEFORE COMMENCING ANY NEW WORK AND AFTER NEW WORK HAS BEEN COMPLETED. THESE REPORTS WILL BE USED AS A BASE LINE ALONG WITH THE EXISTING DRAWINGS TO PROVIDE FINAL AIR DISTRIBUTIONS AND BALANCING OF THE SYSTEM.
- 12. DEMOLISH EXISTING TRANSFER DUCTS ABOVE CEILING IF CEILING PARTITIONS WALLS ARE REMOVED.
- 13. COORDINATE FLEX DUCT SIZING WITH DIFFUSER INLET SIZE. SEE AIR DEVICE SCHEDULE ON SHEET M-4.
- 14. RELOCATE EXISTING THERMOSTAT AS PER NEW AYOUT AND REPLACE ANY DAMAGED THERMOSTAT WITH NEW.
- 15. CONTRACTOR TO PROVIDE AN AIR BALANCE REPORT OF EXISTING HVAC SYSTEM PRIOR TO START OF ANY WORK.

CODES AND REGULATIONS INFORMATION

GOVERNING CODES & REFERENCES:
 ALL CONSTRUCTION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NEW JERSEY UNIFORM CONSTRUCTION CODE AND OTHER NATIONAL AND STATE CODES INCLUDING:
 N.J.A.C. 5-23-6 UNIFORM CONSTRUCTION CODE
 SUBCHAPTER 6, REHABILITATION SUBCODE.
 2018 NATIONAL STANDARD PLUMBING CODE.
 2018 INTERNATIONAL BUILDING CODE (IBC) NJ EDITION.
 2018 INTERNATIONAL ENERGY CONSERVATION CODE.
 2018 INTERNATIONAL FUEL GAS CODE (IFGC).
 2018 INTERNATIONAL FIRE CODE (IFC).
 2018 INTERNATIONAL MECHANICAL CODE (IMC).
 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
 2017 NATIONAL ELECTRICAL CODE (NEC).
 THE FEDERAL "REDUCTION OF LEAD IN DRINKING WATER ACT" AS DEFINED PER SDWA IN SECTION 1417(D). LEAD FREE
 ASHRAE HANDBOOKS - AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS (ASHRAE).

SHOULD CONFLICT BETWEEN CODES OR REFERENCES AND THE CONTRACT DRAWINGS OR SPECIFICATIONS BE OBSERVED BY THE CONTRACTOR, THE CODE OR REFERENCE SHALL BE REFERRED TO THE ENGINEER AND A WRITTEN OPINION BY THE ENGINEER SHALL BE OBTAINED.

NOTES TO CONTRACTORS

NOTE TO CONTRACTORS PRIOR TO START TO ANY WORK:

- 1. CONTRACTOR TO CONTACT BUILDING ENGINEER TO COORDINATE HVAC CONTROLS.
- 2. PROVIDE LOCKABLE COVERS FOR ALL NEW AND EXISTING ADJUSTABLE THERMOSTATS COORDINATE WITH ARCHITECT AND BUILDING ENGINEER.
- 3. ANY DISRUPTIONS OF ADJACENT SPACES MUST BE REPAIRED IMMEDIATELY AND KEPT MINIMAL.
- 4. ALL CORE DRILL LOCATIONS, AND ALL PENETRATIONS MUST BE COORDINATED TO AVOID STRUCTURAL STEEL, AND OTHER CRITICAL FUNCTIONS OF THE BUILDING ADJACENCIES. THIS ACTIVITY MUST INCLUDE ADJACENT TENANT FACILITIES MANAGER'S REQUIREMENTS.
- 5. VARIABLE REFRIGERANT FLOW (VRF) SYSTEM MUST BE INITIALLY INSTALLED AT 50% CAPACITY OR GREATER FOR PROPER SYSTEM OPERATION. THIS PROJECT WILL BE COMPLETED IN PHASES AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A WORKING SYSTEM. THE MECHANICAL MEZZANINE AREA CAN BE UTILIZED FOR TEMPORARY UNIT STORAGE/CONDITIONING IF NECESSARY. TEMPORARY STORED UNITS MAY THEN BE RELOCATED TO DESIRED LOCATIONS OF RESPECTIVE PHASES. COORDINATE WITH ARCHITECT.

HVAC DESIGN CRITERIA

SUMMER OUTDOOR DESIGN CONDITIONS:
 1. DESIGN CITY: NEWARK, NJ
 2. DRY BULB: 93°F
 3. WET BULB: 74°F

SUMMER INDOOR DESIGN CONDITIONS:
 1. DRY BULB: 72°F
 2. RELATIVE HUMIDITY: 50% MAXIMUM

WINTER OUTDOOR DESIGN CONDITIONS:
 1. DESIGN CITY: NEWARK, NJ
 2. DRY BULB: 10°F

WINTER INDOOR DESIGN CONDITIONS:
 1. DRY BULB: 75°F

VENTILATION REQUIREMENTS:
 1. 2015 INTERNATIONAL MECHANICAL CODE (IMC).
 2. THERE ARE NO SMOKE BARRIERS OR SMOKE PARTITIONS ON THIS PROJECT.

SYMBOLS LEGEND

SYMBOL	DESCRIPTION
	4-WAY CEILING DIFFUSER
	3-WAY CEILING DIFFUSER
	2-WAY CEILING DIFFUSER
	RETURN OR EXHAUST CEILING GRILLE
	RETURN OR EXHAUST GRILLE
	SUPPLY REGISTER
	SUPPLY DUCT UP OR DOWN
	RETURN OR EXHAUST DUCT UP OR DOWN
	ROUND DUCT
	MANUAL VOLUME DAMPER
	FIRE DAMPER WITH ACCESS DOOR
	MOTORIZED DAMPER
	PRESSURE REDUCTION VALVE
	GAS COCK
	FLOW ARROW
	POINT OF CONNECTION BETWEEN NEW AND EXISTING
	POINT OF DISCONNECTION
	AIR FLOW THRU DOOR UNDERCUT
	THERMOSTAT
	SENSOR
	CO SENSOR
	HUMIDITY SENSOR
	SMOKE DUCT DETECTOR
	NECK SIZES IN DUCT SPLIT
	DUCTWORK W/ INTERNAL LINING
	FLEXIBLE CONNECTION
	ELBOW WITH DOUBLE THICKNESS TURNING VANES
	45° BOOT TAKE-OFF W/ VOLUME DAMPER
	BELLMOUTH TAKE-OFF W/ VOLUME DAMPER
	TWO WAY VALVE - MOTORIZED
	TWO WAY VALVE - PRESSURE
	THREE WAY VALVE - MOTORIZED
	THREE WAY VALVE - PRESSURE
	AIR VENT
	BALL VALVE
	F&T TRAP
	VALVE
	GATE VALVE
	GLOBE VALVE
	HOSE BIBB VALVE
	OS&Y VALVE
	RADIATION DAMPER

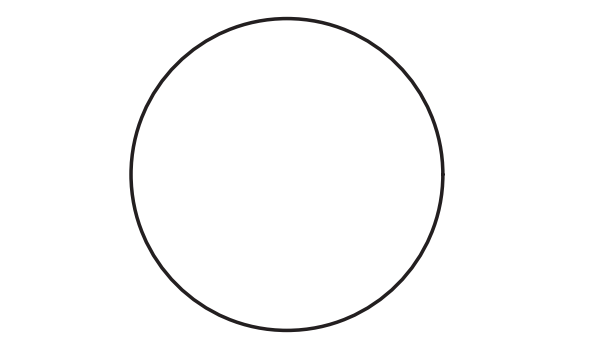
DRAWING INDEX

MECHANICAL DRAWING TABLE

DWG NO.	DWG. TITLE
M001	MECHANICAL OVERVIEW SHEET
MD100	MECHANICAL DEMOLITION PLAN
M100	MECHANICAL WORK PLAN
M101	MECHANICAL ROOF PLAN
M200	MECHANICAL SCHEMATIC DIAGRAM
M300	MECHANICAL SCHEDULES
M400	MECHANICAL DETAILS
M401	MECHANICAL DETAILS
M500	MECHANICAL SPECIFICATIONS
M501	MECHANICAL SPECIFICATIONS

ABBREVIATION LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISH FLOOR	KEF	KITCHEN EXHAUST FAN
AFG	ABOVE FINISHED GRADE	LAT	LEAVING AIR TEMPERATURE
AHU	AIR HANDLING UNIT	MAX	MAXIMUM
A.P.D.	AIR PRESSURE DROP	MBH	THOUSAND BTU PER HOUR
ATC	AUTOMATIC TEMPERATURE CONTROLS	MC	MECHANICAL CONTRACTOR
AU	AIR HANDLING UNIT	MCA	MINIMUM CIRCUIT AMPS
BFG	BELOW FINISHED GRADE	MD, M	MOTORIZED DAMPER
BG	BOTTOM GRILLE	MEZZ	MEZZANINE
BLDG	BUILDING	MFG	MANUFACTURER
BOD	BOTTOM OF DUCT	MH	MOUNTING HEIGHT
BR	BOTTOM REGISTER	MIN	MINIMUM
BS	BIRD SCREEN	MOD	MOTOR OPERATED DAMPER
BTU	BRITISH THERMAL UNIT	MTD	MOUNTED
CD	CEILING DIFFUSER	MU	MAKE UP
CFM	CUBIC FEET PER MINUTE	MUA	MAKE UP AIR UNIT
CLG	CEILING	N.C.	NORMALLY CLOSED
CO	COMPANY	NIC	NOT IN CONTRACT
COMPR	COMPRESSOR	N.O.	NORMALLY OPEN
COND	CONDENSATE	N.T.S.	NOT TO SCALE
COND'R	CONDENSER	OA	OUTSIDE AIR
CONTR	CONTRACTOR	OAI	OUTSIDE AIR INTAKE
CR	CEILING REGISTER	OC	ON CENTER
CTE	CONNECT TO EXISTING	OED	OPEN ENDED DUCT
CU	CONDENSING UNIT	OPNG	OPENING
D	DEMO	OP WT	OPERATING WEIGHT
DB	DRY BULB	PSI	POUNDS PER SQUARE INCH
DEF	DISHWASHER EXHAUST FAN	PVC	POLYVINYL CHLORIDE
DN	DOWN	R	EXISTING EQUIPMENT TO BE REMOVED
DWG(S)	DRAWING(S)	RA	RETURN AIR
E	EXISTING	RG	RETURN GRILLE
EA	EXHAUST AIR	RH	RELATIVE HUMIDITY
EAT	ENTERING AIR TEMPERATURE	RL	EXISTING EQUIPMENT TO BE RELOCATED
EB	ELECTRIC BASEBOARD	RLA	RUNNING LOAD AMPS
EC	ELECTRICAL CONTRACTOR	RPM	REVOLUTIONS PER MINUTE
EDB	ENTERING DRY BULB	RR	RETURN REGISTER
EER	ENERGY EFFICIENCY RATIO	RTU	ROOF TOP UNIT
EF	EXHAUST FAN	SA	SUPPLY AIR
EG	EXHAUST GRILLE	SD, SDD	DUCT SMOKE DETECTOR
EH	ELECTRIC HEATER	SF	SUPPLY FAN
EM	EMERGENCY	SFD	SMOKE AND FIRE DAMPER WITH ACCESS DOOR
EQUIP	EQUIPMENT	SQ. FT.	SQUARE FEET
ESP	EXTERNAL STATIC PRESSURE	SR	SUPPLY REGISTER
ETR	EXISTING TO REMAIN	TEF	TOILET, TRUCK EXHAUST FAN
EWB	ENTERING WET BULB	TG	TRANSFER GRILLE
EWC	ELECTRIC WATER COOLER	TO	TRANSFER OPENING
EX	EXISTING	TR	TOP REGISTER
FC	FLEXIBLE CONNECTION	TYP	TYPICAL
FD	FIRE DAMPER WITH ACCESS DOOR	UH	UNIT HEATER
FLA	FULL LOAD AMPS	UV	UNIT VENTILATOR
FPB	FAN POWERED BOX	VAV	VARIABLE AIR VOLUME TERMINAL UNIT
FPM	FEET PER MINUTE	VD	VOLUME DAMPER
G	GAS	VSD	VARIABLE SPEED DRIVE
GC	GENERAL CONTRACTOR	WB	WET BULB
GPM	GALLONS PER MINUTE	W.C.	WATER COLUMN
HC	HVAC CONTRACTOR	WG	WATER GAUGE
HP	HORSEPOWER	WMS	WIRE MESH SCREEN
HV	HEATING & VENTILATING		
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING		



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JEFFREY THOENS, P.E. DATE
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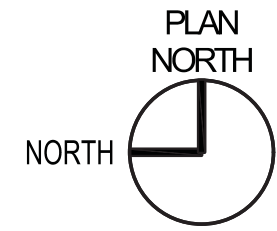
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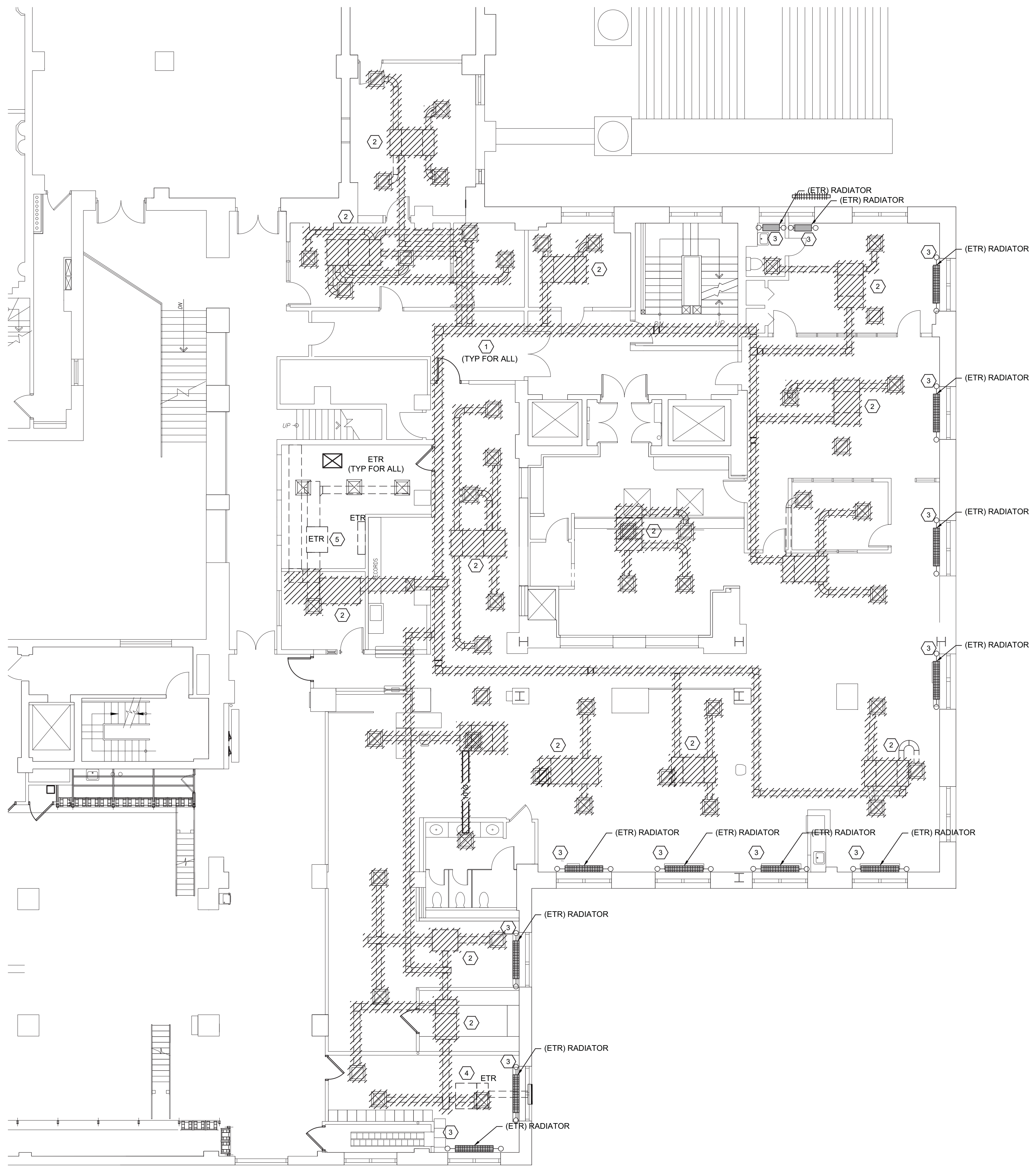
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MECHANICAL OVERVIEW SHEET

M001



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1 MECHANICAL DEMOLITION PLAN
MD100 SCALE: 1/8" = 1'-0"

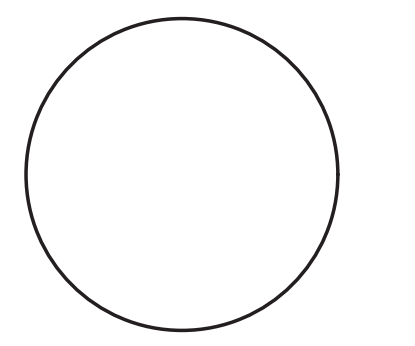
DEMOLITION NOTES

- A. ALL EXISTING HVAC SYSTEMS INCLUDING BUT NOT LIMITED TO HVAC EQUIPMENT, DUCTWORK, PLUMBING, ELECTRICAL, AIR DISTRIBUTION DEVICES, UNIT HEATER, CONTROL, WIRING ETC. TO REMAIN UNLESS SHOWN OR NOTED OTHERWISE.
- B. DISPOSE OF ALL MATERIALS AS DIRECTED BY OWNER'S REPRESENTATIVE.
- C. CONTRACTOR SHALL INSPECT EXISTING EQUIPMENT AND BELTS CHANGE ALL FILTERS AND ADJUST/REPLACE BELTS AS REQUIRE TO MAINTAIN THE EXISTING CONDITIONS AND ASSOCIATED DEVICES/EXISTING EQUIPMENT TO REMAIN.
- D. ALL SYSTEMS TO BE REMOVED ARE NOT SHOWN. CONTRACTOR SHALL BECOME FAMILIAR WITH TOTAL SCOPE OF DEMOLITION WORK PRIOR TO SUBMITTING BID.
- E. INSPECT EXISTING DUCTS FOR AIR LEAKS AND CAP ALL EXISTING DUCT OPENINGS, UNUSED TAKEOFFS AIR TIGHT WITH SHEETMETAL, FASTENERS, AND MASTIC SEALANT.
- F. BEFORE AND AFTER MODIFICATION OF AIR SYSTEMS CONTRACTOR SHALL REPLACE AIR FILTERS AND ADJUST/REPLACE BELTS AS REQUIRED TO CONFIRM THAT THE AHU IS PROVIDING THE INDICATED AIR QUANTITIES. PROVIDE THREE (3) COPIES OF CERTIFIED INDEPENDENT AIR BALANCE REPORTS FOR ALL UNITS WORKED ON UNDER THIS CONTRACT BEFORE COMMENCING ANY NEW WORK AND AFTER NEW WORK HAS BEEN COMPLETED. THESE REPORTS WILL BE USED AS A BASE LINE ALONG WITH THE EXISTING DRAWINGS TO PROVIDE FINAL AIR DISTRIBUTIONS AND BALANCING OF THE SYSTEM.
- G. RETURN ALL REMOVED, UNUSED HARDWARE TO BUILDING OWNER.
- H. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE SAFETY OF EXISTING STRUCTURE.
- I. FIELD VERIFY BRANCH TAKEOFF CONNECTIONS, PROVIDE REQUIRED SIZE CONNECTION AND VOLUME DAMPER AS REQUIRED PER NEW DUCT LAYOUT.
- J. CLEAN EXISTING EXISTING DUCTWORK.
- K. CAP ALL EXISTING, UNUSED TAKEOFFS AIR TIGHT WITH SHEETMETAL, FASTENERS, AND MASTIC SEALANT.
- L. TEMPORARY CONDITIONING OF SPACES MAY BE REQUIRED DURING CONSTRUCTION. COORDINATE WITH OWNER AND ARCHITECT.



DEMOLITION KEY NOTES (1,2,3)

- 1. DISCONNECT AND REMOVE EXISTING DUCTWORK IN ITS ENTIRETY INCLUDING BUT NOT LIMITED TO, DUCTWORK, INSULATION, VOLUME DAMPERS, HANGERS & SUPPORTS, AND HEATING COIL. SEAL TIGHT REMAINING OPENING INDICATED ON DRAWING. REMOVE EXISTING DIFFUSERS, INDOOR AIR HANDLERS, CURBS, GOOSENECKS, EXHAUST FANS AND ALL ASSOCIATED PIPING.
- 2. DISCONNECT AND REMOVE EXISTING FAN COIL UNIT IN ITS ENTIRETY INCLUDING, BUT NOT LIMITED TO, CONTROLS, VALVES, PIPING, AND WIRING. CAP EXISTING CHWS&R BACK TO MAIN AND PREPARE FOR NEW WORK.
- 3. DISCONNECT AND REMOVE EXISTING CONTROL VALVES. PREPARE RADIATOR TO RECEIVE NEW WORK. TYPICAL FOR ALL EXISTING RADIATORS.
- 4. EXISTING AIR HANDLING UNIT TO REMAIN. RE-ROUTE EXISTING CHWS&R AROUND NEW AHU. VERIFY IN FIELD.
- 5. EXISTING COMPUTER ROOM FCU, DUCTWORK, PIPING, CONTROLS AND DIFFUSERS TO REMAIN. REMOVE AND SEAL DUCTWORK WHERE INDICATED.



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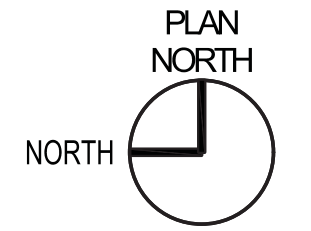
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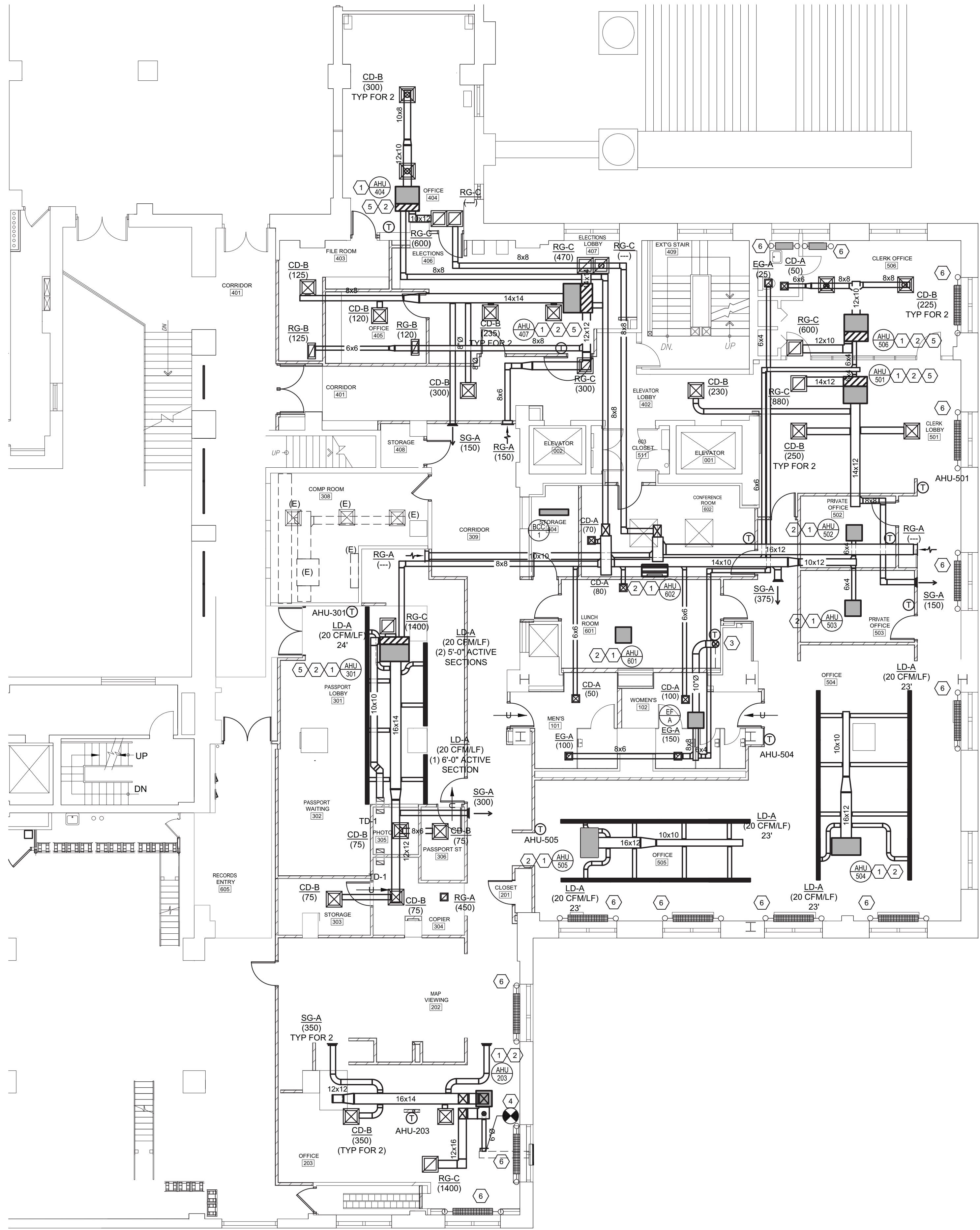
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MECHANICAL DEMOLITION PLAN

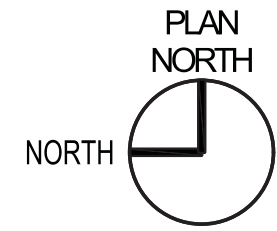
MD100



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1 MECHANICAL WORK PLAN
M100 SCALE: 1/8" = 1'-0"

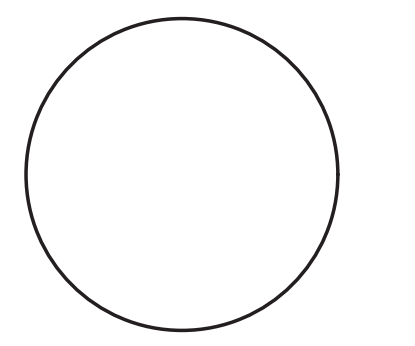


GENERAL NOTES

1. CONTRACTOR TO COORDINATE ROUTING OF ALL PIPING SHOWN ON DRAWING IN FIELD WITH ALL DISCIPLINES' S DRAWINGS PRIOR TO BID.
2. BRANCH DUCTWORK TO CONNECT TO DIFFUSER TO MATCH DIFFUSER NECK SIZE. UNLESS OTHERWISE NOTED ON DRAWINGS.
3. BATHROOM DOOR 1/4 UNDERCUT FOR INTAKE AIR.
4. PROVIDE ADJUSTABLE VOLUME DAMPER AT START OF BRANCH LINE.

KEY NOTES (1,2,3)

1. RUN REFRIGERANT LINES ABOVE CEILING FROM AHU TO CORRESPONDING CU LOCATED OUTSIDE ON ROOF. INSULATION & SIZES SHALL BE AS PER MANUFACTURERS RECOMMENDATION. BASED ON EQUIVALENT LENGTH. PROVIDE PIPING SUPPORT EVERY 6 FEET. COORDINATE EXACT ROUTING WITH ARCHITECT. COORDINATE PROPER DEADBAND FOR PROPER VRF/RADIATOR OPERATION.
2. CONDENSATE TO NEAREST DRAIN. COORDINATE WITH PLUMBING CONTRACTOR AND ARCHITECT.
3. 10"Ø EXHAUST DUCT UP TO GOOSENECK ON ROOF. MAINTAIN 10'-0" HORIZONTAL CLEARANCE OR 3'-0" VERTICAL CLEARANCE TO ALL FRESH AIR INTAKES. MAINTAIN 3'-0" CLEARANCE FOR WINDOW OPENINGS. INSTALL FIRE DAMPERS IN ALL PENETRATIONS OF FIRE RATED STRUCTURES. COORDINATE EXACT LOCATION IN FIELD.
4. TIE FRESH-AIR DUCT TO EXISTING FRESH AIR DUCT COMING FROM SIDEWALL LOUVER. MAINTAIN 10'-0" CLEARANCE TO ALL EXHAUST TERMINATIONS. INSTALL FIRE DAMPERS IN ALL PENETRATIONS OF FIRE RATED STRUCTURES.
5. PROVIDE PLENUM BOX FOR AHU. SIZE TO MEET DUCT CONNECTIONS AND EXTEND 12".
6. CONTRACTOR TO PROVIDE AND INSTALL NEW THERMOSTATIC VALVE AND TAMPERPROOF ACTUATOR WITH VALVE MOUNTED SENSOR, SUCH AS DANFOSS RA2000. INSTALL TWO NEW SHUT OFF VALVES. COORDINATE WITH OWNER AND BRING CONTROL WIRING TO THE OWNERS CONTROL SYSTEM. TYPICAL FOR ALL RADIATORS.



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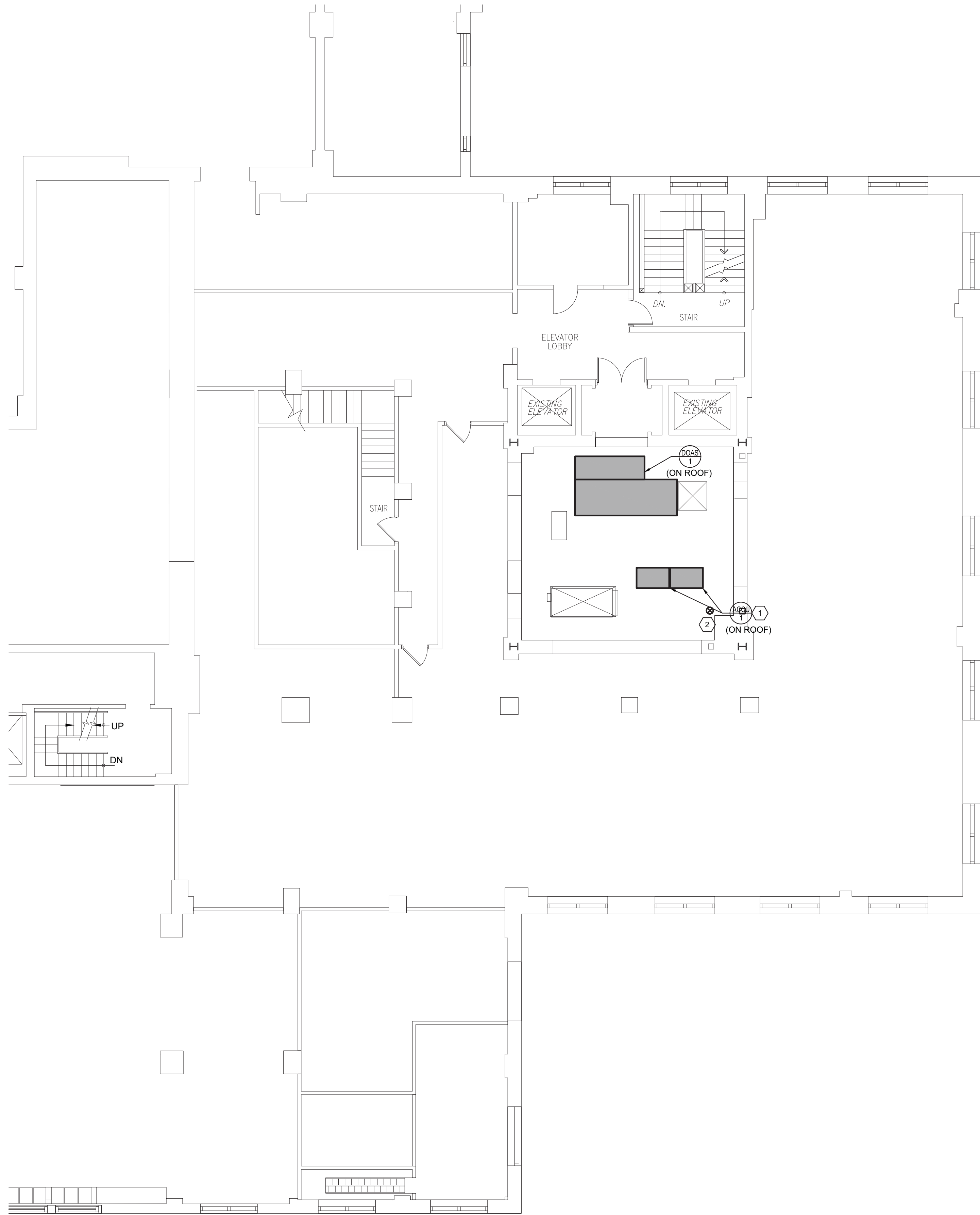
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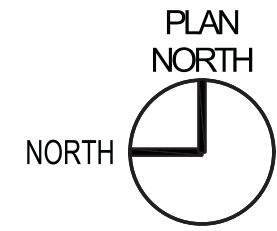
**MECHANICAL
WORK PLAN**

M100

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1 MECHANICAL ROOF PLAN
M101 SCALE: 1/8" = 1'-0"

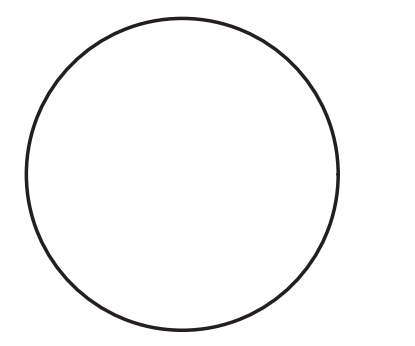


ROOF NOTES

- COORDINATE THE HVAC EQUIPMENT LAYOUT WITH BUILDING STRUCTURAL. COORDINATE DIMENSIONS, WEIGHTS AND REQUIREMENTS WITH ARCHITECT/STRUCTURAL ENGINEER PRIOR THE STEEL FABRICATION.
- THE CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES FOR POSSIBLE INTERFERENCE WITH HIS WORK AND THE WORK OF OTHERS.
- ALL ROOF MOUNTED HVAC EQUIPMENTS TO BE MOUNTED ON ROOF CURBS AND INSTALLED IN A LEVEL CONDITION, CANTED, FLASHING, INSULATED, ATTACHED TO BUILDING STEEL AND EQUIPMENT ATTACHED WITH WIND LOAD RESTRAINTS. COORDINATE WITH ARCHITECT FOR ADDITIONAL REQUIREMENTS.
- ALL ROOF MOUNTED EQUIPMENT SHALL BE LOCATED IN COMPLIANCE WITH ALL LOCAL SOUND AND SIGHT RESTRICTIONS.
- ALL ROOF MOUNTED EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH APPLICABLE CODES AND ORDINANCES INCLUDING INTERNATIONAL MECHANICAL CODE, STATE AND LOCAL CODES AND OSHA REGULATIONS.
- COORDINATE ALL ROOF PENETRATIONS WITH THE BUILDING STRUCTURAL STEEL. THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH A BUILDING REPRESENTATIVE PRIOR TO CUTTING ANY PORTION OF THE ROOF. ALL PENETRATIONS ARE SUBJECT TO INSPECTION BY A BUILDING REPRESENTATIVE.
- ROOF CURB TO MAINTAIN MINIMUM 12" FROM BOTTOM OF EQUIPMENT TO ROOF. FLASHING AND INSULATION ROOF CURB TO MATCH EXISTING ROOFING SYSTEM.
- FLUES AND EXHAUST FANS SHALL BE INSTALLED A MINIMUM OF 10 FEET AWAY FROM ANY FRESH AIR INTAKE OR SUPPLY FAN.
- CONTRACTOR TO PROVIDE GUARDS PER CODE WHEN EQUIPMENT IS LOCATED WITHIN 10 FEET OF A ROOF EDGE.

KEY NOTES (1, 2, 3)

- REFRIGERANT PIPING BETWEEN INDOOR UNITS AND OUTDOOR CONDENSER UNITS PER MANUFACTURER'S RECOMMENDATIONS. INSTALL ON ROOF CURB.
- 10" Ø EXHAUST DUCT UP TO GOOSENECK ON ROOF. MAINTAIN 10'-0" HORIZONTAL CLEARANCE OR 3'-0" VERTICAL CLEARANCE TO ALL FRESH AIR INTAKES. MAINTAIN 3'-0" CLEARANCE FOR WINDOW OPENINGS. INSTALL FIRE DAMPERS IN ALL PENETRATIONS OF FIRE RATED STRUCTURES. COORDINATE EXACT LOCATION IN FIELD.



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MECHANICAL ROOF PLAN

M101

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Union County Clerk

DIAGRAM DISPLAY	SYMBOL DESCRIPTION
---	POWER WIRE
---	CONTROL WIRE
---	REF. PIPE

CONT.No	PAGE
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CITY MULTI SYSTEM SCHEMATIC DWG.

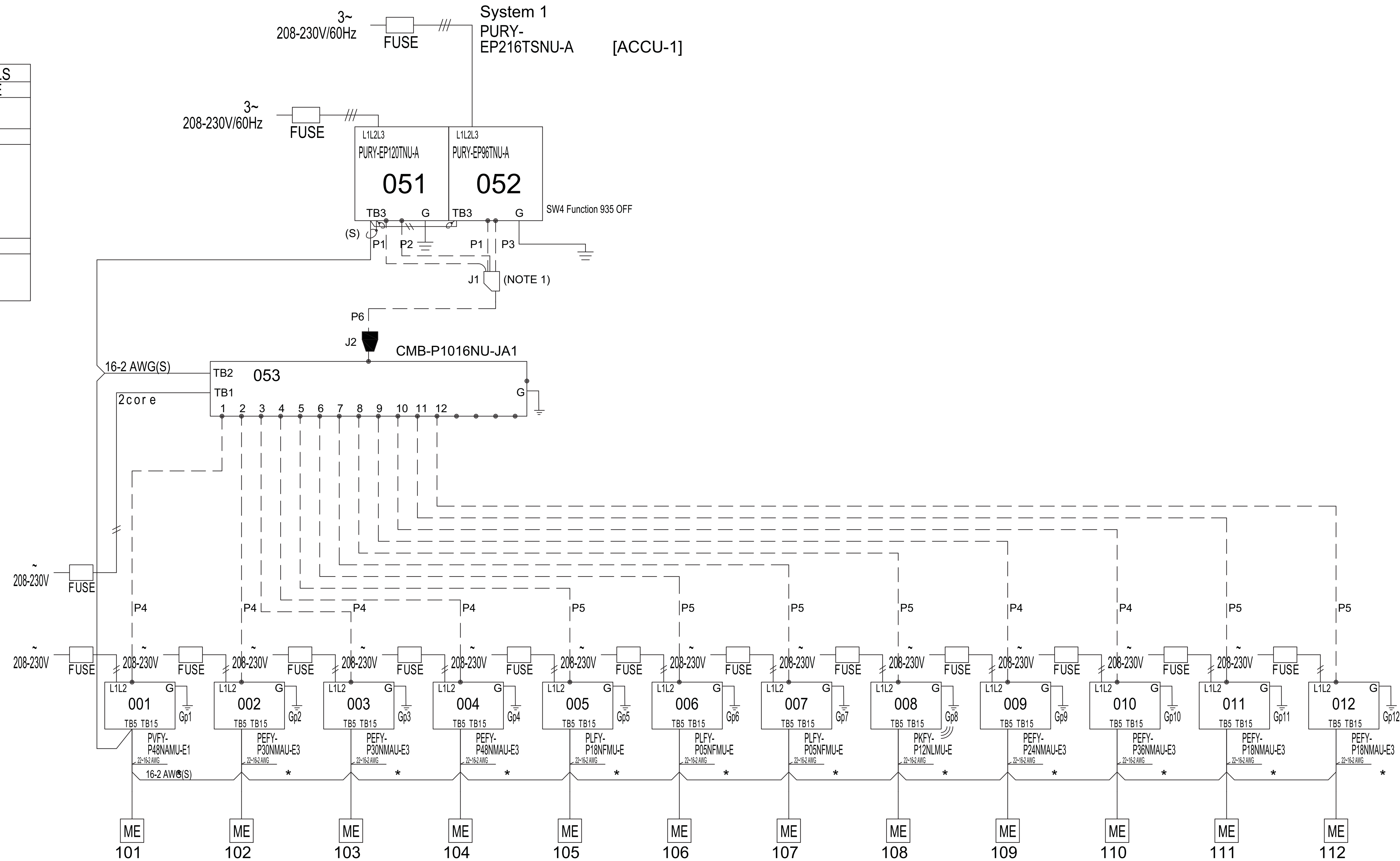
This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.

$$1.25\text{mm}^2 (16 \text{ AWG}) : 1.25\text{mm}^2 (16 \text{ AWG}) \text{ or more.} \quad 0.75\text{mm}^2 (20 \text{ AWG}) : \text{between } 0.5\text{mm}^2 (24 \text{ AWG}) \text{ and } 0.75\text{mm}^2 (20 \text{ AWG}).$$

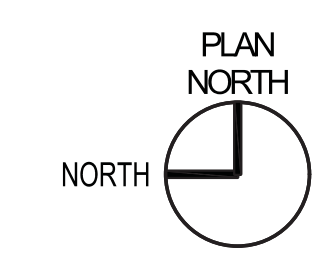
Coded Notes:
NOTE 1: Install twinning Y's within 15 degrees of level and with 20 inches of straight pipe on converging connection - reference installation manual for additional details including but not limited to special trapping requirements when twinning, and pipe slope requirements

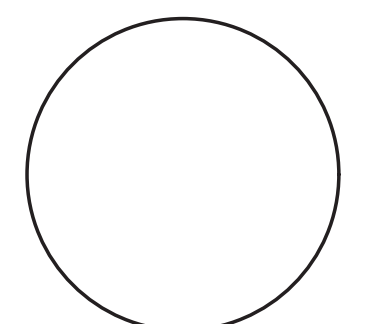
PIPING AND CONTROLS	
SYMBOL BRANCH PIPE MODEL NAME	
J1	CMY-R200NCBK
J2	CMY-R302S-G1
SYMBOL LIQUID PIPE/GAS PIPE SIZE	
P1	3/4
P2	1-1/8
P3	7/8
P4	3/8 / 5/8
P5	1/4 / 1/2
P6	7/8 / 1-1/8
NOTES	
* If the thermostat wiring greater than 32' then use 16-2 AWG only	



- 203 Office AHU-203
- 505 Office AHU-505
- 504 Office AHU-504
- 301 Passport Lobby AHU-301
- 601 Lunch Room AHU-601
- 502 Private Office AHU-502
- 503 Private Office AHU-503
- 602 Conference AHU-602
- 501 Clerk Lobby AHU-501
- 407 Elections Lobby AHU-407
- 404 Office AHU-404
- 506 Corner Clerk AHU-506

REMARKS
Originator: George Wehnert for Whitman Engineering
Comments:




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 No. 24GA28009600

SEAL:

JEFFREY THOENS, P.E. DATE
 NEW JERSEY PROFESSIONAL ENGINEER L.C. NO. 24GE04929100 PROJECT No. 21-02-11T

SEPTEMBER 2021

No.	Revision Description	Date

Drawn by:
Checked by:

113316.01

**MECHANICAL
SCHEMATIC
DIAGRAM**

M200

ORIGINAL
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(ACCU) VRF OUTDOOR UNIT SCHEDULE

TAG	MANUFACTURER	MODEL	NOM. COOLING CAPACITY (BTU/H)	NOM. HEATING CAPACITY (BTU/H)	EER	CORRECTED SYSTEM CAPACITY		REFRIG PIPE DIM LIQUID/SUCT ION (INCH)	MAX PIPE LENGTH	COMPRESOR TYPE	VOLTAGE/PH	ELECTRICAL MCA/MFS (A)	M-NET	WEIGHT LBS	REMARKS
						COOLING TOTAL CAPACITY (BTU/H)	HEATING CAPACITY (BTU/H)								
ACCU-1	DAIKIN	FXR125V1A	216,000	243,000	12.85	215	148	7/8 / 1 1/8	86.6	SCROLL (2)	208V / 3PH	41/31 / 60/45	51.52	1235	SEE NOTES

- NOTES:
 1. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80 / 67F (DB/WB), OUTDOOR OF 95F (DB).
 2. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70F (DB), OUTDOOR OF 43F (WB).
 3. EFFICIENCY VALUES FOR EER, IEER, COP ARE BASED ON AHRI 1230 TEST METHOD FOR MIXTURE OF DUCTED & NON-DUCTED INDOOR UNITS.
 4. PROVIDE WITH 14" ROOF CURB.

(BCC) VRF BRANCH CIRCUIT CONTROLLER

TAG	MANUFACTURER	MODEL	TYPE	CORRECTED CAPACITY TO BC (BTU/H)	VOLTAGE/PH	POWER HEATING(KW)	POWER COOLING(KW)	M-NET	WEIGHT LBS	REMARKS
BCC-1	DAIKIN	CCU125V1A	MAIN	274,000	208V / 3PH	0.137	0.258	53	150	SEE NOTES

- NOTES:
 1. INCLUDE DIAMONDBACK BALL VALVES BV-SERIES, 700PSIG WORKING PRESSURE, FULL PORT, 410A RATED.
 2. PROVIDE REFRIGERATION BALL VALVE-BRAZE/SCHRADER/INSULATED - 3/8" SIZE.
 3. PROVIDE REFRIGERATION BALL VALVE-BRAZE/SCHRADER/INSULATED - 5/8" SIZE

DEDICATED OUTDOOR AIR UNIT

TAG	MANUFACTURER MODEL	SUPPLY FAN				COOLING				HEATING			ELECTRICAL DATA			WEIGHT LBS	REMARKS
		SA CFM	OA	EXHAUST	FAN RPM	HP	SP	TOTAL CAP. (MBH)	SENSIBLE CAP. (MBH)	TOTAL CAP. (MBH)	EAT (DB)	LAT (DB)	MCA	VOLTS/PH	MOC		
DOAS-1	PREMISYS MPE-1-W1-52-060-1	1,200	1,200	1,200	1767	1.00	1.87	65	42.2	33.3	55.8	83.9	72	208V / 3PH	80	3,144	SEE NOTES

- NOTES:
 1. PROVIDE WITH ECONOMIZER.
 2. PROVIDE WITH PIVOT SMART THERMOSTAT.
 3. CONFIGURE FOR DOWNWARD FLOW.
 4. PROVIDE WITH 14" ROOF CURB.
 5. UNIT TO BE SINGLE ELECTRICAL CONNECTION. E.C. SHALL PROVIDE UNIT WITH POWERED CONVENIENCE OUTLET, WEATHERPROOF NON-FUSED DISCONNECT SWITCH, CONTROL PANEL SERVICE LIGHTS. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
 6. FURNISH UNITS WITH PHASE AND BROWNOUT PROTECTION.
 7. FURNISH UNIT WITH POWER EXHAUST & HOT GAS REHEAT.
 8. STATIC PRESSURE LISTED IS THE EXTERNAL STATIC PRESSURE AND EXCLUDES ANY PRESSURE DROP WITHIN THE UNIT.
 9. FURNISH WITH STAINLESS STEEL DRAIN PAN, P-TRAP, CONDENSATE OVERFLOW SWITCH.
 10. FURNISH UNITS WITH 2" MERV 8 FILTERS, CLOGGED FILTER INDICATION.
 11. BASIS OF DESIGN CARRIER OR PROVIDE APPROVED EQUAL.

FAN SCHEDULE

TAG	MANUFACTURER MODEL	LOCATION	AREA SERVED	FAN PERFORMANCE			ELECTRICAL DATA			dBA	WEIGHT LBS	REMARKS
				CFM	TOTAL SP	FAN RPM	POWER	VOLTS/PH	DRIVE			
EF-A	GREENHECK CSP-A700-VG	INLINE	BATHROOMS	275	1.0	1,534	126W	208V / 1PH	DIRECT	39	39	SEE NOTES

- NOTES:
 1. FURNISH UNIT WITH CORROSION RESISTANT GALVANIZED STEEL HOUSING, BACKWARD INCLINED WHEEL, BIRDSCREEN, AND VIBRATION ISOLATION MOTOR MOUNTS.
 2. FURNISH WITH UNIT BACKDRAFT DAMPER AND BRACKETS.
 3. DISCONNECT SWITCH BY ELECTRICAL CONTRACTOR.
 4. FURNISH UNIT WITH UNIT MOUNTED SPEED CONTROLLER, MOTOR WITH THERMAL OVERLOADS, AND STEEL MOTOR COVER.
 5. COORDINATE MOTOR POSITION IN FIELD.

(AHU) VRF INDOOR UNIT SCHEDULE

TAG	MANUFACTURER	MODEL	TYPE	OA (CFM)	NOM. COOLING CAPACITY (BTU/H)	NOM. HEATING CAPACITY (BTU/H)	COOLING DESIGN ENTERING TEMP DB/WB (F)	HEATING DESIGN ENTERING TEMP DB/WB (F)	CORRECTED SYSTEM CAPACITY			REFRIG PIPE DIM LIQUID/SUCT ION (INCH)	FAN AIRFLOW (CFM)	SOUND PRESSURE PER FAN SPEED 208V (dBA)	VOLTAGE/PH	ELECTRICAL MCA/MFS (A)	M-NET ADDRESS	WEIGHT LBS	REMARKS
									COOLING TOTAL CAPACITY (BTU/H)	COOLING SENSIBLE CAPACITY (BTU/H)	HEATING CAPACITY (BTU/H)								
AHU-203	DAIKIN	PVFX-P48NAMU-E1	AIR HANDLER	150	48,000	54,000	80/67	70	37,236	29,586	26,053	3/8 / 5/8	1400	43	208V / 1PH	5.63/15	1	172	SEE NOTES
AHU-301	DAIKIN	PEFY-P48NMAU-E3	CONCEALED DUCTED	200	48,000	54,000	80/67	70	37,236	29,586	26,053	3/8 / 5/8	1412	44	208V / 1PH	3.51/15	4	86	SEE NOTES
AHU-404	DAIKIN	PEFY-P18NMAU-E3	CONCEALED DUCTED	30	18,000	20,000	80/67	70	13,953	12,957	9,649	3/8 / 5/8	600	35	208V / 1PH	1.56/15	11	58	SEE NOTES
AHU-407	DAIKIN	PEFY-P36NMAU-E3	CONCEALED DUCTED	175	36,000	40,000	80/67	70	27,927	24,887	19,298	3/8 / 5/8	1165	41	208V / 1PH	3.50/15	10	86	SEE NOTES
AHU-501	DAIKIN	PEFY-P24NMAU-E3	CONCEALED DUCTED	50	24,000	27,000	80/67	70	18,618	17,184	13,026	3/8 / 5/8	880	39	208V / 1PH	2.73/15	9	67	SEE NOTES
AHU-502	DAIKIN	PLFY-P05NFMU-E	CASSETTE	20	5,000	5,600	80/67	70	3,878	3,878	2,701	1/4 / 1/2	280	30	208V / 1PH	0.24/15	6	28.9	SEE NOTES
AHU-503	DAIKIN	PLFY-P05NFMU-E	CASSETTE	20	5,000	5,600	80/67	70	3,878	3,878	2,701	1/4 / 1/2	280	30	208V / 1PH	0.24/15	7	28.9	SEE NOTES
AHU-504	DAIKIN	PEFY-P30NMAU-E3	CONCEALED DUCTED	-	30,000	34,000	80/67	70	23,272	18,934	16,403	3/8 / 5/8	920	39	208V / 1PH	2.73/15	3	67	SEE NOTES
AHU-505	DAIKIN	PEFY-P30NMAU-E3	CONCEALED DUCTED	-	30,000	34,000	80/67	70	23,272	18,934	16,403	3/8 / 5/8	920	39	208V / 1PH	2.73/15	2	67	SEE NOTES
AHU-506	DAIKIN	PEFY-P18NMAU-E3	CONCEALED DUCTED	30	18,000	20,000	80/67	70	13,953	12,957	9,649	3/8 / 5/8	600	35	208V / 1PH	1.56/15	12	58	SEE NOTES
AHU-601	DAIKIN	PLFY-EP18NEMU-E1	CASSETTE	-	18,000	20,000	80/67	70	13,953	12,957	9,649	1/4 / 1/2	812	34	208V / 1PH	0.54/15	5	55	SEE NOTES
AHU-602	DAIKIN	PKFY-P12NLMU-E	WALL-MOUNTED	-	12,000	13,500	80/67	70	9,309	6,986	6,513	1/4 / 1/2	300	41	208V / 1PH	0.24/15	8	24.5	SEE NOTES

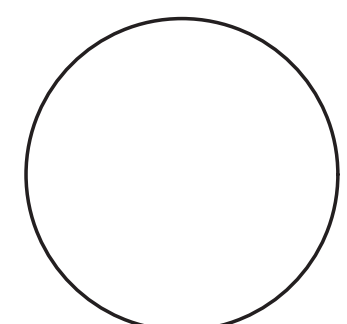
- NOTES:
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 2. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70F (DB), OUTDOOR OF 43F (WB).
 3. SEE OUTDOOR UNIT SCHEDULE FOR OUTDOOR AMBIENT CONDITIONS, CONNECTED CAPACITY, AND OTHER FACTORS ASSOCIATED WITH CORRECTED CAPACITIES.
 4. FURNISH WITH BLUE MAXI BLUE CONDENSATE DRAIN PUMP AND ACCESSORIES FOR INSTALLATION. WIRE PUMP POWER FROM INDOOR UNIT. DRAIN PAN WITH LEVEL SENSOR.
 5. PROVIDE FILTER BOXES WITH 2" MERV 8 FILTERS.
 6. PROVIDE ELECTRICAL DISCONNECT FOR INDOOR UNIT. ELECTRICAL CONTRACTOR TO FURNISH OUTDOOR DISCONNECT AND INSTALL ALL DISCONNECTS.
 7. REFRIGERANT PIPING SHALL BE SIZED BASED ON ACTUAL LINE LENGTH AND THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL REQUIRED PIPING SPECIALTIES.
 8. PROVIDE DIAMOND BACK BALL VALVES AT EACH UNIT. BV SERIES 700PSIG WORKING PRESSURE, FULL PORT 410 RATED.
 9. PROVIDE WITH ME CONTROLLER.

DIFFUSERS AND REGISTERS SCHEDULE

TAG NO.	MANUFACTURER	MODEL	SIZE	MAX CFM	DESCRIPTION	NC	REMARKS
CD-A	KRUEGER	PLQ	12X12	TABLE 1	STEEL DIFFUSER WITH REMOVABLE SQUARE PLAQUE FACE	<35	SEE NOTES
CD-B	KRUEGER	PLQ	24X24	TABLE 1	STEEL DIFFUSER WITH REMOVABLE SQUARE PLAQUE FACE	<35	SEE NOTES
RG-A	KRUEGER	6390	12X12	500	STEEL RETURN GRILLE WITH 1/2" SPACING AND 35-DEGREES DEFLECTION	<35	SEE NOTES
RG-B	KRUEGER	6390	12X24	1000	STEEL RETURN GRILLE WITH 1/2" SPACING AND 35-DEGREES DEFLECTION	<35	SEE NOTES
RG-C	KRUEGER	6390	24X24	1400	STEEL RETURN GRILLE WITH 1/2" SPACING AND 35-DEGREES DEFLECTION	<35	SEE NOTES
SG-A	KRUEGER	880	12X6	350	STEEL DOUBLE DEFLECTION SUPPLY GRILLE WITH 3/4" BLADE SPACING	<35	SEE NOTES
SG-B	KRUEGER	880	18X6	550	STEEL DOUBLE DEFLECTION SUPPLY GRILLE WITH 3/4" BLADE SPACING	<35	SEE NOTES
SG-C	KRUEGER	880	18X10	825	STEEL DOUBLE DEFLECTION SUPPLY GRILLE WITH 3/4" BLADE SPACING	<35	SEE NOTES
LD-A	KRUEGER	DFL10	SEE PLAN	-	2NV, 2-SLOT 1" SLOT, ALUMINUM CONTINUOUS LINEAR CEILING DIFFUSER	<35	SEE NOTES

- NOTES:
 1. COORDINATE RAL CUSTOM COLOR AND FINISH WITH ARCHITECT.
 2. SEE FLOOR PLAN FOR AIRFLOW THROW DIRECTIONS.
 3. PROVIDE ADJUSTABLE VOLUME DAMPER AT START OF BRANCH LINE.
 4. COORDINATE INSTALL WITH ARCHITECT PLAN FOR CEILING TYPE/WALL CONSTRUCTION TYPE.
 5. PROVIDE WIRE SUPPORT FOR AIR DEVICES.
 6. LINEAR DIFFUSERS SHALL BE CONTINUOUS WITH BLANK OFF DFBO. REFER TO PLAN FOR ACTIVE SIZING.

TABLE 1 - DIFFUSER NECK SIZE SCHEDULE
6" DIA. Up to 120 CFM
8" DIA. 121 to 250 CFM
10" DIA. 251 to 375 CFM
12" DIA. 376 to 500 CFM
14" DIA. 501 to 675 CFM



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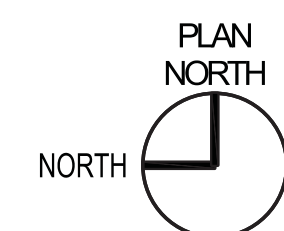
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MECHANICAL SCHEDULES

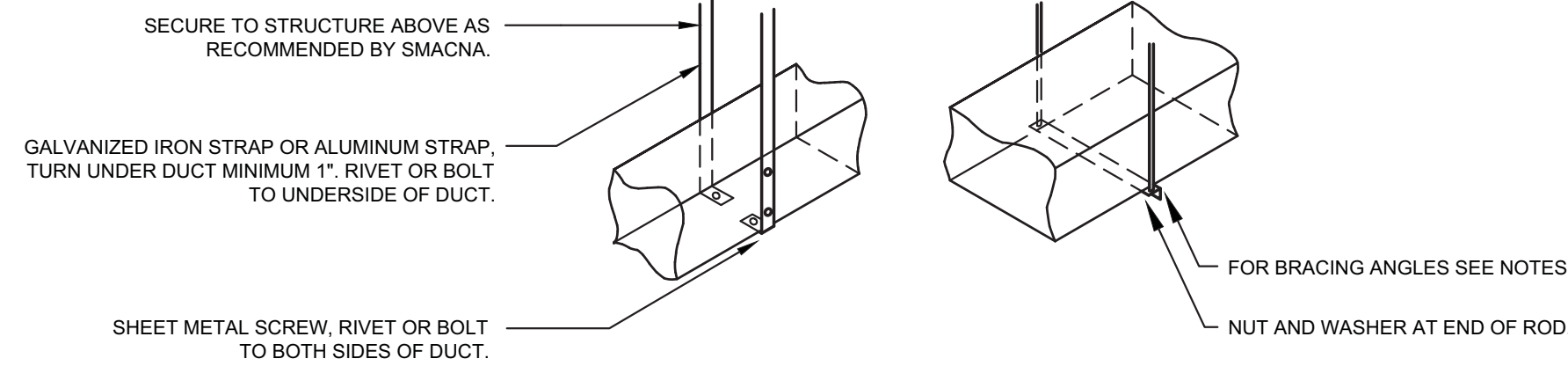
M300



ORIGINAL IF IT IS RED IT IS AN ORIGINAL

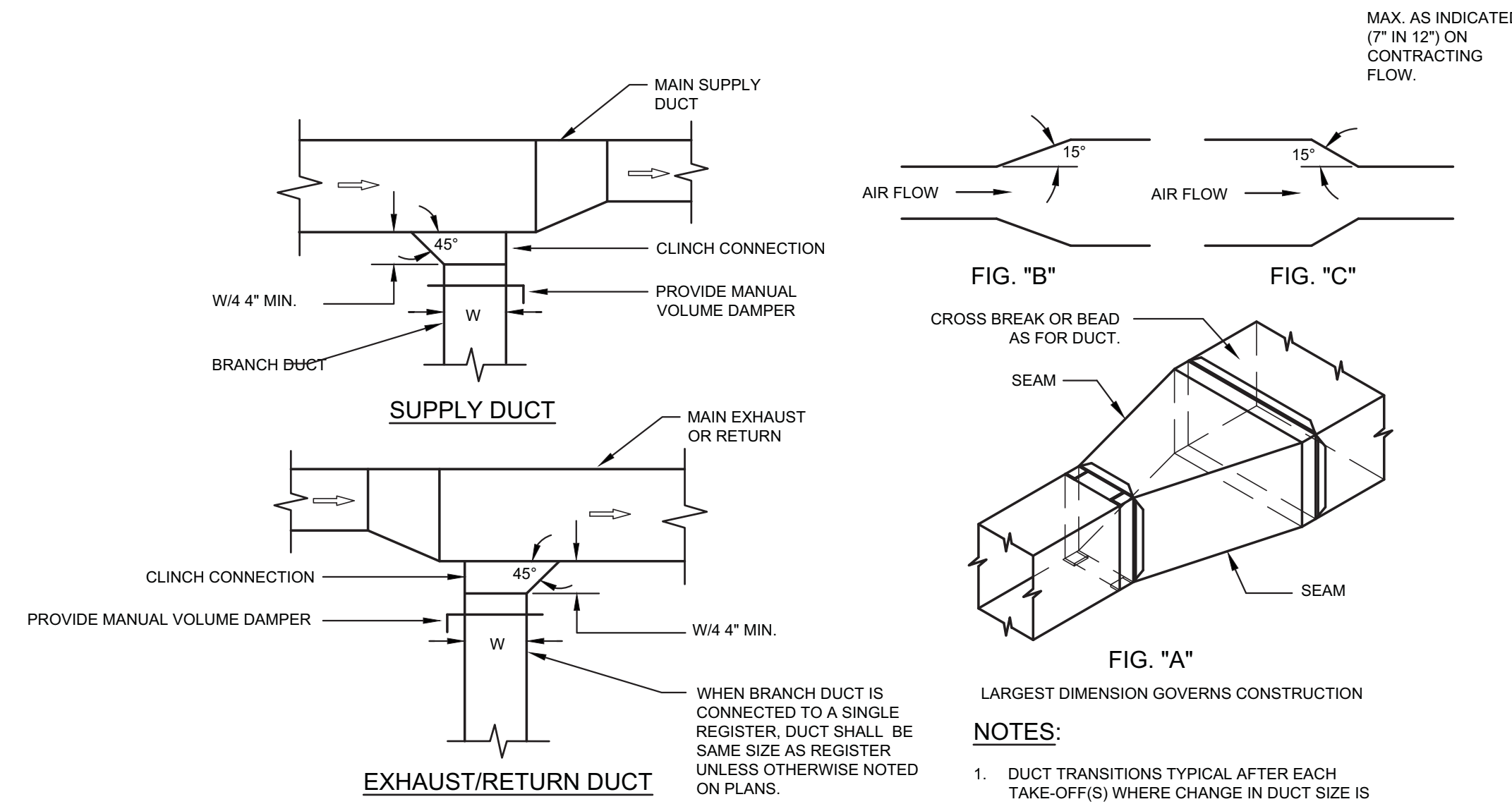
RECTANGULAR DUCT HANGER SCHEDULE (MINIMUM SIZES)

HALF DUCT PERIMETER RANGE	PAIR AT 10' SPACING		PAIR AT 8' SPACING		PAIR AT 5' SPACING		PAIR AT 4' SPACING	
	STRAP	WIRE/ROD	STRAP	WIRE/ROD	STRAP	WIRE/ROD	STRAP	WIRE/ROD
P/2 < 30"	1"x 22 GA.	10 GA. (0.135")	1"x 22 GA.	10 GA. (0.135")	1"x 22 GA.	12 GA. (0.106")	1"x 22 GA.	12 GA. (0.106")
P/2 < 72"	1"x 18 GA.	3/8"	1"x 20 GA.	1/4"	1"x 22 GA.	1/4"	1"x 22 GA.	1/4"
P/2 < 96"	1"x 16 GA.	3/8"	1"x 18 GA.	3/8"	1"x 20 GA.	3/8"	1"x 22 GA.	1/4"
P/2 < 120"	1-1/2"x 16 GA.	1/2"	1"x 16 GA.	3/8"	1"x 18 GA.	3/8"	1"x 20 GA.	1/4"
P/2 < 168"	1-1/2"x 16 GA.	1/2"	1"x 16 GA.	1/2"	1"x 16 GA.	3/8"	1"x 18 GA.	3/8"
P/2 < 192"	-	1/2"	1-1/2"x 16 GA.	1/2"	1"x 16 GA.	3/8"	1"x 16 GA.	3/8"



1 DUCT HANGER SCHEDULE AND DETAILS

M400 SCALE: NONE

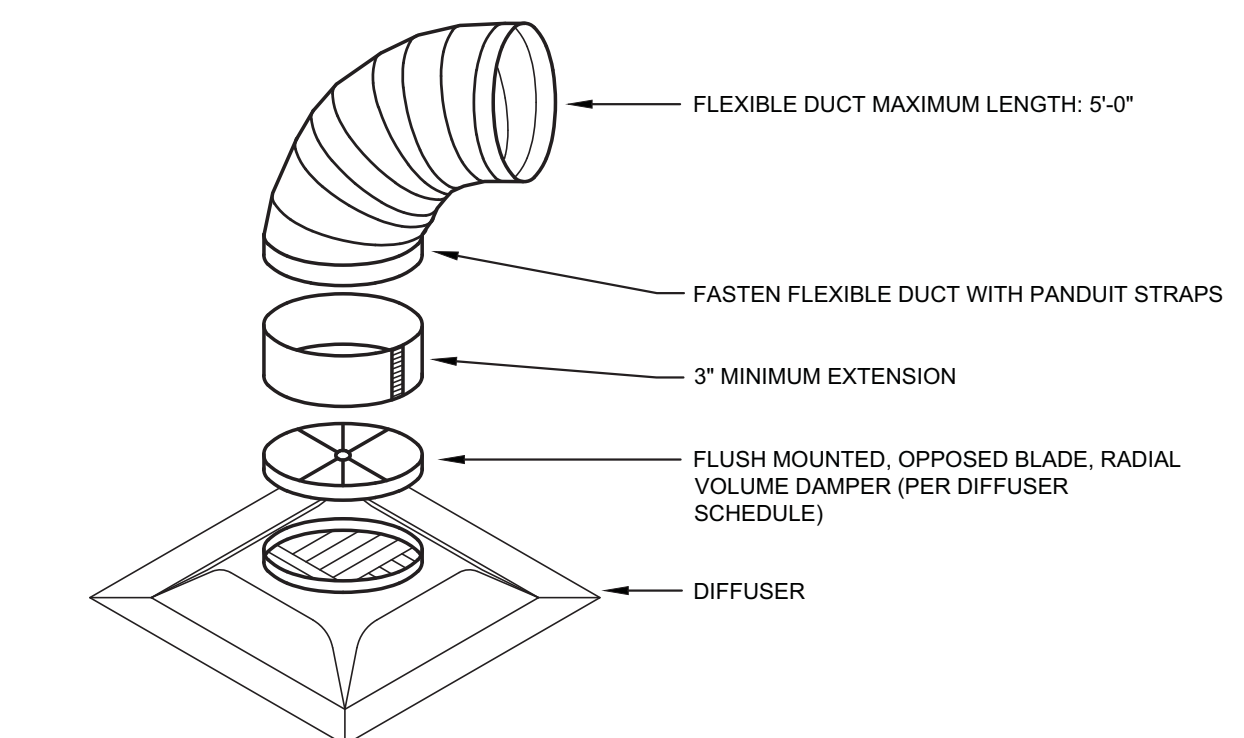


2 DUCT TAKE-OFF AND TRANSITION DETAILS

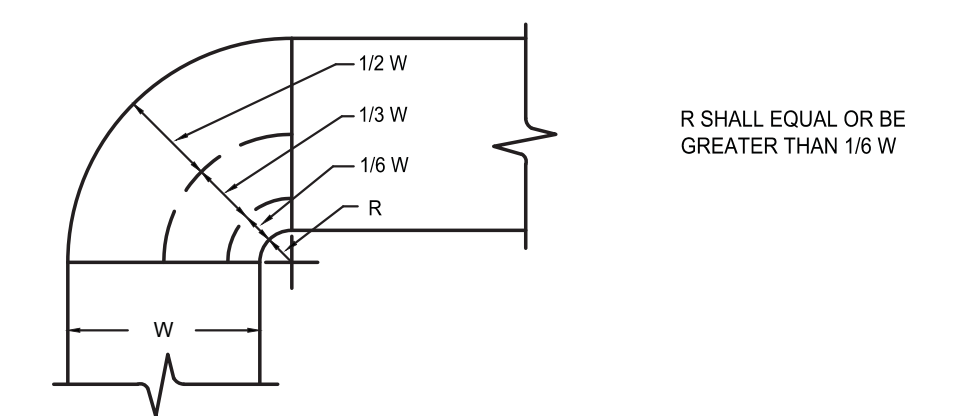
M400 SCALE: NONE

3 FLEX DUCT CONNECTION AT DIFFUSER DETAIL

M400 SCALE: NONE

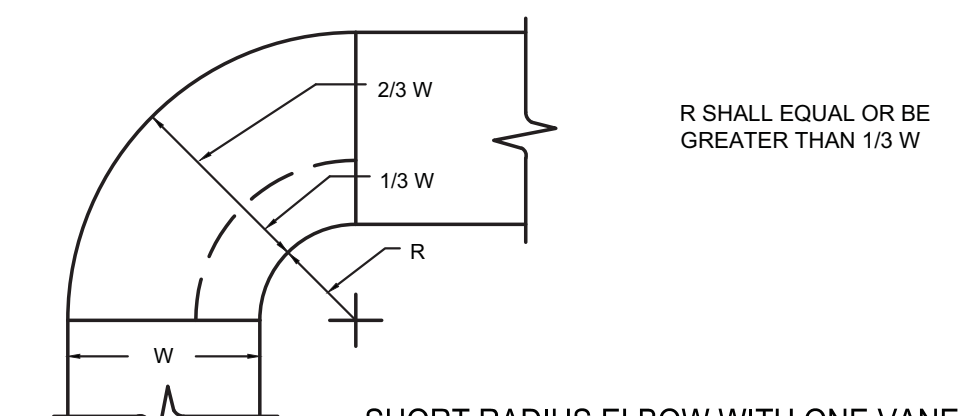


- NOTES:**
1. PROVIDE AT FLEXIBLE DUCT CONNECTION METAL OR "PANDUIT" DRAWBAND ON THE INTERIOR FLEXIBLE DUCT HELIX. SECURE THE INSULATION OVER THE DRAW BAND WITH AN ADDITIONAL DRAWBAND.
 2. PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER.
 3. PROVIDE MINIMUM 3" COLLARS FOR ATTACHMENT OF THE FLEX DUCT TO ROUND DUCT, DAMPERS AND DIFFUSERS.
 4. BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.
 5. LOCK BALANCING DAMPER AT BRACH TAKE-OFF INTO PLACE AND PERMANENTLY MARK POSITION.

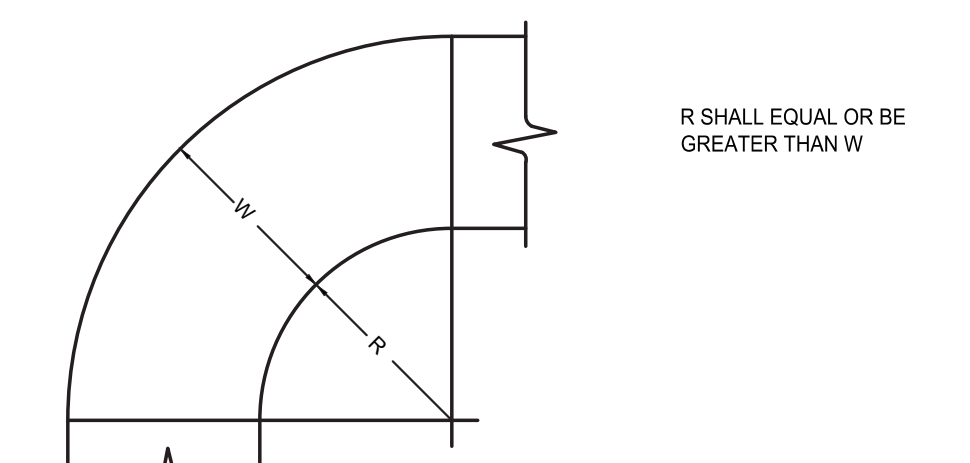


R SHALL EQUAL OR BE GREATER THAN 1/8 W

NOTES:
THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
ALL STANDARD RADIUS ELBOWS SHOWN ON PLANS MAY BE MADE SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.



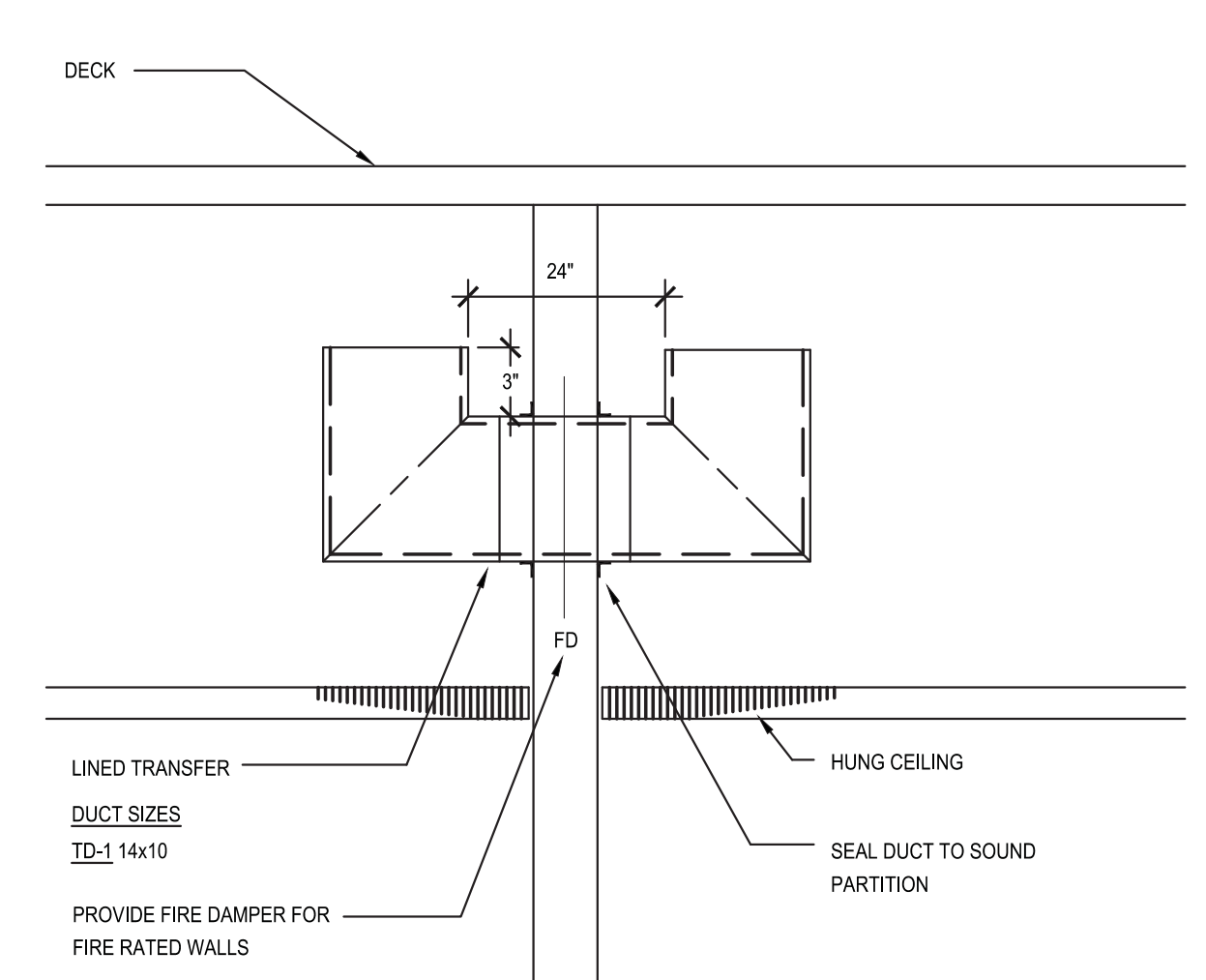
R SHALL EQUAL OR BE GREATER THAN 1/3 W



R SHALL EQUAL OR BE GREATER THAN W

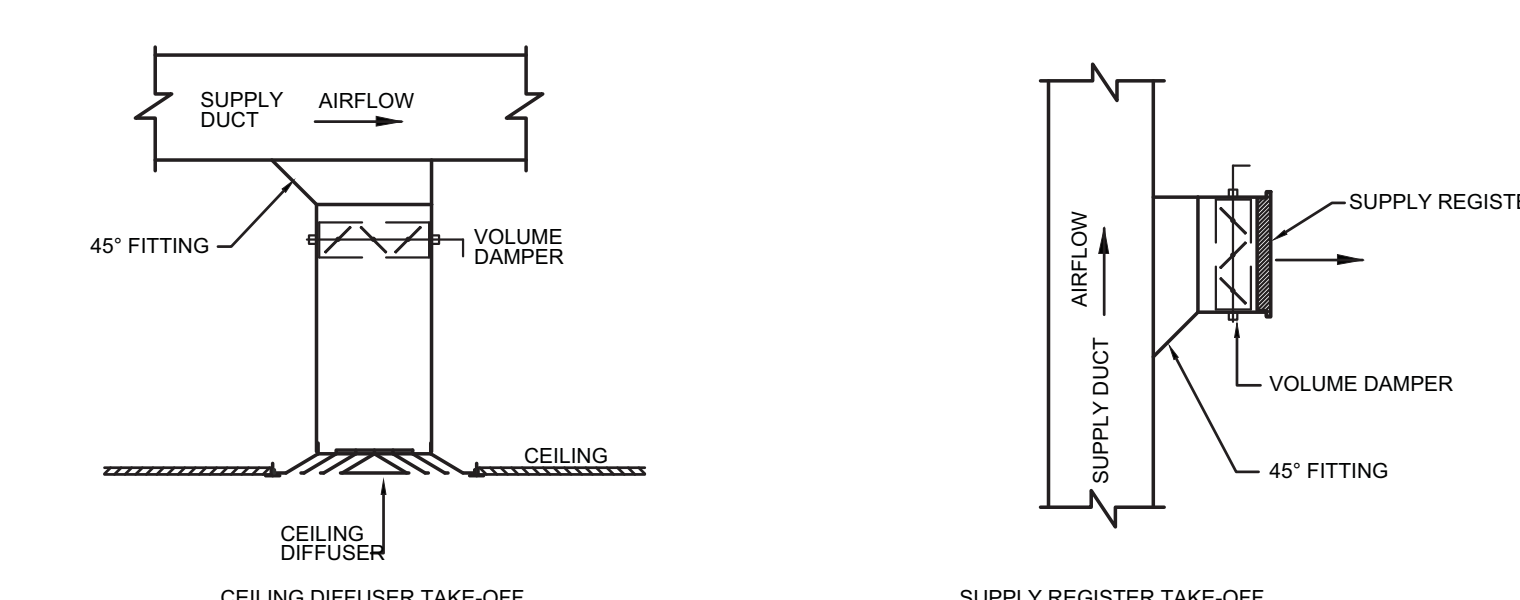
4 RADIUS ELBOWS

M400 SCALE: N.T.S.



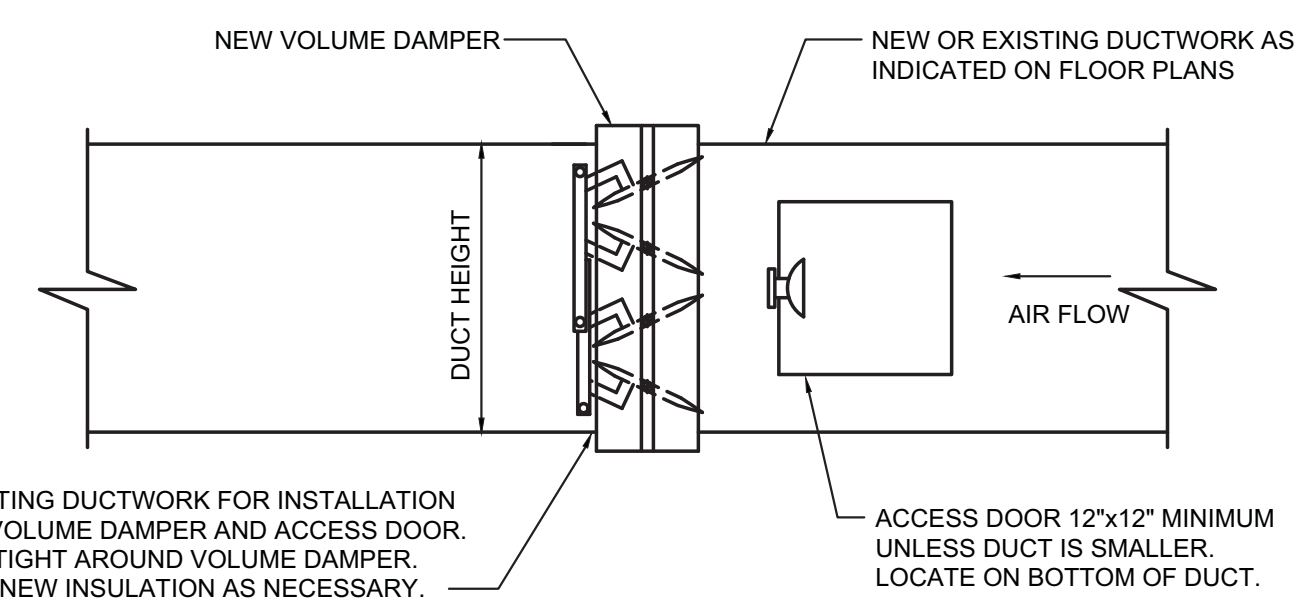
5 TRANSFER DUCT DETAIL

M400 SCALE: NONE



6 SUPPLY DUCT TAKE-OFF DETAILS

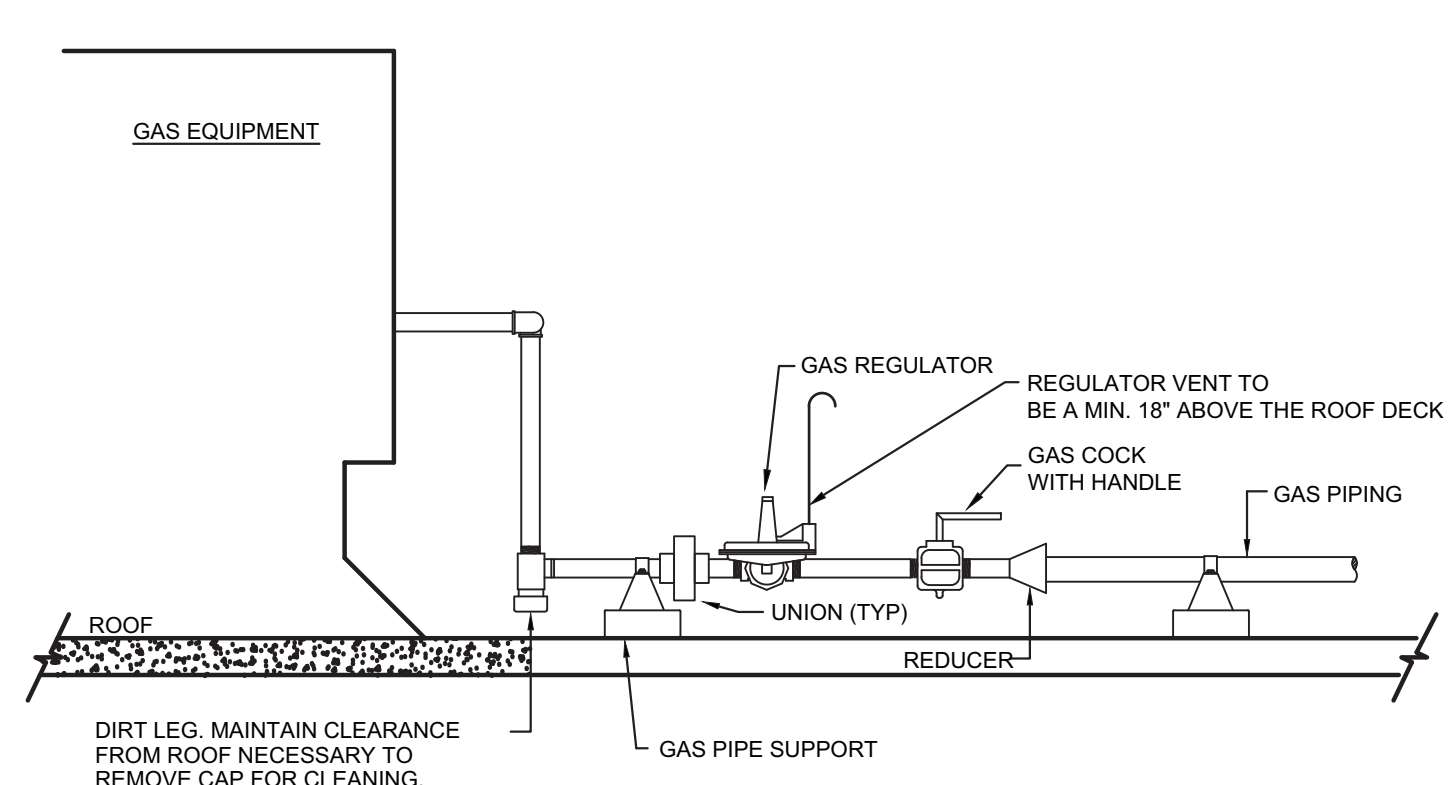
M400 SCALE: NONE



CUT EXISTING DUCTWORK FOR INSTALLATION OF NEW VOLUME DAMPER AND ACCESS DOOR. SEAL AIRTIGHT AROUND VOLUME DAMPER. PROVIDE NEW INSULATION AS NECESSARY.

7 VOLUME DAMPER DETAIL

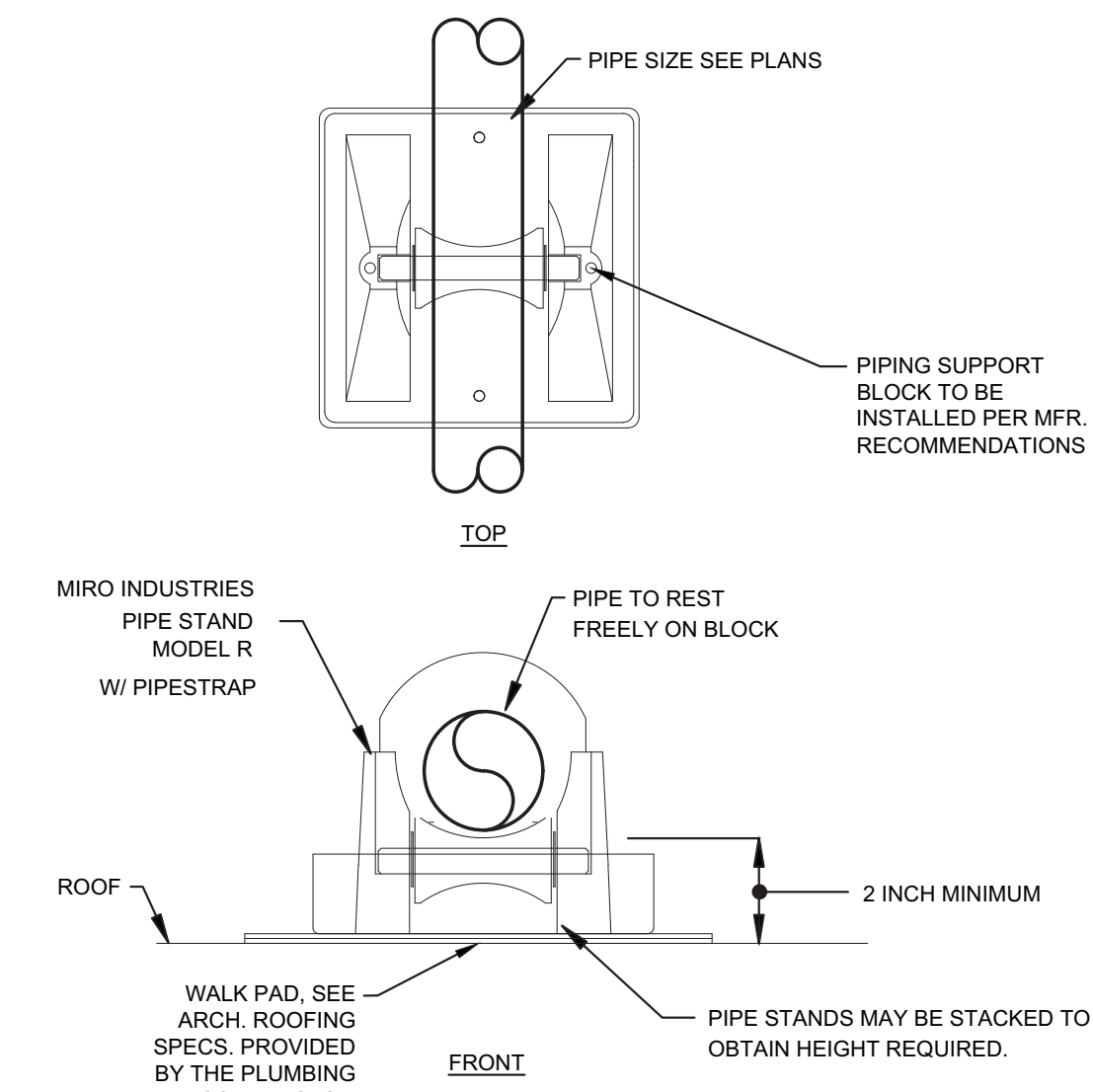
M400 SCALE: N.T.S.



- NOTES:**
1. ABOVE DETAIL FOR ALTERNATE #1.

8 ROOFTOP UNIT GAS CONNECTION DETAIL

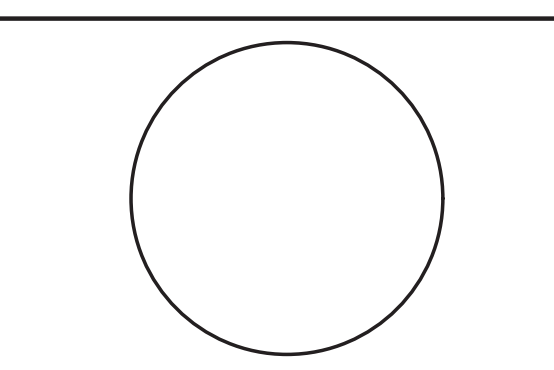
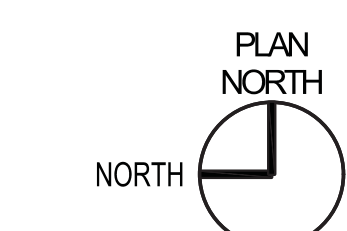
M400 SCALE: NONE



NOTE: ALL ROOFTOP GAS LINES SUPPORTS SHALL BE FULLY ADHERED TO THE ROOF PAD AND THE ROOF PADS SHALL BE FULLY ADHERED TO THE ROOF SURFACE.

9 ROOFTOP PIPE SUPPORT

M400 SCALE: NONE



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No.	Revision Description	Date
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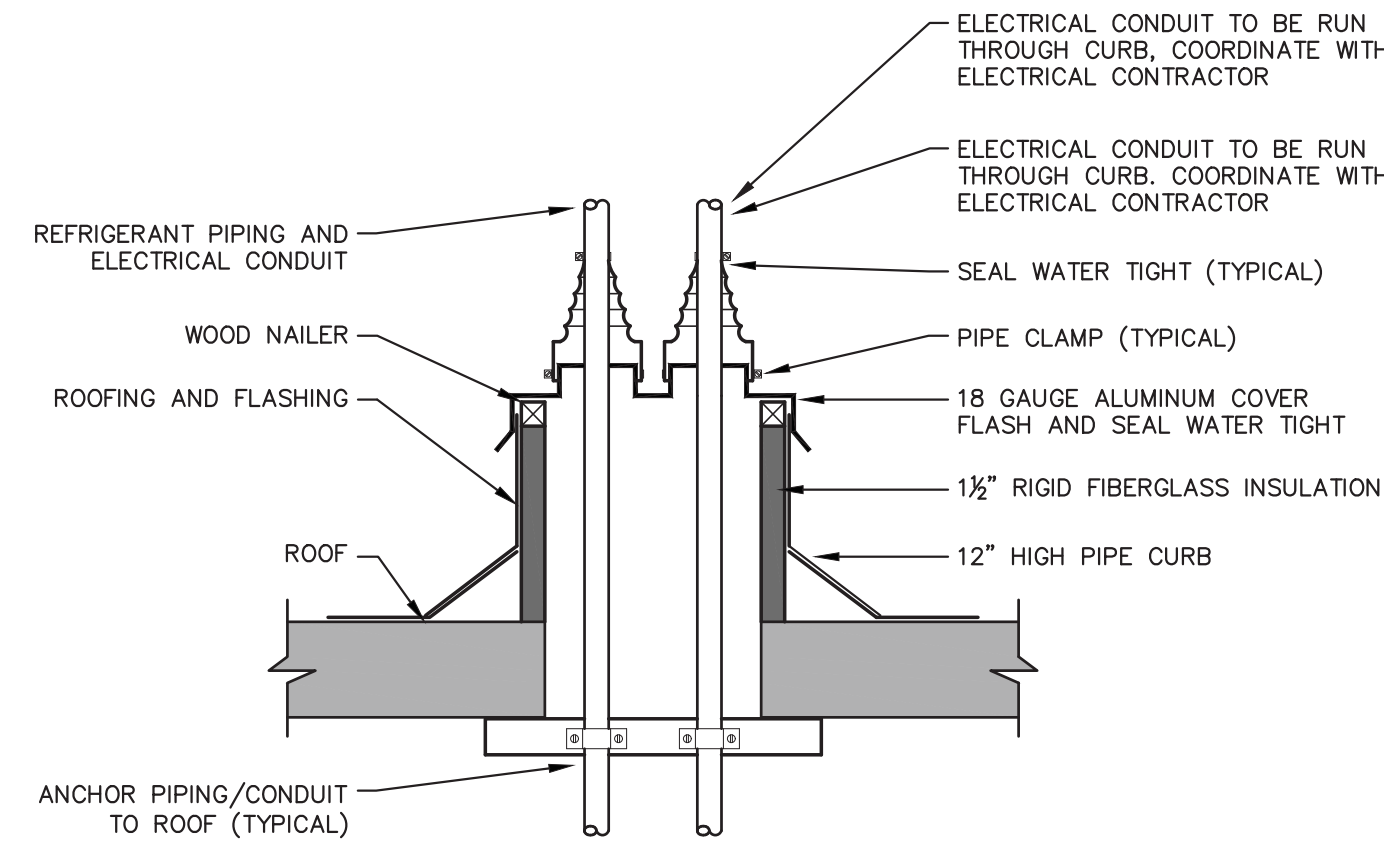
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MECHANICAL DETAILS

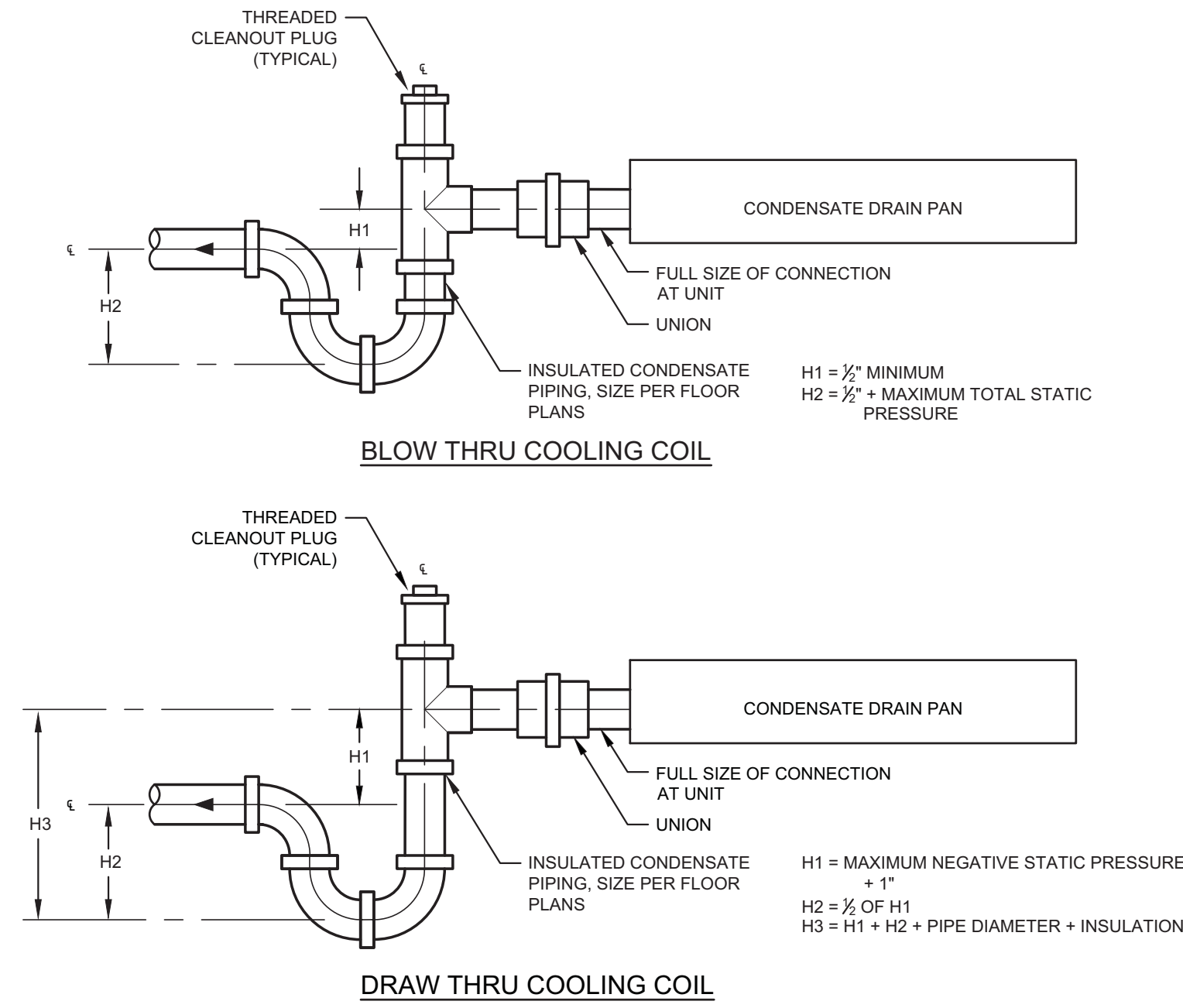
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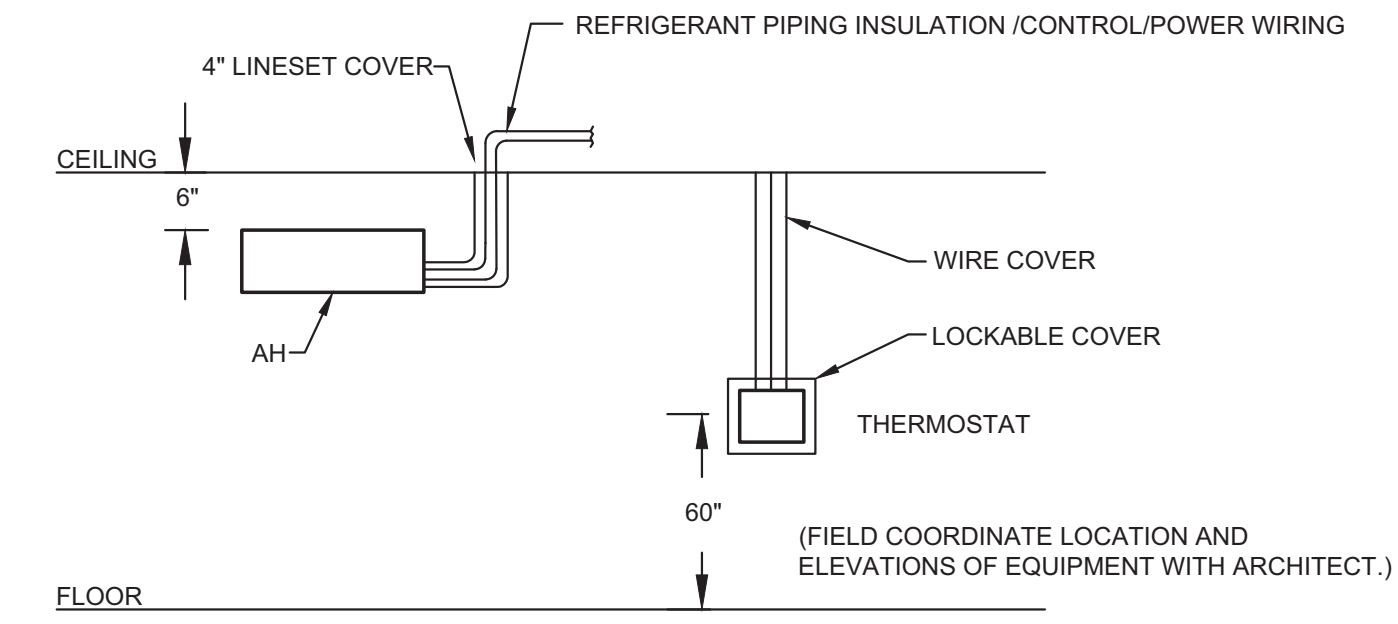


- NOTES:
- HVAC CONTRACTOR SHALL COORDINATE ALL CURB AND PENETRATION FLASHING REQUIREMENTS WITH THE GENERAL CONTRACTOR. ALL PENETRATIONS SHALL BE SEALED AIR AND WATER TIGHT.

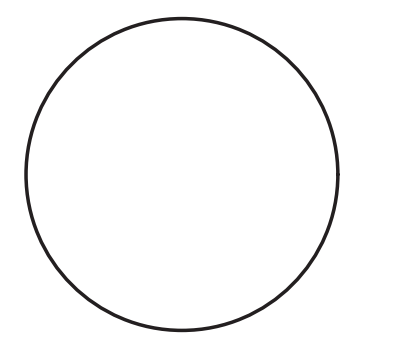
1 PIPING PENETRATION THRU ROOF DETAIL
SCALE: NONE



2 AIR CONDITIONING CONDENSATE PIPING DETAIL
SCALE: N.T.S.



3 AH AND THERMOSTAT DIAGRAM
SCALE: NONE



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N.J. 21A102068500

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EACH CONTRACTOR SHALL THOROUGHLY EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS FOR THE PROJECT AND NOT LIMIT THEIR WORK TO DRAWINGS REFERENCED FOR INDIVIDUAL TRADES.

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CERTIFICATE OF AUTHORIZATION
No. 24GA28009600

SEAL:

JEFFREY THOENS, P.E. DATE
NEW JERSEY PROFESSIONAL ENGINEER LIC. NO. 24GE04929100 PROJECT No. 21-02-11T

SEPTEMBER 2021

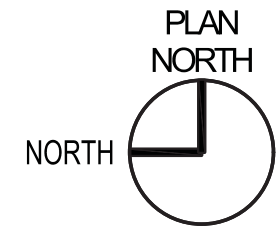
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MECHANICAL
DETAILS

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1.0 GENERAL NOTES

- A. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE PROJECT SCOPE OF WORK AND ADDITIONAL NOTES.
B. THE APPLICABLE PROVISIONS OF THE GENERAL CONSTRUCTION SPECIFICATIONS SHALL APPLY.
C. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS UPON WHICH THE CONTRACTOR SHALL SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR PROVISIONS.
D. PROPER FIRE PROTECTION MEASURES, SATISFACTORY TO THE LOCAL FIRE DEPARTMENT SHALL BE TAKEN WHEN WELDING OR FOR CUTTING WITH TORCHES OR ELECTRIC ARC.
E. THE CONTRACTOR SHALL PROVIDE ALL ITEMS OF LABOR OR MATERIALS NOT SPECIFICALLY INDICATED, BUT REQUIRED TO COMPLETE THE INTENDED INSTALLATIONS.
F. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF SAME WHICH MAY BE DAMAGED, LOST OR STOLEN, WITHOUT ADDITIONAL COSTS TO THE OWNER.
G. ALL WORK AND MATERIAL TO BE IN ACCORDANCE WITH BASE BUILDING SPECIFICATIONS AND LEASE REQUIREMENT AND TENANT WORK LETTER UNLESS NOTED OTHERWISE ON PLANS. A COPY OF THE REGULATIONS CAN BE OBTAINED AT THE BUILDING OFFICE.
H. ALL EXISTING SUPPLY AND OUTSIDE AIR DUCTWORK WHERE INSULATION IS MISSING OR DAMAGED SHALL BE FULLY INSULATED WITH THERMAL INSULATION.
I. ALL OPENINGS RESULTING FROM REMOVAL OF EXISTING DUCTWORK, CEILING DIFFUSERS AND CEILING REGISTERS SHALL BE BLANKED-OFF AND AIR TIGHT, AS PER SMACNA.
J. BUILDING SHALL REMAIN OPEN DURING RENOVATION. THE CONTRACTOR SHALL SEQUENCE CONSTRUCTION IN ORDER TO ALLOW CONTINUED OPERATIONS. THE CONTRACTOR SHALL ENSURE THAT WORK DOES NOT INTERFERE WITH OR PROHIBIT THE CONTINUING OCCUPATION OF ADJACENT OPERATIONS WITHIN THE STRUCTURE. THIS INCLUDES, BUT IS NOT LIMITED TO, THE SELECTIVE DEMOLITION OF PARTITIONS, ELECTRICAL AND MECHANICAL SYSTEMS. THE CONTRACTOR SHALL INFORM THE OWNER A MINIMUM OF 72 HOURS PRIOR TO DEMOLITION OF ACTIVITIES THAT WILL AFFECT THE NORMAL OPERATION OF THE FACILITY.
K. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE SAFETY OF EXISTING STRUCTURE.
L. CONTRACTOR TO PROVIDE DUST PROTECTION TO SATISFACTION OF THE BUILDING OWNER.
M. CONTRACTOR TO PROVIDE ADEQUATE FIRST AID AND FIRE PROTECTION IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF ALL BUILDING CODES.
N. CONTRACTOR SHALL LEAVE SITE BROOM CLEAN AT THE END OF EACH WORKING DAY. ALL RUBBISH AND DEBRIS SHALL BE REMOVED FROM SITE. CONTRACTOR SHALL PROVIDE HIS OWN CONTAINERS AND CLEANING EQUIPMENT.
O. ALL WORK SHALL BE DONE DURING NORMAL WORKING HOURS UNLESS OTHERWISE APPROVED BY OWNER.
P. REFER TO SPECIFICATION FOR DETAILED REQUIREMENTS OF WORK.
Q. DO NOT SCALE FROM THESE DRAWINGS.
R. THE CONTRACTOR SHALL PROVIDE A WORK SCHEDULE TO THE OWNER AND ARCHITECT FOR APPROVAL PRIOR TO COMMENCEMENT OF ANY WORK.
S. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES AND OTHER FORMS OF PROTECTION AS REQUIRED TO PROTECT THE OWNER'S PERSONNEL, OTHER TENANTS AND GENERAL PUBLIC FROM INJURY DUE TO DEMOLITION WORK.
T. CONTRACTOR SHALL PROVIDE AT ALL TIMES ALL PROTECTION REQUIRED WHERE THE NEW WORK OR REMOVALS EXPOSE EXISTING CONSTRUCTION. ALL OPENINGS INTO THE EXISTING BUILDING SHALL BE FULLY SEALED AND PROTECTED TO PREVENT ENTRY OF DIRT, DEBRIS, WEATHER AND EXCESSIVE NOISE.
U. CONTRACTOR SHALL PROVIDE ALL NECESSARY STEEL SUPPORTS, BRACING, ETC. REQUIRED FOR CONSTRUCTION AND THE SUPPORT OF ANY AND ALL EQUIPMENT, PIPING, CONDUIT, DUCTWORK, ETC. TO BE RELOCATED OR REINSTALLED. SUSPEND FROM SLAB, STEEL WALL, OR TRUSS WORK.
V. CONTRACTOR SHALL PATCH AND/OR REPAIR ALL EXISTING ADJACENT CONSTRUCTION AS MAY BE REQUIRED AFTER DEMOLITION TO PROVIDE A COMPLETE FINISHED INSTALLATION. PROVIDE FINISHES TO MATCH EXISTING ADJACENT FINISHES.
W. ALL MECHANICAL AND ELECTRICAL EQUIPMENT TO BE REMOVED AS SHOWN AND SHALL BE DISCONNECTED AND ALL PENETRATIONS AND OPENINGS SEALED UNLESS OTHERWISE NOTED. CAP EXISTING CHWS&R BACK TO MAIN.
X. EACH TRADE, WHETHER IT IS THE GENERAL CONTRACTOR OR SUBCONTRACTORS, IS RESPONSIBLE FOR THEIR OWN CUTTING. ALL PATCHING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
Y. ALL MATERIALS AND EQUIPMENT REMOVED FROM THE BUILDING SHALL BE DISPOSED OF BY THE CONTRACTOR (EXCEPT AS REQUESTED BY THE OWNER).
Z. CONTRACTOR SHALL PATCH AND/OR REPAIR ALL EXISTING ADJACENT CONSTRUCTION AS MAY BE REQUIRED AFTER DEMOLITION TO PROVIDE A COMPLETE FINISHED INSTALLATION. PROVIDE FINISHES TO MATCH ADJACENT FINISHES.
AA. ALL MATERIALS SHALL BE NEW AND THE BEST OF THEIR RESPECTIVE KINDS, SUITABLE FOR THE CONDITIONS AND DUTIES IMPOSED UPON SAME AT THE BUILDING. MATERIALS SHALL MATCH EXISTING FOR SIMILAR SERVICE EXCEPT AS OTHERWISE NOTED HEREIN. THEY SHALL GENERALLY BE OF REPRESENTATIVE MANUFACTURER. BRAND NAMES ARE SPECIFIED TO INDICATE A STANDARD OF QUALITY ONLY. INSTALLATION OF THE WORK SHALL BE PERFORMED BY SKILLED TRADESMEN.
AB. IF ANY UNEXPECTED DISCOVERY OF SUSPECTED HAZARDOUS MATERIALS IS MADE DURING THE COURSE OF WORK, THE CONTRACTOR SHALL REPORT THE DISCOVERY IMMEDIATELY TO THE OWNER. THE CONTRACTOR SHALL STOP ANY WORK THAT MAY DISTURB THE SUSPECTED HAZARDOUS MATERIAL. CONTRACTOR SHALL RESUME WORK AFTER ALL HAZARDOUS MATERIAL HAS BEEN REMEDIATED.
AC. CONTRACTOR TO RUN DUCTWORK AND PRESSURE PIPING UP AND DOWN TO COORDINATE WITH OTHER TRADES AND ARCHITECT'S CEILING REQUIREMENTS. ALL GRAVITY PIPING (DRAIN PIPING) TO PITCH DOWN IN DIRECTION OF FLOW.
AD. RELATED WORK: THE FOLLOWING WORK IS NOT INCLUDED IN THIS SECTION AND WILL BE PROVIDED UNDER OTHER SECTIONS: 1) TEMPORARY HEAT FOR USE DURING CONSTRUCTION AND TESTING UNLESS SPECIFICALLY NOTED IN OTHER SPECIFICATION SECTIONS; 2) PAINTING, EXCEPT AS SPECIFIED; 3) ELECTRICAL POWER WIRING TO ALL EQUIPMENT OTHER THAN AUTOMATIC TEMPERATURE CONTROL PANELS AND COMPONENTS; AND 4) DUCT MOUNTED SMOKE DETECTORS SHALL BE FURNISHED BY OTHERS FOR MOUNTING AND WIRING TO THE ATC SYSTEM UNDER THIS SECTION.
AE. INTERPRETATIONS OF DOCUMENTS: WHERE DRAWINGS OR SPECIFICATIONS DO NOT COINCIDE WITH MANUFACTURER'S RECOMMENDATIONS, OR ARE UNCLEAR AS TO INTENT, OR REQUIRED MATERIAL QUALITY, ADVISE THE ENGINEER IN WRITING BEFORE PROCEEDING WITH THE WORK. ALL COST FOR REWORK NECESSARY TO RESOLVE DISCREPANCIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
AF. ANY RFI FOR RESOLVING AN APPARENT CONFLICT OR UNCLARITY, OR A REQUEST FOR ADDITIONAL DETAIL, SHALL INCLUDE A SKETCH OR EQUIVALENT DESCRIPTION OF CONTRACTOR'S PROPOSED SOLUTION.
AG. IDENTIFICATION: ALL EQUIPMENT, PIPING, VALVES, AND DUCTWORK PROVIDED UNDER THIS SECTION OF THE SPECIFICATIONS SHALL BE MARKED FOR EASE OF IDENTIFICATION PER OWNER'S OR INDUSTRY STANDARDS.
AH. PIPE EXPANSION: THE EXPANSION OF SUPPLY AND RETURN PIPES SHALL BE PROVIDED FOR BY CHANGES IN THE DIRECTION OF THE RUN OF PIPE, BY EXPANSION LOOPS, OR BY EXPANSION JOINTS AS REQUIRED.
AI. ALL PIPING SYSTEMS SHALL BE IDENTIFIED AS TO THEIR CONTENTS AND DIRECTION OF FLOW WITH PVC PIPING BANDS ON A MAXIMUM OF 30 FEET ON STRAIGHT RUNS AND VALVES LOCATIONS.
AJ. ALL VALVES SHALL BE TAGGED WITH 2" BRASS PLATED TAGS AND CHAINS AND VALVE CHART SCHEDULE FRAMED AND WALL MOUNTED WERE DIRECTED.
AK. MOTOR STARTERS SHALL BE PROVIDED WITH LAMACOIF PLATES WHICH INDICATE THE SYSTEM SERVED.
AL. EQUIPMENT DELIVERIES AND USE OF FREIGHT ELEVATORS SHALL BE SCHEDULED WITH MANAGEMENT TO AVOID INCONVENIENCE TO BUILDING OPERATION AND TO CLIENT.
AM. DURING CONSTRUCTION, ALL RETURN AIR OUTLETS SHALL BE COVERED WITH GAUZE MESH AND TAPED SECURELY TO PREVENT THE ENTRANCE OF DUST AND DEBRIS INTO THE AIR CONDITIONING SYSTEM.
AN. DISCONNECT SMOKE DETECTORS AT EACH RETURN AIR INTAKE AS REQUIRED. WHEN WORK IS COMPLETED, REINSTALL AND RECONNECT TO BUILDING FIRE AND LIFE SAFETY SYSTEM.

1.1 SCOPE:

- A. PERFORM WORK AND PROVIDE NEW MATERIAL AND EQUIPMENT AS SHOWN ON

- DRAWINGS AND AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. PROVIDE ALL COMPONENTS AND MATERIALS, WHETHER SPECIFICALLY SHOWN OR NOT, THAT ARE NECESSARY TO MAKE THE SYSTEMS COMPLETE AND FULLY OPERATIONAL AS INTENDED IN THE CONSTRUCTION DOCUMENTS. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO: 1) THE DESIGN INTENT AS ILLUSTRATED ON THESE DRAWINGS, 2) ALL TESTING AND CERTIFICATIONS NECESSARY FOR COMPLIANCE INCLUDING ANY REQUIRED REMEDIAL ACTIONS AND RETESTING DUE TO FAILURE, 3) INSPECT AND RECONSTRUCT ALL EXISTING SYSTEM COMPONENTS THAT WILL REMAIN.
B. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES FOR COMPLETE INSTALLATION, TESTING AND PERFECT OPERATION OF THE SYSTEMS AND WORKS SPECIFIED HEREIN AT NO ADDITIONAL EXPENSE TO THE OWNER.
C. A COMPLETE HEATING, VENTILATING, AND AIR CONDITIONING SYSTEM FOR THE AREA OF RENOVATION COMPRISED OF LOW PRESSURE DUCTWORK, AIR TERMINALS, ACCESSORIES AND CONTROLS AS SHOWN ON DRAWINGS.
D. RECORD DRAWINGS, OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS.
E. TESTING, BALANCING, ADJUSTING AND GUARANTEES.
F. ALL CUTTING AND ROUGH PATCHING.
G. ALL MISCELLANEOUS APPURTENANCES, ACCESSORIES AND SPECIALTIES REQUIRED FOR A COMPLETE INSTALLATION PLACED INTO OPERATING CONDITION ACCEPTABLE TO ARCHITECT AND ENGINEER.
H. FURNISH AND INSTALL ALL REQUIRED CONTROL SWITCHED AND TEMPERATURE CONTROLS.
I. INSTALL ALL EQUIPMENT AND PROVIDE REQUIRED ACCESSORIES AS SET FORTH PER RECOMMENDATIONS OF MANUFACTURERS INSTALLATION MANUALS OR GUIDELINES.
J. GENERAL CONTRACTOR TO COORDINATE FINISHES AND COLORS AND REPAIR OF ROOM CONDITIONS AND EQUIPMENT WITH ARCHITECT.
K. COORDINATE AND SCHEDULE WITH OWNER START-UP SERVICES AND TRAINING WITH MANUFACTURERS DUST COLLECTOR REPRESENTATIVE.

1.2 SHOP DRAWINGS & EQUIPMENT SUBMISSIONS

- A. DUCTWORK AND PIPING AND CERTIFIED EQUIPMENT - MANUFACTURER'S DATA SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION, ERECTION OR PURCHASED. ALL SHOP DRAWINGS MUST BE APPROVED BY THE BUILDING MANAGEMENT OFFICE BEFORE CONSTRUCTION PROCEEDS, INCLUDING THE FOLLOWING:
B. PRODUCT DATA - LITERATURE SHALL BE PROVIDED THAT INDICATES DIMENSIONS, OPERATING AND SHIPPING WEIGHTS, CAPACITIES, RATINGS, FAN PERFORMANCE, FILTER INFORMATION, FACTORY SUPPLIED ACCESSORIES, ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS. INSTALLATION, OPERATION, AND MAINTENANCE MANUAL WITH STARTUP REQUIREMENTS SHALL BE PROVIDED.
C. SHOP DRAWINGS - SUBMIT PLANS, SECTIONS, DETAILS, SCHEDULES AND CALCULATIONS. LAYOUTS SHALL BE DOUBLE LINE, SCALE: 3/8"=1'-0" COORDINATED WITH OTHER TRADES AND WITH BUILDING CONSTRUCTION ELEMENTS. SHOP DRAWINGS MUST BE APPROVED BY OWNER REPRESENTATIVE AND ENGINEER BEFORE CONSTRUCTION PROCEEDS.
D. MAINTENANCE MANUALS - PREPARE OPERATING AND MAINTENANCE MANUAL INCLUDING MANUFACTURER'S LITERATURE DESCRIBING EACH PIECE OF EQUIPMENT, COPIES OF PRODUCT WARRANTIES AND GUARANTIES AND OPERATING AND MAINTENANCE PROCEDURES, SERVICING INSTRUCTIONS, WRITTEN DESCRIPTIONS SHALL INCLUDE LUBRICATION SCHEDULES, PARTS LIST, PERFORMANCE SERVICE FOR EQUIPMENT, FILTER SIZE/QUANTITY SCHEDULE ETC.
E. PRESSURE TEST REPORTS AND WATER PURITY TEST REPORTS.
F. AIR AND WATER BALANCE REPORTS (2 SETS), WHEN BALANCING REPORT IS SUBMITTED TO THE BUILDING, INCLUDE SCALED HVAC DRAWING NOTING DIFFUSERS NOS. AND COLUMN NOS. REPORT MUST BE SUBMITTED WITHIN 2 WEEKS AFTER BALANCING IS COMPLETED.
G. EQUIPMENT USE PERMITS FOR ALL HVAC UNITS.
H. CONTRACTOR SHALL SUBMIT "AS-BUILT" DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FINAL PUNCH-LIST OF THE PROJECT.
I. PROVIDE SPECIFIED ITEMS AND EQUIPMENT UNLESS "EQUAL" OR "APPROVED EQUAL" IS EXPLICITLY INDICATED ON THE DRAWINGS. DEVIATIONS TO SPECIFIED ITEMS SHALL BE AT THE SOLE RISK OF THE CONTRACTOR, WHO SHALL BE RESPONSIBLE FOR ALL ASSOCIATED CHANGES TO THIS AND OTHER TRADES. REVIEW OF THE SHOP DRAWINGS BY THE ENGINEER SHALL NOT ABSOLVE THE CONTRACTOR FROM MEETING THE FULL DESIGN INTENT OF THE ASSOCIATED SYSTEM(S).
J. SUBMITTALS SHALL INDICATE PRIOR REVIEW AND APPROVAL BY THE RESPONSIBLE CONTRACTOR.
K. SUBMIT FOR REVIEW MANUFACTURER'S PRODUCT DATA FOR THE FOLLOWING ITEMS:
K.A. AIR DISTRIBUTION LAYOUT DRAWINGS AND DETAILS
K.B. PIPING DISTRIBUTION LAYOUT DRAWINGS, COMPONENTS, AND DETAILS.
K.C. ALL EQUIPMENT
K.D. CONTROL SCHEMATICS, COMPONENTS, AND SEQUENCES, INCLUDING TIE-IN TO THE EXISTING BUILDING CONTROL OR MANAGEMENT SYSTEM.
K.E. ELECTRICAL WIRING DIAGRAMS, THE WIRING DIAGRAMS MUST BE COMPLETE AND COORDINATED WITH THE EQUIPMENT ACTUALLY INSTALLED.
K.F. BALANCING REPORTS
K.G. ALL TEST REPORTS
K.H. ALL CERTIFICATES. ALLOW ENGINEER A MINIMUM OF 10 WORKING DAYS FOR PROCESSING AND REVIEW OF EACH SUBMISSION.

1.3 APPROVALS AND SUBSTITUTIONS

- A. IT IS THE INTENT OF THESE SPECIFICATIONS THAT WHEREVER A MANUFACTURER IS SPECIFIED AND SUBSTITUTIONS ARE MADE, THEY SHALL CONFORM IN ALL RESPECTS TO THE SPECIFIED ITEM. CRITERIA AS DELINEATED FOR EQUIPMENT SHALL BE INTERPRETED AS MINIMUM PERFORMANCE REQUIREMENTS. COSTS FOR ANY REVISIONS TO STRUCTURAL DESIGN OR MECHANICAL/ELECTRICAL REQUIREMENTS DUE TO EQUIPMENT SUBSTITUTIONS SHALL BE PAID BY CONTRACTOR.
B. SUBSTITUTED EQUIPMENT WHERE PERMITTED MUST CONFORM TO SPACE REQUIREMENTS. ANY SUBSTITUTED EQUIPMENT THAT CANNOT MEET SPACE REQUIREMENTS, WHETHER APPROVED OR NOT, SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ANY MODIFICATION OF RELATED SYSTEMS OR ADDITIONAL COSTS THAT RESULT FROM SUBSTITUTED EQUIPMENT SHALL BE BORNE BY THIS CONTRACTOR.
C. ALL AIR MOVING DEVICES, INCLUDING BUT NOT LIMITED TO, AIR HANDLING UNITS AND AIR CONDITIONING UNITS MUST COMPLY WITH AMCA STANDARD 210 AND ASHRAE.
D. CONTRACTOR SHALL VERIFY ALL SPECIFIC MANUFACTURER REQUIREMENTS FOR ALL EQUIPMENT PRIOR TO INSTALLATION.
E. ALL EQUIPMENT FOR THIS PROJECT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.

1.4 VERIFYING EXISTING CONDITIONS, REMOVALS & ALTERATIONS

- B. THE CONTRACTOR SHALL VISIT THE PREMISES TO DETERMINE EXISTING CONDITIONS AND COMPARE SAME WITH DRAWINGS AND SPECIFICATIONS AND SATISFY HIMSELF OF ALL CONDITIONS PRIOR TO THE SUBMISSION OF A BID PROPOSAL. NO ALLOWANCE WILL BE MADE FOR FAILURE TO COMPLY WITH THESE REQUIREMENTS AND A BID PROPOSAL SHALL BE CONSIDERED AS EVIDENCE HE HAS DONE SO.
C. THE CONTRACTOR SHALL REMOVE, RELOCATE, REPLACE, ADJUST, ADAPT AND MODIFY EXISTING EQUIPMENT AND/OR SYSTEMS AS REQUIRED BY THE DRAWINGS OR SPECIFICATIONS AND AS MAY BE REQUIRED WHEN SUCH WORK IS UNCOVERED AND FOUND TO INTERFERE WITH THE COMPLETION OF WORK IN THIS CONTRACT OR OTHER CONTRACT WORK.
D. PROVIDE SHUTDOWNS, DRAINING AND REFILLING, RECONNECTIONS AND STARTUPS OF EXISTING SYSTEMS NECESSARY IN CONNECTION WITH THE NEW WORK. COORDINATE SHUTDOWNS WITH THE OWNER.
E. TEMPORARY SERVICES: PROVIDE TEMPORARY SERVICES DURING THE INTERRUPTION IN SERVICE CREATED BY THE DEMOLITION OF THE EXISTING FACILITY AND UNTIL THE NEW FACILITY BECOMES OPERATIONAL. PROCURE RENTAL EQUIPMENT OF ADEQUATE CAPACITIES AND ASSUME ALL COSTS RELATED TO THIS INSTALLATION AND OPERATION OF SAME. ALL COSTS RELATED TO THE INSTALLATION AND PROVIDE CONNECTIONS TO BUILDING UTILITIES INCLUDING ELECTRICAL.
F. ALL MATERIALS AND EQUIPMENT REMOVED FROM THE BUILDING INCLUDING, BUT NOT LIMITED TO, UNUSED HARDWARE, EQUIPMENT, PIPING, VALVES, SPECIALTIES, ACCESSORIES, ETC. SHALL BE DISPOSED OF BY THE CONTRACTOR (EXCEPT AS REQUESTED BY THE OWNER).

- G. EXISTING AIR VOLUME QUANTITIES AND TEMPERATURES AT THE POINTS OF CONNECTIONS OF NEW DUCTS WITH EXISTING DUCTS RISERS AND NOT, THAT ARE NECESSARY TO MAKE THE SYSTEMS COMPLETE AND FULLY OPERATIONAL AS INTENDED IN THE CONSTRUCTION DOCUMENTS. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO: 1) THE DESIGN INTENT AS ILLUSTRATED ON THESE DRAWINGS, 2) ALL TESTING AND CERTIFICATIONS NECESSARY FOR COMPLIANCE INCLUDING ANY REQUIRED REMEDIAL ACTIONS AND RETESTING DUE TO FAILURE, 3) INSPECT AND RECONSTRUCT ALL EXISTING SYSTEM COMPONENTS THAT WILL REMAIN.

1.5 ACCESS DOORS IN FINISHED CONSTRUCTION

- A. THIS CONTRACTOR SHALL PREPARE A LIST OF ALL ACCESS DOORS REQUIRED FOR OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT, DAMPERS, CONTROLS, AND OTHER SIMILAR DEVICES WHICH SHALL BE SUPPLIED TO THE GENERAL CONTRACTOR WHO SHALL FURNISH AND INSTALL SAME. ACCESS DOORS SHALL BE OF AMPLE SIZE (18X18 MINIMUM), COORDINATE LOCATION W/ ARCHITECT.
B. THIS CONTRACTOR IN ADVANCE OF CEILING INSTALLATIONS SHALL SUITABLY FIELD TAG AND IDENTIFY ALL CONCEALED EQUIPMENT, DAMPERS, ETC. WHICH REQUIRE ACCESS DOOR PROVISIONS.
C. ACCESS KITS SHALL BE PROVIDED IN ACOUSTICAL TILE CEILING AS REQUIRED BY THIS CONTRACTOR FOR ACCESS TO ALL DAMPERS.
D. ACCESS IS REQUIRED BELOW ALL DAMPERS, AC UNITS & HEAT PUMPS.
E. CONTRACTOR TO FURNISH AND PROVIDE ACCESS DOORS AS REQUIRED TO MAINTAIN ACCESS TO EQUIPMENT.
B. IN ACCORDANCE WITH SMACNA STANDARDS PROVIDE DUCTWORK CASING ACCESS DOORS TO ALL CONCEALED CONTROLS, FUSIBLE LINKS OF DAMPERS, ETC.

1.6 ELECTRICAL WIRING & WIRING DIAGRAMS

- A. ELECTRICAL WIRING FOR POWER AND MOTOR STARTERS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNDER ANOTHER DIVISION OF CONTRACT WORK.
B. THE MECHANICAL CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL TERMINAL POINT TO TERMINAL POINT, COMPLETELY COORDINATED AND INTEGRATED WIRING DIAGRAMS FOR ALL WIRING REQUIRING FIELD INSTALLATIONS BY THE ELECTRICAL CONTRACTOR.
C. SPECIFIC WIRING DIAGRAMS OF FACTORY INSTALLED EQUIPMENT WIRING SHALL ALSO BE SUBMITTED FOR APPROVAL AND FURNISHED TO THE ELECTRICAL CONTRACTOR FOR HIS INSTALLATION REQUIREMENTS AND OTHER USES.
D. ALL CONTROL SHALL BE ELECTRIC. ALL ELECTRICAL WORK TO BE IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODE. PROVIDED REQUIRED TRANSFORMER SWITCHES, SENSORS, RELAYS AND ALL WIRING REQUIRED TO ACCOMPLISH FULL CONTROL.
E. ALL WIRING, STARTERS, SWITCHES, ETC. SHALL BE IN FULL ACCORDANCE WITH ALL LOCAL AND INSURANCE UNDERWRITERS' CODE REQUIREMENT.
F. FURNISH LOCAL DISCONNECT SWITCHES FOR ALL ELECTRICALLY DRIVEN HVAC DEVICES. MISCELLANEOUS WIRING AND INTERLOCKING WIRING IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS REQUIRED TO PROVIDE A COMPLETE WORKING SYSTEM.
H. COORDINATE MOTOR CONTROLLERS, MOTOR STARTERS & DISCONNECTS FOR EQUIPMENT AND INSTALLATION WORK WITH THE CONTRACTOR.
I. THE CONTRACTOR IS RESPONSIBLE FOR POWER WIRING TO THE CONTROL SYSTEM. ALL POWER AND CONTROL WIRINGS TO AND FROM THE CONTROL PANELS, CONTROL DEVICES, MISCELLANEOUS WIRING AND INTERLOCKING WIRING IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS REQUIRED TO PROVIDE A COMPLETE WORKING SYSTEM.

1.7 CODES, PERMITS AND INSPECTIONS

- A. ALL WORK SHALL MEET OR EXCEED LATEST REQUIREMENT OF NATIONAL, STATE, COUNTY, MUNICIPAL AND OTHER AUTHORITIES EXERCISING JURISDICTION OF THE WORK OF THIS PROJECT.
B. ANY PORTION OF WORK WHICH IS NOT SUBJECT TO THE APPROVAL OF AN AUTHORITY HAVING JURISDICTION SHALL BE PROVIDED IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS.
C. COMPLY WITH APPLICABLE UTILITY COMPANY RULES AND REGULATIONS.
D. COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) REQUIREMENTS.
E. SECURE PERMITS AND INSPECTION CERTIFICATES AND TRANSMIT SAME TO THE OWNER AT THE COMPLETION OF THE WORK.
F. CONTRACTOR SHALL BE RESPONSIBLE FOR FILING ALL DOCUMENTS, INCLUDING PAYING ALL FEES AND BACKCHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES HAVING JURISDICTION AS REQUIRED FOR THE EXECUTION OF ALL WORK ASSOCIATED WITH THIS PROJECT. CONTROLLED INSPECTION SHALL BE DONE BY CONTRACTOR.
G. ALL WORK SHALL CONFORM WITH THE LATEST REQUIREMENTS OF ALL NATIONAL, STATE AND LOCAL BUILDING CODES AND ORDINANCES.
H. UNLESS OTHERWISE INDICATED, THE ARRANGEMENT, POSITION, CONNECTIONS, ETC., SHOWN ON THE DRAWINGS SHALL BE TAKEN AS DIAGRAMMATIC.
I. THE RIGHT IS RESERVED BY THE ENGINEER TO MAKE MINOR CHANGES IN LOCATIONS AND ARRANGEMENTS WHEN REQUIRED BY JOB DEVELOPMENT WITHOUT ADDITIONAL COMPENSATION TO THIS CONTRACTOR.

1.8 COORDINATION

- A. ALL NEW DUCTWORK SHALL BE KEPT AS HIGH AS POSSIBLE TO MAINTAIN CEILING HEIGHTS SHOWN ON ARCHITECTURAL DRAWINGS.
B. WHERE PIPING, LIGHTS AND DUCTWORK CONFLICT, DUCTWORK SHALL BE COORDINATED TO SITE CONDITIONS.
C. CONNECT NEW WORK TO EXISTING AS SHOWN ON THE DRAWING.
D. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL AIR OUTLETS THERMOSTATS AND SWITCHES WITH ARCHITECT'S REFLECTED CEILING PLANS.
E. COORDINATE PROVISION OF OPENINGS IN WALLS AND SLABS, POURING OF CONCRETE PADS, SETTING OF SLEEVES AND CURBS.
F. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENT.
G. SEQUENCE AND COORDINATE PHASES OF MECHANICAL WORK WITH THE WORK OF OTHER TRADES.
H. CONTRACTOR SHALL ENSURE THAT ALL MECHANICAL DEVICES SHALL BE INSTALLED IN A LOCATION WHICH AFFORDS ACCESSIBILITY FOR MAINTENANCE AND REPAIR.
I. COORDINATE INSTALLATION AMONG ALL TRADES TO AVOID INTERFERENCE, AND LOCATE EQUIPMENT TO PROVIDE CLEARANCE OR EXCEED THOSE RECOMMENDED BY THE MANUFACTURER. PRIOR TO PROJECT COMPLETION, REPRESENTATIVES OF OWNER AND ENGINEER, SHALL REVIEW EACH INSTALLATION AND SHALL DIRECT CHANGES WHENEVER ACCESS OR SERVICE ABILITY IS, IN THEIR OPINION, UNACCEPTABLE.
J. COORDINATE REFRIGERANT PIPING SIZES, ROUTING & SUPPORTS, ROOF CURBS, EQUIPMENT SUPPORTS, AND ROOF PENETRATIONS.
K. COORDINATE LOCATION OF MECHANICAL EQUIPMENT, PIPING AND DUCTWORK WITH THE WORK OF OTHER TRADES, PROVIDING CLEARANCES FOR INSULATION, SERVICING, REMOVAL OF COMPONENTS AND EQUIPMENT DISASSEMBLY.
L. THE WORK UNDER THIS CONTRACT SHALL BE PERFORMED SIMULTANEOUSLY WITH WORK OF OTHER TRADES, SO AS NOT TO DELAY THE OVERALL PROGRESS OF WORK.

1.9 MOTOR STARTERS & CONTROL DEVICES

- A. FURNISH TO THE ELECTRICAL CONTRACTOR WHO SHALL ERECT AND WIRE SUITABLE STARTING AND CONTROL EQUIPMENT FOR ALL MOTORS.
B. MOTOR STARTERS SHALL BE CUTLER HAMMER, WESTINGHOUSE OR ALLEN-BRADLEY MANUFACTURE, SUITABLE FOR WALL OR ANGLE IRON FRAME MOUNTING.
C. ALL MAGNETIC STARTERS SUBJECT TO MANUAL START AND IN DIRECT VIEW OF THE MOTORS THEY CONTROL SHALL HAVE MOMENTARY CONTACT START AND STOP BUTTONS AND PILOT LIGHT BUILT INTO COVER. ALL SELECTOR SWITCHES IN STARTERS SHALL BE OF THE MAINTAIN CONTACT TYPE.
D. WHERE STARTERS ARE NOT IN SIGHT OF MOTORS THEY CONTROL, A LOCAL DISCONNECT SWITCH WILL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
E. ALL MAGNETIC STARTERS SHALL HAVE THERMAL OVERLOAD IN EACH PHASE LEG AND LOW VOLTAGE PROTECTION.

- F. ALL COILS, CORES, RESISTANCE, INSULATION CONTACTS, TRIPPERS, ETC. OF STARTERS AND RELAYS SHALL BE OF THE APPROVED TYPE. ALL PARTS SUBJECT TO WEAR, ARCING, ETC., SHALL BE RENEWABLE.
G. ALL WIRING, STARTERS, SWITCHES, ETC. SHALL BE IN FULL ACCORDANCE WITH ALL LOCAL AND INSURANCE UNDERWRITERS' CODE REQUIREMENTS.
H. FURNISH DETAILED COMPOSITE WIRING DIAGRAMS FOR THOSE INSTALLING THE ELECTRICAL WORK, AND FURNISH SUCH OTHER INFORMATION NECESSARY TO ASSURE THE PROPER CONNECTION, OPERATION AND CONTROL OF MOTORIZED EQUIPMENT, INCLUDING INTERLOCKS, AUTOMATIC OR SAFETY CONTROLS AND AUXILIARY CIRCUITS.
I. PROVIDE LAMACOID NAMEPLATE ATTACHED TO EACH STARTER IDENTIFYING THE SYSTEM IT SERVES.
J. STARTERS SHALL BE NEMA COMBINATION MAGNETIC MOTOR STARTERS SIZED PER MOTOR HORSE POWER. COORDINATE MOTOR STARTER TYPE AND FEATURES WITH THE REQUIREMENTS OF THE MECHANICAL EQUIPMENT AND THE CONTROL SYSTEM. PROVIDE OVERLOAD, UNDER VOLTAGE AND PHASE LOSS PROTECTION IN ALL STARTERS. STARTERS FOR MOTORS 50 HORSE POWER AND LARGER SHALL BE REDUCED VOLTAGE TYPE.
K. CONTRACTOR/EQUIPMENT MANUFACTURER AND WIRED BY ELECTRICAL CONTRACTOR.
L. ALL STARTERS FOR MOTOR 1/2 HP AND ABOVE SHALL BE MAGNETIC ACROSS-THE-LINE TYPE WITH HOA SWITCH. SUCH STARTERS SHALL BE 208 OR 480 VOLTS, 3 PHASE, 60 CYCLE.

1.10 TESTING, ADJUSTMENTS AND BALANCING

- A. IT IS THE INTENT UNDER THIS SECTION OF THE WORK TO OBTAIN COMPLETE BALANCING OF EACH AND EVERY FAN, BRANCH DUCTWORK, DRY COOLER, AIR CONDITIONING UNIT, PUMP, WATER SYSTEM, TERMINAL UNIT, AIR OUTLET, DAMPER ETC.
B. DO NOT COVER OR CONCEAL WORK BEFORE TESTING AND INSPECTION AND OBTAINING APPROVAL.
C. MAKE ALL REQUIRED ADJUSTMENTS OF AIR AND WATER SYSTEM DEVICES UNTIL ALL SPECIFIED PERFORMANCES SHOWN IN SCHEDULES AND ON DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODES, STANDARDS, REGULATIONS, AND AUTHORITIES HAVING JURISDICTION INCLUDING CITY INSPECTORS.
D. AIR AND WATER FLOWS SHALL BE BALANCED TO +/- 10% OF DESIGN. LEAKS, DAMAGE, AND DEFECTS DISCOVERED OR RESULTING FROM START-UP AND BALANCING SHALL BE REPAIRED OR REPLACED TO LIKE-NEW CONDITION WITH ACCEPTABLE MATERIALS.
E. ADJUST WATER BALANCING VALVES TO OBTAIN REQUIRED FLOW AND SPECIFIED PRESSURE DROPS ACROSS COILS.
F. PIPING SYSTEMS SHALL BE TESTED TO A HYDROSTATIC PRESSURE AT LEAST 125% TIMES THE MAXIMUM OPERATING PRESSURE (BUT NOT LESS THAN 40 LBS. PER SQ. IN.) FOR A SUFFICIENTLY LONG TIME (4 HOUR MINIMUM) TO DETECT ALL LEAKS AND DEFECTS. WHERE NECESSARY, PIPING SHALL BE TESTED IN SECTIONS TO PERMIT THE PROGRESS OF THE JOB.
M. ANY EQUIPMENT NOT CAPABLE OF WITHSTANDING TEST PRESSURES SHALL BE SUITABLY ISOLATED FROM THE TEST PRESSURE.
N. THE OWNERS SYSTEM SHALL BE FLUSHED TO REMOVE ANY CONSTRUCTION DEBRIS.
O. AFTER COMPLETION OF TESTS SUBMIT ITEMIZED LIST TO CONSULTING ENGINEER OF FAN SPEEDS IN RPM, AMPERE READINGS, PRESSURE DROPS OF EACH COIL, INLET AND LEAVING WATER TEMPERATURES, READINGS AND TESTS OF AIR OUTLETS SHALL INCLUDE REQUIRED CFM AND RESULTANT CFM AFTER ADJUSTMENTS, FOR PURPOSES OF TESTING USE PILOT TUBES WITH INCLINED MANOMETERS TO TRAVERSE DUCT CROSS SECTION. TEST SHALL INCLUDE NEW TENANT WORK AND EXISTING BASE BUILDING AC UNITS.
P. CONTRACTOR TO PROVIDE TRANVERSE READING AT BASE BUILDING MAIN SUPPLY AND RETURN SHAFTS AND PROVIDE STATIC PRESSURE READINGS DOWNSTREAM AND UOSTREAM OF ALL REHEAT COILS AND PRVS.
Q. SYSTEM BALANCING SHALL BE PERFORMED BY AN ORGANIZATION SPECIALIZING IN THE PROCEDURES TO DO SO, HAVING AT LEAST FIVE (5) YEARS EXPERIENCE.
R. BALANCING MUST CONFORM TO LATEST RECOMMENDATIONS OF THE AABC OR NEBB.
S. IT SHALL BE THE OBLIGATION OF THIS CONTRACTOR TO INCLUDE IN HIS BALACING PROCEDURE A COMPLETE TEST OF THE BASE BUILDING A.C. UNIT AND/OR SUPPLY AND RETURN TAPS CONDENSER OR CHILLED WATER SUPPLY PRESSURE, PRIOR TO COMMENT OF WORK IN ORDER TO CONFIRM LEASE IDENTIFIED CAPACITY. IN ORDER TO ESTABLISH BASE BUILDING AIR CONDITIONING CAPACITIES PRIOR TO CONNECTION OF TENANT SYSTEM, CONTRACT SHALL NOTIFIED BUILDING MANAGER, TENANT ENGINEER AT LEAST 5 DAYS PRIOR TO TEST.
T. THE REPORT SHALL BE PREPARED BY A LICENSED ENGINEER CERTIFIED BY THE ASSOCIATED AIR BALANCE COUNCIL OR THE NATIONAL ENVIRONMENTAL AIR BALANCING BUREAU.
U. AT THE COMPLETION OF THE PROJECT, THE HVAC CONTRACTOR SHALL PROVIDE A SIGNED AND SEALED AIR BALANCE REPORT FOR SUBMISSION TO THE STATE OF NEW JERSEY DEPARTMENT OF COMMUNITY AFFAIRS AND THE LOCAL CONSTRUCTION OFFICIAL.
V. A COPY OF COMPLETE BALANCING DATA SHALL BE DELIVERED TO THE ENGINEER FOR APPROVAL OF BALANCING OF ALL SYSTEMS.
W. REPORTS SHALL INCLUDE A SINGLE LINE DIAGRAM OF AIR SYSTEMS WITH AIR OUTLETS IDENTIFIED NUMERICALLY.
X. WHERE TEST RESULTS INDICATE THAT AIR QUANTITIES AT ANY SYSTEM FAN ARE BELOW OR IN EXCESS OF THE SPECIFIED AMOUNT, THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL CHANGE THE DRIVING PULLEY RATIO OR SHALL MAKE APPROVED CHANGES TO OBTAIN THE SPECIFIED OR SCHEDULED AIR QUANTITIES.
Y. FOR EXISTING SYSTEMS AIR READINGS AND FAN READINGS SHALL BE TAKEN PRIOR TO CONSTRUCTION. TRAVERSE ALL MAIN DUCTS TO DETERMINE AVAILABLE QUANTITY OF CFM, AMPERAGE, RPM AND STATIC PRESSURES OF THE FANS SHOULD BE CHECKED TO VERIFY AIR HANDLERS OPERATING CONDITIONS. ALL READINGS ARE TO BE TURNED OVER TO THE BUILDING MANAGEMENT OFFICE FOR REVIEW.
Z. RE-BALANCE ALL SYSTEMS WHICH ARE AFFECTED BY WORK. PRIOR TO PERFORMING AIR BALANCE PROCEDURES, BALANCER MUST CONTACT BUILDING MANAGEMENT OFFICE TO VERIFY OPERATION OF SYSTEM, 24 HOUR WRITTEN NOTICE IS REQUIRED.
AA. ANY CEILINGS OUTSIDE OF THE WORK AREAS WHICH ARE BROKEN OR REMOVED DURING BALANCING PROCEDURES MUST BE REPLACED AT CONTRACTOR'S EXPENSE.
AB. WRITTEN NOTIFICATION TO THE BUILDING MANAGEMENT OFFICE MUST BE MADE EACH TIME CFM READINGS ARE TAKEN. SUBMIT COPY OF BALANCE REPORT TO BUILDING MANAGEMENT OFFICE.

Logo for Noel S. Musial, A.I.A. with contact information: N.J. A105415, N.Y. 11339, CT. 09009, PA. B 6580. Also includes a smaller version of the logo and name.

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SEAL:
JEFFREY THOENS, P.E. DATE
NEW JERSEY PROFESSIONAL ENGINEER LIC. NO. 24GE04929100 PROJECT NO. 21-02-11T

SEPTEMBER 2021

Table with 3 columns: No., Revision, Description, Date. Contains one entry for revision 113316.01.

MECHANICAL SPECIFICATIONS
M500
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NORTH

1.11 RECORD DRAWINGS

- A. THE ARCHITECT AND ENGINEER ARE NOT GRANTING ANY OWNERSHIP OR PROPERTY INTEREST IN THE CAD DRAWINGS BY THE DELIVERY OF THE CAD FILES.
- B. THE USE OF THE CAD FILES AND DRAWINGS ARE LIMITED FOR THE SOLE PURPOSE OF ASSISTING IN THE CONTRACTOR'S PERFORMANCE IN ITS CONTRACTUAL OBLIGATIONS WITH RESPECT TO THIS PROJECT. ANY REUSE AND/OR OTHER USE BY THE CONTRACTOR WILL BE AT THE CONTRACTOR'S SOLE RISK AND WITHOUT LIABILITY TO THE ARCHITECT AND ENGINEER.
- C. REPRODUCIBLE RECORD DRAWINGS SHALL BE SUPPLIED UPON WHICH CORRECTIONS SHALL BE MADE TO PROVIDE AN ACCURATE AND COMPLETE RECORD OF THE WORK AS INSTALLED.
- D. AS-BUILT INFORMATION SHALL BE SUBMITTED AS FOLLOWS:
 - D.A. CAD DRAWING FILES IN AUTOCAD DWG.
 - D.B. ONE (1) SET OF REPRODUCIBLE DRAWINGS.
 - D.C. TWO (2) SETS OF BLUEPRINTS.
- E. CAD RECORD DRAWING FILES SHALL BE SUBMITTED AT THE COMPLETION OF THE PROJECT SHOWING THE "AS-BUILT" CONDITION INCLUDING WORK INSTALLED AND ALL MODIFICATIONS OR ADDITIONS TO ORIGINAL DESIGN.

1.12 PROJECT CLOSEOUT & WARRANTIES:

- A. A CERTIFICATE OF COMPLETION SHALL BE ISSUED BY THE CONTRACTOR INDICATING THAT THE INSTALLATION IS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND ALL APPLICABLE LOCAL, STATE AND FEDERAL STATUTES AND CODES.
- B. ALL SUBMITTALS, AS-BUILTS, O&M MANUALS, AND BALANCING REPORTS ARE TO BE PROVIDED, FOR ENGINEER'S REVIEW, PRIOR TO REQUEST FOR COMPLETION CERTIFICATES.
- C. IN ADDITION, AND ALSO PRIOR TO REQUEST FOR COMPLETION CERTIFICATES, ALL PUNCH LIST ITEMS MUST BE COMPLETED TO THE SATISFACTION OF THE ENGINEER.
- D. THE CONTRACTOR MUST VERIFY THAT ALL SEQUENCES OF OPERATIONS AND CONTROLS HAVE BEEN INCORPORATED AND ALL SYSTEMS AND EQUIPMENT ARE WORKING PER THE SPECIFIED SEQUENCES OF OPERATIONS.
- E. AFTER FINAL TESTS AND ADJUSTMENTS, FULLY INSTRUCT OWNER'S OPERATING PERSONNEL IN ALL DETAILS OF OPERATION FOR EQUIPMENT INSTALLED.
- F. PROVIDE TO THE OWNER OPERATION AND MAINTENANCE MANUALS. SUBMIT (3) SETS OF OPERATING AND MAINTENANCE MANUALS PRIOR TO THE COMPLETION OF THE PROJECT. O&M MANUALS SHALL INCLUDE ALL COMPONENTS (DIFFUSERS, VALVES, ETC.) AS WELL AS SYSTEM DESCRIPTIONS OF ALL SYSTEMS WITH FLOW DIAGRAMS, WIRING DIAGRAMS, WRITTEN WARRANTIES, RECOMMENDED SPARE PARTS AND ROUTINE MAINTENANCE REQUIREMENTS WITH RECOMMENDED INTERVALS FOR ALL MOVING EQUIPMENT AND CONTROLS.
- G. PROVIDE ON-SITE DEMONSTRATION OF ALL SYSTEMS TO OWNER AFTER SYSTEMS ARE FULLY OPERATIONAL.
- H. THE CONTRACTOR SHALL GUARANTEE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE OF THE INSTALLATION BY THE OWNER.
- I. THE CONTRACTOR SHALL DURING THE PERIOD OF GUARANTEE REPLACE OR REPAIR AT HIS OWN EXPENSE ANY PIECE OF EQUIPMENT AND/OR MATERIAL WHICH IS FOUND TO BE DEFECTIVE. THE CONTRACTOR SHALL ALSO REPAIR ALL DAMAGE TO SURROUNDING WORK CAUSED BY THE FAILURE, REPAIR OR REPLACEMENT OF DEFECTIVE EQUIPMENT AT HIS OWN EXPENSE.
- J. WHERE INDIVIDUAL EQUIPMENT SECTIONS SPECIFY LONGER WARRANTIES, PROVIDE THE LONGER WARRANTY. REPAIR, REPLACE OR PROVIDE TEMPORARY ACCOMMODATIONS FOR DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN 24 HOURS OF NOTIFICATION. WARRANTY SHALL INCLUDE A CONTACT PERSON (NAME AND 24 HOUR TELEPHONE NUMBER) FOR SERVICE REQUESTS. CORRECT DAMAGE CAUSED WHILE MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY PERIOD AT NO ADDITIONAL COST.
- K. A BLANK CONTRACTOR'S CERTIFICATE FORM CAN BE FURNISHED BY ENGINEERS UPON REQUEST.
- L. FINAL INSPECTION BY THE ENGINEER SHALL BE CONDUCTED AFTER RECEIPT OF THE CERTIFICATE OF COMPLETION. PREMATURE REQUESTS FOR FINAL INSPECTIONS THAT REQUIRE REINSPECTION OF DEFICIENT ITEMS WILL RESULT IN BACK CHARGES OF THE COSTS ASSOCIATED WITH THE REINSPECTION.

1.13 CLEANING:

- A. DUCTS SHALL BE THOROUGHLY CLEANED SO THAT NO DIRT OR DUST SHALL BE DISCHARGED FROM DIFFUSERS, REGISTERS, OR GRILLES, WHEN SYSTEM IS OPERATED. AFTER ALL WATER, STEAM, AND CONDENSATE PIPING SYSTEMS HAVE BEEN PRESSURE TESTED AND APPROVED FOR TIGHTNESS, CLEAN AND FLUSH PIPING. AFTER COMPLETION OF PROJECT, CLEAN EXTERIOR SURFACES OF ALL EQUIPMENT INCLUDED IN THIS SECTION, INCLUDING REMOVAL OF CONCRETE RESIDUE. AFTER COMPLETION OF PROJECT, REMOVE ALL CONSTRUCTION DEBRIS, TEMPORARY FACILITIES AND EQUIPMENT FROM WORK AREA. CLEAN WORK AREA TO PERMIT OCCUPATION.
- B. DURING CONSTRUCTION ALL RETURN AIR OUTLETS SHALL BE COVERED WITH GAUGED MESH AND TAPED SECURELY TO PREVENT THE ENTRANCE OF DUST AND CONSTRUCTION DEBRIS INTO HVAC SYSTEM.

1.14 DELIVERY, STORAGE, AND HANDLING

- A. UNIT SHALL BE SHIPPED WITH DOORS SCREWED SHUT AND OUTSIDE AIR HOOD CLOSED TO PREVENT DAMAGE DURING TRANSPORT AND THEREAFTER WHILE IN STORAGE AWAITING INSTALLATION.
- B. FOLLOW INSTALLATION, OPERATION, AND MAINTENANCE MANUAL INSTRUCTIONS FOR RIGGING, MOVING, AND UNLOADING THE UNIT AT ITS FINAL LOCATION.
- C. UNIT SHALL BE STORED IN A CLEAN, DRY PLACE PROTECTED FROM CONSTRUCTION TRAFFIC IN ACCORDANCE WITH THE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL.
- D. CONTRACTOR SHALL COORDINATE WORK ON ROOF WITH OWNER'S OPERATIONS.

1.15 GENERAL

- A. SUPPORTS: INCLUDE ALL STRUCTURAL STEEL SUPPORTS, HANGER BRACKETS, ETC., REQUIRED FOR THE EXECUTION OF THE WORK OF THIS SECTION. THE WELDS AND EDGES OF ALL BRACKETS SHALL BE FILED OR GROUND SMOOTH FOR PAINTING. HANGERS SHALL BE STEEL ANGLE IRON, CHANNEL OR STEEL ROD USED WITH APPROVED CLAMPS, INSERTS, ETC. ALL HANGERS SHALL BE GALVANIZED OR PAINTED WITH TWO COATS OF RUSTOLEUM PAINT BEFORE INSTALLATION. APPLY TOUCH-UP PAINT (ZINC GALVANIZING FOR GALVANIZED STEEL) AFTER INSTALLATION. SUPPORTS INSTALLED IN EXTERIOR LOCATIONS SHALL BE PVC COATED STEEL, GALVANIZED STEEL, OR STAINLESS STEEL WITH STAINLESS STEEL HARDWARE.
- B.
- C. CUTTING AND PATCHING: INCLUDE ALL CORING, CUTTING, PATCHING AND FIREPROOFING NECESSARY FOR THE EXECUTION OF THE WORK OF THIS SECTION. STRUCTURAL ELEMENTS SHALL NOT BE CUT WITHOUT WRITTEN APPROVAL OF THE ARCHITECT. REPAIR AND PATCH AROUND THE WORK SPECIFIED HEREIN TO MATCH THE EXISTING ADJACENT SURFACES TO THE SATISFACTION OF THE ARCHITECT. FILL AND PATCH ALL OPENINGS OR HOLES LEFT IN THE EXISTING STRUCTURES BY THE REMOVAL OF EXISTING EQUIPMENT THAT IS PART OF THIS SECTION OF THE SPECIFICATIONS. PATCH AND SEAL ALL EXISTING OPENINGS IN DUCTWORK AND PIPING NOT UTILIZED FOR NEW LAYOUT. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF THE FIRE RESISTANCE-RATED ASSEMBLY. ALL PENETRATIONS AND ASSOCIATED FIRE STOPPING SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE STOPPING MANUFACTURER'S LISTED INSTALLATION DETAILS AND BE LISTED BY UL OR FM.
- D.
- E. HOISTING, SCAFFOLDING AND PLANKING: INCLUDE THE FURNISHING, SET-UP AND MAINTENANCE OF ALL HOISTING MACHINERY, CRANES, SCAFFOLDS, STAGING AND PLANKING AS REQUIRED FOR THE EXECUTION OF WORK FOR THIS SECTION.
- F. SAFETY PRECAUTIONS: LIFE SAFETY AND ACCIDENT PREVENTION SHALL BE A PRIMARY CONSIDERATION. COMPLY WITH ALL OF THE SAFETY REQUIREMENTS OF THE OWNER AND OSHA THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. FURNISH, PLACE AND MAINTAIN PROPER GUARDS AND ANY OTHER NECESSARY CONSTRUCTION REQUIRED TO SECURE SAFETY OF LIFE AND PROPERTY.
- G. ACCESSIBILITY: ALL WORK PROVIDED UNDER THIS SECTION OF THE SPECIFICATION

SHALL BE INSTALLED SO THAT PARTS REQUIRING PERIODIC INSPECTION, MAINTENANCE AND REPAIR ARE READILY ACCESSIBLE. WORK OF THIS TRADE SHALL NOT INFRINGE UPON CLEARANCES REQUIRED BY EQUIPMENT OF OTHER TRADES.

- H.
- I. SEISMIC RESTRAINT REQUIREMENTS: PROVIDE SEISMIC RESTRAINTS AS REQUIRED IN ACCORDANCE WITH THE STATE BUILDING CODE. A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER, LICENSED IN THE APPLICABLE STATE FOR THE PROJECT LOCATION, SHALL PREPARE THE SEISMIC RESTRAINT DESIGN AND CERTIFY THAT THE DESIGN IS IN COMPLIANCE WITH THE STATE BUILDING CODE REQUIREMENTS.
- J. PROVIDE VOLUME DAMPERS ON ALL SPLITS AND TAPS FOR ALL LOW PRESSURE DUCTWORK. DO NOT INSTALL DAMPERS ON MEDIUM PRESSURE DUCTWORK.
- K. ACCESS IS REQUIRED BELOW ALL DAMPERS, AC UNITS, VALVES AND TERMINAL BOXES.
- L. ACCESS IS REQUIRED BELOW ALL DAMPERS, VALVES, EXPANSION JOINTS, AIR TERMINAL BOXES, ACCESS DOORS IN DUCTWORK AND OTHER MECHANICAL EQUIPMENT.
- M. PROVIDE VOLUME DAMPERS IN LOW PRESSURE DUCTWORK FOR ALL SUPPLY, RETURN, AND EXHAUST OUTLETS (EXCEPT FL) PROVIDE VOLUME DAMPERS (VD) AT EVERY DUCTWORK BRANCH, TAP AND SPLIT. DO NOT INSTALL VOLUME DAMPERS ON MEDIUM PRESSURE DUCTWORK.
- N. PROVIDE ACCESS DOORS IN DUCTWORK OR PLENUMS WHERE INDICATED OR REQUIRED FOR ACCESS TO SYSTEM COMPONENTS INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
 - N.A. AUTOMATIC DAMPERS.
 - N.B. FILTER BANKS
 - N.C. FIRE DAMPERS.
 - N.D. COMBINATION FIRE SMOKE DAMPERS.
 - N.E. FOR AREAS WITH INACCESSIBLE CEILINGS, VOLUME DAMPERS SHALL BE PROVIDED WITH METAL FLEXIBLE CABLE OPERATORS FOR REMOTE OPERATION OF DAMPERS.
 - N.F. ALL DUCT DIMENSIONS ARE CLEAR INSIDE DUCT DIMENSIONS
 - N.G. PROVIDE A MINIMUM OF 4 X INLET DIAMETER STRAIGHT DUCT LENGTH UPSTREAM OF ALL AIR TERMINAL BOXES AS PER DETAILS AND SPECIFICATIONS

WORK INCLUDED UNDER OTHER SECTIONS OF WORK

ITEMS OF WORK WHICH SHALL BE INCLUDED UNDER OTHER SECTIONS OF WORK ARE AS FOLLOWS:

ACCESS DOORS IN FINISHED CONSTRUCTION

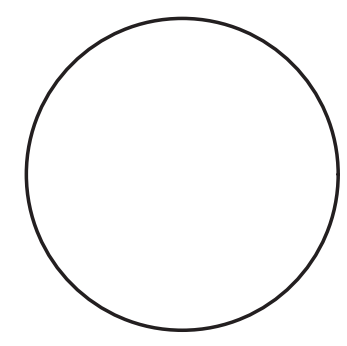
PROVISIONS OF ELECTRICAL DISCONNECT SWITCHES OR FUSES

ELECTRICAL WIRING FOR POWER, AUTOMATIC, SAFETY AND INTERLOCKING CONTROLS

PROVISION OF DUCT MOUNTED SMOKE DETECTORS (TO BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.

FINISH PAINTING OF EQUIPMENT (UNLESS FACTORY SUPPLIED AND SPECIFIED).

ORIGINAL
IF IT IS REEDED IT IS AN ORIGINAL



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EACH CONTRACTOR SHALL THOROUGHLY EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS FOR THE PROJECT AND NOT LIMIT THEIR WORK TO DRAWINGS REFERENCED FOR INDIVIDUAL TRADES.

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CERTIFICATE OF AUTHORIZATION
No. 24GA28009600

SEAL:

JEFFREY THOENS, P.E. DATE
NEW JERSEY PROFESSIONAL ENGINEER LIC. NO. 24GE04929100 PROJECT No. 21-02-11T

SEPTEMBER 2021

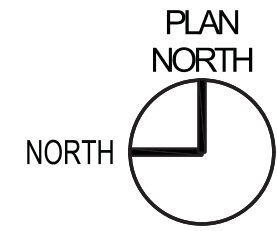
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Drawn by:
Checked by:

113316.01

**MECHANICAL
SPECIFICATIONS**

M501



GENERAL NOTES

GENERAL:

A. ALL WORK SHALL CONFORM TO 2017 NEC AND 2015 IBC AND LOCAL CODES.

B. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND APPROVAL FROM AUTHORITIES HAVING JURISDICTION AND PAY ALL FEES REQUIRED.

C. THE WORK, MATERIALS AND EQUIPMENT COVERED BY THE CONSTRUCTION DOCUMENTS/PERMIT DOCUMENTS SHALL COMPLY IN ALL RESPECTS WITH THE REQUIREMENTS OF STATE, COUNTY AND CITY APPLICABLE ORDINANCES, REGULATIONS, AND CODES. IN ADDITION, THE FOLLOWING PUBLISHED STANDARDS SHALL BE ADHERED TO:

- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
- AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- UNDERWRITERS LABORATORIES (UL)
- NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA)
- NATIONAL ELECTRICAL CODE (NEC)

D. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND APPROVAL FROM AUTHORITIES HAVING JURISDICTION AND PAYING ALL FEES REQUIRED.

E. ALL MATERIALS SHALL BE NEW AND SHALL BEAR A UL LABEL, WHERE APPLICABLE.

F. THE CONTRACTOR IS TO SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT TO THE ENGINEER AND OBTAIN APPROVAL PRIOR TO INSTALLATION.

G. BUILDING SHALL REMAIN OPEN DURING RENOVATION. THE CONTRACTOR SHALL SEQUENCE DEMOLITION AND CONSTRUCTION IN ORDER TO ALLOW CONTINUED OPERATIONS. THE CONTRACTOR SHALL ENSURE THAT DEMOLITION WORK DOES NOT INTERFERE WITH OR PROHIBIT THE CONTINUING OCCUPATION OF ADJACENT OPERATIONS WITHIN THE STRUCTURE. THIS INCLUDES, BUT IS NOT LIMITED TO, THE SELECTIVE DEMOLITION OF PARTITIONS, MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS. THE CONTRACTOR SHALL INFORM THE OWNER A MINIMUM OF 72 HOURS PRIOR TO DEMOLITION OF ACTIVITIES THAT WILL AFFECT THE NORMAL OPERATION OF THE FACILITY.

H. INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS: ONLY WITH WRITTEN CONSENT OF OWNER. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES. ALARM AND EMERGENCY SYSTEMS ARE NOT TO BE INTERRUPTED.

I. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS. MAINTAIN HEADROOM AND SPACE CONDITIONS.

J. SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK), NAILS, PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS SHALL BE SUPPORTED AT INTERVALS NOT GREATER THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.

K. PASS RACEWAYS OVER WATER, STEAM OR OTHER PIPING WHEN PULL BOXES ARE NOT REQUIRED. NO RACEWAY WITHIN 6 INCHES OF STEAM OR HOT WATER PIPES OR APPLIANCES (EXCEPT PIPE CROSSINGS WHERE RACEWAY SHALL BE AT LEAST 6 INCHES FROM PIPE COVERS).

L. FIRESTOPPING SHALL BE INSTALLED WHENEVER WIRING OR RACEWAYS CROSS FIRE RATED CONSTRUCTION.

M. PRIOR TO STARTING WORK THE CONTRACTOR SHALL VISIT THE SITE AND CONVENE A COORDINATION MEETING WITH CONSTRUCTION MANAGER. THE CONTRACTOR SHALL PROVIDE A SCHEDULE OF ACTIVITIES WITH DURATION TO SATISFY PROJECT SCHEDULE.

N. BEFORE SUBMITTING PROPOSALS, IT IS MANDATORY THAT EACH BIDDER SHALL VISIT THE SITE OF THE WORK TO BECOME ACQUAINTED WITH EXISTING CONDITIONS AND LIMITATIONS. FAILURE TO DO SO SHALL IN NO MANNER RELIEVE THE CONTRACTOR FROM THE OBLIGATIONS OF THE DRAWINGS, SPECIFICATIONS AND/OR CONTRACT, AS STATED OR IMPLIED.

O. BEGINNING OF WORK MEANS INSTALLER ACCEPTS EXISTING CONDITIONS.

P. THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER.

Q. ALL MATERIALS SHALL BE LISTED BY UNDERWRITERS LABORATORIES OR OTHER APPROVED INDEPENDENT AGENCY.

R. ALL MATERIALS USED IN THE WORK SHALL BE NEW, FREE OF DEFECTS, THE BEST OF THEIR RESPECTIVE KINDS, AND SHALL BE INSTALLED BY LABOR THOROUGHLY SKILLED IN THE CLASS OF WORK ANTICIPATED BY THIS CONTRACT.

S. WHERE CONDUITS PENETRATE EXISTING WALLS, THE CONTRACTOR SHALL INSTALL PROPER UL FIRESTOPPING PER RATING OF THE EXISTING WALL.

T. THE CONTRACTOR SHALL COORDINATE ALL MOUNTING HEIGHTS, LOCATIONS AND ARCHITECTURAL DRAWINGS.

U. THE CONTRACTOR SHALL DO ALL CUTTING AND PATCHING OF EXISTING CONSTRUCTION REQUIRED BY HIS WORK. ALL FINISHES SHALL MATCH EXISTING. STRUCTURAL MEMBERS SHALL NOT BE CUT UNLESS APPROVED BY OWNER'S REPRESENTATIVE. WHERE PATCHING/REPAIRING IS REQUIRED CONTRACTOR TO REFINISH AREA TO MATCH EXISTING.

V. EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.

W. THE CONTRACTOR SHALL REMOVE, RELOCATE AND REROUTE OTHER TRADES WORK AS REQUIRED TO ACCOMMODATE ELECTRICAL WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THAT WORK AND SHALL PAY ALL REQUIRED COSTS AT NO ADDITIONAL COST TO THE OWNER. WORK SHALL BE PERFORMED BY MECHANICS SKILLED IN THE PARTICULAR TRADE INVOLVED.

X. ALL MATERIAL SHALL BE INSTALLED IN COMPLIANCE WITH ALL MANUFACTURER'S INSTRUCTIONS AND PRACTICES UNLESS WRITTEN DIRECTION TO THE CONTRARY IS PROVIDED.

Y. UPON COMPLETION OF THE EQUIPMENT INSTALLATION THE CONTRACTOR SHALL CLEAN AREA AND LEAVE THE AREA IN A NEAT AND ORGANIZED FASHION.

Z. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION EQUIPMENT, SERVICES AND FACILITIES REQUIRED FOR THE COMPLETE, PROPER AND SUBSTANTIAL INSTALLATION OF ALL WORK WITH REQUIRED TESTING/APPROVALS

AA. ELECTRICAL DRAWINGS ARE NOT TO BE SCALED FOR DIMENSIONAL REQUIREMENTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.

ELECTRICAL DISTRIBUTION:

GENERAL:

A. FURNISH AND INSTALL ALL ELECTRICAL PANELBOARDS, WIRING, CONDUIT, DEVICES, SWITCHES, ETC. AS INDICATED ON THE DRAWINGS.

B. PROVIDE ENGRAVED PLASTIC NAMEPLATES AND SIGNS FOR ALL ELECTRICAL EQUIPMENT. ENGRAVING STOCK SHALL BE PLASTIC LAMINATE, MINIMUM 1/8 INCH THICK. ENGRAVED LEGEND WITH WHITE LETTERS ON BLACK FACE. PUNCHED OR DRILLED FOR MECHANICAL FASTENERS OR FURNISHED WITH ADHESIVE BACKING. PROVIDE NAMEPLATES ON ALL PANELBOARDS, MOTOR STARTERS, DISCONNECT SWITCHES, ETC.

PANELBOARDS:

A. FURNISH PANELBOARDS AS MANUFACTURED BY GENERAL ELECTRIC. 120/208 VOLT 3 PHASE 4 WIRE SHALL BE DEAD FRONT BOLT-ON CIRCUIT BREAKERS TYPE AQ.

B. PANELBOARDS AND CIRCUIT BREAKERS SHALL BE BRACED AND RATED TO HANDLE THE MAXIMUM AVAILABLE FAULT CURRENT FROM THE INCOMING UTILITY SERVICE. INTERRUPTING CAPACITY OF BREAKERS AND EQUIPMENT INDICATED ON THE PANEL SCHEDULES ARE APPROXIMATE. COORDINATE EXACT VALUE OF AVAILABLE FAULT CURRENT WITH THE LOCAL UTILITY COMPANY AND PROVIDE EQUIPMENT WITH RATINGS EXCEEDING THAT VALUE.

C. FURNISH PANELBOARDS WITH AMPERE RATINGS NOT LESS THAN THE VALUES SPECIFIED ON THE

DRAWINGS:

D. FURNISH PANELBOARDS IN MAIN CIRCUIT BREAKER OR MAIN LUG ONLY CONFIGURATIONS AS INDICATED ON THE DRAWINGS AND PANEL SCHEDULES.

E. THE PANELS SHALL BE OF DEAD FRONT CONSTRUCTION WITH SINGLE DOOR AND CODE GAUGE GALVANIZED STEEL BACK BOX, WITH LOCK AND KEY. A TYPEWRITTEN CIRCUIT IDENTIFICATION DIRECTORY, INDICATING THE USE OF EACH BRANCH CIRCUIT AND DESIGNATING SPARE CIRCUITS, SHALL BE FURNISHED ON THE INSIDE OF THE PANEL HANDWRITTEN DIRECTORIES ARE NOT ACCEPTABLE.

F. PROVIDE PANELBOARDS WITH CONTINUOUS COPPER BUSSING, ALLOWING SPACE FOR FUTURE OVERCURRENT PROTECTION DEVICES.

G. FURNISH PANELBOARDS WITH TLN PLATED COPPER MAIN BUSSING, COPPER EQUIPMENT GROUND BAR, AND ISOLATED GROUND BAR (WHERE INDICATED).

H. MOUNT PANELBOARD CABINET PLUMB AND RIGID WITHOUT DISTORTION OF BOX.

GROUNDING:

A. EQUIPMENT GROUNDING CONDUCTORS SHALL BE PROVIDED FOR ALL FEEDERS AND BRANCH CIRCUITS. USE GREEN GROUND CONDUCTORS.

B. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE PROPER GROUNDING OF ALL CIRCUITS AND EQUIPMENT AS PER APPLICABLE CODES.

C. GROUND METALLIC ENCLOSURES, RACEWAYS, ETC IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE ARTICLE 250.

WIRING METHODS:

A. CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREAD OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.

B. HORIZONTAL OR CROSS RUNS IN PARTITIONS AND WALLS ARE NOT PERMITTED. DO NOT RUN CONDUIT IN PRECAST ROOF SLABS, IN 2 INCH SLABS OR IN TERRAZZO FLOOR FINISH.

C. SET BOXES SQUARE AND TRUE WITH BUILDING FINISH.

D. COVERS OF JUNCTION AND PULLBOXES SHALL BE READILY ACCESSIBLE.

E. PROVIDE PULLBOXES WHERE INDICATED, WHERE REQUIRED BY CODE AND WHEREVER NECESSARY TO FACILITATE PULLING OF WIRE. COORDINATE PULLBOX LOCATIONS WITH OTHER TRADES.

F. USE FOLLOWING RACEWAYS:

a. EXTERIOR ABOVE GROUND: RIGID GALVANIZED STEEL, ALL APPLICATIONS.

b. UNDERGROUND: SCHEDULE 40 PVC.

c. INTERIOR AREAS:
EXPOSED: EMT WITH COMPRESSION FITTINGS
CONCEALED: EMT WITH COMPRESSION FITTINGS

d. USE OF METAL CLAD (MC) CABLE: MC CABLE SHALL BE PERMITTED IN CONCEALED AREAS. NO EXPOSED MC CABLE IS PERMITTED.

G. WIRING FOR COMMUNICATIONS SHALL BE IN RACEWAY SPECIFIED FOR BRANCH CIRCUITS UNLESS SPECIFICALLY NOTED OTHERWISE.

H. PROVIDE SEALS FOR RACEWAYS PASSING THROUGH FLOORS, ROOFS AND EXTERIOR WALLS.

I. CONDUCTORS SHALL BE 600 VOLT INSULATION, COPPER, TYPE THHN OR THWN-2.

J. LIQUID TIGHT FLEXIBLE METAL CONDUIT IN LENGTHS OF 3' OR LESS WITH APPROVED TYPE FITTINGS SHALL BE USED FOR CONNECTIONS TO VIBRATING EQUIPMENT, MOTORS, AND OTHER OUTLETS WHERE WIRING WILL BE EXPOSED TO WEATHER, MOISTURE OR VIBRATIONS.

K. INSTALL RACEWAYS FROM BOX TO BOX OR TERMINATIONS AS SHOWN ON THE DRAWINGS OR AS REQUIRED TO EFFECT CIRCUITING DESCRIBED WITH CIRCUIT NUMBERS ADJACENT TO EQUIPMENT. GROUPING HOME RUNS OR COMBINING WIRES IN COMMON RACEWAYS WILL BE ALLOWED WITH A MAXIMUM OF THREE SINGLE POLE BRANCH CIRCUITS IN A RACEWAY. INCREASE WIRE SIZES AND RACEWAYS WHERE REQUIRED TO AVOID LOSS OF AMPACITY AS REQUIRED BY NEC.

L. FLEXIBLE METAL CONDUIT WITH APPROVED TYPE FITTING MAY BE USED IN LIMITED LENGTHS FOR CONNECTIONS TO RECESSED FIXTURES WHERE IT IS NECESSARY TO PROVIDE FLEXIBLE CONNECTIONS. IT MAY ALSO BE USED WHERE STRUCTURAL MEMBERS PRECLUDE THE USE OF ELECTRICAL METALLIC TUBING OR CONDUITS.

M. INSTALL CONDUIT CONTINUOUS BETWEEN BOXES AND CABINETS WITH NO MORE THAN FOUR(4) 90 DEGREE BENDS. SECURELY FASTEN IN PLACE WITH STRAPS, HANGERS AND STEEL SUPPORTS AS REQUIRED. DO NOT SUPPORT CONDUIT FROM SUSPENDED CEILING GRID OR SUSPENSION WIRES. REROUTE CONDUIT ENDS BEFORE INSTALLATION AND THOROUGHLY CLEAN BEFORE INSTALLATION. OPENINGS SHALL BE PLUGGED OR COVERED TO KEEP CONDUIT CLEAN.

N. CONDUCTORS SHALL BE CONTINUOUS FROM ORIGIN TO PANEL OR EQUIPMENT WITHOUT SPLICES. WHERE TAP SPLICES ARE NECESSARY AND APPROVED, THEY SHALL BE MADE WITH SUITABLE CONNECTORS IN JUNCTION BOXES.

O. ALL WIRE AND CABLE AMPACITIES INDICATED ON DRAWINGS ARE BASED ON 75°C. TEMPERATURE RATING. ALL LUGS, BREAKERS, SWITCHES AND OTHER TERMINATIONS SHALL HAVE 75°C. RATINGS AS A MINIMUM.

P. SEPARATE NEUTRALS SHALL BE RUN FOR ALL CIRCUITS UTILIZING SWITCH MODE POWER SUPPLIES(EG. COMPUTERS, FLUORESCENT LIGHTING, ETC.).

WIRING DEVICES:

A. PROVIDE WIRING DEVICES AS INDICATED ON THE DRAWINGS. ALL WIRING DEVICES SHALL BE SPECIFICATION GRADE.

B. STANDARD RECEPTACLES AND SWITCHES COLORS SHALL BE COORDINATED WITH ARCHITECT.

C. ALL DEVICE WALL PLATES SHALL BE IVORY OR WHITE SMOOTH PLASTIC OR STAINLESS STEEL.

D. ALL JUNCTION AND HANDY BOXES SHALL BE METALLIC.

E. CONTRACTOR TO INSURE THAT DEVICES AND THEIR BOXES ARE PROTECTED. DO NOT PLACE WALL FINISH MATERIALS OVER DEVICES AND DO NOT CUT HOLES FOR BOXES WITH ROUTERS THAT ARE GUIDED BY RIDING AGAINST OUTSIDE OF THE BOXES.

F. KEEP OUTLET BOXES FREE OF PLASTER, DRYWALL, JOINT COMPOUND, MORTAR, CEMENT, CONCRETE, DUST, PAINT, AND OTHER MATERIAL THAT MAY CONTAMINATE THE RACEWAY SYSTEM, CONDUCTORS, AND CABLES.

G. INSTALL DEVICE BOXES IN BRICK OR BLOCK WALLS SO THAT THE COVER PLATE DOES NOT CROSS A JOINT UNLESS THE JOINT IS TROWELED FLUSH WITH THE FACE OF THE WALL.

H. INSTALL WIRING DEVICES AFTER ALL WALL PREPARATION, INCLUDING PAINTING, IS COMPLETE.

LOW VOLTAGE POWER CONDUCTORS:

A. MULTI-CONDUCTOR CABLES SHALL COMPLY WITH NEMA WC 70 FOR METAL-CLAD CABLE, TYPE MC

B. USE ONLY FACTORY-FABRICATED CONNECTORS AND SPLICES OF SIZE, AMPACITY RATING, MATERIAL, TYPE, AND CLASS FOR APPLICATION AND SERVICE INDICATED.

C. WIRE SIZES #10 AWG AND SMALLER SHALL BE SOLID, #8 AWG AND LARGER SHALL BE STRANDED. ALL CONDUCTORS SHALL BE COPPER. CONDUCTORS SHALL BE INCREASED IN SIZE (PER NEC VOLTAGE DROP FORMULA) FOR ANY 120 VOLT RUNS LONGER THAN 100 FT OR ANY 208V RUNS LONG THAT 200 FT. MINIMUM WIRE SIZE SHALL BE #12 AWG.

IDENTIFICATION:

A. WIRE COLOR CODING: AS PER CODE. WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION FOR OVERLAP COLOR TAPING OF CONDUCTORS (MINIMUM LENGTH 6") IN ACCESSIBLE LOCATIONS. COLOR CODING, ONCE SELECTED, MUST BE USED CONSISTENTLY FOR THE ENTIRE PROJECT

a. POWER WIRING: CONSISTENT PHASE IDENTIFICATION OF ALL WIRES SHALL BE MAINTAINED AS FOLLOWS:

PHASE A	208/120 VOLT, 3Ø 60HZ	277/480V, 3Ø 60 HZ	BROWN
PHASE B	BLACK		ORANGE
PHASE C	RED		YELLOW
NEUTRAL WIRE	BLUE		WHITE WITH
GROUND WIRE	WHITE		GRAY STRIPE
	GREEN		

B. PROVIDE IDENTIFICATION OF ALL BRANCH CIRCUIT WIRES IN PULL BOXES AND AT TERMINATIONS WITH PANEL AND CIRCUIT NUMBER.

C. PROVIDE PLASTIC ENGRAVED LABELS ON PANELS, DISCONNECT SWITCHES AND TRANSFORMERS TO INDICATE POWER SOURCE AND VOLTAGE.

CLOSE OUT:

A. ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED AND TESTED FOR PROPER OPERATION. AFTER WIRES ARE IN PLACE AND CONNECTED TO DEVICES AND EQUIPMENT, THE SYSTEM SHALL BE TESTED FOR SHORTS AND GROUNDS. ALL HOT AND NEUTRAL CONDUCTORS, IF SHORTED OR GROUNDED, SHALL BE REMOVED AND REPLACED. ALL METERS, INSTRUMENTS, CABLE CONNECTIONS, EQUIPMENT OR APPARATUS NECESSARY FOR MAKING ALL TESTS, SHALL BE FURNISHED BY THIS CONTRACTOR AT HIS OWN EXPENSE

B. TOUCH-UP OR REFINISH DAMAGED SURFACES OF FIXTURES AND EQUIPMENT, EXPOSED TO VIEW.

C. FURNISH WRITTEN MINIMUM OF ONE YEAR GUARANTEE FOR ALL ELECTRICAL WORK AND EQUIPMENT UNLESS NOTED OTHERWISE IN DIVISION 1 OF SPECIFICATIONS.

D. CONTRACTOR SHALL SUBMIT RECORD DRAWINGS AT COMPLETION OF PROJECT.

E. CONTRACTOR SHALL SUBMIT (3) THREE COPIES OF OPERATION AND MAINTENANCE MANUALS UNLESS NOTED OTHERWISE IN DIVISION 1 OF SPECIFICATIONS

F. AFTER THE COMPLETION OF THE WORK, THE CONTRACTOR SHALL TEST AND DEMONSTRATE TO THE SATISFACTION AND APPROVAL OF THE CONSTRUCTION MANAGER / ENGINEER THAT ALL SYSTEMS ARE IN WORKING ORDER IN ACCORDANCE WITH MANUFACTURERS GUIDELINES.

GENERAL NOTES

A. THE CONTRACTOR IS TO FURNISH AND INSTALL ALL MATERIALS REQUIRED TO COMPLETE THE WORK.

B. THE CONTRACTOR IS RESPONSIBLE FOR ALL CHASES, OPENINGS, HOLES, SLEEVES, DRILLING, ETC., PERTAINING TO HIS WORK.

C. PRIOR TO SUBMISSION TO BID, THE CONTRACTOR SHALL VISIT THE JOB SITE TO FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND TO DETERMINE HIS SCOPE OF WORK.

D. THE WORK SHALL INCLUDE SUPPLYING ALL LABOR, EQUIPMENT AND PROVIDING ALL MATERIALS NECESSARY FOR A COMPLETE ELECTRICAL INSTALLATION AS SHOWN ON THE DRAWINGS AND SPECIFIED HERE IN.

E. ALL BRANCH CIRCUITS AND FEEDERS SHALL BE INSTALLED IN METAL CONDUIT AND RUN CONCEALED IN CEILINGS AND WALLS. NO SURFACE MOUNTED WIRING OR WIREMOLD WILL BE PERMITTED.

F. MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE NOTED.

G. CONTRACTOR SHALL UPDATE PANEL INDEX DIRECTORY CARDS TO SHOW SPARE CIRCUIT BREAKERS AND ACCURATE CONNECTIONS TO PERIPHERAL EQUIPMENT.

H. SURVEY FIELD CONDITIONS AND VERIFY THAT WORK IS FEASIBLE AS SHOWN. NOTIFY THE ARCHITECT IN WRITING IF ANY CONFLICTS ARE PRESENT PRIOR PROCEEDING WITH THE WORK.

I. COORDINATE ALL WORK RELATED TO EQUIPMENT WITH MANUFACTURERS RECOMMENDATIONS, SPECIFICATIONS AND INSTRUCTIONS.

J. ALL WORK MUST BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND ALL APPLICABLE LOCAL CODES AND REGULATIONS.

K. ALL EXPOSED WIRING SHALL BE RUN IN CONDUIT (EMT CONDUIT FOR INTERIOR APPLICATIONS, RMC FOR EXTERIOR APPLICATIONS). CONDUIT SHALL BE ROUTED AS HIGH AS POSSIBLE AND PARALLEL TO WALLS. CONDUIT PENETRATIONS THRU WALLS SHALL BE MADE PERPENDICULAR TO THE SURFACE OF THE WALL. SEAL AROUND OPENINGS WITH AN APPROVED FIRESTOPPING MATERIAL WHERE CONDUITS PENETRATE FIRE-RATED WALLS.

L. ALL EQUIPMENT, PIPING, WIRING, ETC. UTILIZED IN CEILING RETURN PLENUMS SHALL BE NON-COMBUSTIBLE, HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50, AND BE LISTED AND LABELED AS PLENUM RATED WHERE APPLICABLE.

CODES AND REGULATIONS INFORMATION

GOVERNING CODES & REFERENCES:

ALL CONSTRUCTION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NEW JERSEY UNIFORM CONSTRUCTION CODE AND OTHER NATIONAL AND STATE CODES INCLUDING:

N.J.A.C. 5:23-6 UNIFORM CONSTRUCTION CODE SUBCHAPTER 6. REHABILITATION SUBCODE.
2018 NATIONAL STANDARD PLUMBING CODE.
2018 INTERNATIONAL BUILDING CODE (IBC) NJ EDITION.
2018 INTERNATIONAL FUEL GAS CODE (IFGC).
2018 INTERNATIONAL FIRE CODE (IFC).
2018 INTERNATIONAL MECHANICAL CODE (IMC).
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
2017 NATIONAL ELECTRICAL CODE (NEC).
THE FEDERAL "REDUCTION OF LEAD IN DRINKING WATER ACT" AS DEFINED PER SDWA IN SECTION 1417(D). LEAD FREE
ASHRAE HANDBOOKS - AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS (ASHRAE).

SHOULD CONFLICT BETWEEN CODES OR REFERENCES AND THE CONTRACT DRAWINGS OR SPECIFICATIONS BE OBSERVED BY THE CONTRACTOR, THE CODE OR REFERENCE SHALL BE REFERRED TO THE ENGINEER AND A WRITTEN OPINION BY THE ENGINEER SHALL BE OBTAINED.

DRAWING INDEX

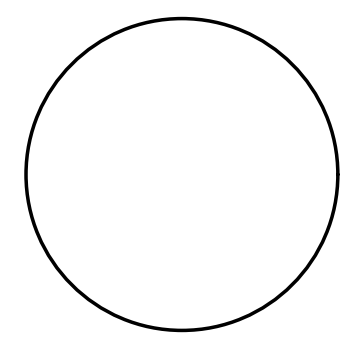
ELECTRICAL DRAWING LIST	
DWG. No.	DRAWING TITLE
E001	ELECTRICAL OVERVIEW SHEET
E100	ELECTRICAL DEMOLITION PLAN
E200	ELECTRICAL POWER PLAN
E300	ELECTRICAL LIGHTING PLAN
E301	ELECTRICAL LIGHTING CONTROLS (1)
E301	ELECTRICAL LIGHTING CONTROLS (2)
E303	ELECTRICAL LIGHTING CONTROLS (3)
E400	HVAC ELECTRICAL PLAN
E500	ELECTRICAL DETAILS

SYMBOLS

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, 20A 120V
	QUAD RECEPTACLE, 20A 120V
	QUAD RECEPTACLE, 20A 120V - COUNTER HEIGHT COORDINATE MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH IN.
	DUPLEX RECEPTACLE COUNTER HEIGHT 48" AFF. 20A 120V WITH USB CONNECTION. COORDINATE MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH IN.
	GFI DUPLEX COUNTER HEIGHT RECEPTACLE, 20A 120V COORDINATE MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH IN.
	DUPLEX RECEPTACLE, 20A 120V WITH GFCI PROTECTION
	FLUSH MOUNT POKE THROUGH POWER DATA ASSEMBLY - 20A 120V - LEGRAND WIREMOLD 6" PREWIRED SURF STYLE BRUSHED ALUMINUM 6ATC2PAA WITH WITH THE ATC-8a TELDATA PIECE.
	JUNCTION BOX
	DESIGNATED SWITCH
	DIMMER SWITCH
	OCCUPANCY SENSOR SWITCH
	UNFUSED SAFETY SWITCH
	DATA/TV OUTLET, WITH 3/4" CONDUIT TO ACCESSIBLE CEILING FOR DATA. DATA TO BE BY OWNER. COORDINATE MOUNTING HEIGHT WITH ARCHITECT
	ELECTRICAL PANEL BOARD
	EXIT LIGHT WITH BATTERY BACK UP WITH DIRECTIONAL KNOCKOUT ARROWS
	EMERGENCY LIGHT WITH BATTERY BACK UP
	FIRE ALARM HORN/ STROBE NUMBER EQUALS CANDELA RATING
	MANUAL PULL STATION
	FIRE ALARM STROBE
	FIRE ALARM CONTROL PANEL
	FIRE ALARM CARBON MONOXIDE DETECTOR
	FIRE ALARM DUCT SMOKE DETECTOR
	KEYNOTE SYMBOL
	WALL MOUNTED REMOTE EMERGENCY LIGHT
	PANIC PUSHBUTTON TO SHERIFF'S CONTROL ROOM

ABBREVIATIONS

SYMBOL	DESCRIPTION
A	AMPERES
AFF	ABOVE FINISHED FLOOR
AFC	ABOVE FINISHED CEILING
C	CONDUIT
CH	COUNTER HEIGHT
EDH	ELECTRIC DUCT HEAT
EM	EMERGENCY
G	GROUND
NL/EM	NIGHTLIGHT/ EMERGENCY FIXTURE
TYP	TYPICAL
V	VOLTS
WP	WEATHERPROOF
WR	WEATHER RESISTANT



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EACH CONTRACTOR SHALL THOROUGHLY EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS FOR THE PROJECT AND NOT LIMIT THEIR WORK TO DRAWINGS REFERENCED FOR INDIVIDUAL TRADES.
BUSINESS PROPRIETARY INFORMATION
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CERTIFICATE OF AUTHORIZATION
No. 24GA28009600

JEFFREY THOENS, P.E. DATE
NEW JERSEY PROFESSIONAL ENGINEER LIC. NO. 24GE04929100 PROJECT No. 21-02-11T

No.	Revision	Description	Date

Drawn by:
Checked by:

113316.01
ELECTRICAL OVERVIEW SHEET
E001

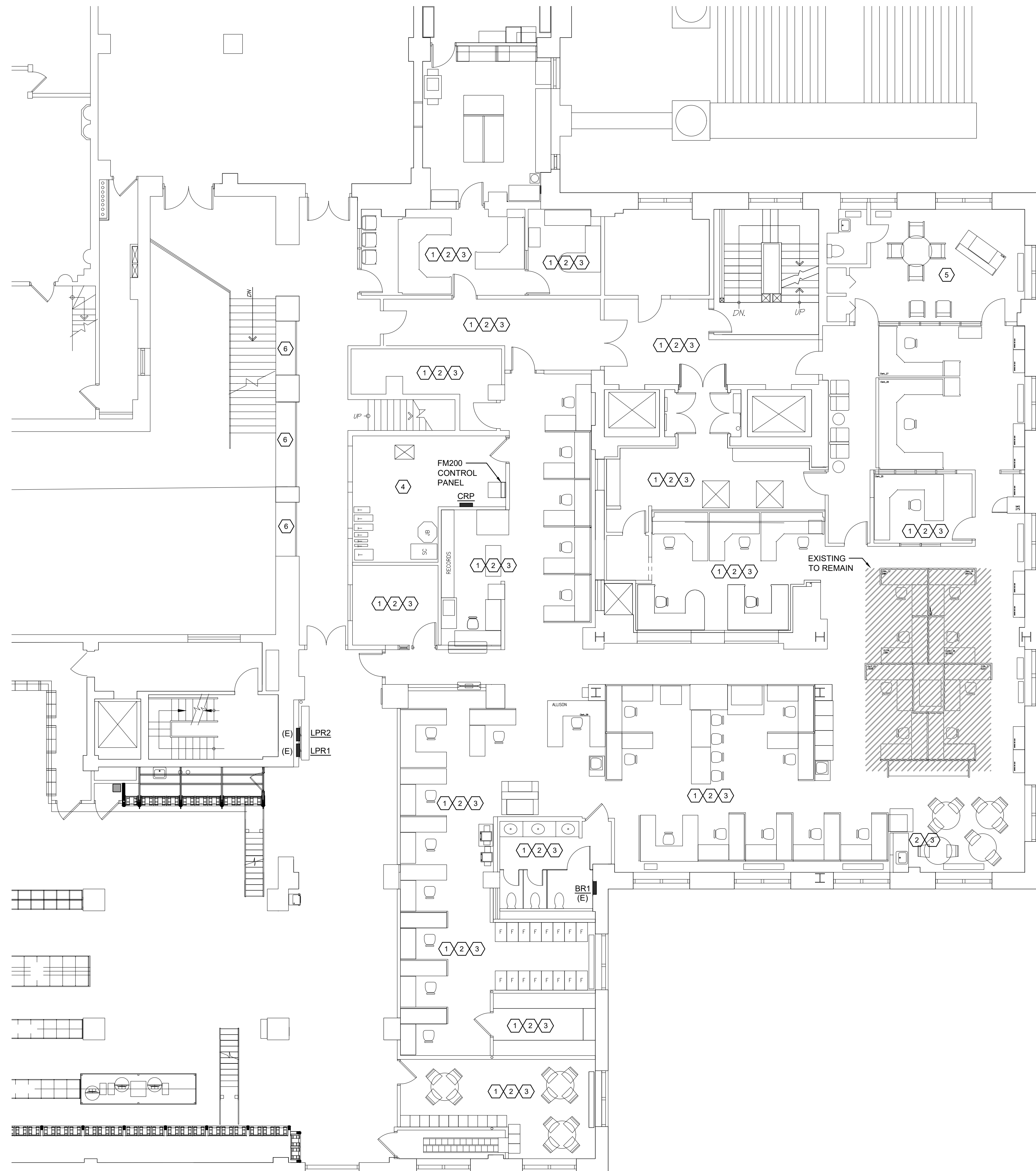
ORIGINAL IF IT IS RED IT IS AN ORIGINAL

DEMOLITION NOTES

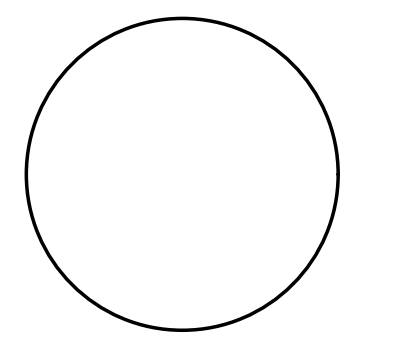
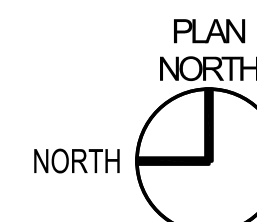
- A. REFER TO THE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DEMOLITION GENERAL NOTES.
- B. THESE DEMOLITION PLAN DRAWINGS WERE CREATED FROM EXISTING WORKING DRAWINGS AND LIMITED FIELD SURVEYS AND ARE INTENDED TO SHOW THE OVERALL SCOPE OF WORK AND GENERAL CONDITIONS WHICH ARE EXPECTED TO OCCUR. ONLY SYSTEM ELEMENTS THAT WERE CLEARLY VISIBLE HAVE BEEN IDENTIFIED. FIELD OBSERVATION OF EXISTING SYSTEMS AND THEIR COMPONENTS MUST BE PERFORMED BY THE CONTRACTOR. PRIOR TO DEMOLITION, THE CONTRACTOR MUST ATTEST TO THE ACCURACY OF WORK INDICATED TO BE REMOVED. FIXTURES, WIRING, CONDUIT, DEVICES, ETC. INADVERTENTLY REMOVED SHALL BE REPLACED AT NO ADDITIONAL COST. VERIFY ALL CONDITIONS BEFORE PROCEEDING WITH THE DEMOLITION WORK IN ANY AREA.
- C. CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL CONDITIONS UNDER WHICH HE WILL BE OBLIGATED TO OPERATE AND THAT WILL AFFECT HIS WORK, AND SHALL BE SOLELY RESPONSIBLE FOR SAME. NO ALLOWANCE WILL BE MADE IN THIS REGARD FOR ERROR OR NEGLIGENCE.
- D. GENERAL CONTRACTOR SHALL PROVIDE A TIME TABLE FOR DEMOLITION AND NEW CONSTRUCTION TO THE OWNER AND ARCHITECT FOR APPROVAL PRIOR TO COMMENCEMENT OF ANY WORK.
- E. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES AND OTHER FORMS OF PROTECTION AS REQUIRED TO PROTECT THE OWNER'S PERSONNEL, OTHER TENANTS AND GENERAL PUBLIC FROM INJURY DUE TO DEMOLITION WORK.
- F. CONTRACTOR SHALL PROVIDE AT ALL TIMES ALL PROTECTION REQUIRED WHERE THE NEW WORK OR REMOVALS EXPOSE EXISTING CONSTRUCTION. ALL OPENINGS INTO THE EXISTING BUILDING SHALL BE FULLY SEALED AND PROTECTED TO PREVENT ENTRY OF DIRT, DEBRIS, WEATHER AND EXCESSIVE NOISE.
- G. CONTRACTOR SHALL PROVIDE ALL TEMPORARY SUPPORTS, BRACING, ETC. REQUIRED FOR CONSTRUCTION AND THE SUPPORT OF ANY AND ALL EQUIPMENT RELOCATED OR REINSTALLED.
- H. CONTRACTOR SHALL PATCH AND/OR REPAIR ALL EXISTING ADJACENT CONSTRUCTION AS MAY BE REQUIRED AFTER DEMOLITION TO PROVIDE A COMPLETE FINISHED INSTALLATION. PROVIDE FINISHES TO MATCH EXISTING ADJACENT FINISHES.
- I. CONTRACTOR SHALL DEMOLISH AND REMOVE ALL ITEMS AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY DEMOLITION AND/OR REMOVALS NOT SPECIFICALLY CALLED FOR IN THE DRAWINGS AND SPECIFICATIONS, BUT REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS DELINEATED ON THE DRAWINGS AND SPECIFICATIONS.
- J. ALL MATERIALS AND EQUIPMENT REMOVED FROM THE BUILDING SHALL BE DISPOSED OF BY THE CONTRACTOR (EXCEPT AS REQUESTED BY THE OWNER).
- K. EACH TRADE, WHETHER IT IS THE GENERAL CONTRACTOR OR SUBCONTRACTORS, IS RESPONSIBLE FOR THEIR OWN CUTTING. ALL PATCHING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
- L. BUILDING SHALL REMAIN OPEN DURING RENOVATION. THE CONTRACTOR SHALL SEQUENCE DEMOLITION AND CONSTRUCTION IN ORDER TO ALLOW CONTINUED OPERATIONS. THE CONTRACTOR SHALL ENSURE THAT DEMOLITION WORK DOES NOT INTERFERE WITH OR PROHIBIT THE CONTINUING OCCUPATION OF ADJACENT OPERATIONS WITHIN THE STRUCTURE. THIS INCLUDES, BUT IS NOT LIMITED TO, THE SELECTIVE DEMOLITION OF PARTITIONS, ELECTRICAL AND MECHANICAL SYSTEMS. THE CONTRACTOR SHALL INFORM THE OWNER A MINIMUM OF 72 HOURS PRIOR TO DEMOLITION OF ACTIVITIES THAT WILL AFFECT THE NORMAL OPERATION OF THE FACILITY.
- M. ALL ITEMS INDICATED TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY, INCLUDING FIXTURES, LENSES, LAMPS, BALLASTS, HANGERS, SUPPORTS, ETC. REMOVE ASSOCIATED WIRING, CONDUIT, PULL AND JUNCTION BOXES, FITTINGS, CLAMPS, HANGERS, ETC BETWEEN FIXTURES AND SOURCE OF POWER. MAINTAIN CONTINUITY OF POWER IF CIRCUITS AFFECTED BY THE RENOVATION SERVE ADJACENT AREAS THAT ARE EXISTING TO REMAIN. REMOVE SWITCHING ASSOCIATED WITH FIXTURES BEING REMOVED OR MODIFIED IN THE AREA OF RENOVATION. (TYPICAL)
- N. ALL MECHANICAL AND ELECTRICAL EQUIPMENT TO BE REMOVED SHALL BE DISCONNECTED AND ALL PENETRATIONS AND OPENINGS SEALED UNLESS OTHERWISE NOTED.

KEY NOTES (1,2,3)

- 1. REMOVE EXISTING LIGHTING FIXTURES AND ASSOCIATED SWITCHING IN THE AREA OF RENOVATION IN ACCORDANCE WITH THE ARCHITECT'S DEMOLITION PLAN. RETAIN ASSOCIATED WIRING, CONDUIT, PULL AND JUNCTION BOXES, FITTINGS, CLAMPS, HANGERS, ETC BETWEEN FIXTURES AND SOURCE OF POWER. CONTRACTOR SHALL UTILIZE EXISTING BRANCH CIRCUIT TO EXTEND AND CONNECT TO NEW FIXTURE CONFIGURATION. MAINTAIN CONTINUITY OF POWER IF CIRCUITS AFFECTED BY THE RENOVATION SERVE ADJACENT AREAS THAT ARE EXISTING TO REMAIN. REMOVE SWITCHING ASSOCIATED WITH FIXTURES BEING REMOVED OR MODIFIED IN THE AREA OF RENOVATION. (TYPICAL)
- 2. REMOVE EXISTING DEVICES LOCATED ON ANY EXISTING WALLS BEING DEMOLISHED. REMOVALS SHALL INCLUDE ALL DEVICES, JUNCTION AND HANDY BOXES, MOUNTING HARDWARE, WIRING, CONDUIT, FITTINGS, ETC BETWEEN DEVICES AND SOURCE OF POWER. MAINTAIN CONTINUITY OF POWER IF CIRCUITS AFFECTED BY THE RENOVATION SERVE ADJACENT AREAS THAT ARE EXISTING TO REMAIN. (TYPICAL)
- 3. DISCONNECT AND REMOVE ELECTRICAL DEVICES. REMOVALS SHALL INCLUDE RECEPTACLES, DATA/TELEPHONE OUTLETS AND LOCAL SWITCHING. CONTRACTOR SHALL PULL BRANCH CIRCUIT WIRING BACK TO SOURCE OF POWER.
- 4. NOT IN SCOPE EXISTING TO REMAIN
- 5. BRANCH CIRCUITS IN THIS AREA ARE EXISTING TO REMAIN.
- 6. REMOVE EXISTING FIXTURE, RETAIN CONDUIT AND WIRING AND EXTEND TO NEW.



1 ELECTRICAL DEMOLITION PLAN
E100 SCALE: None



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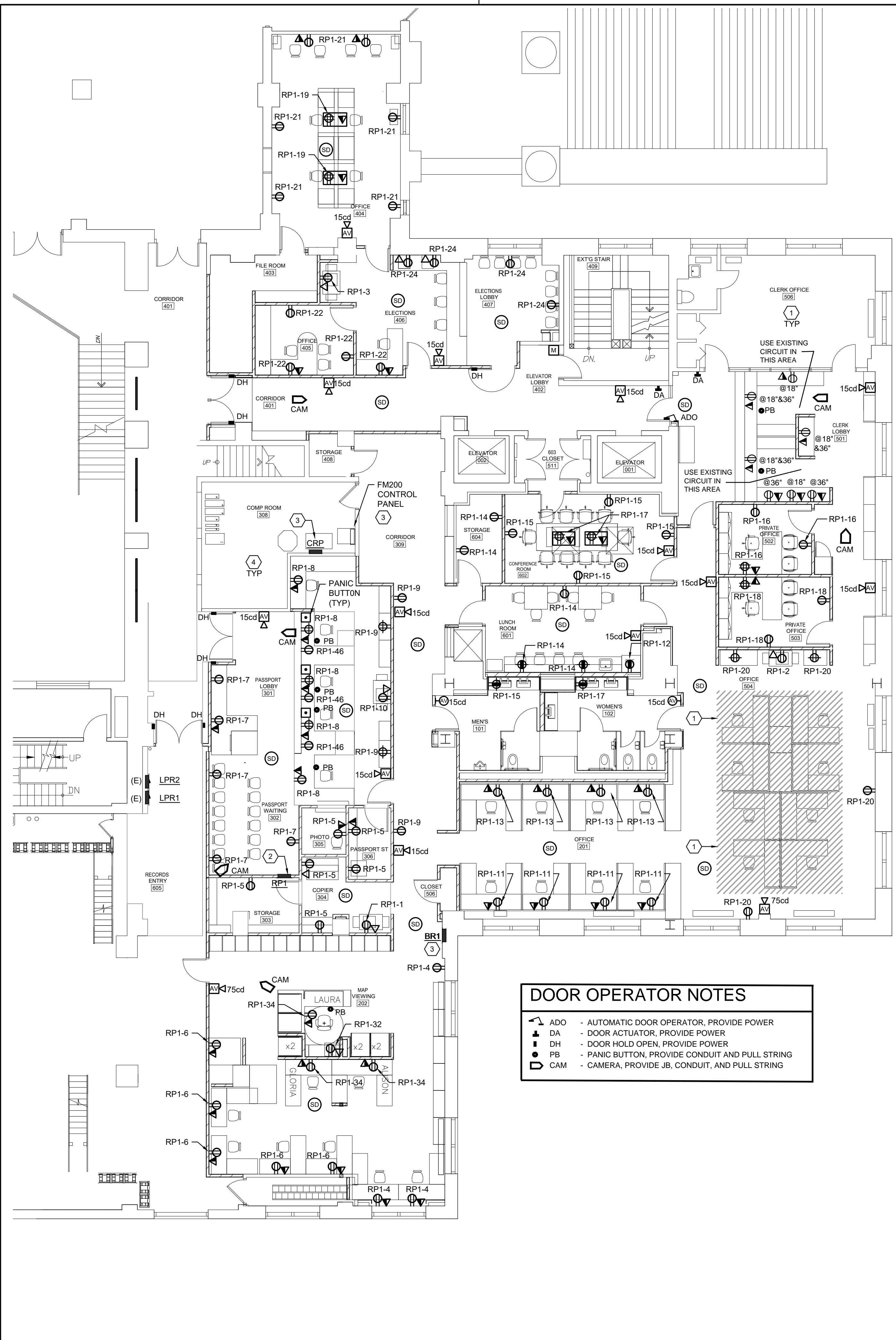
SEPTEMBER 2021

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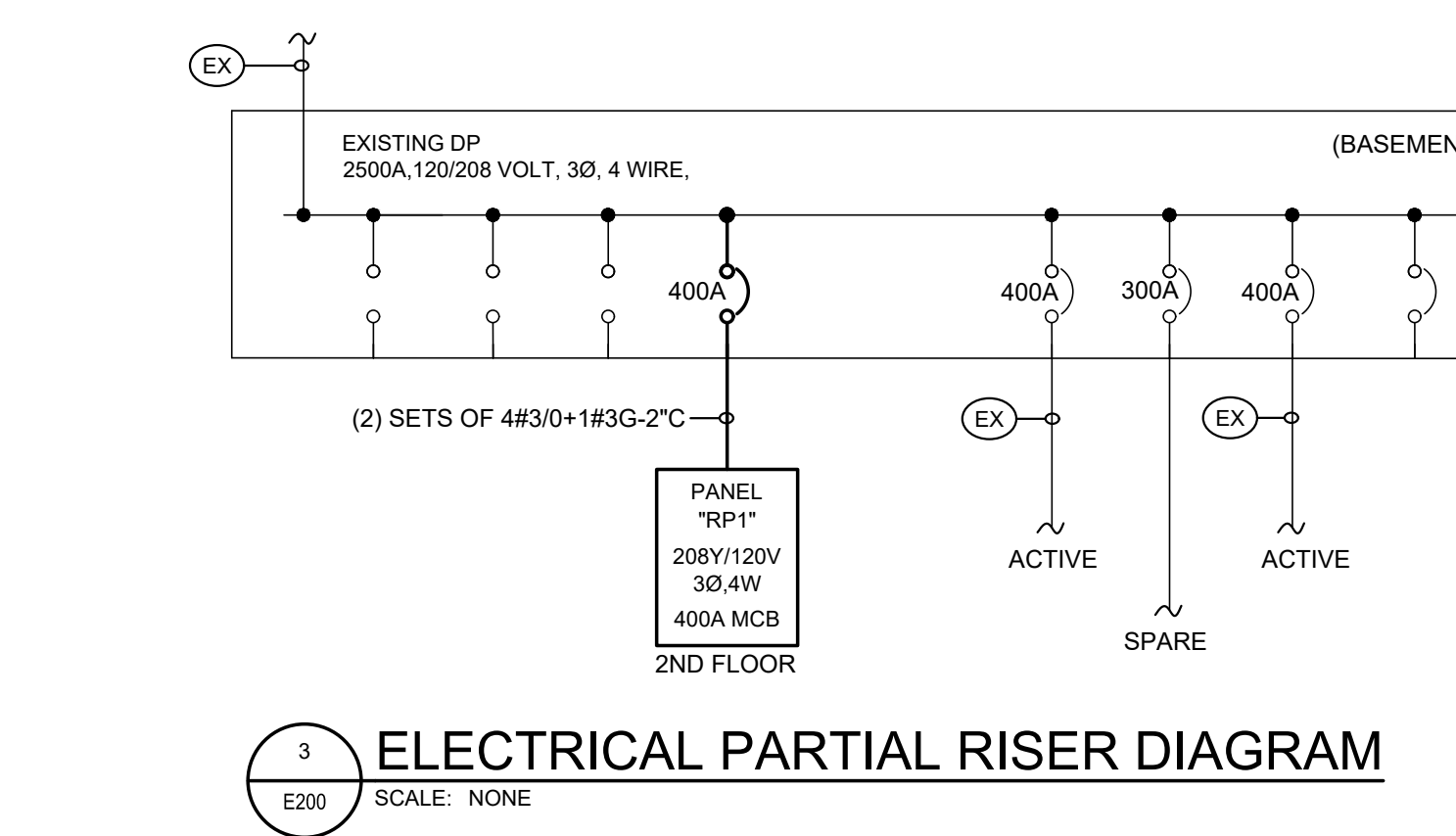
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ELECTRICAL DEMOLITION PLAN
ED100

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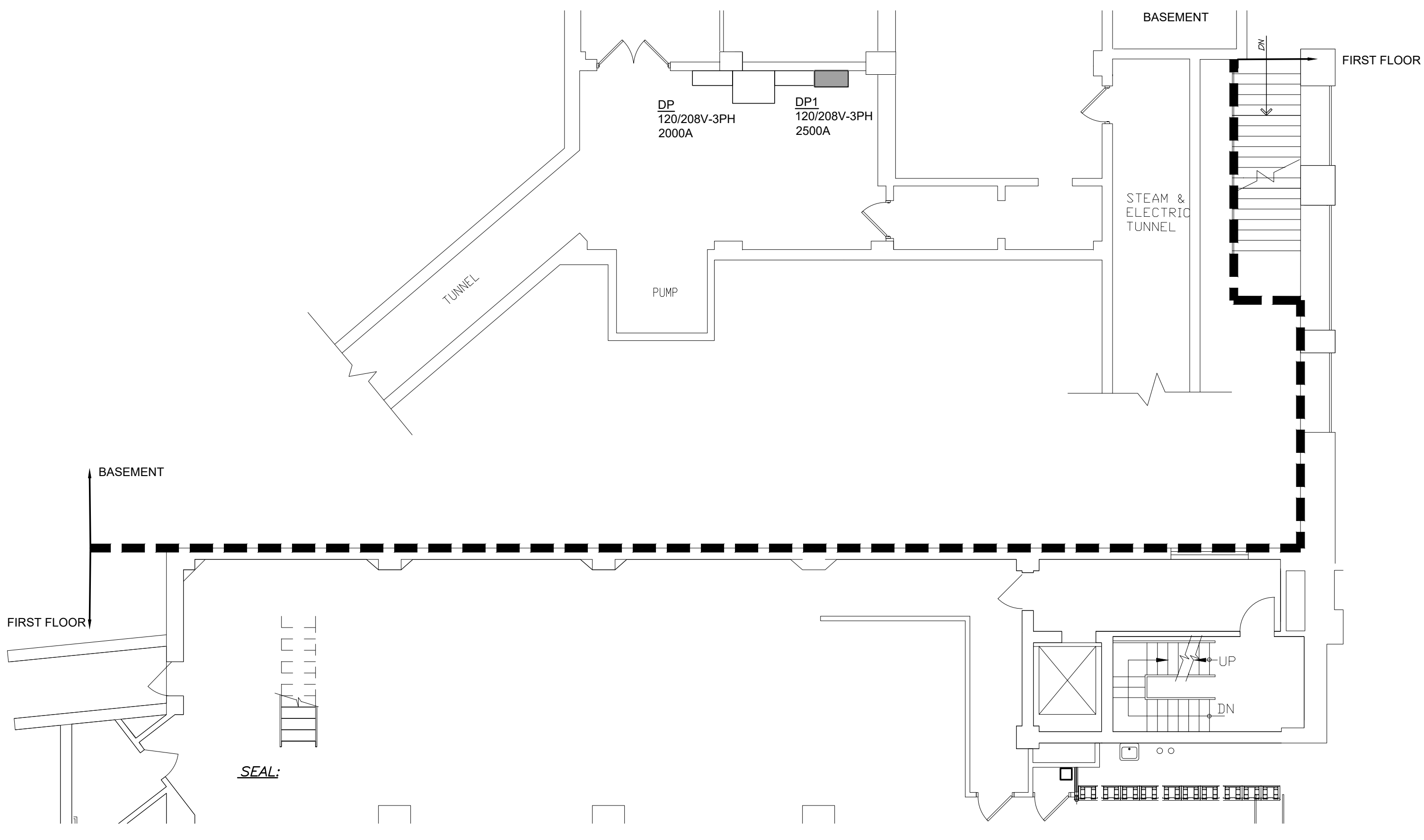


1 ELECTRICAL POWER FLOOR PLAN
SCALE: 1/8"=1'-0"

DESIGNATION: RP1		MOUNTING: SURFACE		MAIN CIRCUIT BREAKER 400 Amps					
VOLTAGE: 208V/120V, 3 PHASE, 4 WIRE		GROUND BUS: YES		PANEL BUS SIZE: 400 Amps					
KAICR RATING: 14K		NEUTRAL BUS: 100%		NUMBER OF POLES: 84					
ISOLATED GROUND BUS: NO				ENCLOSURE: NEMA 1					
GR. NO.	MINIMUM BRANCH CIRCUIT No. WIRE GND	LOAD DESCRIPTION	CIRCUIT BREAKER P TRIP	C.B. LOAD VA	PHASE A PHASE B PHASE C	CIRCUIT BREAKER TRIP P F	LOAD DESCRIPTION	MINIMUM BRANCH CIRCUIT No. WIRE GND	GR. NO.
1	2 12 12	COOPER	1 20 1000	2000			COOPER	2 12 12	2
2	2 12 12	COOPER	1 20 1000		1900		MAP VIEWING RECEIPTS	2 12 12	4
3	2 12 12	STORAGE 303 PSIRT 308 RECP	1 20 900		1620		OFFICE 107 MAP VIEW RECEIPTS	2 12 12	6
4	2 12 12	LOBBY RECEIPTS	1 20 900	1800			LOBBY RECEIPTS	2 12 12	8
5	2 12 12	LOBBY / CORRIDOR RECEIPTS	1 20 1000		2080		RECP/IMP 4265 RECP	2 12 12	10
6	2 12 12	OFFICE 505 RECEIPTS	1 20 720		1320		REFRIGERATOR	2 12 12	12
7	2 12 12	OFFICE 505 RECEIPTS	1 20 720	1260			LUNCH ROOM RECEIPTS	2 12 12	14
8	2 12 12	CONFERENCE RM 602 RECEIPTS	1 20 720		1440		OFFICE 505 RECEIPTS	2 12 12	16
9	2 12 12	CONFERENCE RM 602 RECEIPTS	1 20 720		1440		OFFICE 505 RECEIPTS	2 12 12	18
10	2 12 12	OFFICE 404 RECEIPTS	1 20 1000	1800			OFFICE 505 RECEIPTS	2 12 12	20
11	2 12 12	OFFICE 404 RECEIPTS	1 20 720		1440		OFFICE 407 RECEIPTS	2 12 12	22
12	2 12 12	ACCU MAINTENANCE RECP	1 20 300		1020		OFFICE 407 RECEIPTS	2 12 12	24
13	2 12 12	LIGHTING	1 20 680	1500			LIGHTING	2 12 12	26
14	2 12 12	LIGHTING	1 20 220		1360		LIGHTING	2 12 12	28
15	2 12 12	LIGHTING	1 20 460		840		LIGHTING	2 12 12	30
16	3 6 10	ACCU-1	3 60 11008	11748			PRINTER	2 12 12	32
17	3 6 10	ACCU-1	3 60 11008	11748			MAP VIEWING / OFFICE RECEIPTS	2 12 12	34
18	3 6 10	ACCU-1	3 60 11008	11748			MAP VIEWING / OFFICE RECEIPTS	2 12 12	36
19	2 12 12	AHUJ-510	2 20 365	10901			ACCU-1	3 6 10	38
20	2 12 12	AHUJ-510	2 20 365	10901			AHUJ-203	2 12 12	40
21	2 12 12	AHUJ-501	2 20 283	888			AHUJ-301	2 12 12	42
22	2 12 12	AHUJ-502	2 20 283	888			AHUJ-301	2 12 12	44
23	2 12 12	AHUJ-503	2 20 283	888			AHUJ-301	2 12 12	46
24	2 12 12	AHUJ-504	2 20 283	888			AHUJ-301	2 12 12	48
25	2 12 12	AHUJ-505	2 20 283	888			AHUJ-301	2 12 12	50
26	2 12 12	AHUJ-506	2 20 283	888			AHUJ-301	2 12 12	52
27	2 12 12	AHUJ-507	2 20 283	888			AHUJ-301	2 12 12	54
28	2 12 12	AHUJ-508	2 20 283	888			AHUJ-301	2 12 12	56
29	2 12 12	AHUJ-509	2 20 283	888			AHUJ-301	2 12 12	58
30	2 12 12	AHUJ-510	2 20 283	888			AHUJ-301	2 12 12	60
31	2 12 12	AHUJ-511	2 20 283	888			AHUJ-301	2 12 12	62
32	2 12 12	AHUJ-512	2 20 283	888			AHUJ-301	2 12 12	64
33	3 6 10	DOAS	3 60 4992	5162			BCC-1	2 12 12	66
34	3 6 10	DOAS	3 60 4992	5162			BCC-1	2 12 12	68
35	2 12 12	AHUJ-506	2 15 156	156			SPARE	2 12 12	70
36	2 12 12	AHUJ-506	2 15 156	156			SPARE	2 12 12	72
37	2 12 12	AHUJ-506	2 15 156	156			SPARE	2 12 12	74
38	2 12 12	AHUJ-506	2 15 156	156			SPARE	2 12 12	76
39	2 12 12	AHUJ-506	2 15 156	156			SPARE	2 12 12	78
40	2 12 12	AHUJ-506	2 15 156	156			SPARE	2 12 12	80
41	2 12 12	AHUJ-506	2 15 156	156			SPARE	2 12 12	82
42	2 12 12	AHUJ-506	2 15 156	156			SPARE	2 12 12	84



3 ELECTRICAL PARTIAL RISER DIAGRAM
SCALE: NONE



3 ELECTRICAL POWER BASEMENT PART PLAN
SCALE: 1/8"=1'-0"

POWER NOTES

- A. ALL RECEPTACLES NOTED ON DRAWINGS ARE NEW UNLESS OTHERWISE INDICATED AS EXISTING (E)
- B. ALL DEVICE WIRING SHALL BE IN STRICT COMPLIANCE TO THE MANUFACTURER'S REQUIREMENTS, BUT NOT LIMITED TO, UNUSED DEVICES, WIRING, CONDUIT, ACCESSORIES, ETC. SHALL BE DISPOSED OF BY THE CONTRACTOR. PRIOR TO DISPOSAL, DETERMINE IF BUILDING OWNER WOULD LIKE ANY OF THE EXISTING EQUIPMENT OR DEVICES FOR THEIR ATTIC STOCK.
- C. ALL MATERIALS AND EQUIPMENT REMOVED FROM THE BUILDING INCLUDING, BUT NOT LIMITED TO, UNUSED DEVICES, WIRING, CONDUIT, ACCESSORIES, ETC. SHALL BE DISPOSED OF BY THE CONTRACTOR. PRIOR TO DISPOSAL, DETERMINE IF BUILDING OWNER WOULD LIKE ANY OF THE EXISTING EQUIPMENT OR DEVICES FOR THEIR ATTIC STOCK.
- D. REFER TO THE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR A DESCRIPTION OF ALTERNATE BIDS THAT MAY AFFECT THE ELECTRICAL SCOPE OF WORK.
- E. ALL EQUIPMENT, PIPING, WIRING, ETC. UTILIZED IN CEILING RETURN PLENUMS SHALL BE NON-COMBUSTIBLE, HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50, AND BE LISTED AND LABELED AS PLENUM RATED WHERE APPLICABLE.

FIRE ALARM NOTES

- A. FIRE ALARM PLANS DEPICT THE GENERAL LAYOUT AND INTENT OF THE FIRE ALARM SYSTEM. THE CONTRACTOR MUST DETERMINE THE ACTUAL QUANTITY AND FINAL LOCATION OF DEVICES REQUIRED BY CODE BASED UPON ACTUAL FIELD CONSTRUCTED CONDITIONS.
- B. COORDINATE ALL FIRE ALARM REQUIREMENTS AND WORK, INCLUDING DEVICE MOUNTING HEIGHT, WITH AUTHORITY HAVING JURISDICTION PRIOR TO INSTALLATION.
- C. THE FIRE ALARM CONTRACTOR SHALL RELOCATE ANY EXISTING INITIATING AND NOTIFICATION DEVICES AND PROVIDE ADDITIONAL QUANTITIES OF NEW DEVICES AS REQUIRED FOR A FULLY OPERATIONAL FIRE ALARM SYSTEM COMPLIANT WITH ALL APPLICABLE CODES AND REFERENCES.
- D. THE CONTRACTOR SHALL CONNECT RELOCATED AND NEW DEVICES TO THE EXISTING FIRE ALARM CONTROL PANEL AND PROVIDE ALL REQUIRED RE-PROGRAMMING OF THE EXISTING FIRE ALARM SYSTEM TO ACCOMMODATE NEW DEVICES AND THEIR RESPECTIVE ADDRESSABLE IDENTIFIERS. FIELD VERIFY EXACT LOCATION OF EXISTING CONTROL PANEL.
- E. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED BOOSTER POWER SUPPLIES, CONTROL PANEL EXPANSION MODULES, AND ALL OTHER HARDWARE AND DEVICES AS REQUIRED FOR A FULLY OPERATIONAL SYSTEM.
- F. THE EXISTING FIRE ALARM SYSTEM IS A FULLY ADDRESSABLE VOICE COMMUNICATION SYSTEM. INITIATING DEVICES ARE INTERLOCKED WITH THE FIRE ALARM CONTROL PANEL. ENSURE THAT ALL NEW DEVICES ARE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM AND WILL OPERATE ACCORDING TO THE EXISTING SYSTEM SEQUENCE OF OPERATIONS.
- G. ALL DEVICE WIRING SHALL BE IN STRICT COMPLIANCE TO THE MANUFACTURER'S REQUIREMENTS. ALL DEVICE WIRING SHALL BE POWER LIMITED AND SHALL BE INSTALLED IN EMT CONDUIT 3/2" MINIMUM.
- H. MODIFICATIONS TO THE EXISTING FIRE ALARM SYSTEM SHALL BE MADE WHILE THE SYSTEM IS STILL OPERATIONAL. IF A SYSTEM SHUTDOWN IS REQUIRED, THE CONTRACTOR SHALL COORDINATE AND SCHEDULE WITH THE BUILDING MANAGEMENT AND PROVIDE ALL REQUIRED FIRE WATCH EQUIPMENT AND PERSONNEL IN ACCORDANCE WITH THE LOCAL AUTHORITY HAVING JURISDICTION.
- I. ALL MATERIALS AND EQUIPMENT REMOVED FROM THE BUILDING INCLUDING, BUT NOT LIMITED TO, UNUSED DEVICES, WIRING, CONDUIT, ACCESSORIES, ETC. SHALL BE DISPOSED OF BY THE CONTRACTOR. PRIOR TO DISPOSAL, DETERMINE IF BUILDING OWNER WOULD LIKE ANY OF THE EXISTING EQUIPMENT OR DEVICES FOR THEIR ATTIC STOCK.
- J. REFER TO THE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR A DESCRIPTION OF ALTERNATE BIDS THAT MAY AFFECT THE ELECTRICAL SCOPE OF WORK.
- K. ALL EQUIPMENT, PIPING, WIRING, ETC. UTILIZED IN CEILING RETURN PLENUMS SHALL BE NON-COMBUSTIBLE, HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50, AND BE LISTED AND LABELED AS PLENUM RATED WHERE APPLICABLE.
- L. CONTRACTOR SHALL PROVIDE NEW FIRE ALARM DEVICES WHICH MATCHES EXISTING MANUFACTURER. CONNECT ALL NEW DEVICES TO EXISTING FIRE ALARM SYSTEM. FIELD VERIFY SYSTEM MANUFACTURER AND ALL LOCATIONS OF EXISTING FIRE ALARM CONTROL PANEL. ALL NEW DEVICES SHALL BE COMPATIBLE WITH THE EXISTING SYSTEM. PROVIDE ALL REQUIRED PROGRAMMING, EXPANSION MODULES, POWER SUPPLIES, ETC. TO ACCOMMODATE THE NEW DEVICES. CONTRACTOR SHALL UPSIZE PANEL IF REQUIRED.

KEY NOTES (1, 2, 3)

- 1. EXISTING BRANCH CIRCUITS IN THIS AREA ARE EXISTING TO REMAIN.
- 2. NEW 120/208V-3PH-4W-400A NEW PANEL
- 3. EXISTING PANEL TO REMAIN
- 4. THE COMPUTER ROOM IS EXISTING TO REMAIN. CONTRACTOR SHALL ENSURE UNINTERRUPTED POWER AND CONTINUED OPERATIONS OF THE ENTIRE COMPUTER ROOM DURING THE EXTENT OF THE RENOVATION AND NEW CONSTRUCTION.

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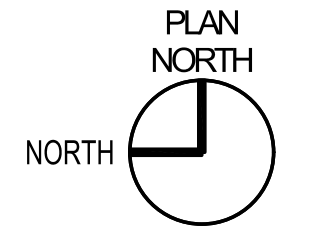
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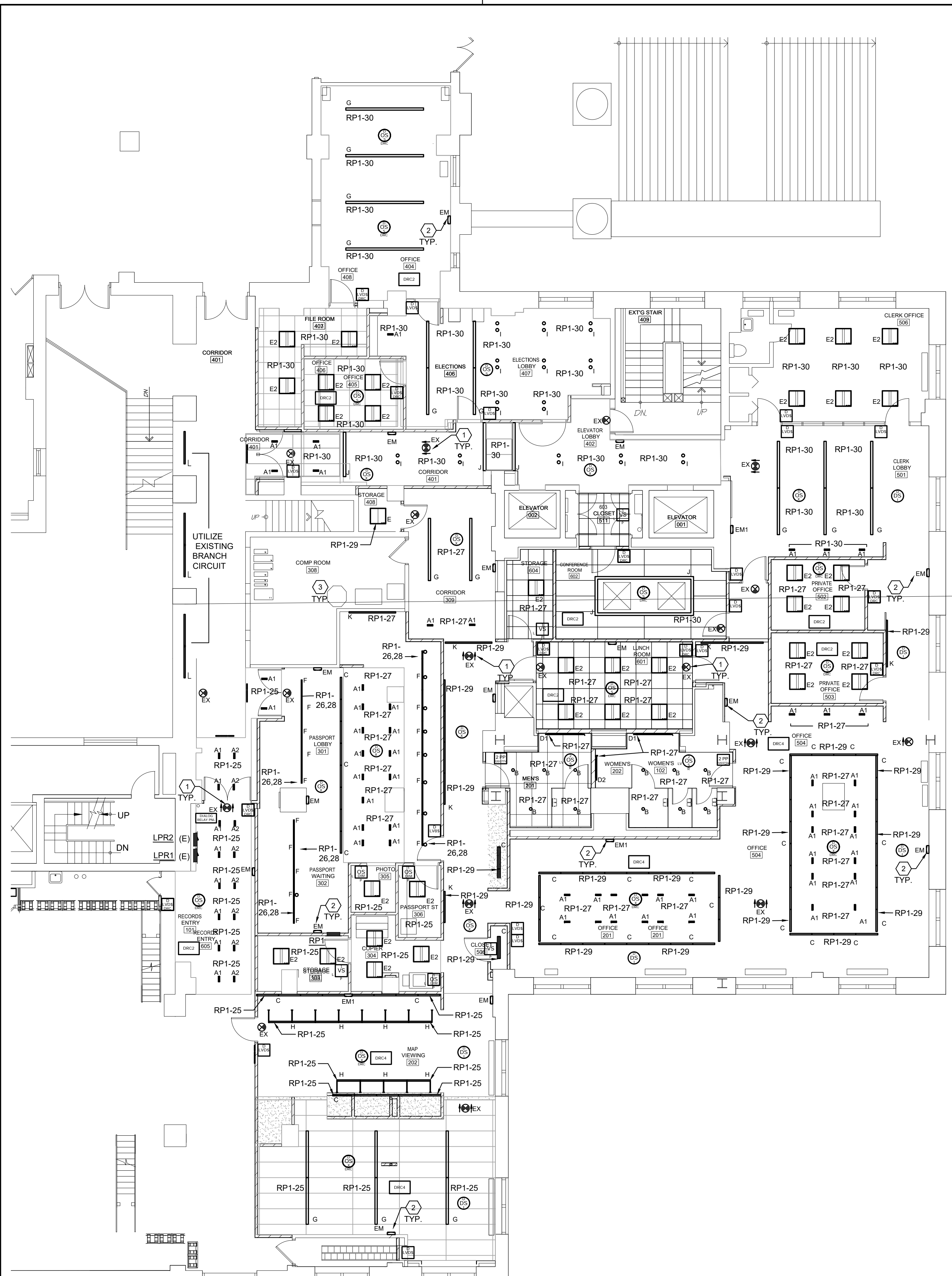
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ELECTRICAL POWER PLAN

E200

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ORIGINAL
IF IT IS RED IT IS AN ORIGINAL

1 ELECTRICAL LIGHTING FLOOR PLAN
E300 SCALE: 1/8"=1'-0"

LIGHTING FIXTURE SCHEDULE					
FIXTURE TYPE	SYMBOL	MANUFACTURER	DESCRIPTION AND MANUFACTURER'S CAT.NO.	REMARKS	
A1		USA1	MICRO DOWNLIGHT WITH TRIM - MDF MDF06-21H1-35KS-50-BZ-WHNC-UNV-D2-CB27-J9		
A2		USA1	MICRO DOWNLIGHT WITH TRIM - MDF MDF06-21H1-35KS-30-BZ-NC-UNVD2-CB27-J9		
B		USA1	BEVELED 2.2 GLOW - B4SD GLOW 4.5" SQUARE DOWNLIGHT B4SDL-24C3-35KS-M-G1-WH-WH-NCUNV-D6E-CB27-J9		
C		FINELITE	SERIES 11 LED FINELITE MICRO PROFILE COVE S11-LED-MP-XX-V-835-SC-96W-ADV-TXL-J9	REFER TO PLANS FOR LENGTHS	
D1		ELECTRIC MIRROR	ELECTRIC MIRROR - SERENITY LED LIGHTED MIRROR SER2-60.00X36.00-L7CSD-NB-30KJ9		
D2		ELECTRIC MIRROR	ELECTRIC MIRROR - SERENITY LED LIGHTED MIRROR SER2-36.00X36.00-L7CSD-NB-30KJ9		
E2		FINELITE	HPR RECESSED LED HPR LED-A-2X2-SCC-S-835-ADV-SCCX-J9		
F1		TIMES SQUARE LIGHTING	G-SERIES VOLT TRACK GHTEK-XX-WHTEK11XTSA21XTSA41-J9	CONTRACTOR RESPONSIBLE FOR A COMPLETE OPERATING SYSTEM INCLUDING ALL HARDWARE COMPONENTS AND DRIVERS AND CONTROL TO PROVIDE THE LAYOUT AS SHOWN ON PLANS	
F1		TIMES SQUARE LIGHTING	CCR SERIES CREE LED CCR-25-80-35-W-120-60-CABLE W/CANOPY-010-J9		
G		FINELITE	HP4 PENDANT DIRECT /INDIRECT LED HP-L-RG-ID-SEE PLANS-S-835-WSOTG-L-RG-D-96LG-120-SC-FC-1%-FA50-C2-FE-SW-J9	REFER TO PLANS FOR LENGTHS	
H		FINELITE	HP2 ARM MOUNT HP-2-AM-ID-SEE PLANS-S-835-ASY-L-RG-D-96LG-120-SC-FC-1%-AM18-FE-W-J9		
I		USA1	BEVELED 2.2 TRIMLESS ACOUSTICAL B4SDP-16C3-35KS-50-S-AC-NC-UNVD6E-CAX-J9	CONTRACTOR TO COORDINATE WITH CEILING MANUFACTURER TO PRODUCE PRE-CUT CEILING TILES TO PRODUCE LAYOUT AS SHOWN ON PLANS	
J		FINELITE	HP4 RECESSED LINEAR LED HP-4-R-RG-D-SEE PLANS-S-835-RG-D-96LG-120-SC-FC-1%-CX-FE-CTBS-J9	REFER TO PLANS FOR LENGTHS. FIXTURES INTERFACE WITH MULTIPLE CEILING TYPES. COORDINATE CEILING HARDWARE WITH ADJACENT CEILING TYPES	
K		FINELITE	HP2 WALL MOUNT REGRESSED LINEAR LED HP-2-WM-RG-ID-XX-ADVISE-ADVISE-835-ASY-L-RG-D-96LG-ADVISE-SC-FC-1%-FE-CTBS-J9	REFER TO PLANS FOR LENGTHS	
L		CORONET	LINEAR PENDANT MAF-TRK(SEE PLANS FOR LENGTH) NA-27-LTG-UNV-09-DR90-BLK-AC MAGNETIC FIXTURE MAG-XX-27-LTG1-BLK-EM120	UTILIZE EXISTING CIRCUITS	
EM1		EVENLITE	EMERGENCY LED FIXTURE TEBL6W-SD-J9		
EX		EVENLITE	LED EXIT SIGN TEXZ EM R URC J9		

LIGHTING NOTES

- COORDINATE THE ACTUAL LOCATION OF ALL LIGHTING FIXTURES WITH THE ARCHITECT'S REFLECTED CEILING PLAN AND ALL ARCHITECTURAL, MECHANICAL, AND STRUCTURAL ELEMENTS INCLUDING, BUT NOT LIMITED TO, DUCTWORK, PIPING, EQUIPMENT, BEAMS, JOISTS, ETC.
- PROVIDE ALL LIGHTING FIXTURES, BALLASTS, MOUNTING HARDWARE AND ACCESSORIES, CONDUIT, CONDUCTORS, CONTACTORS, SWITCHES, OCCUPANCY SENSORS, ETC. REQUIRED FOR A COMPLETE INSTALLATION WHETHER INDICATED ON THE DRAWINGS OR NOT.
- ILLUMINATION LEVELS SHALL BE IN ACCORDANCE WITH THE ILLUMINATION ENGINEERING SOCIETY OF NORTH AMERICA (IESNA) AND ALL APPLICABLE CODES.
- EXIT SIGNS AND LIGHTING WITH EMERGENCY BATTERY PACKS SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY SWITCHING.

KEY NOTES (1,2,3)

- PROVIDE NEW EXIT SIGN. CONNECT TO UN-SWITCHED LEG OF GENERAL LIGHTING CIRCUIT OF THE AREA WITH 2#12 + 1#12G IN 3/4" CONDUIT.
- PROVIDE NEW EMERGENCY FIXTURE. CONNECT TO UN-SWITCHED LEG OF GENERAL LIGHTING CIRCUIT OF THE AREA WITH 2#12 + 1#12G IN 3/4" CONDUIT.
- THE COMPUTER ROOM LIGHTING IS EXISTING TO REMAIN. CONTRACTOR SHALL ENSURE UNINTERRUPTED POWER AND CONTINUED OPERATIONS OF THE ENTIRE COMPUTER ROOM DURING THE EXTENT OF THE RENOVATION AND NEW CONSTRUCTION.

LIGHTING CONTROL LEGEND

	DIALOG REMOTE PANEL 24 CAPACITY W/ 8 RELAYS
	WSW-3528 DIALOG 8 BUTTON LOW VOLTAGE SWITCH STATION
	WSD-3501 DIALOG LOW VOLTAGE DIMMER SWITCH STATION
	WORSDD1-P-N DIALOG CEILING MOUNT STANDARD RANGE OCCUPANCY SENSOR
	WORXDG1-P-N DIALOG CEILING MOUNT EXTENDED RANGE OCCUPANCY SENSOR
	WPP-INT DIALOG CEILING MOUNT INTERIOR PHOTOSENSOR
	WRC-4244 4-CHANNEL DIALOG ROOM CONTROLLER
	WRC-4222 2-CHANNEL DIALOG ROOM CONTROLLER
	WSD-3501 DIALOG ROOM CONTROLLER LOW VOLTAGE DIMMER SWITCH STATION
	WORSDD1-R-T DIALOG ROOM CONTROLLER CEILING MOUNT STANDARD RANGE OCCUPANCY SENSOR
	WORXDG1-R-T DIALOG ROOM CONTROLLER CEILING MOUNT EXTENDED RANGE OCCUPANCY SENSOR
	WPP-INT DIALOG ROOM CONTROLLER CEILING MOUNT INTERIOR PHOTOSENSOR
	WP-PP20-D 1 POLE POWER PACK, 120/277V
	WP-PP20-2P-D 2 POLE POWER PACK, 120/277V
	WSR-8711 1 BUTTON LOW VOLTAGE SWITCH STATION
	WORSDD1-R-N CEILING MOUNT OCCUPANCY SENSOR, LOW VOLTAGE, 2 POLE, RELAY, STANDARD RANGE
	WRSDD1-R-N CEILING MOUNT VACANCY SENSOR, LOW VOLTAGE, 1 POLE, RELAY, STANDARD RANGE
	SWX-131-D-WH PASSIVE INFRARED 0-10V WALL SWITCH OCCUPANCY/VACANCY SENSOR, LINE VOLTAGE 120/277V, 1 POLE, PHOTO
	WVSSDU1-P-WV SWITCH MOUNT VACANCY SENSOR, LINE VOLTAGE 120/277V, 1 POLE, PHOTO

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N.J. 21A102068500

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CERTIFICATE OF AUTHORIZATION
No. 24GA28009600

SEAL:

JEFFREY THOENS, P.E.
NEW JERSEY PROFESSIONAL
ENGINEER LIC. NO. 24GE04929100 PROJECT No. 21-02-11T

SEPTEMBER 2021

No.	Revision Description	Date

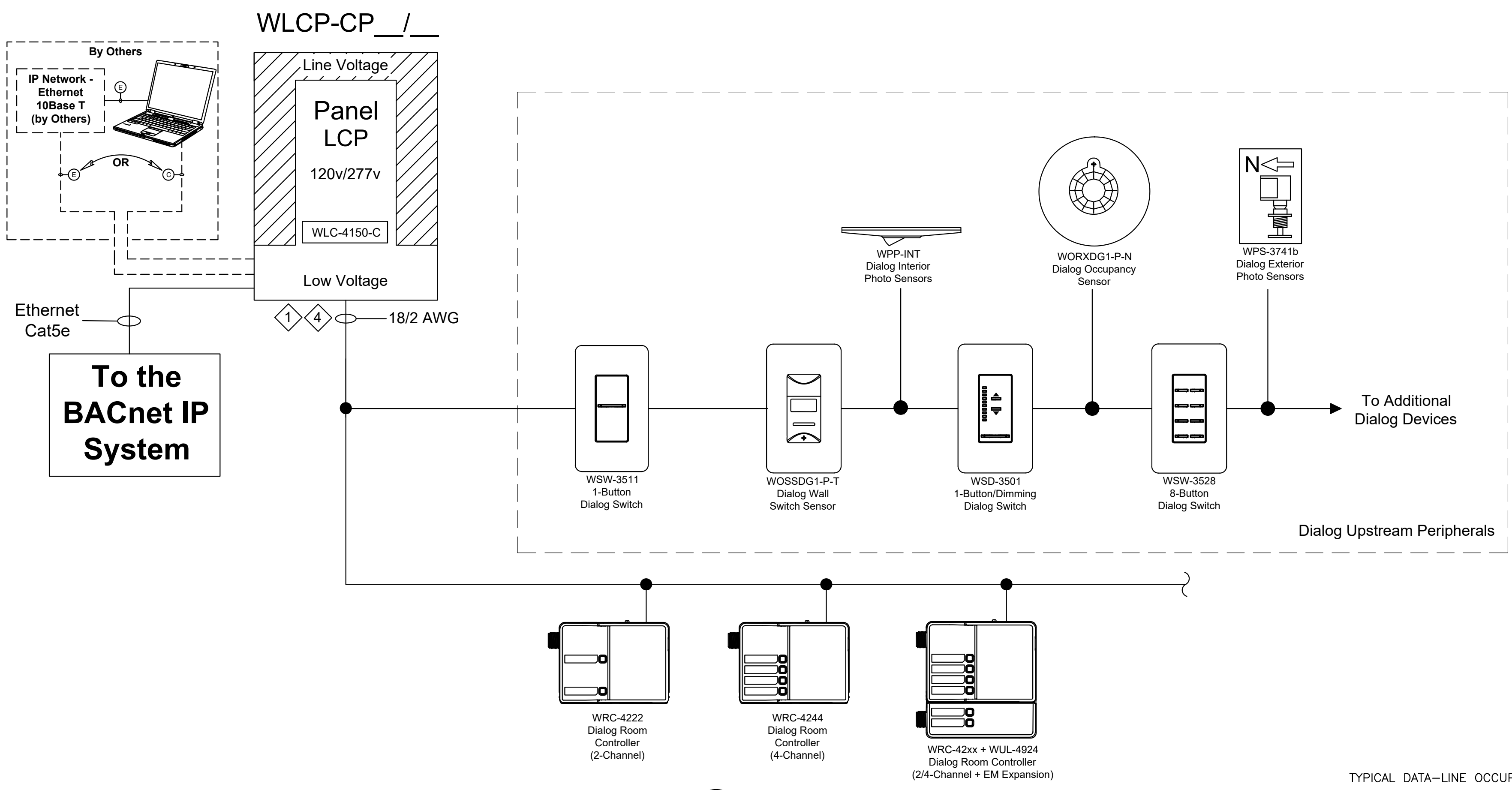
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Checked by:

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ELECTRICAL LIGHTING PLAN

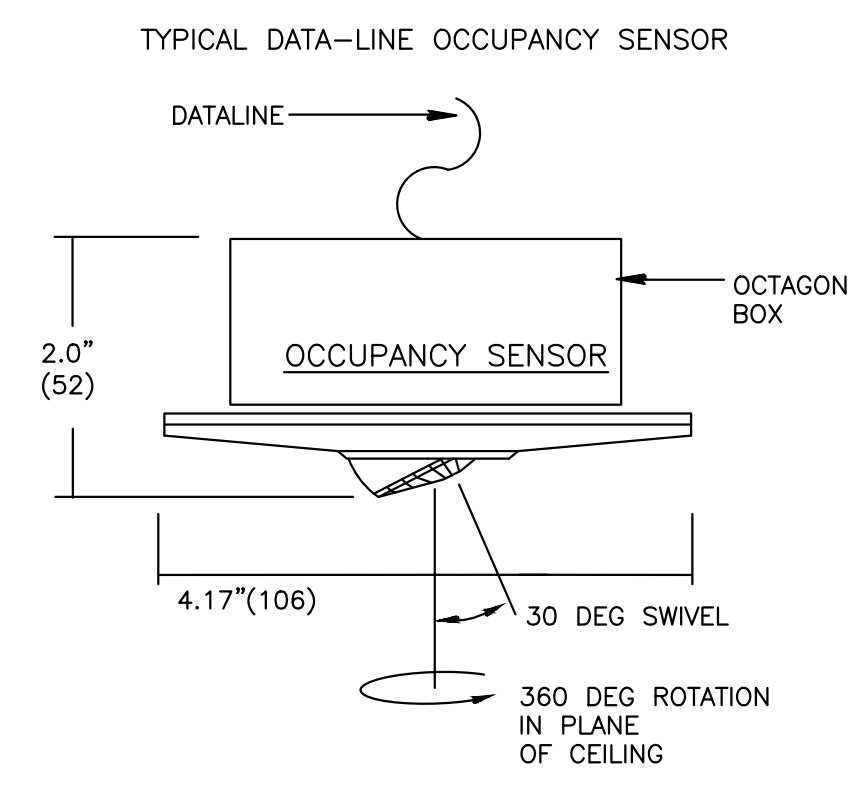
E300

PLAN NORTH
NORTH

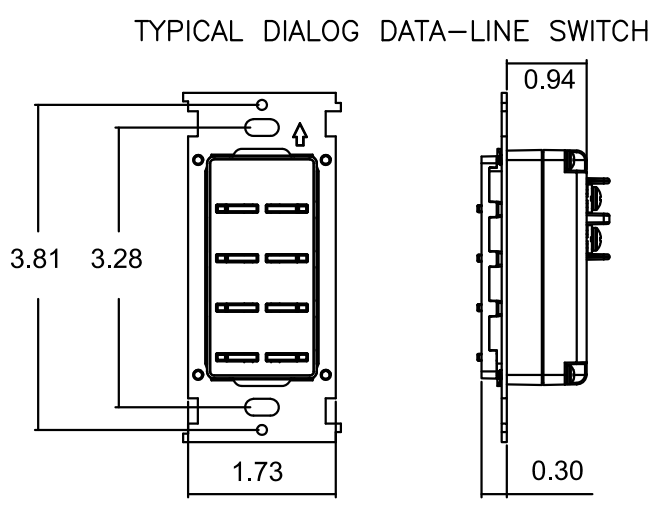


- NOTES**
- THE DIALOG DATA SIGNAL IS SUPPLIED BY THE LIGHTING CONTROL UNIT (LCU) OR ROOM CONTROLLER.
 - EACH LIGHTING CONTROL PANEL CAN HOST UP TO 252 OUTPUTS AND THE ASSOCIATED INPUT CONTROL DEVICES.
 - EACH INPUT DEVICE (SWITCH, OCCUPANCY SENSOR, PHOTO SENSOR, CONTACT INPUT) IS TARGETED TO EITHER A SINGLE OUTPUT ADDRESS OR A COLLECTION OF OUTPUTS. COLLECTIONS OF OUTPUTS CAN BE ADDRESSED AS A GROUP OR PRESET. MORE THAN ONE INPUT DEVICE CAN BE SET TO THE SAME TARGET.
 - THE DIALOG DATA SIGNAL IS 18/2 AWG, POLARITY INSENSITIVE TWISTED OR NON-TWISTED PAIR WITH A MAXIMUM SINGLE RUN LENGTH OF 1000ft (300m) AND A TOTAL AGGREGATED WIRE LENGTH OF 3000ft (900m). THE DATA SIGNAL TOPOLOGY CAN BE T-TAPPED, BUS OR STAR CONFIGURATION.
 - THE LIGHTING CONTROL UNIT SUPPLIES THE DATA LINE WITH 500mA OF POWER. 3 ADDITIONAL AMPLIFIERS MAY BE ADDED WHERE EACH AMPLIFIER ADDS AN ADDITIONAL 500mA TO THE DATA LINE.
 - AN INFRARED SETTING UNIT (WIR-3110) IS REQUIRED TO SET INPUT DEVICES TARGET AND ADDRESS. THIS DEVICE CAN ALSO BE USED TO SET THE PARAMETERS OF SENSORS AND FUNCTION OF KEYPADS.
 - LIGHTING CONTROL PANELS MAY HAVE MULTIPLE VOLTAGES AND POWER FEEDS ENTERING THE ENCLOSURE. WHERE MULTIPLE VOLTAGES/FEEDS EXIST, ONE OR MORE VOLTAGE BARRIER(S) ARE REQUIRED.
 - DIALOG LIGHTING CONTROL PANELS MAY HAVE A MAXIMUM OF 72 RELAYS WITHIN THE SAME ENCLOSURE.
 - MULTIPLE RELAY PANELS MAY BE FED FROM A SINGLE WLC-4150. EACH ADDITIONAL RELAY PANEL MUST CONSIST OF APPROPRIATE NUMBER OF RELAY DRIVERS TO SUPPORT UP TO A TOTAL OF 252 RELAYS PER LCU.

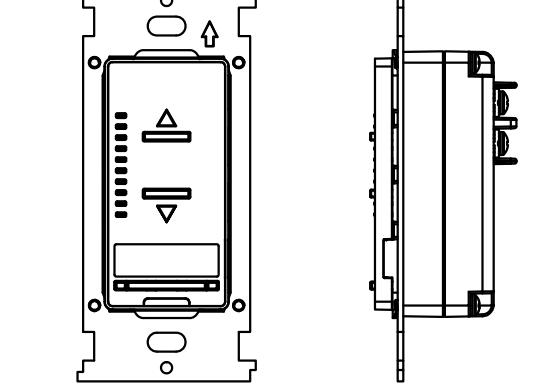
1 LIGHTING CONTROL PANEL
SCALE: NTS



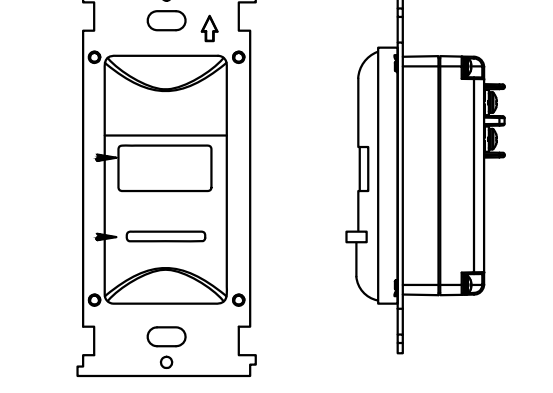
6 OCCUPANCY SENSOR
SCALE: NTS



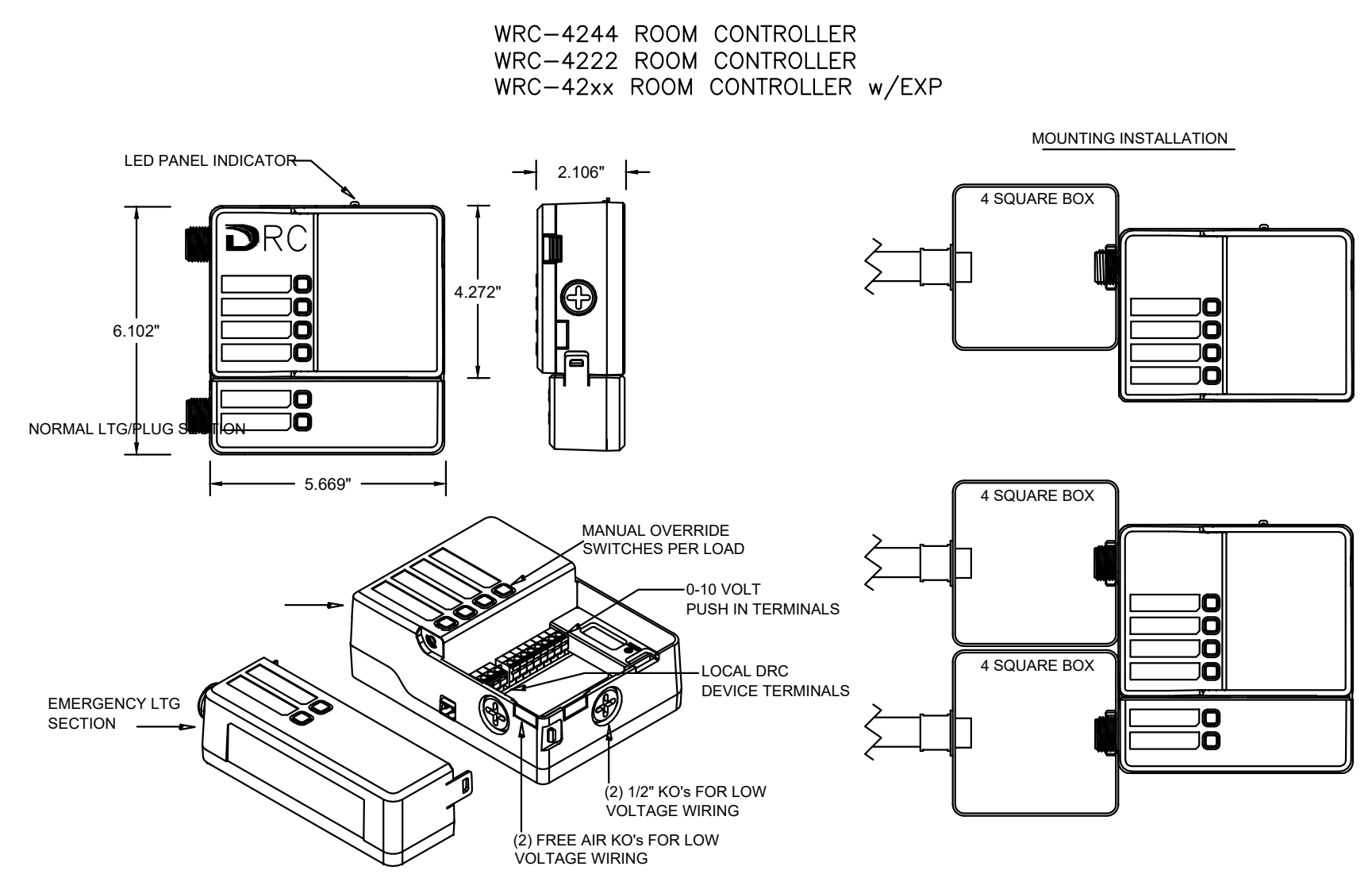
4 DATA LINE SWITCH
SCALE: NTS



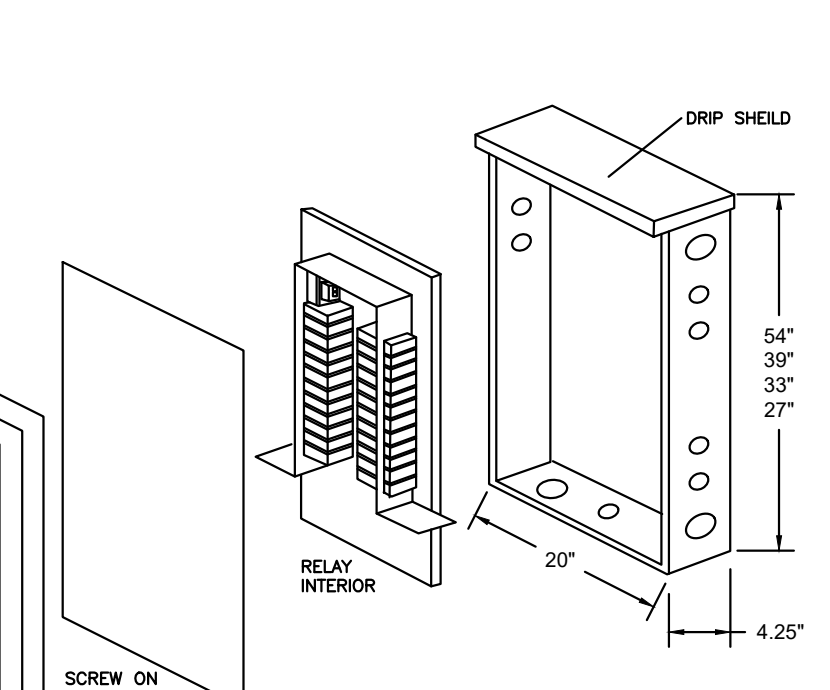
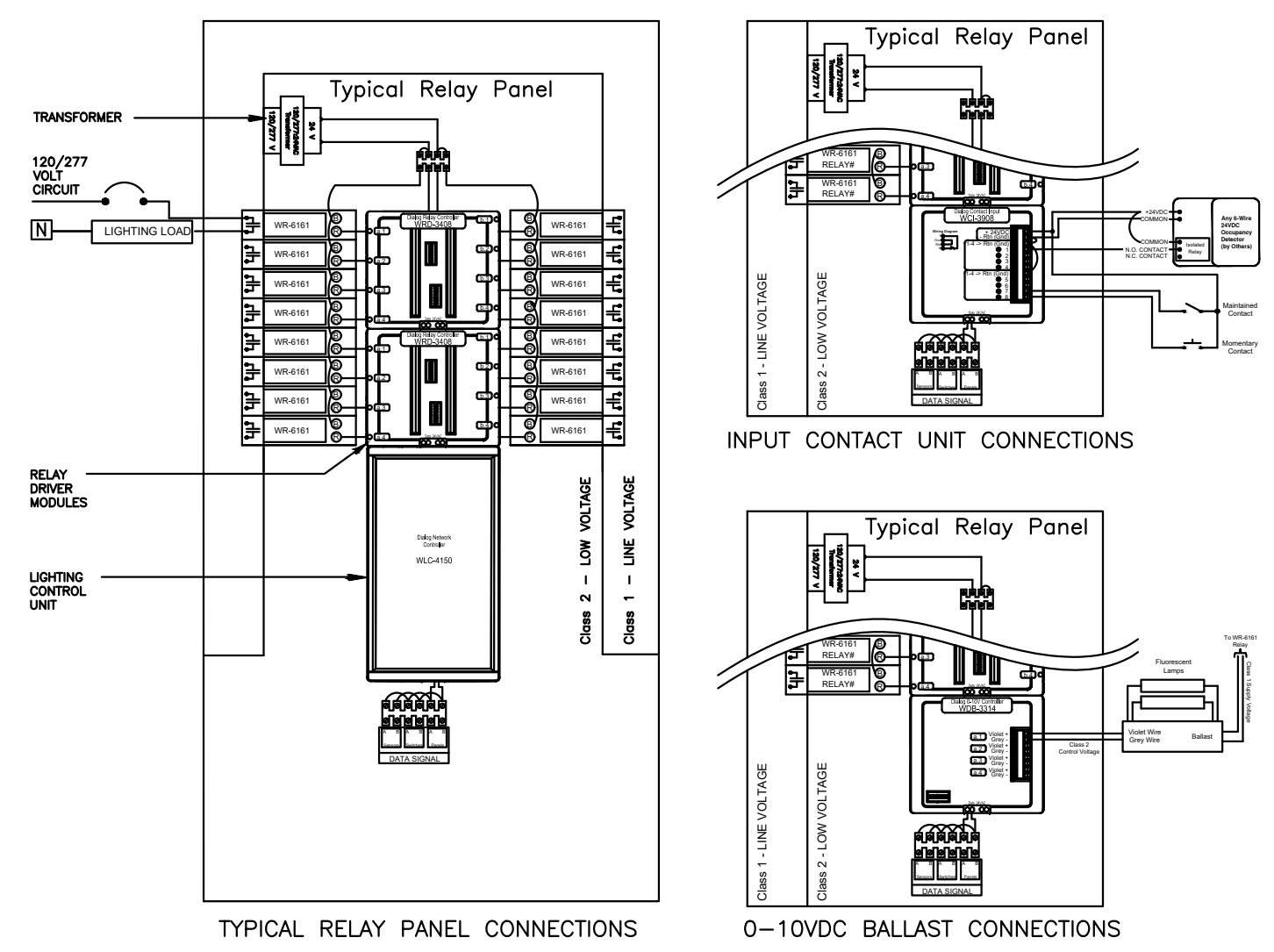
4 WALL SWITCH/OCCUPANCY SENSOR



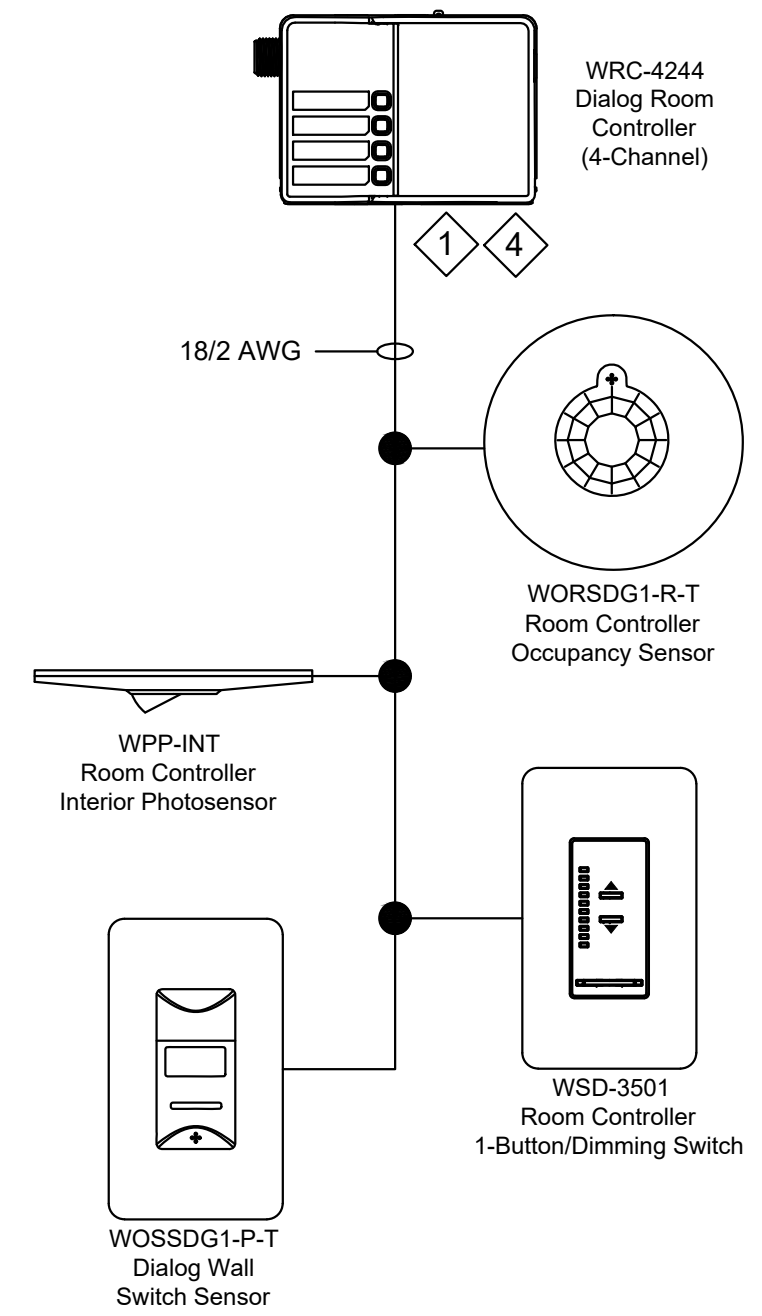
4 TYPICAL INSTALLATION DETAILS



5 DIALOG ROOM CONTROLLER
SCALE: NTS



3 DIALOG RELAY PANEL
SCALE: NTS



2 ROOM CONTROLLER
SCALE: NTS

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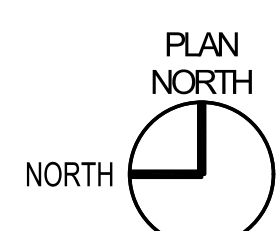
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NEW JERSEY PROFESSIONAL
ENGINEER L.C. NO. 24GE04929100 PROJECT No. 21-02-11T

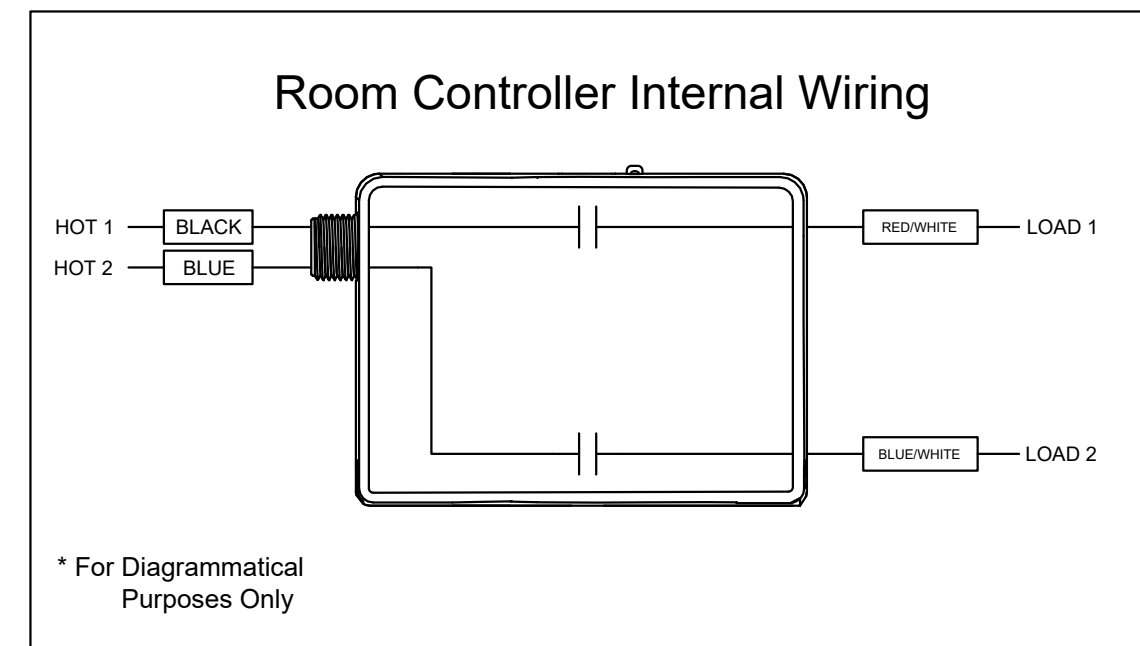
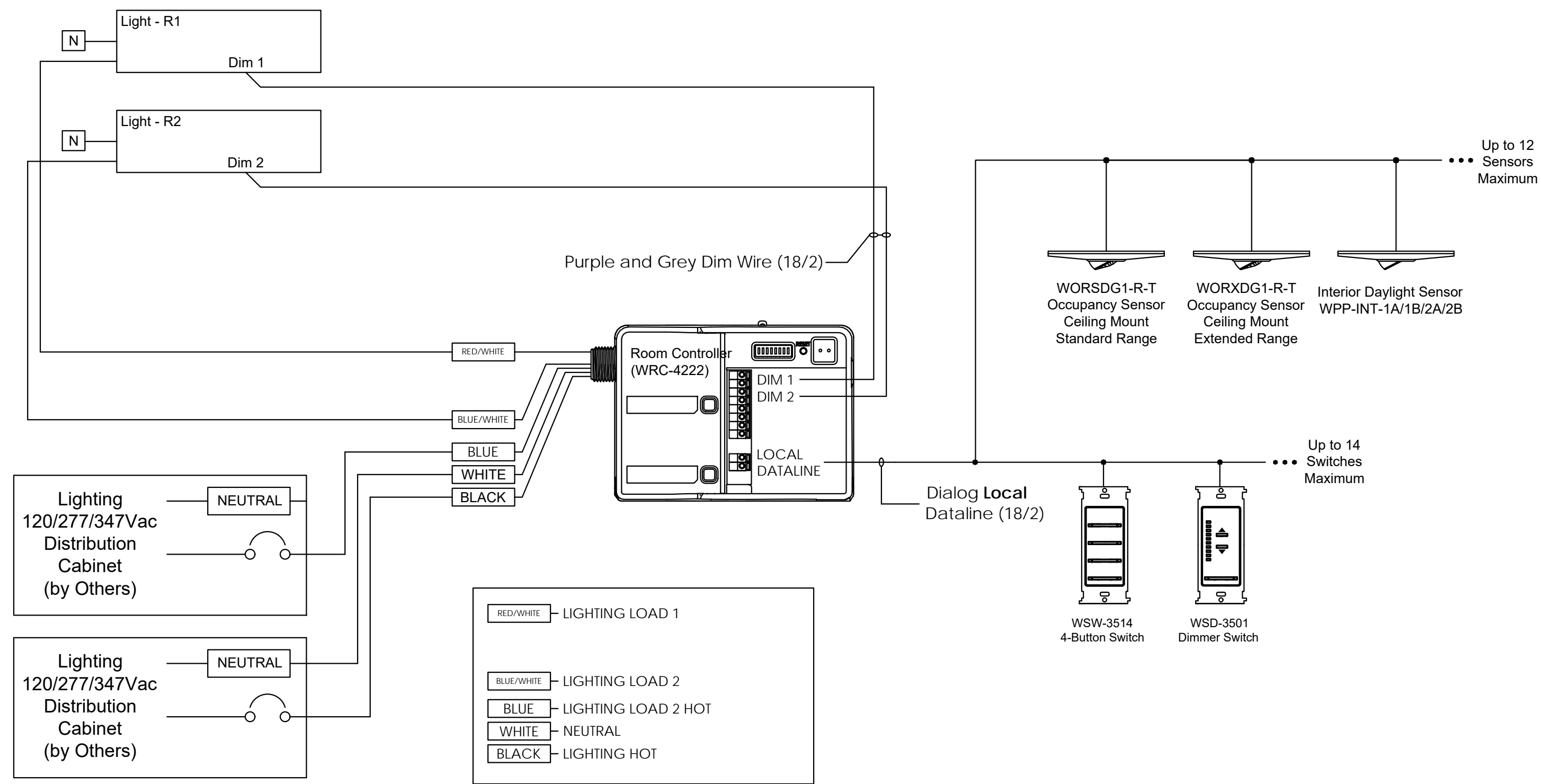
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No.	Revision Description	Date
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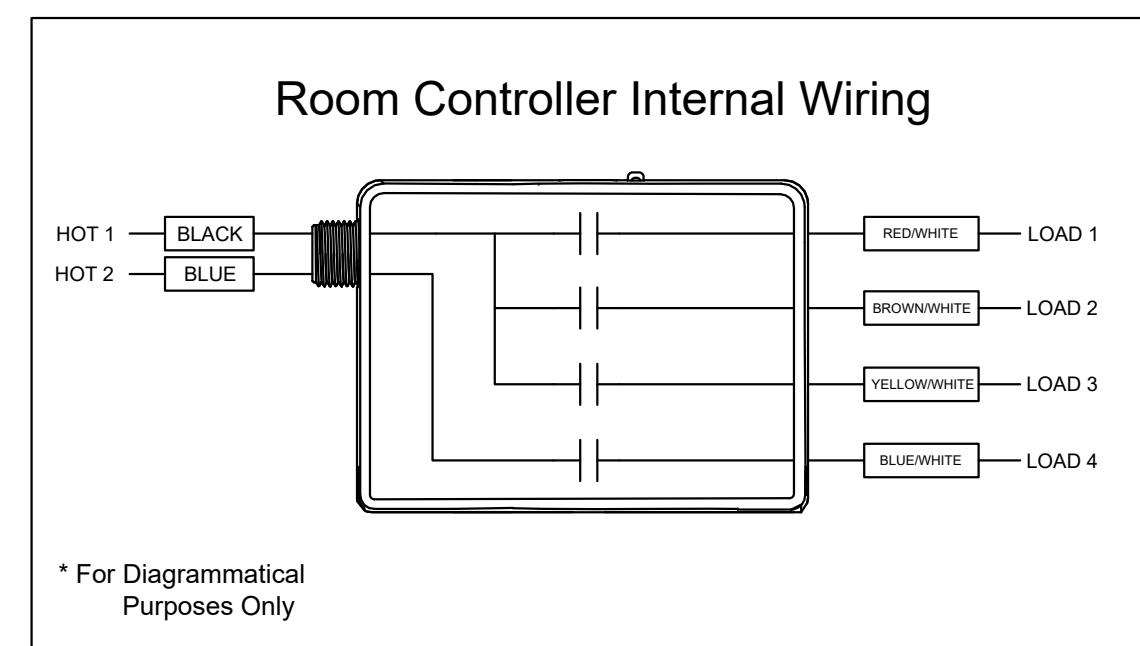
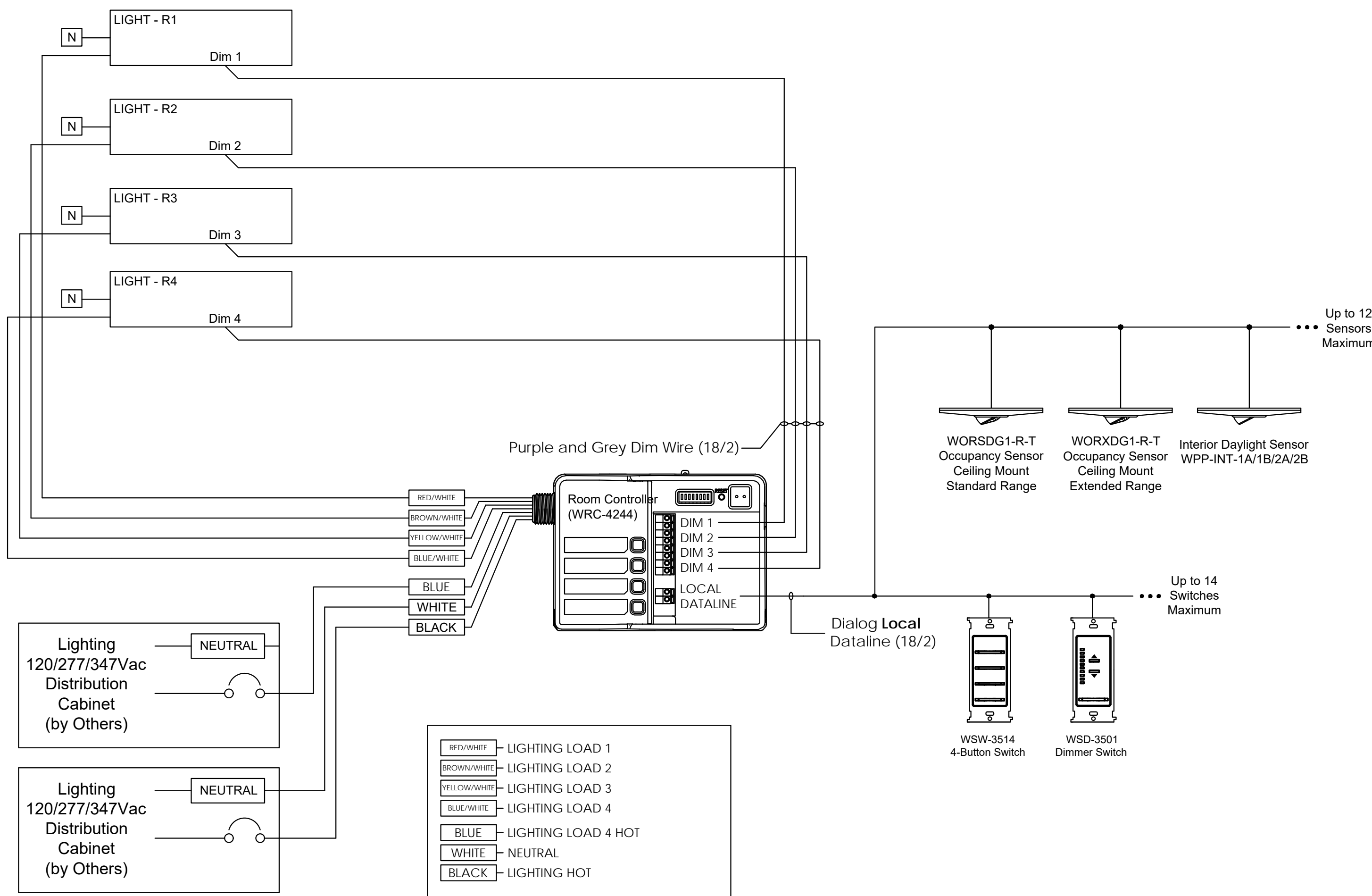
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**ELECTRICAL
LIGHTING
CONTROLS (1)**
E301

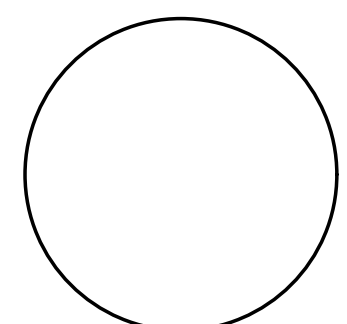





1 DIALOG ROOM CONTROLLER WRC-4222 - WIRING DIAGRAM
E302 SCALE: NTS



2 DIALOG ROOM CONTROLLER WRC-4224 - WIRING DIAGRAM
E302 SCALE: NTS


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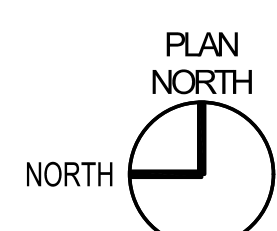
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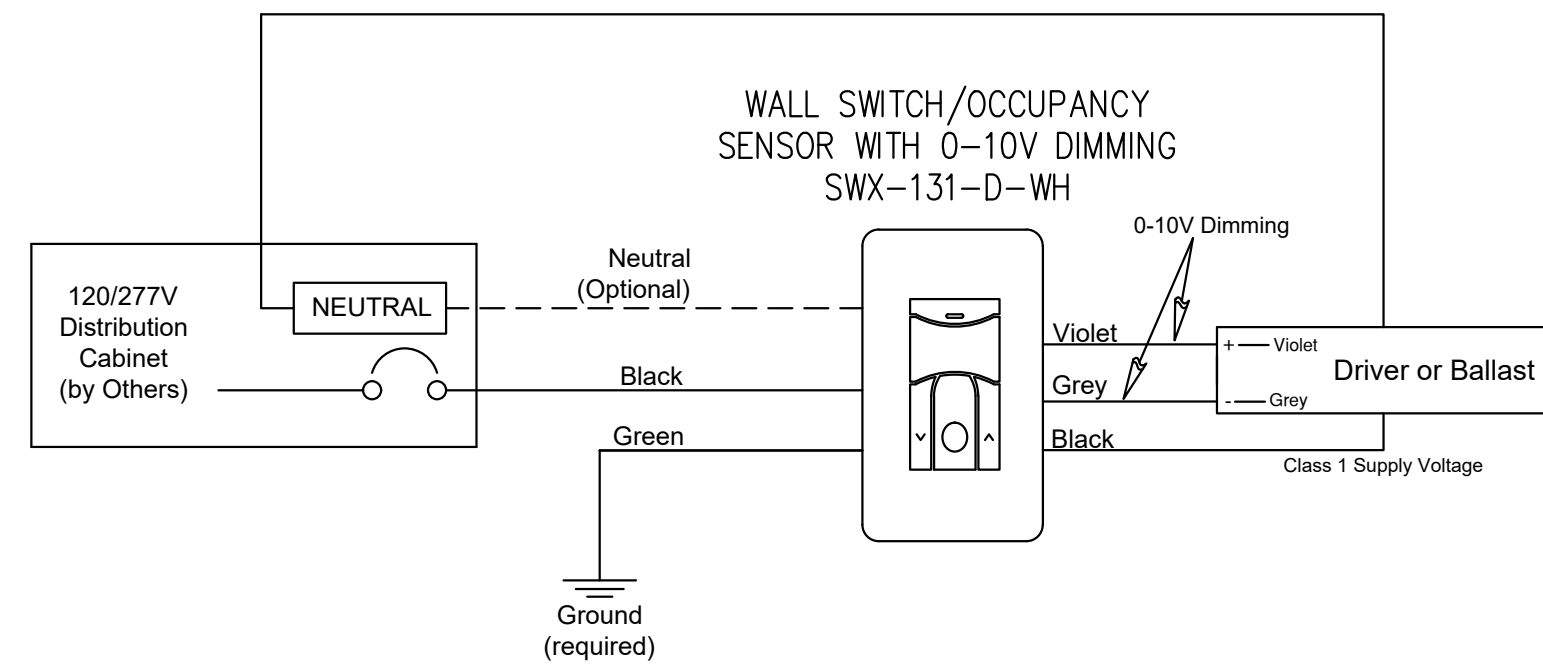
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ELECTRICAL LIGHTING CONTROLS (2)

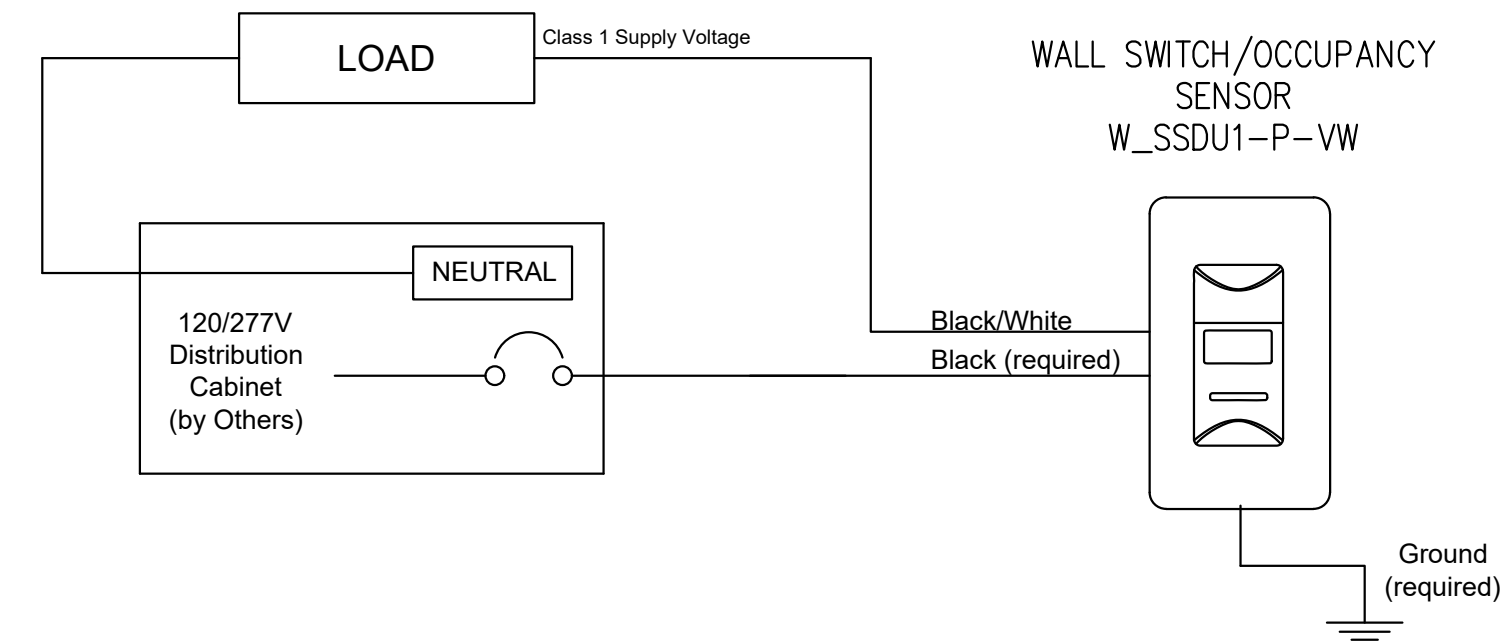
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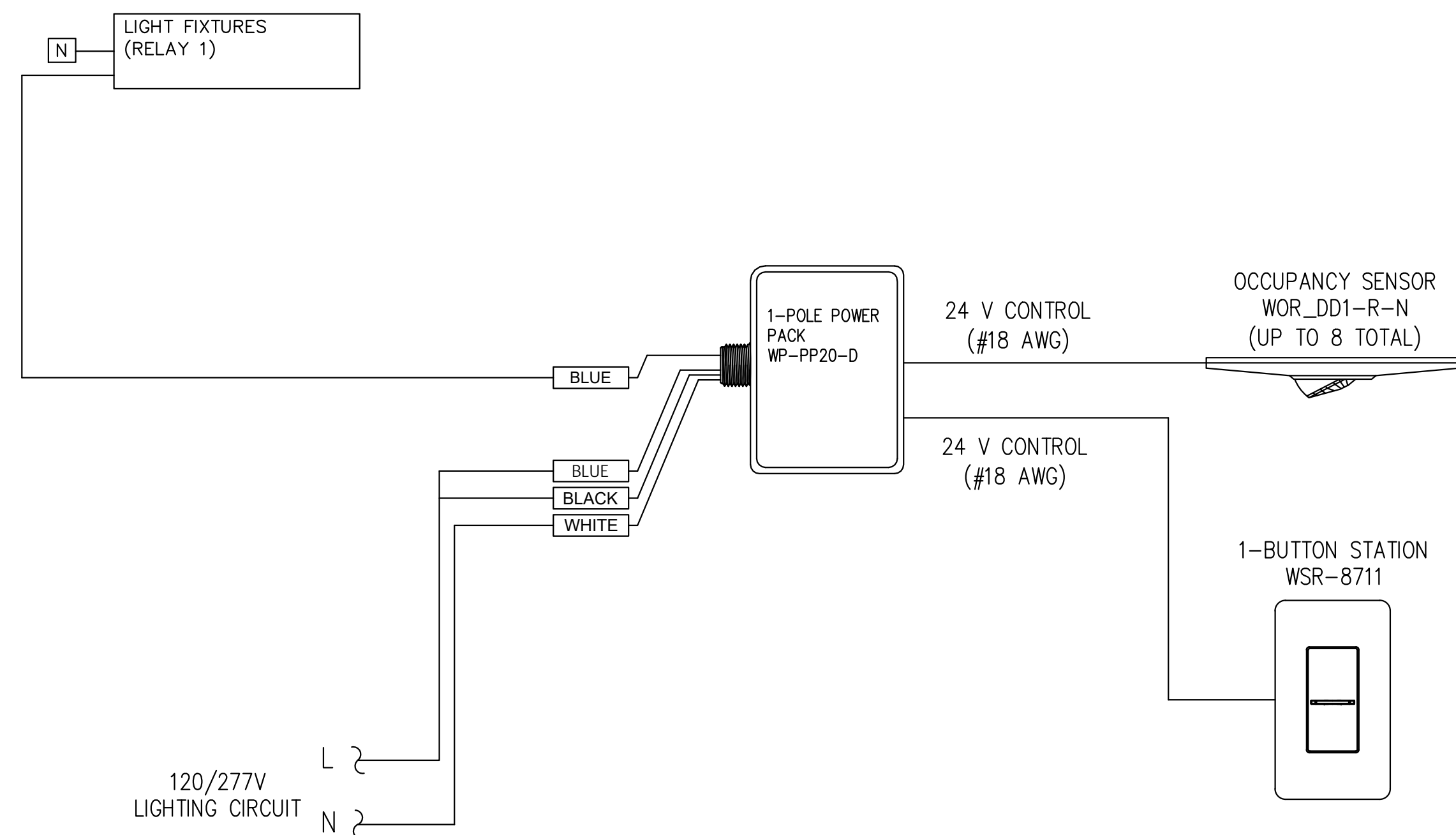
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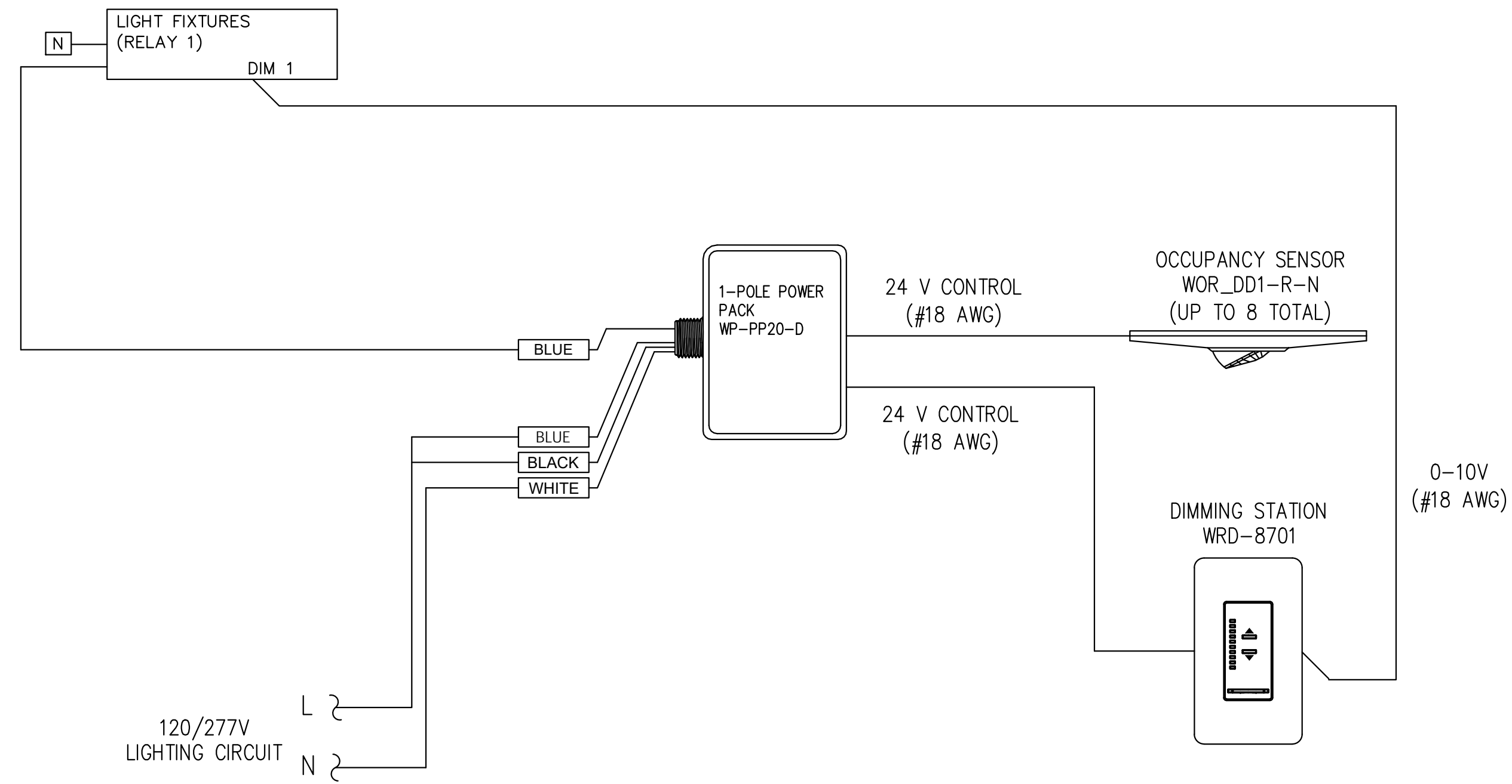
1 WALL SWITCH / OCCUPANCY SENSOR W/DIMMING
E303 SCALE: NTS



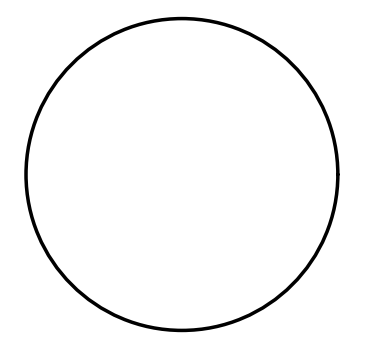
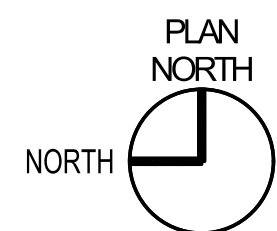
2 WALL SWITCH / OCCUPANCY SENSOR
E303 SCALE: NTS



3 OCCUPANCY SENSOR - 1 BUTTON STATION
E303 SCALE: NTS



4 OCCUPANCY SENSOR - DIMMING STATION
E303 SCALE: NTS



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ENGINEER LIC. NO. 24GE04929100 PROJECT No. 21-02-11T

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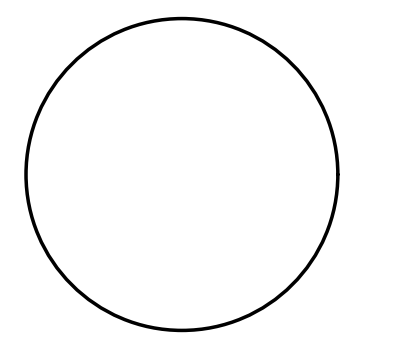
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ELECTRICAL LIGHTING CONTROLS (3)
E303

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HVAC POWER NOTES

- A. ALL DEVICE WIRING SHALL BE IN STRICT COMPLIANCE TO THE MANUFACTURER'S REQUIREMENTS. ALL DEVICE WIRING SHALL BE POWER LIMITED AND SHALL BE INSTALLED IN EMT CONDUIT 3/4" MINIMUM.
- B. ALL MATERIALS AND EQUIPMENT REMOVED FROM THE BUILDING INCLUDING, BUT NOT LIMITED TO, UNUSED DEVICES, WIRING, CONDUIT, ACCESSORIES, ETC. SHALL BE DISPOSED OF BY THE CONTRACTOR. PRIOR TO DISPOSAL, DETERMINE IF BUILDING OWNER WOULD LIKE ANY OF THE EXISTING EQUIPMENT OR DEVICES FOR THEIR ATTIC STOCK.
- C. REFER TO THE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR A DESCRIPTION OF ALTERNATE BIDS THAT MAY AFFECT THE ELECTRICAL SCOPE OF WORK.
- D. ALL EQUIPMENT, PIPING, WIRING, ETC. UTILIZED IN CEILING RETURN PLENUMS SHALL BE NON-COMBUSTIBLE, HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50, AND BE LISTED AND LABELED AS PLENUM RATED WHERE APPLICABLE.



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SEPTEMBER 2021

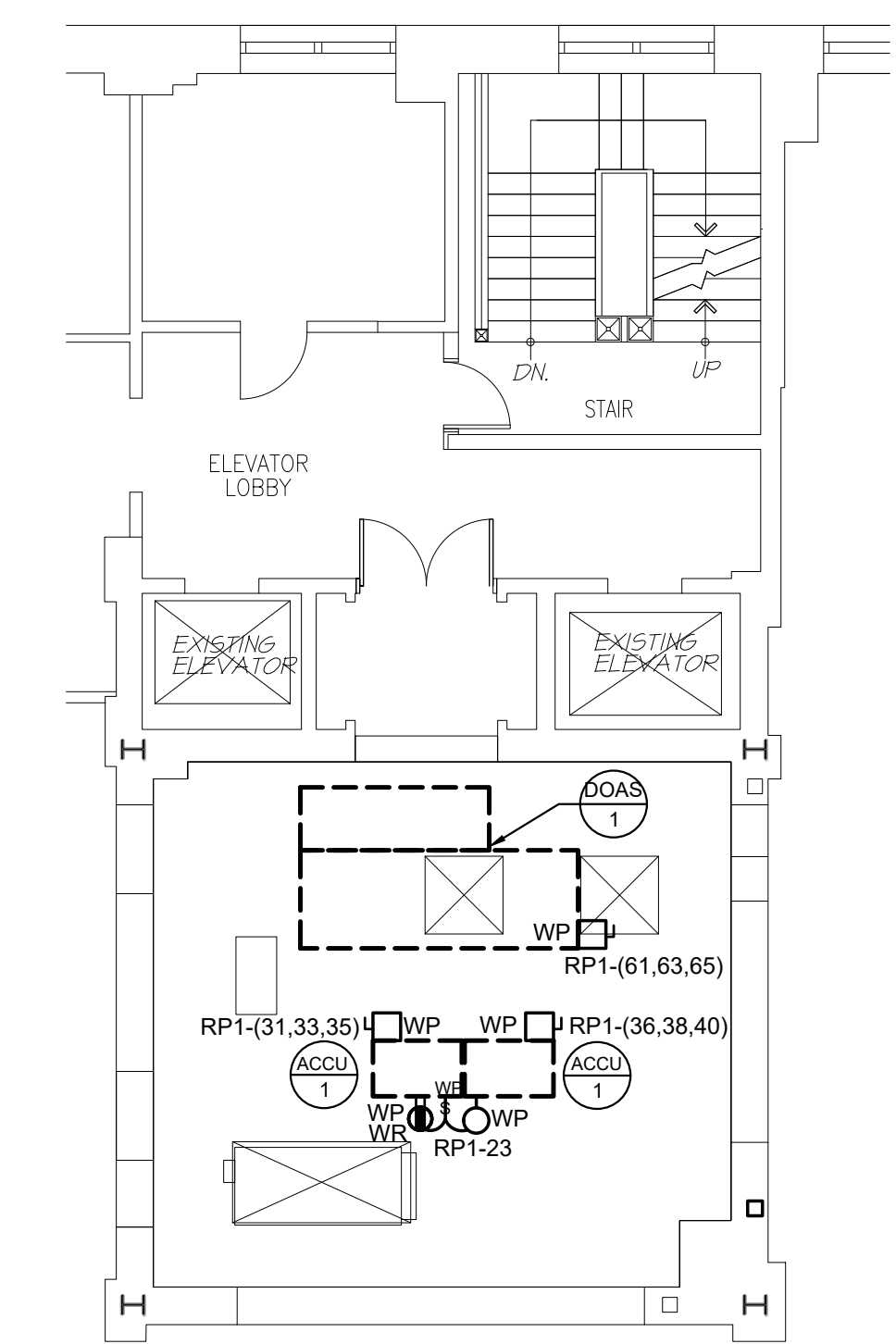
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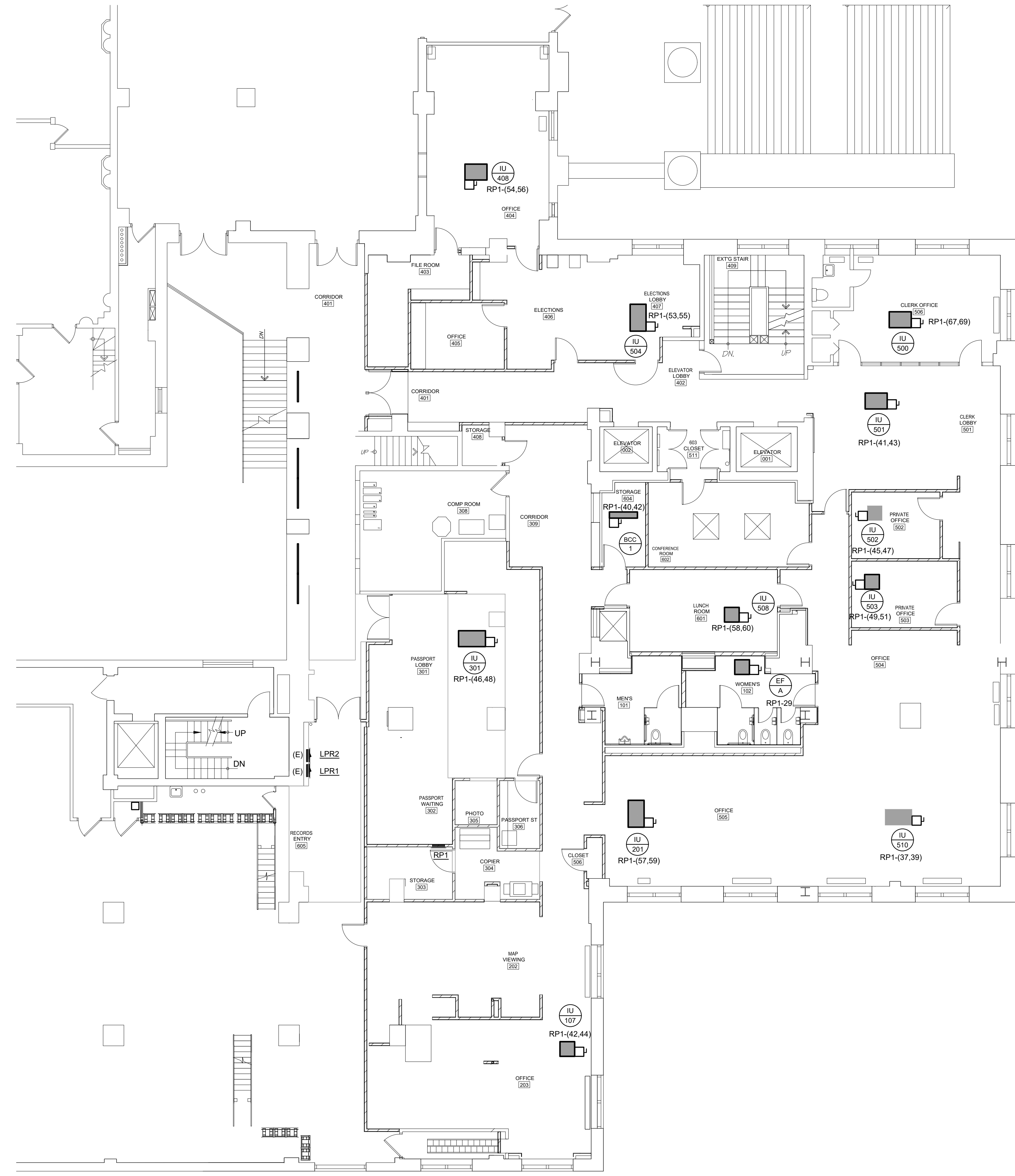
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HVAC ELECTRICAL PLAN

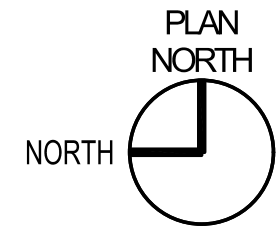
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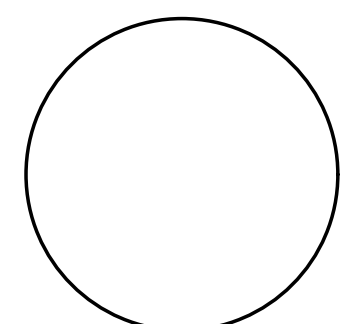
2 ELECTRICAL HVAC PARTIAL ROOF PLAN
 SCALE: 1/8"=1'-0"



1 ELECTRICAL HVAC FLOOR PLAN
 SCALE: 1/8"=1'-0"



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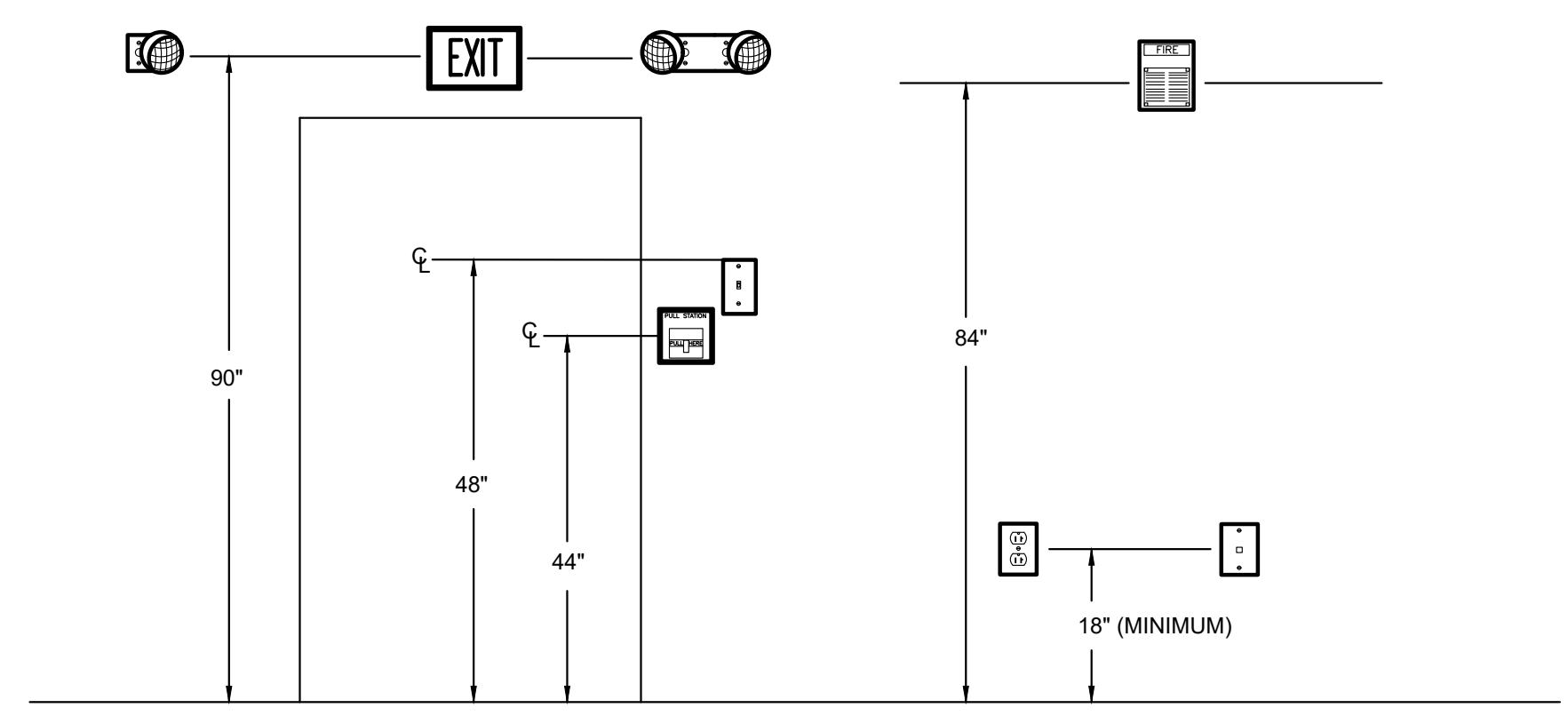
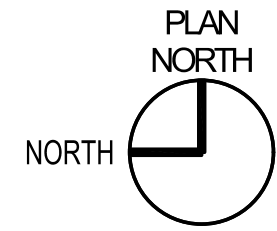
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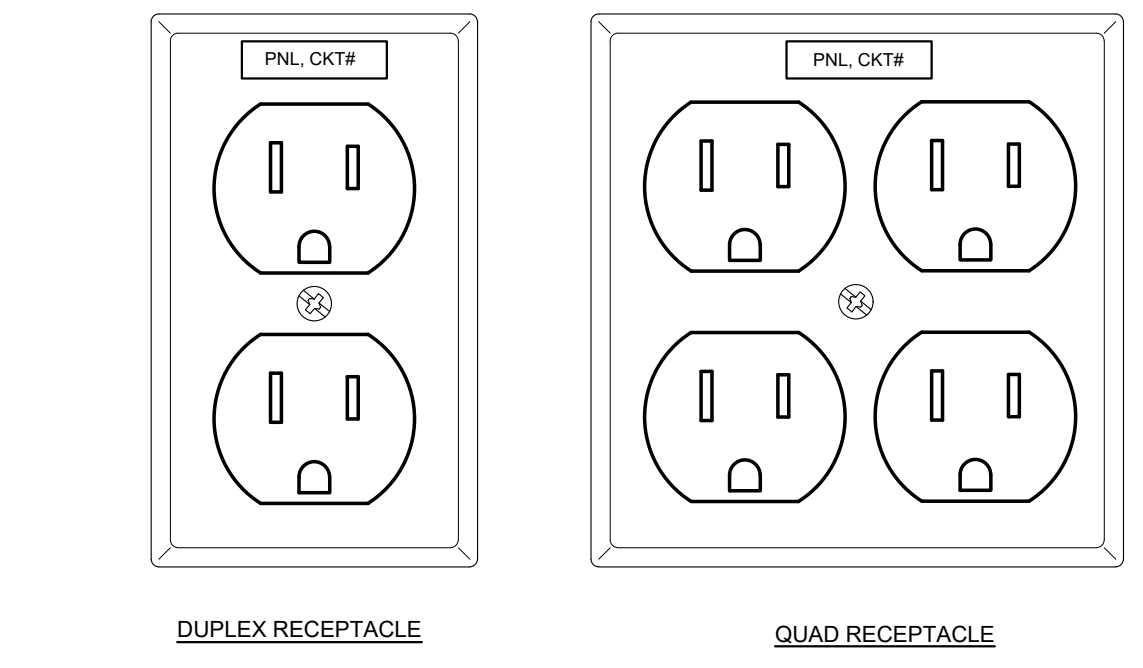
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ELECTRICAL DETAILS

E500

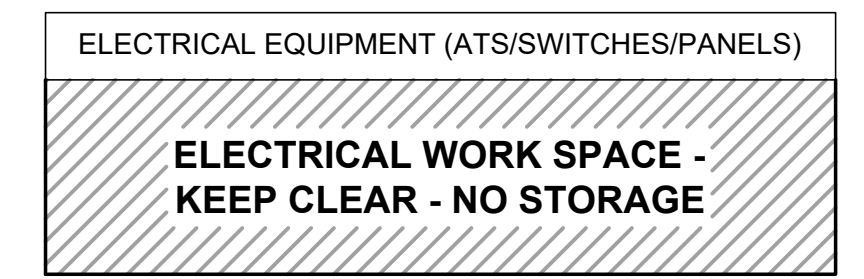


3 TYPICAL MOUNTING HEIGHTS DETAIL
SCALE: None



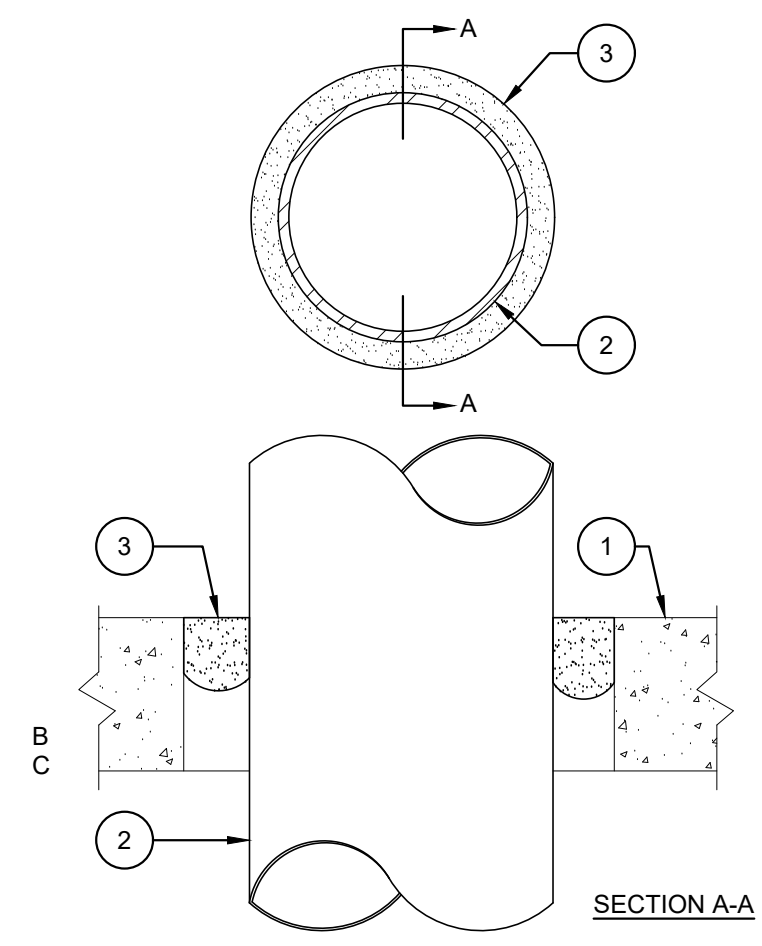
2 TYPICAL RECEPTACLE LABELLING DETAIL
SCALE: None

NOTES:
1. NORMAL POWER RECEPTACLE: CONTRACTOR SHALL FURNISH AND INSTALL A RECEPTACLE WITH A WHITE FACE PLATE WITH PERMANENT LABELING AS SHOWN. FACE PLATE SHALL HAVE THE PANEL DESIGNATION AND CIRCUIT NUMBER FEEDING THE RECEPTACLE LABELED AT THE TOP AS SHOWN. RECEPTACLE SHALL BE A HUBBELL: BR20WHITR (INTERIOR). COORDINATE WITH ARCHITECT PRIOR TO PURCHASE AND INSTALLATION.



CONTRACTOR SHALL PREPARE A TEMPLATE AND SHALL PAINT THE FLOOR WITH THE LOCAL LAW 39 OF 2011 110.26 ELECTRICAL WORK SPACE CLEARANCE AS SHOWN ABOVE IN YELLOW. CONTRACTOR SHALL SUBMIT A SHOP DRAWING AND COLOR SAMPLE FOR REVIEW AND APPROVAL PRIOR TO INITIATING WORK.

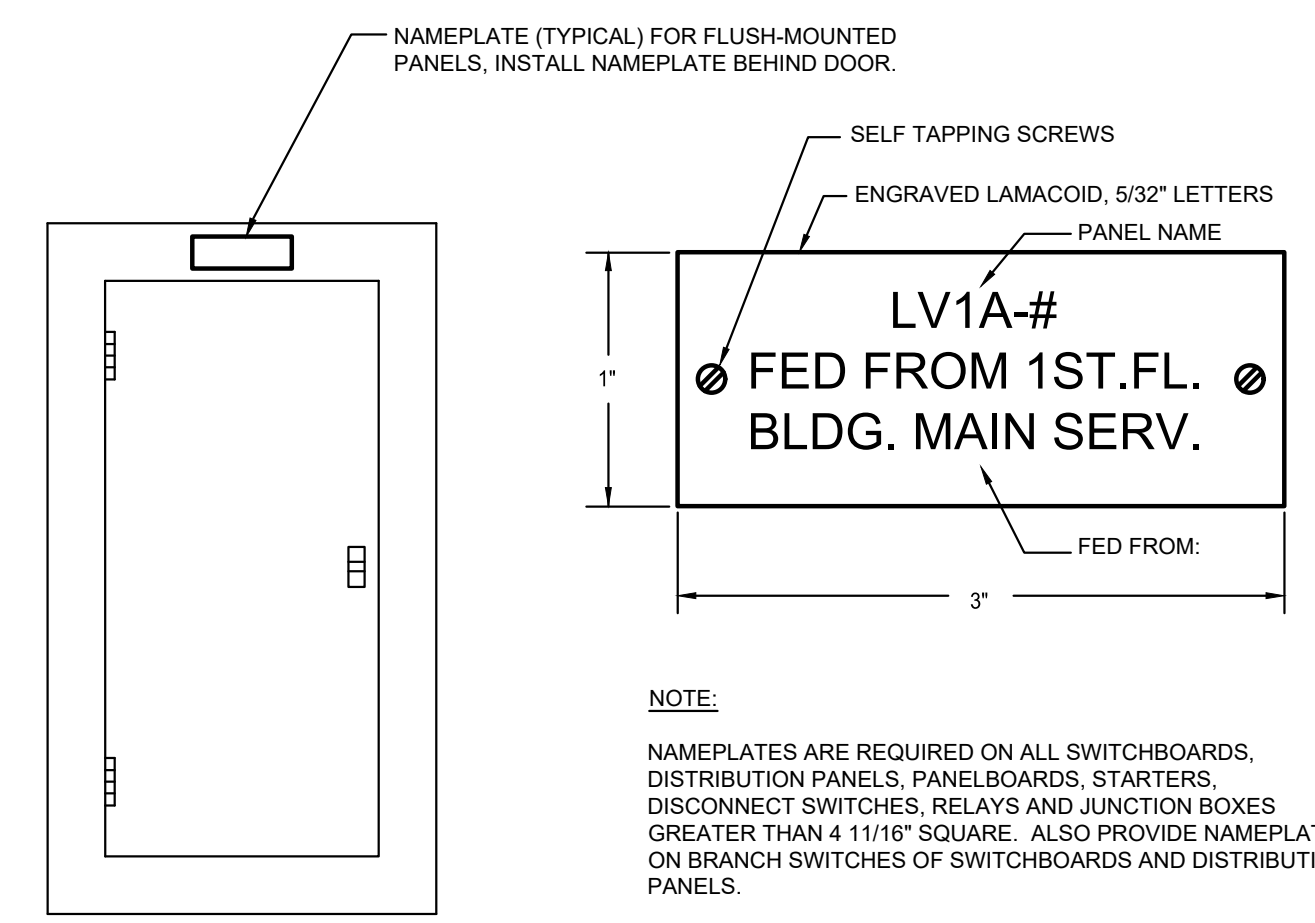
5 TYPICAL ELECTRICAL EQUIPMENT "CLEAR ZONE" BOX
SCALE: None



- FLOOR OR WALL ASSEMBLY - MIN 4-1/2" THICK LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX. DIMENSION OF THROUGH OPENING IS 12-1/4". SEE CONCRETE BLOCKS (CAZT) CATEGORY IN FIRE RESISTANCE DIRECTORY FOR NAME OF MANUFACTURERS.
- THROUGH PENETRANTS - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRE STOP SYSTEM. MIN. ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND EDGE OF OPENING IS 0 INCHES (POINT CONTACT). MAX. ANNULAR SPACE IS DEPENDENT ON PIPE, CONDUIT, OR TUBING TYPE AND SIZE AS WELL AS THE "F" RATING OF THE SYSTEM, AS SHOWN IN THE TABLE BELOW. PIPE, CONDUIT, OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED.

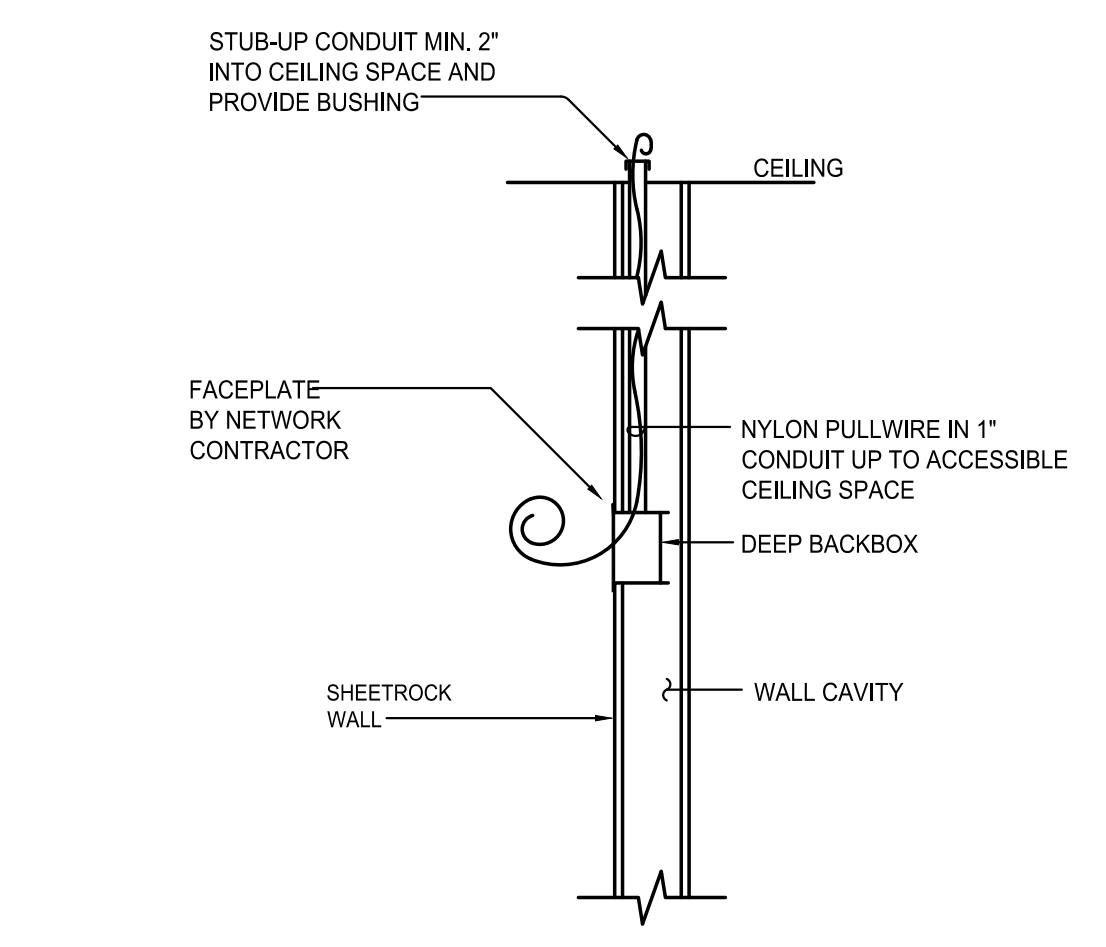
PIPE CONDUIT OR TUBING	MAX NOM PIPE CONDUIT OR TUBING DIAM. IN INCHES	F RATING HOUR	MAX ANNULAR SPACE INCHES
B	6	3	3/4
C	4	3	1-1/2
- FILL VOID OR CAVITY MATERIALS* - PUTTY - MOLDABLE PUTTY MATERIAL KNEADED BY HAND AND APPLIED TO FILL ANNULAR SPACE TO A MIN. DEPTH OF 1 INCH, FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED PUTTY THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL. MINNESOTA MINING & MFG. - MPS-2+
*BEARING THE UL CLASSIFICATION MARKING.

7 PENETRATION WALL ASSEMBLY
SCALE: None

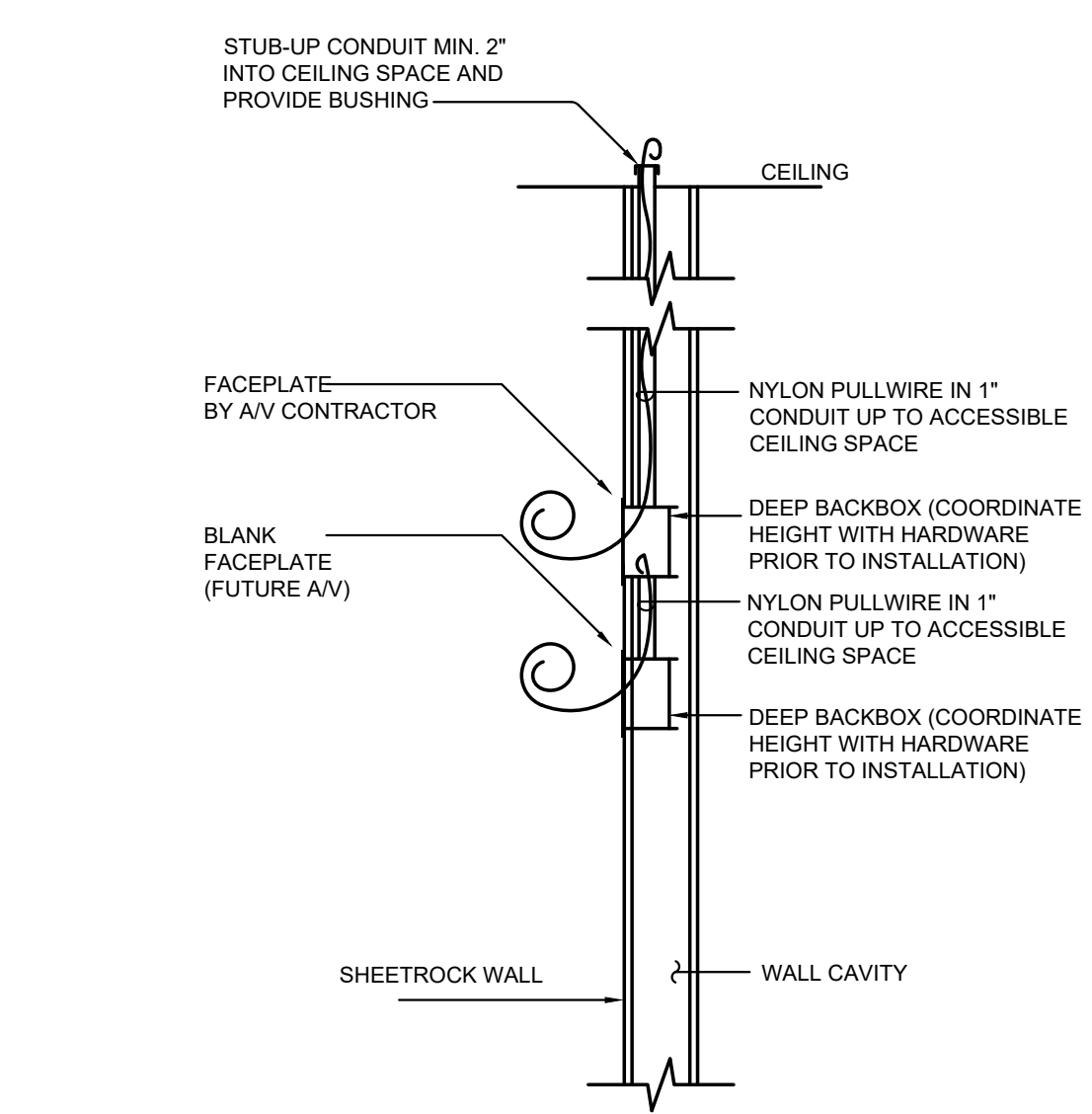


- STANDARD COLORS:**
- NORMAL POWER - BLACK BACKGROUND, WHITE LETTERS
 - EMERGENCY POWER - RED BACKGROUND, WHITE LETTERING
 - IN ADDITION TO THE FUNCTION NAMEPLATE, PROVIDE NAMEPLATES IDENTIFYING ALL "MAIN SERVICE NAMEPLATE DISCONNECTS" - RED BACKGROUND - WHITE LETTERING

8 TYPICAL NAMEPLATE LABELLING DETAIL
SCALE: None

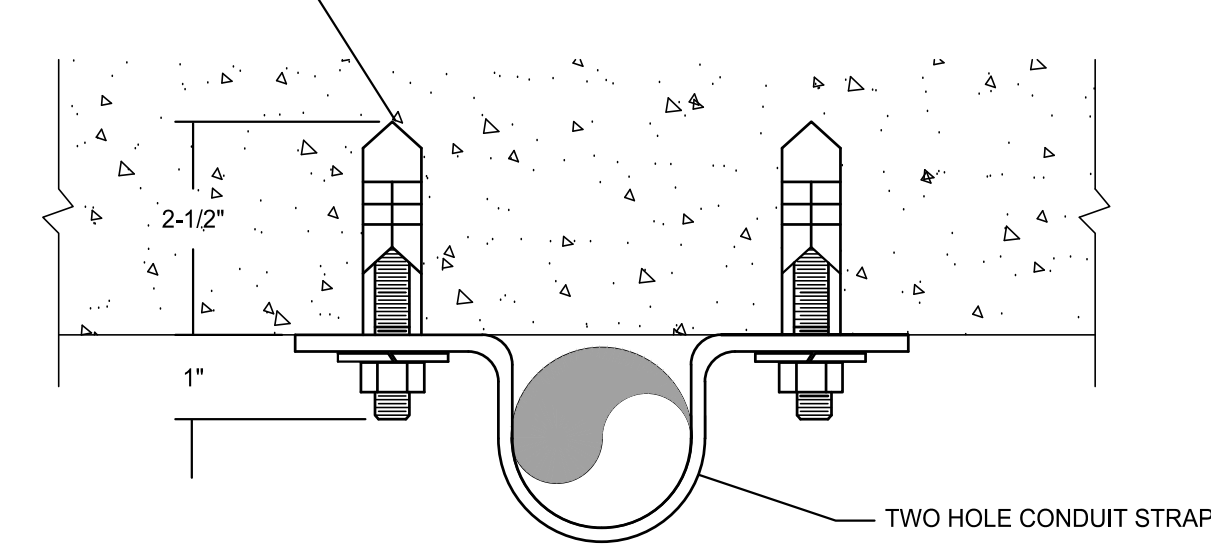


1 TYPICAL TEL / DATA OUTLET INSTALLATION DETAIL (ALTERNATE CONSTRUCTION)
SCALE: None



4 TYPICAL TV OUTLET INSTALLATION
SCALE: None

DRILL 3/8" DIAMETER HOLES IN THE ROOF SLAB/BEAM FOR 1/4" Ø X 3 1/2" LONG STAINLESS STEEL THREADED ROD BY ITW RAMSET RED HEAD OR APPROVED EQUAL SET WITH EPOCERAMIC 6 EPOXY.



6 CONDUIT MOUNTING FOR HORIZONTAL SURFACES
SCALE: None