



COUNTY OF UNION

DEPARTMENT OF ENGINEERING, PUBLIC WORKS & FACILITIES MANAGEMENT

Joseph J. Policay, Jr., CPWM, Acting Director

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County Counsel

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Clerk of the Board

RICARDO S. MATIAS
PE, CME, CFM
County Engineer
Director, Division of Engineering

MEMORANDUM

TO: All Potential Bidders

FROM: Ricardo S. Matias, PE, CME, CFM, 
County Engineer
Director / Division of Engineering

DATE: November 2, 2023

RE: **ADDENDUM NUMBER 2**
Union County Courthouse Parking Deck,
City of Elizabeth, County of Union,
Phase 1, BA# 5-2023,
Union County Engineering Project #2019-026

Attached is Addendum Number 2 dated November 2, 2023 for the above referenced project.

Please be sure to complete and submit the standard "Acknowledgement of Addendum" form included in the original bid specifications and submit it with the bid.

DIVISION OF ENGINEERING

2325 South Avenue

Scotch Plains, NJ 07076

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ADDENDUM NUMBER TWO

for

Demolition of Courthouse Parking Deck

for the

County of Union

USA Project No. 2023-090

Dated: November 2, 2023

USA ARCHITECTS, PLANNERS AND INTERIOR DESIGNERS, LTD
20 N. Doughty Avenue
Somerville, NJ 08876

This Addendum is issued for the purpose of amending certain requirements of the Bidding Documents and is hereby made an integral part of the Contract Documents for this project.

Statements made herein shall amend, supersede, and take precedence over any conflicting and contrary information contained in previously issued documents including previously issued addenda, if any. Bidders shall acknowledge receipt of this addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

CHANGES TO PRIOR ADDENDA:

None

CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS (DIVISION 00):

None

CHANGES TO CONDITIONS OF THE CONTRACT:

None

CHANGES TO GENERAL REQUIREMENTS (DIVISION 01):

None

CHANGES TO SPECIFICATIONS:

None

CHANGES TO DRAWINGS:

Item 01: Civil Drawings, Sheet 3.00, Demolition Plan. Revise notes 17 and 22 as per below.

Note 17. CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL BY THE OWNERS ENGINEER A PLAN DETAILING THE LOCATIONS OF THE TEMPORARY FENCING, GATES, BARRICADES AND OTHER ITEMS REQUIRED TO SECURE THE DEMOLITION WORK AREA AND TO PROTECT THE PUBLIC BEFORE, DURING, AND AFTER DEMOLITION ACTIVITIES.

Note 22. THE CONTRACTOR SHALL INSTALL PERMINATE 6'-0" CHAIN LINK FENCE AND 12'-0" GATE SYSTEM AROUND THE ENTIRE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AS NECESSARY.

Item 02: Civil Drawings, Grading Plan revised grading plan at/around the SOE retaining wall so top of grade is even with top of wall.

CONTRACTOR QUESTIONS

None

ATTACHMENTS:

None

END OF ADDENDUM NUMBER TWO



COUNTY OF UNION

DEPARTMENT OF ENGINEERING, PUBLIC WORKS & FACILITIES MANAGEMENT

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RICARDO S. MATIAS
PE, CME, CFM
County Engineer
Director, Division of Engineering

MEMORANDUM

TO: All Potential Bidders

FROM: Ricardo S. Matias, PE, CME, CFM,
County Engineer
Director / Division of Engineering

DATE: November 2, 2023

RE: **ADDENDUM NUMBER 1**
Union County Courthouse Parking Deck,
City of Elizabeth, County of Union,
Phase 1, BA# 5-2023,
Union County Engineering Project #2019-026

Attached is Addendum Number 1 dated October 27, 2023 for the above referenced project.

Please be sure to complete and submit the standard "Acknowledgement of Addendum" form included in the original bid specifications and submit it with the bid.

DIVISION OF ENGINEERING



ADDENDUM NUMBER ONE

for

Demolition of Courthouse Parking Deck

for the

County of Union

USA Project No. 2023-090

Dated: October 27, 2023

USA ARCHITECTS, PLANNERS AND INTERIOR DESIGNERS, LTD
20 N. Doughty Avenue
Somerville, NJ 08876

This Addendum is issued for the purpose of amending certain requirements of the Bidding Documents and is hereby made an integral part of the Contract Documents for this project.

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None

CHANGES TO CONDITIONS OF THE CONTRACT:

None

CHANGES TO GENERAL REQUIREMENTS (DIVISION 01):

None

CHANGES TO SPECIFICATIONS:

None

CHANGES TO DRAWINGS:

None

CONTRACTOR QUESTIONS

Q1: Subcontractor Identification Statement Form B10 lists Plumbing, HVAC, Electric, Structural Steel, Ornamental Iron Work, and "any other trades required to be identified by the specifications."

Notice to Bidders form NB-1 states that we are to have pre-classification of General Construction, Demolition, Plumbing, Electrical, and Asbestos Removal/Treatment. If bidder does not have the required classification stated above, bidder must include and identify a subcontractor who has the classifications in the List of Subcontractors.

Please clarify the correct list of subcontractors required to be named on this project. Also, there does not appear to be any structural steel and/or mechanical work on this project. Please confirm there is no requirement to name a subcontractor for Structural Steel, Ornamental Iron Work, or HVAC.

A1: The named contractors and sub-contractors on this project are as per the Notice to Bidders, this project requires a General Contractor (C008), Demolition Contractor (C021),

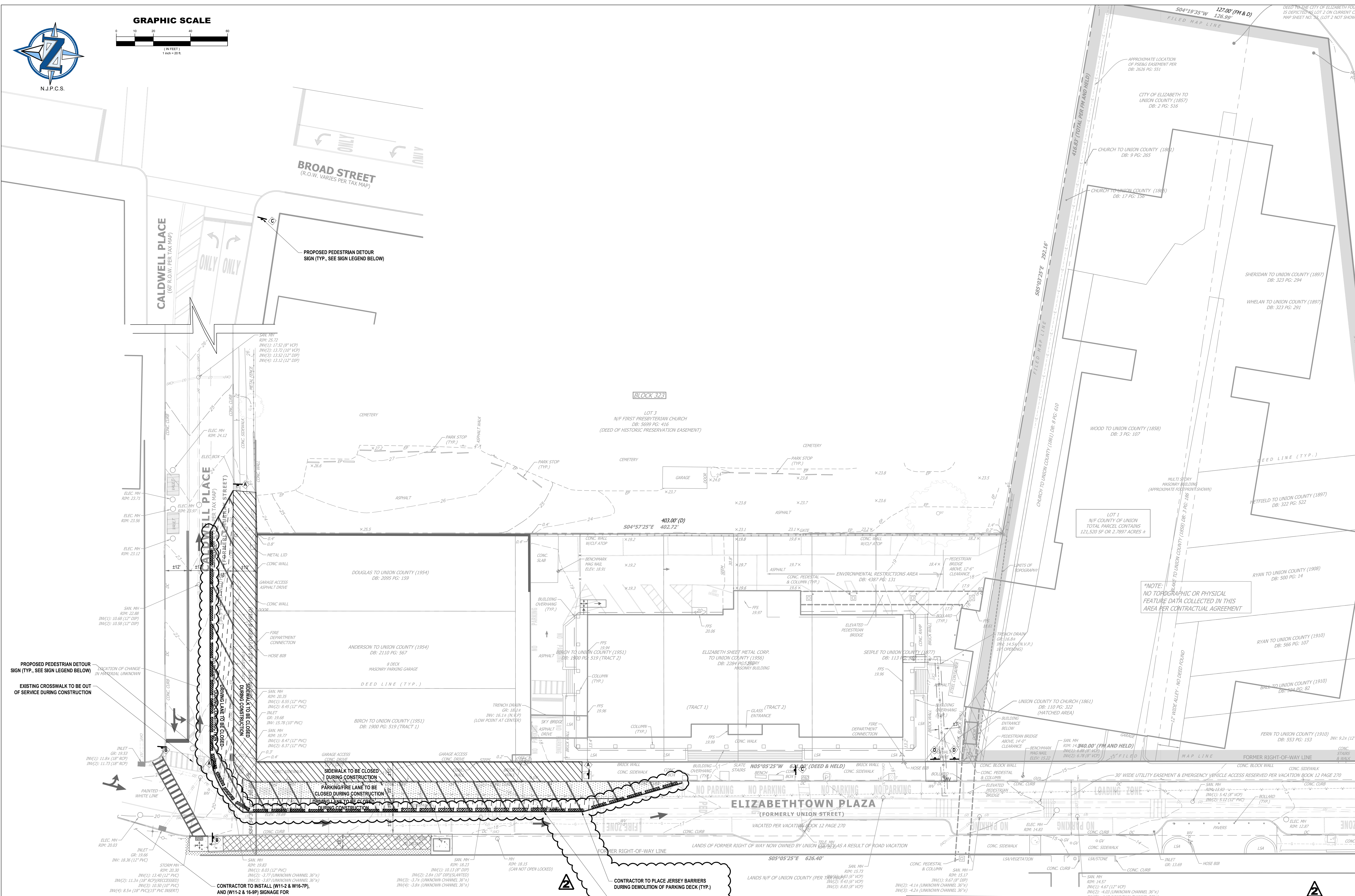
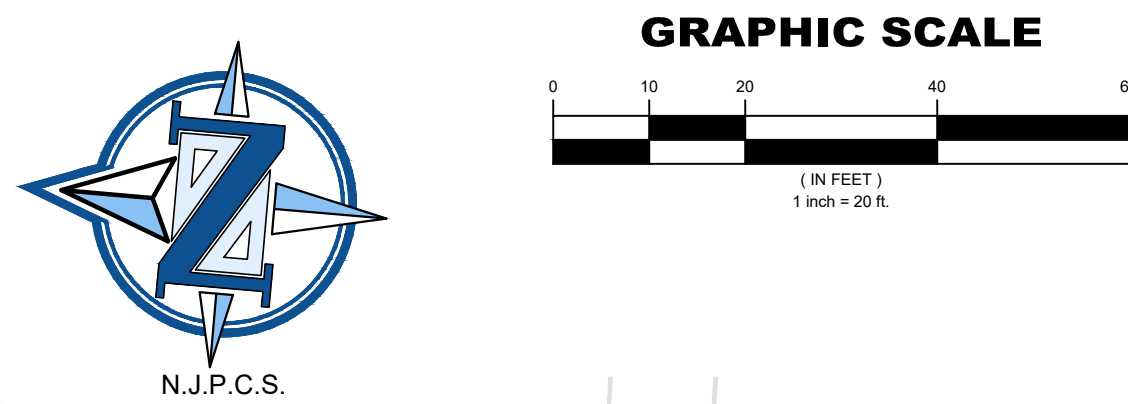
**Plumbing Contractor (C030), Electrical Contractor (C047), and Asbestos Removal/
Treatment , Contractor (C092).**

- Q2:** Drawing 5.00 has (2) notes for similar shapes:
"Contractor to place jersey barriers during demolitions of parking deck (typ.)"
"Contractor to place water barriers during demolitions of parking deck (typ.)"
Please confirm which is required.
- A2:** **Please utilize the revised Traffic Control Plan enclosed for assistance with differentiation the water barriers from the jersey barriers. For the project both will be required, with the water barriers being utilized only adjacent to the Union County Department of Corrections' garage door.**
- Q3:** Please confirm whether or not the existing garage structure is post-tensioned concrete construction.
- A3:** **The garage is conventionally reinforced, it is not post-tensioned.**
- Q4:** Please provide whatever geotech /boring information is available for either the garage or nearby structures?
This would help us for SOE drilling conditions.
- A4:** **Refer to attached Geotechnical Investigation Report, dated December 14, 2020**

ATTACHMENTS:

1. Civil Drawing 5.00, Traffic Control Plan
2. Geotechnical Investigation Report, December 14, 2020
3. Pre-Bid Meeting Sign-in Sheet, October 17, 2023

END OF ADDENDUM NUMBER ONE



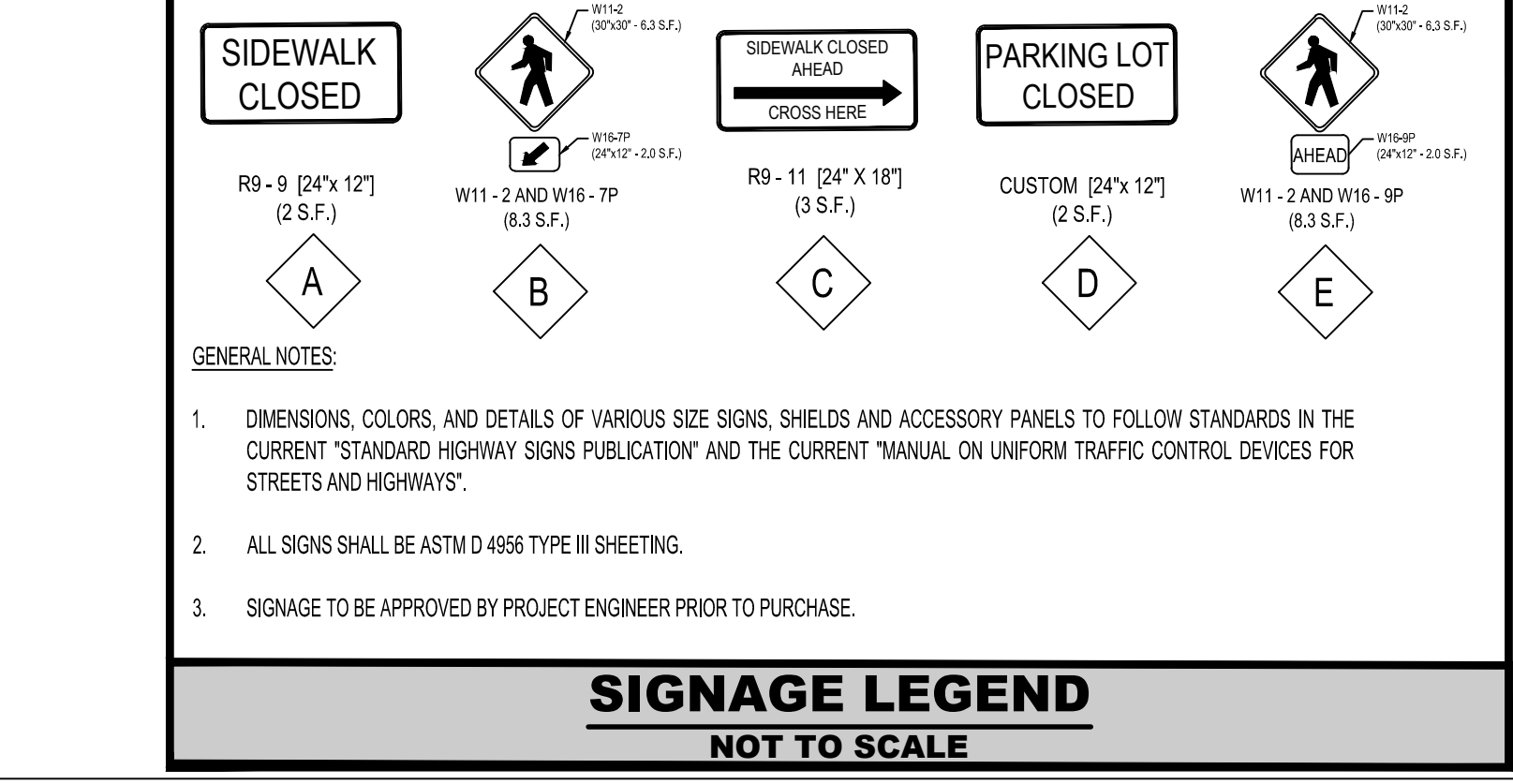
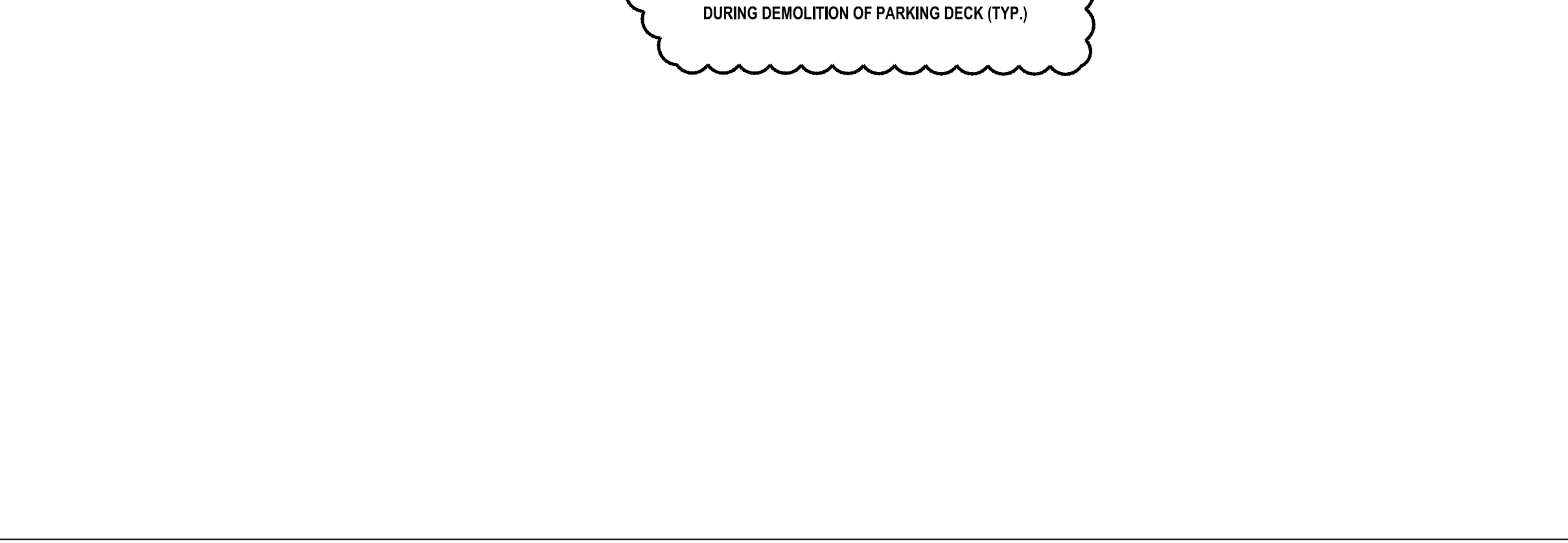
GENERAL NOTES:

- EXISTING TOPOGRAPHIC SURVEY INFORMATION WAS OBTAINED FROM A PLAN ENTITLED "TOPOGRAPHIC SURVEY, UNION COUNTY BUILDINGS, BLOCK 323, LOT 1, PORTIONS OF LOT 3, CITY OF ELIZABETH, UNION COUNTY, NEW JERSEY," PREPARED BY NEGLIA ENGINEERING ASSOCIATES.
- THE MERIDIAN OF THIS SURVEY IS BASED ON THE NEW JERSEY STATE PLANE COORDINATE SYSTEM NAD83 (2011) AS ESTABLISHED USING GPS METHODS AND THE SMARTNET NETWORK.
- ELEVATIONS SHOWN ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AS ESTABLISHED USING GPS METHODS AND THE SMARTNET NETWORK.

CONTRACTOR TO INSTALL (W11-2 & W16-7P) AND (W11-2 & W16-8P) SIGNAGE FOR TEMPORARY SIDEWALK IN ACCORDANCE WITH MUTCD AND NJDOT STANDARDS (TYP.)

CONTRACTOR TO PLACE JERSEY BARRIERS DURING DEMOLITION OF PARKING DECK (TYP.)

CONTRACTOR TO PLACE WATER BARRIERS DURING DEMOLITION OF PARKING DECK (TYP.)



No.	Date	Issue or Revision
2	10.25.23	REVISED PER RFI'S
1	10.10.23	ISSUED FOR BID

Drawing Title
TRAFFIC CONTROL PLAN

Scale
1" = 20'

USA Project No.
2023-090

Drawing Date
10.10.2023

Drawing No.
5.00

Drawn By
M/JG

Checked By
DRA/NH

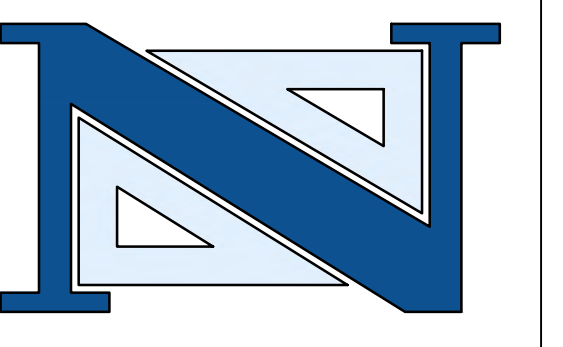


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**DEMOLITION
OF
COURTHOUSE PARKING DECK
FOR THE
COUNTY OF UNION
CALDWELL PLACE & ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201**

Caldwell & Elizabethtown Parking Garage

Caldwell Place and Elizabethtown Plaza
Elizabeth, Union County, New Jersey

Geotechnical Investigation Report December 14, 2020

Prepared for:
Union County
2325 South Avenue
Scotch Plains, NJ 07076

Submitted by:
K. Charles Westen, PE
NJ License No. 47013



Signature

December 14, 2020

Date

Prepared by:
Remington & Vernick Engineers
51 Haddonfield Road, Suite 260
Cherry Hill, New Jersey 08002
Office Phone: (856) 795-9595
RVE Project Number: 2000F020



GEOTECHNICAL INVESTIGATION REPORT

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INTRODUCTION

Remington & Vernick Engineers (RVE) has prepared this report which presents the findings, conclusions, and recommendations of a geotechnical investigation conducted for the proposed construction of the new Caldwell & Elizabethtown Parking Garage. The proposed parking garage will be constructed within the same location of the existing parking facility after demolition is completed. The parking garage site is located at the intersection of Caldwell Place and Elizabethtown Plaza in the City of Elizabeth, Union County, New Jersey.

The purpose of this geotechnical investigation is to determine the subsurface conditions at the site, the depth to bedrock and to provide recommendations, from a geotechnical engineering viewpoint, for the most suitable type of foundation, site preparation, earthwork operations, and other geotechnical considerations.

SITE & PROJECT DESCRIPTION

The existing parking facility is a 7-story reinforced concrete structure with below grade parking, with the upper story having office space, utilized by the County Sheriff's office. The existing parking structure, including the below grade parking level, will be demolished, and removed in its entirety to allow for construction of the new parking structure. Based on preliminary information, the proposed footprint of the new parking structure will be located in approximately the same location as the existing structure.

The proposed new parking structure will be a 9-story structure, with a basement for below grade parking. The structure will be constructed using precast concrete members with reinforced cast-in-place concrete foundation. The depth of the proposed basement will vary from approximately 3.2 to 15.8 feet below existing grade. The parking structure is expected to be supported by a spread footing foundation system consisting of continuous wall and isolated column footings. The anticipated maximum wall and column loads are expected to be 22 kips per linear foot and 325 kips respectively, with anticipated exterior column spacing of 30 feet. These anticipated loads and column spacing was provided to us by the Project Architect. The final exterior site grades are expected to change from those that currently exist at the site.

SUBSURFACE INVESTIGATION

A Standard Penetration Test (SPT) boring investigation for this project was performed on October 27, 28 and 29, 2020. The investigation consisted of seven (7) SPT test borings drilled by Sano Drilling Inc., utilizing drilled in casing (hollow stem augers) at locations selected by RVE. The soil borings, designated as B-1 through B-7, were drilled to auger refusal at depths ranging from 10 to 15 feet below existing grade. At auger refusal, rock cores were performed in each boring into bedrock with the core runs measuring 5 feet in depth. All drilling, soil sampling and rock coring operations were supervised by RVE. The field logging of the soil and rock core samples was also performed by a representative of RVE.

Soil samples were recovered via a two-inch O.D. split-spoon sampler; driven by a hydraulically activated 140-pound hammer, free falling 30 inches (ASTM D 1586). The number of hammer blows required to advance the 24-inch spoon in 6-inch increments (four increments in all) were recorded. The number of blows required to penetrate the middle two increments (6 to 18 inches) is known as the Standard Penetration Resistance (N). Soil samples were obtained continuously in the upper 10 ft and at 5 ft intervals thereafter. Recovered soil samples were visually classified in

the field using the *Burmister Soil Identification System* and the *Unified Soil Classification System*.

All rock coring was performed using a 5-foot NX-size double tube core barrel. The recovered rock samples were visually classified in the field with the percentage of rock recovered (REC) and the rock quality designation (RQD) determined.

The results of the visual analyses were utilized to prepare the attached Test Boring Logs which are presented in Appendix C of this report, along with a Glossary of Terms and Definitions. The approximate location of the test borings, along with other pertinent site information, is shown on the Boring Location Plan, in Appendix B.

LABORATORY TESTING

All recovered soil samples were retained by RVE for examination and testing. The field classifications were confirmed or modified as necessary by our Geotechnical Engineer. Gradation analysis and moisture content determinations were performed by TRC's testing laboratory on soil samples selected by RVE to determine soil properties and to assist in soil identification. Unconfined compression tests were also performed by TRC on two (2) representative rock core samples selected by RVE. Summaries of test results, along with graphic presentations of the test results are presented in Appendix E.

SUBSURFACE CONDITIONS

Published Geologic Data

Published geology indicates the soils at the site are unstratified glacial ground moraine deposited during the Wisconsin glaciation. These deposits are generally described as unsorted and heterogeneous with soil composition ranging from clay to gravel, cobbles and boulders, though silt and sand sizes are predominant. The colors vary from red to red-brown or brown.

Underlying the glacial deposits is soft red shale bedrock with occasional beds of red sandstone. The depth to bedrock in the region is generally variable, with depths usually greater than 10 feet. Shallower depths to bedrock often occur on the tops of existing ridges while greater depths are observed along the lower ridge slopes and in valleys.

The geologic information was obtained from the "Engineering Soil Survey of New Jersey," Rutgers University, Report Number 5, Union County, Engineering Research Bulletin Number 19, 1952.

Soils Encountered

The site soils are in general agreement with the published geologic data. Fill or possible fill soils were encountered beneath asphalt or concrete pavement in all borings. Underlying the fill layer, natural glacial deposits and decomposed bedrock was encountered until auger or sampling spoon refusal on shale bedrock. Weathered and decomposed rock fragments that are moderately friable were observed in the soil matrix of the glacial deposits. Beneath the fill soils and glacial deposits, shale bedrock was encountered and extended to the termination depth of the borings. A detailed description of the soils encountered is shown on the boring logs. A brief general description is

given in the following sections. Inferred Subsurface Cross Sections are presented in Appendix D. The cross-sections present interpolations between the borings and the actual subsurface conditions and elevations may vary from those shown on the sections.

Fill / Possible Fill Stratum (F/PF): Beneath a 6-inch layer of bituminous asphalt or concrete pavement, fill or possible fill was encountered to a depth of 6 to 13 feet below existing grade in all borings. The fill soils consist of coarse to fine reddish brown to gray sand with varying amounts silt, clay, crushed stone and rock asphalt fragments. The relative density of this stratum varies from loose to dense with normalized Standard Penetration Test (SPT) N_{60} and N_{160} -values ranging from 4 to 49 blows per foot (bpf).

It should be noted, in the absence of foreign materials within the soil matrix, it may be difficult to differentiate between natural soils and fill or regraded soils, even when classified by experienced engineers. Accordingly, the depth of fill could vary from that indicated on the boring logs.

Glacial Moraine Deposits (GM): Underlying the fill stratum in all borings, naturally occurring glacial deposits were encountered to auger and sampling spoon refusal at depths ranging from 10 to 15 feet below existing grade. The soils in this stratum can be described as reddish brown coarse to fine sand with trace to “and” silt, trace to little clay and trace to some coarse to fine rock fragments. Immediately above the bedrock the soils become predominately coarse to fine rock fragments with little to some coarse to fine sand. The relative density of this stratum varies from compact to very dense, with normalized SPT N_{160} -values ranging from 16 bpf to over 50 blows per foot. In general, the relative density of the stratum increases with depth, becoming very dense 1 to 2 feet above the bedrock.

Shale Bedrock (S): In all borings, shale bedrock was encountered below the glacial deposits. Rock coring of the bedrock was performed in all borings using a NX double tube core barrel, to the boring termination depths of 15 to 20 feet below existing grade. In borings B-1 through B-5, recoveries of 100% were observed, while recoveries of 95% and 42% were observed in borings B-6 and B-7 respectively. Rock quality designations ranged from 0% to 28%. The shale bedrock encountered in the rock cores was reddish brown, and is considered to be soft, moderately to highly weathered and extremely close to closely fractured.

Groundwater

Natural groundwater was not encountered in the borings at the time of drilling and prior to the introduction of water into the borehole for rock coring. However, pockets of shallow perched groundwater were observed in borings B-1 and B-4 at depths of 3.5 feet and 5 feet, respectively. It should be noted that this groundwater information represents the conditions encountered at the time of drilling operations. Groundwater levels generally can fluctuate due to changes in precipitation, infiltration, surface run-off and other hydrogeological factors. Therefore, the groundwater level present at the time of construction may vary from that observed at the time of the drilling operations.

It should also be noted that shallow or perched groundwater might be encountered during excavations for foundation construction, especially if the work commences after a wet weather period. Dewatering of perched water or surface runoff water encountered during construction can be performed using sump pumps.

DISCUSSION & RECOMMENDATIONS

The subsurface investigation indicated that the site is underlain by loose to medium-dense fill material and glacial deposits which is not suitable to support the proposed structure. Based on the results of our field investigation and laboratory test data, we have evaluated the existing subsurface soil and rock strata to determine their engineering properties and to recommend the most feasible foundation system, from a geotechnical engineering point of view, for the proposed parking garage structure. The natural intact bedrock is capable of supporting the proposed structure and the anticipated maximum design loads on a spread footing type foundation system.

Demolition, Site Preparation Procedures & Earthwork Operations

The proposed construction area is defined as the area within the proposed building limits, and a 5-foot wide zone outside the building.

1. Clear and strip from the construction area, any existing asphalt and concrete pavements or any other deleterious material. Also remove any structures, foundations, basement walls, floor slabs and all demolition debris completely from within the building footprint. Any debris, old foundations or abandoned pipes encountered during excavation, will have to be removed completely from the area under the proposed building to a minimum depth of 2 feet below the bottom slab elevation and completely from the area of the foundations. If any pipes are to be left in place, they must be completely filled with cement grout.
2. Excavate the site, where necessary as described in the “Soil Excavation” and/or “Rock Excavation” sections of this report, to proposed subgrade elevation. Over-excavate any unsuitable material or soils encountered below this elevation in the zone of influence of the foundations. The zone of influence is the volume of soil within lines drawn downward and outward, from the lower edges of a foundation, at a slope of 1.5H:1V. Unsuitable material includes all deleterious fill material, bricks, debris, rubble, or any other undesirable material designated by the on-site representative of the Geotechnical Engineer. Undesirable natural soils include all soft and loose soils encountered under the bottom of the foundation elevation. Replace the over-excavated material with controlled structural fill as defined herein.
3. After excavation procedures have been successfully completed, the rock surface should be examined and scaled to remove any loose rock fragments. The rock, including boulders or fingers and ledges of rock projecting into the bottom of excavation, should be removed to a minimum depth of 6 inches below the proposed bottom of foundation concrete. If the rock is shattered below the foundation elevation and surrounded by intact rock, the shattered material should be removed. The space created should be refilled with the same class of concrete as the overlying foundation. The rock surface should be freed from loose material, cleaned and cut to a firm surface, shaped and leveled according to final elevations. All seams should be cleaned out and filled with concrete, mortar or grout.
4. During a dry and favorable weather period and under the technical supervision of a representative of the Geotechnical Engineer, proof roll and compact the resulting subgrade, in areas underlain by soil, with a 10-ton heavy-duty vibratory roller. A minimum of 8 overlapping passes is recommended. Heavy equipment should not be

operated within 10 feet of any existing structures. Compaction of the soil in the vicinity of existing structures could be accomplished utilizing a mechanical compactor such as a walk behind vibratory roller or similar device as approved by the Geotechnical Engineer's representative on-site.

5. Undercut any zones of instability disclosed by the proof rolling, as determined by the on-site representative of the Geotechnical Engineer and replace the undercut material with controlled structural fill as defined herein. As required, raise the ground surface to proposed subgrade elevation with controlled structural fill. All material used as controlled structural fill material in the building area should comply with the requirements given herein and approved by the on-site representative of the Geotechnical Engineer.
6. All load-bearing fill should be controlled structural fill placed in loose horizontal lifts with a maximum thickness of 8 inches. Controlled structural fill should consist of inorganic, readily compactable, predominantly well-graded granular soils with no more than 12% fines (material passing the No. 200 sieve), and a maximum particle size of 3 inches. The moisture content of the fill materials should be controlled to within 2% of the optimum moisture content, as determined by ASTM D 1557, by wetting, aeration or blending, as necessary. It is recommended that controlled fill within the construction area be compacted to at least 98% and 95% of the maximum dry density, as determined by the Modified Proctor Test (ASTM D 1557), below and above the footing subgrade elevations, respectively. In addition, it is recommended that all fills be stable without significant movement under construction traffic, as judged by the on-site representative of the Geotechnical Engineer. Quality control testing of in-place fill densities should be conducted throughout the entire earthwork operation.
7. In areas where the proposed foundations are lower than existing adjacent foundations, it will be necessary to protect the existing foundations from being undermined by appropriate sheeting and shoring or underpinning of the existing foundations. Conventional steel sheet piling, soldier pile and lagging or pit underpinning will be satisfactory, but it should be designed by and installed in accordance with the requirements of a Licensed Professional Engineer.

Soil Excavation

It is recommended that open cut excavation be used in areas where the granular fill and the glacial deposits are encountered overlying the bedrock. Open excavations are feasible provided there is enough room so that the stability of existing structures is not affected. Existing structures may be considered not affected by the open cut excavation if a line projected downward from the bottom edge of the existing footings at a slope of 1.5H:1V does not intersect the excavation slope. Any section of the existing foundations affected by the excavation should be underpinned. We recommend that the depth of the foundation of the existing school building and other adjacent structures should be established before starting the excavation for the proposed addition. Temporary side slopes of open cut excavations should not be steeper than 2H:1V.

If any existing structures will be affected by an open cut excavation, we recommend that the affected structures be underpinned. Alternatively, temporary sheeting and shoring should be used to support the sides of the excavation. If temporary shoring is utilized, the soil parameters presented in the table below may be used for the design of the shoring. All excavations should be

in compliance with “Excavating and Trenching Operations” manual (latest revision), issued by the US Department of Labor, OSHA 2226 and local requirements.

Temporary Shoring Design Parameters

Stratum	Design Parameters	
Existing Fill: <i>From ground surface to Glacial Deposits or Rock</i>	Unit Weight of Soil (pcf)	115
	Angle of Internal Friction (ϕ)	28°
	Coefficient of Active Earth Pressure (K_a)	0.36
	Coefficient of Earth Pressure At-rest (K_o)	0.53
	Coefficient of Passive Earth Pressure (K_p)	2.7*
Glacial Deposits: <i>From bottom of fill to top of Rock</i>	Unit Weight of Soil (pcf)	120
	Angle of Internal Friction (ϕ)	30°
	Coefficient of Active Earth Pressure (K_a)	0.33
	Coefficient of Earth Pressure At-rest (K_o)	0.5
	Coefficient of Passive Earth Pressure (K_p)	3.0*

* A suitable factor of safety should be applied to K_p .

The lateral load information presented in this report should be used only as a guideline by the contractor, and it should be a requirement for the excavation contractor to prepare, and submit for review, a proposed sheeting and shoring design certified by a Licensed Professional Engineer prior to construction. The excavation contractor should be responsible for the design, installation, and maintenance of all sheeting and shoring.

Regardless of the excavation option chosen, excavated soils should not be stockpiled adjacent to the sides of the excavations to avoid the imposition of additional loads, unless these loads are considered in the design of the temporary shoring or side slopes. Additionally, the effect of excavation machinery should be included in the stability of the open cut slopes, as well as the temporary shoring design.

The on-site fill soils and glacial deposits are sensitive to moisture and are subject to disturbance and deterioration due to weather, moisture intrusion, construction traffic or any other site related disturbance. It is recommended that excavation equipment operating from the existing ground surface be utilized to complete the proposed excavations. The effect of this machinery should be included in the stability of the open cut slopes, as well as the temporary shoring design.

If soil subgrades within the excavation are to be left open for a prolonged period, a work mat should be used to protect the foundation subgrade. A work mat may consist of a layer of ¾ -inch quarry processed crushed stone, a two-inch lean concrete “mud mat,” or other approved material, which will serve to level the footing subgrade, as well as to prevent subgrade softening if the subgrade is exposed for prolonged periods to surface water infiltration.

After the approval of excavation subgrade by a qualified on-site engineer, it is recommended that provisions be made to cover the bottom of the excavation with a 6-inch layer of ¾-inch clean

crushed stone or recycled concrete (minimum thickness), and to follow the recommendations given in the “Foundations” section of this report. This layer will provide a means of protecting the subgrade soil and will facilitate the construction procedures.

Rock Excavation

As discussed previously, the test borings indicate that the entire site is underlain by shale bedrock at a depth of 10 to 15 feet below existing grade. Based on the depth of the proposed basement it is expected that rock excavation may be required. The rock excavation will be facilitated in some areas by intense joints and fractures in the rock. In areas where highly fractured rock is encountered, it may possibly be rippable and can be excavated and removed using heavy construction equipment. Otherwise, in areas where the joints within the rock are more widely spaced, the rock can be dislodged and removed via pre-splitting using hydraulic rock splitters, pneumatic jack hammers or line drilling. Special provisions should be made during excavation. These are delineated in the following paragraphs.

Boulders extending laterally beyond the prescribed limits of excavation may be removed entirely. Any space created outside the prescribed limits due to the removal of such boulders should be refilled with controlled structural fill material as specified in this report.

If the rock excavation extends beyond the bottom elevation of the footing the space created between the intact rock and footing bottom should be refilled with the same class of concrete as the overlying foundation.

After completing the excavation of each section of rock and before beginning the next section, the rock vertical face or sloped surface of the excavation, should be scaled to remove any loose unstable rock fragments. The on-site engineer and the contractor should both examine all rock slopes during the excavation to identify possible unstable conditions and to determine the need for stabilization.

Care should be taken not to leave undrained pockets of surface water on the surface of the rock. Dewatering of surface runoff water encountered during construction can be performed using sump pumps.

Backfill

A portion of the on-site soils contain fine grained material and are sensitive to moisture which may make them difficult to compact. Therefore, these soils are not suitable for use as controlled structural fill. However, they can be used as non-structural fill to raise grades outside of the building envelope and in any paved areas provided, they can be placed at a moisture content which would permit compaction to the required densities. The clean granular portions of the existing on-site soils can be reused as backfill after approval by the Geotechnical Engineer. Soils with organic or other deleterious materials should be discarded. The moisture content of the soil must be within 2% of the optimum value for proper compaction. Therefore, some adjustment of the moisture content may be necessary prior to use as fill material. If imported fill materials are required to complete backfilling of the excavations, they should consist of uncontaminated, relatively well-graded granular soils as defined in Item 5 of the Demolition, Site Preparation Procedures & Earthwork Operations portion of this report.

Backfilling against the foundations and for utility trenches, or other structural uses, should be accomplished using controlled structural fill, as defined in this report, compacted to 95% of the maximum dry density as determined by the Modified Proctor Test, ASTM D 1557. Compaction of the backfill within 5 feet of any existing structures should be performed with relatively light equipment such as a jumping jack, a walk behind roller, or similar device as approved by the on-site representative of the Geotechnical Engineer. The backfill should be placed in 8-inch lifts and compacted to at least 95% and 90% of maximum dry density, as determined by the ASTM D-1557 test procedure, in structural and paved areas or landscaped areas, respectively.

Dewatering

The results obtained at the time of the drilling operation indicate that no natural groundwater was encountered in the borings and therefore continuous dewatering operations should not be required on this site. However, shallow perched groundwater was encountered in two (2) borings at the time of our drilling operation. The removal of perched water, run-off water and any water accumulating in pockets in the surface of the subgrades and exposed rock should be removed. This could be accomplished using sump pumps.

Foundations

The existing fill or glacial deposits are not suitable for direct support of the anticipated heavy column and wall loads of the proposed structure. Based on the results of our field and laboratory investigations and on our engineering analyses, conventional spread footings founded on intact rock, will be the most suitable foundation system for the proposed parking garage structure. For design purposes, a maximum net allowable bearing pressure of 8 tons per square foot (tsf) can be used for both the column and continuous wall foundations. Bearing elevations between boring locations will vary depending upon the exposed soil and rock elevations. With the use of the recommended allowable bearing capacities, a satisfactory factor of safety will be provided against a shear failure and total and differential settlement will be within tolerable limits. The liquefaction potential of the subsoils was also evaluated, and the subsoils were found to have a very low liquefaction potential.

Wall and column footing widths should not be less than 2 and 3 feet respectively. All continuous wall footings should be designed to project at least six inches on each side of the walls. The requirements that the footings be founded at least three (3) feet beneath the finish grade level for frost protection will necessarily be satisfied with the foundations bearing on bedrock. In the vicinity of the existing structures, the proposed foundation bottom elevation should be the same as that of the existing foundation. It should be pointed out that in no case should a line drawn downward at a 1.5H:1V slope from the nearest edges of the proposed foundation bottom elevation intersect with any existing foundations, and vice versa. If the adjacent building foundation is above the proposed new footing founding level, their foundations must be underpinned to prevent undermining the existing foundations or structures.

Footing subgrades on rock should be level and prepared as discussed in Item 3 of the Demolition, Site Preparation Procedures & Earthwork Operations portion of this report. The footing subgrades on compacted structural fill should be thoroughly compacted prior to the placement of the concrete utilizing a mechanical compactor such as a jumping jack, walk-behind roller, or similar device as approved by the on-site representative of the Geotechnical Engineer.

Prior to the placement of concrete, the foundation subgrade must be inspected by a qualified representative of the Geotechnical Engineer in order to confirm that the rock subgrade is properly prepared and that the soil bearing capacity of any compacted structural fill is satisfactory. The contractor should exercise extreme caution not to disturb the subgrade soils. Should the subgrade be disturbed, the loosened soil should be compacted in-place or excavated down to firm soil. Any water, which accumulates in the bottom of the foundation excavation, should be removed promptly.

Basement Construction

The basement walls should be designed to resist the expected lateral soil pressure and any surcharge load located within 15 feet of the basement wall. For design purposes, the lateral earth pressure may be estimated using the following recommended parameters:

Unit Weight of Soil (pcf)	120
Angle of Internal Friction (ϕ)	30°
Coefficient of Active Earth Pressure (K_a)	0.33
Coefficient of Earth Pressure At-rest (K_o)	0.5
Coefficient of Passive Earth Pressure (K_p)	3.0*

* A suitable factor of safety should be applied to K_p .

We recommend that the at-rest (K_o) earth pressure coefficient should be used in the design of basement walls. All anticipated surface surcharge loads should also be taken into consideration.

Natural groundwater was not encountered in the borings, however shallow perched groundwater was encountered in borings B-1 and B-4. Based on the observed perched groundwater and the stratification and visible soil drainage characteristics of soils encountered during the geotechnical investigation, the likelihood of perched water tables and isolated zones of saturation can exist within the soil strata. We therefore recommend that a perimeter drainage system be installed to remove any groundwater seepage that may accumulate adjacent to the basement wall. The perimeter drainage system should include perimeter drains and free draining backfill, or a perimeter drainage membrane placed against the exterior basement walls. The perimeter drain should consist of perforated pipe (ADS or equivalent), having a minimum diameter of 4 inches. The pipe should be surrounded with 6 inches of clean $\frac{3}{4}$ -inch crushed stone or washed gravel on all sides. The gravel should be wrapped in filter fabric (Mirafi 140N, or equivalent). The perimeter drainage system should flow by gravity into a nearby storm water system, if feasible, or connected to a sump from which water may be pumped. The exterior basement walls should be damp proofed and, if free-draining backfill is not installed, the walls should be provided with a drainage membrane, such as Tuff-N-Dri, Amerdrain or Miradrain or equal. The membrane should be hydraulically connected to the foundation drain and should extend to within 2 feet of the finished ground surface. After installation of the perimeter drainage system, the basement can be backfilled using approved imported select fill.

In addition, to the recommended subsurface drainage system, it is recommended that the finish exterior grades around the proposed building addition be sloped away from the building walls to rapidly drain the surface run-off water away from the building perimeter.

Slabs on Grade

Proposed reinforced concrete slabs on grade can be uniformly supported on the densified natural soil or controlled structural fill after site preparation procedures have been successfully completed as discussed herein. The slabs should be structurally independent of walls and footings. Large floor areas should be provided with joints at frequent intervals as determined by the structural engineer. A minimum of 4 inches of ¾-inch clean crushed stone or a 12-inch thick layer (minimum) of well-graded sand and gravel with not more than 5% non-plastic fines is recommended below the slab to assure uniform bearing conditions and to act as a capillary break. A vapor barrier should be placed between the slab and base course, as directed by the Architect, to minimize moisture migration to the surface. All structural fill supporting the floor slab should be compacted to 95% of the maximum dry density (ASTM D 1557).

Concrete slabs placed on the subgrade, prepared as described herein, can be designed using a modulus of subgrade reaction of 225 pounds per cubic inch (pci).

Seismic Zone

According to the New Jersey Edition of the 2018 International Building Code, Section 1613.2.2 referencing ASCE 7, Chapter 20 the project site is categorized as a Site Class “C” for seismic design purposes. This classification is based on subsoil conditions encountered in the borings. In general, the density of the soil below the test borings should increase with depth, based on experience.

LIMITATIONS

The conclusions and recommendations contained in this report are based upon the subsurface data obtained during this investigation and on details stated in this report. It is understood that the number of borings made are consistent with good engineering practice but actual conditions encountered may differ significantly from those projected in this report. Should conditions arise which differ from those described in this report, **RVE** should be notified immediately and provided with all information regarding differing subsurface conditions.

Our recommendations are based upon the assumption that the services of a qualified Geotechnical Engineer will be retained during construction for the observation of all critical earthwork operations and foundation installation. **RVE** cannot minimize, or provide recommended solutions for, any problems resulting from construction or differing soil conditions unless our services include full-time construction inspection to determine that the work performed is in compliance with **RVE's** recommendations, and to ensure the work is carried out in the owner's best interests.

Environmental considerations and contaminants, such as petroleum products, hazardous waste, radioactivity, irritants, pollutants, radon or other dangerous substances and conditions were not the subject of this study. Their presence and/or absence are not implied, inferred or suggested by this report or results of this study.

This report is intended for use with regard to the specific project discussed herein, and any changes in the design of the structure or location, however slight, should be brought to our attention so that we may determine how they may affect our conclusions. We are responsible for the conclusions and opinions contained in this report based on the data relating only to the specific project and location discussed herein.

Appendix A

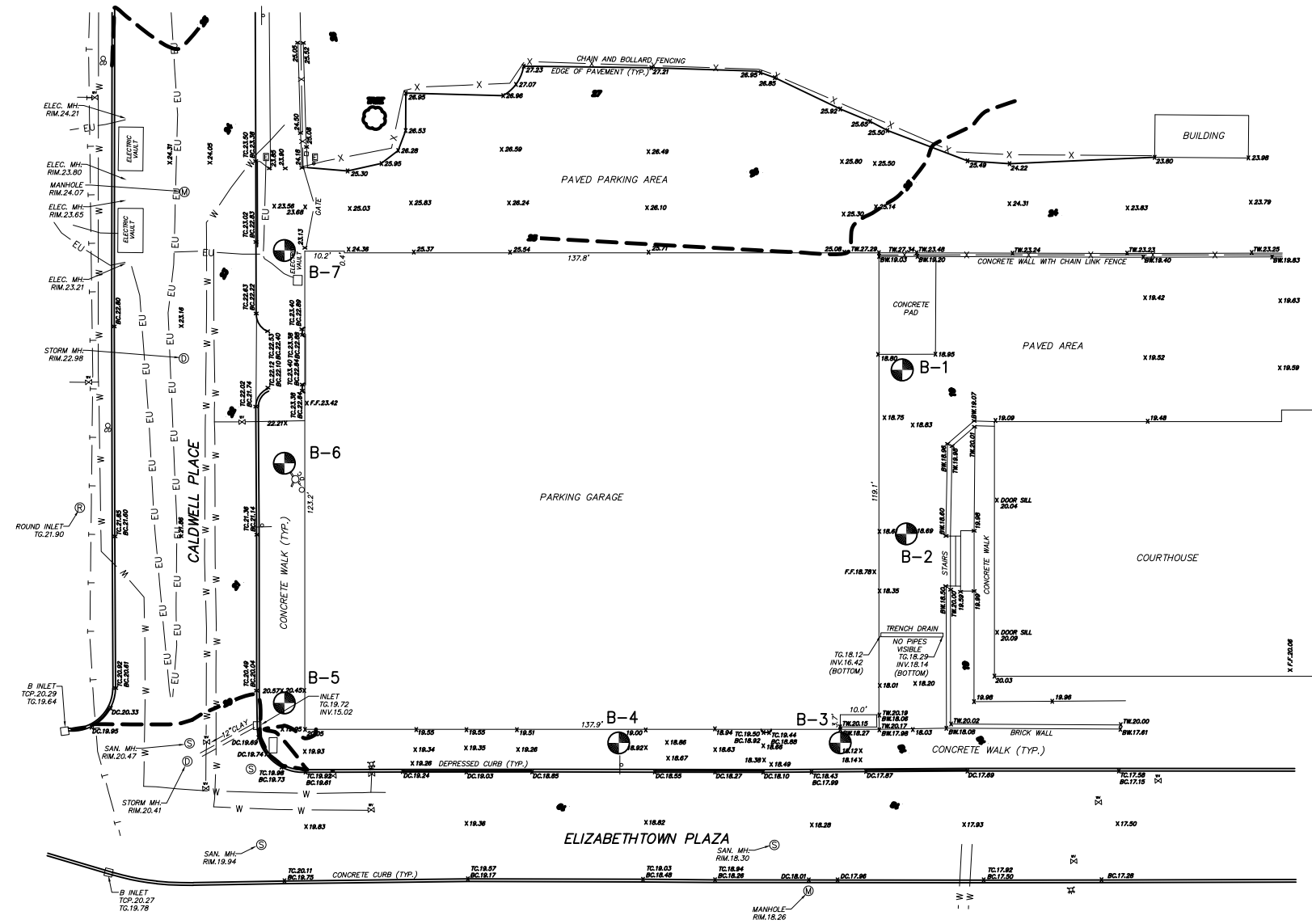
Site Location Map/USGS Quadrangle



**Site Location Map/USGS Quadrangle
Proposed New Union County Parking Garage Structure
Elizabeth, Union County, New Jersey**

Appendix B

Soil Boring Location Plan

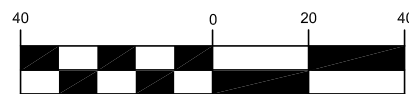


PLAN

SCALE: 1" = 40'

N.S.P.C.S. NAD 1983


GRAPHIC SCALE



(IN FEET)

1 inch = 40 ft.

LEGEND

B-1
 DENOTES NUMBER AND APPROXIMATE LOCATION OF TEST BORINGS

NO.	REVISION	DATE	BY	CHK. BY
-----	----------	------	----	---------

BORING LOCATION PLAN

CALDWELL & ELIZABETHTOWN PARKING GARAGE
 CITY OF ELIZABETH, UNION COUNTY, NEW JERSEY



REMINGTON & VERNICK ENGINEERS

232 KING'S HIGHWAY EAST HADDONFIELD, NJ 08033
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM

SCALE	DATE	DRAWN BY	DSGN. BY	CHK'D. BY	DWG. NO.	SHEET NO.
1"=40'	10/2020	C.O.G.	K.C.W.	K.C.W.		1 OF 1

DWG FILE PATH/NAME

Appendix C

Soil Boring Logs

REMINGTON & VERNICK ENGINEERS

SOIL BORING LOG

Project No. 2000F020 **Project** Caldwell & Elizabethtown Parking Garage **Boring No.** B-5

Date Started: 10/28/20 **Location** Elizabethtown Plaza, Elizabeth, Union County, NJ **Sheet** 1 of 1

Date Finished: 10/28/20 **Client** Union County **Surface Elev.** 20.40 +/-

Drilling Contractor: Sano Drilling Inc. **Groundwater Data**

Drilling Method: Hollow Stem Augers & NX Core Barrel **Depth** None

Hammer Type: Automatic **Driller:** Shaun Ward **Date** 10/28/20

Equipment: Diedrich D-50 Tracked Rig **Inspector:** Chris Gilbert **Time** _____

Depth (ft.)	Sample		Blow Count (Blows per 6 inches)	Recovery	Lithology	Classification of Materials (Based upon samples recovered and observation of materials returned between samples)	Stratum	Moisture Content, %	Other Tests
	Type	Number							
0						6" Concrete Sidewalk			
		S-1	4-3-3	6"		Reddish brown m-f SAND, little Silt, little m-f Crushed Stone (Fill)			
		S-2	3-3-5-5	12"		Reddish brown m-f SAND, little Silt, trace Clay, trace f Crushed Stone (Fill)			
5		S-3	5-5-6-10	12"		Reddish brown m-f SAND, little Silt, trace Clay, little m-f Crushed Stone (Fill)			
		S-4	12-8-4-5	16"		Reddish brown SAND & SILT, little m-f Rock Fragments, trace Clay			
		S-5	5-5-5-8	18"					
10									
		S-6	16-50/4"	10"		Reddish brown m-f ROCK FRAGMENTS, some c-f Sand, little Silt			
15			AUGER						
		C-1	ROCK CORE	60"		Reddish brown RED SHALE, soft, moderately to highly weathered and extremely close to closely fractured REC=100% RQD=18%			
20						Boring End at 20 Feet boring end			
25									
30									
35									

REMINGTON & VERNICK ENGINEERS

SOIL BORING LOG

Project No. 2000F020 **Project** Caldwell & Elizabethtown Parking Garage **Boring No.** B-7

Date Started: 10/29/20 **Location** Elizabethtown Plaza, Elizabeth, Union County, NJ **Sheet** 1 of 1

Date Finished: 10/29/20 **Client** Union County **Surface Elev.** 23.20 +/-

Drilling Contractor: Sano Drilling Inc. **Groundwater Data**

Drilling Method: Hollow Stem Augers & NX Core Barrel **Depth** None

Hammer Type: Automatic **Driller:** Shaun Ward **Date** 10/29/20

Equipment: Diedrich D-50 Tracked Rig **Inspector:** Eric Rundstrom **Time** During

Depth (ft.)	Sample		Blow Count (Blows per 6 inches)	Recovery	Lithology	Classification of Materials (Based upon samples recovered and observation of materials returned between samples)	Stratum	Moisture Content, %	Other Tests
	Type	Number							
0						6" Concrete Sidewalk			
		S-1	3-2-2-2	3"		Brown m-f CRUSHED STONE (Fill)			
		S-2	2-3-3-5	12"		Reddish brown c-f SAND, some m-f Crushed Stone, trace Silt (Fill)			
5		S-3	5-6-6-7	12"		Reddish brown c-f SAND, little Silt, trace f Crushed Stone (Fill)			
		S-4	7-8-12-15	8"		Reddish brown c-f SAND, little Silt, trace Clay			
		S-5	15-15-17-19	10"		Reddish brown c-f SAND, some f Rock Fragments, trace Silt			
10									
		S-6	17-7-50/3"	10"					
			AUGER						
15		C-1	ROCK CORE	25"		Reddish brown RED SHALE, soft, moderately to highly weathered and extremely close to closely fractured REC=42% RQD=0%			
20						Boring End at 19.25 Feet boring end			
25									
30									
35									

KEY TO SYMBOLS

Symbol Description

Strata symbols



Paving



Fill



Glacial Deposit



Shale

Soil Samplers



Standard penetration
test



Auger



Rock core

Notes:

1. Exploratory borings were drilled on 10/27/20 through 10/29/20 using a continuous flight hollow stem augers. Rock coring was performed using a NX size double tube core barrel.
2. Natural groundwater was not encountered at the time of drilling and prior to the introduction of water for the rock coring operation.
3. Boring locations were located from existing features and elevations extrapolated from the topographic survey plan prepared by PS&S, dated 10/12/20.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.

MODIFIED METHOD
FOR
IDENTIFICATION OF SOILS
AFTER
DR. D. M. BURMISTER

Soil Component	Descriptive Terms As Written on Log	Range of Proportions
PRINCIPAL COMPONENT (All Letters Capitalized)	-	35% or more
MINOR COMPONENTS (First Letter Capitalized)	and (a.) some (s.) little (l.) trace (tr.)	35% to 50% 20% to 35% 10% to 20% 1% to 10%

Coarse Grained Soils-Gradation of Components

Coarse to fine	cf	All sizes
Coarse to medium	cm	Less than 10% fine
Medium to fine	mf	Less than 10% coarse
Coarse	c	Less than 10% medium & fine
Medium	m	Less than 10% coarse & fine
Fine	f	Less than 10% coarse & medium

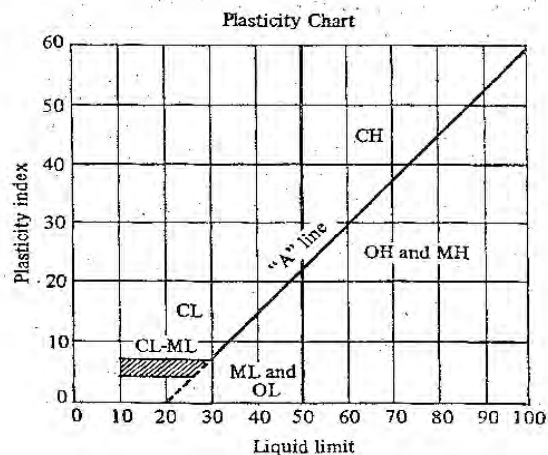
Component	Symbol	Sieve Range
Boulders		9" and larger
Cobbles		3" to 9"
Gravel	G	
Coarse		¾" to 3"
Fine		#4 to ¾"
Sand	S	
Coarse		#4 to #10
Medium		#10 to #40
Fine		#40 to #200

Fine Grained Soils-Plasticity of Components

Component	Symbol	Overall Plasticity	Plasticity Index
SILT	S	Non-Plastic	0
CLAYEY SILT	CyS	Slight	1 to 5
SILT & CLAY	S & C	Low	5 to 10
CLAY & SILT	C & S	Medium	10 to 20
SILTY CLAY	SyC	High	20 to 40
CLAY	C	Very High	. over 40

UNIFIED SOIL CLASSIFICATION SYSTEM. (ASTM D-2487)

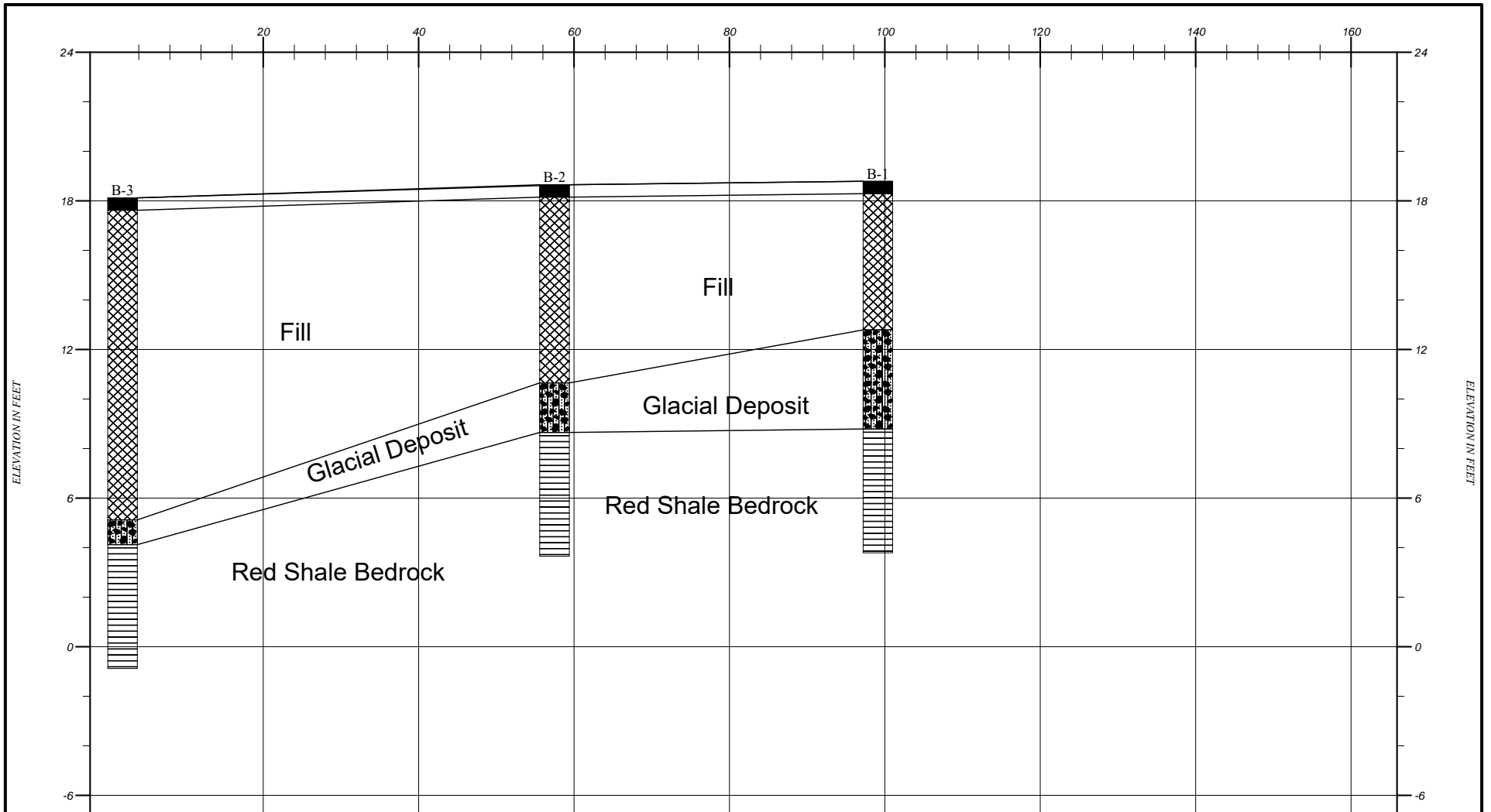
Major Divisions		Group Symbols	Typical Names	Laboratory Classification Criteria				
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 per cent More than 12 per cent 5 to 12 per cent	Borderline cases requiring dual symbols ^b GW, GP, SW, SP GM, GC, SM, SC	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for GW Atterberg limits below "A" line or P.I. Less than 4 Atterberg limits below "A" line with P.I. Greater than 7 $C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for SW Atterberg limits above "A" line or P.I. Less than 4 Atterberg limits above "A" line with P.I. Greater than 7 Limits plotting in hatched zone with P.I. Between 4 and 7 are <i>borderline</i> cases requiring use of dual symbols	
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines				
		Gravels with fines (Appreciable amount of fines)	GM ^a	d				Silty gravels, gravel-sand-silt mixtures
				u				
			GC	Clayey gravels, gravel-sand-clay mixtures				
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines				
			SP	Poorly graded sands, gravelly sands, little or no fines				
		Sands with fines (Appreciable amount of fines)	SM ^a	d				Silty sands, sand-silt mixtures
				u				
			SC	Clayey sands, sand-clay mixtures				
Fine-grained soils (More than half material is smaller than No. 200 sieve)	Silt and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity					
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays					
		OL	Organic silts and organic silty clays of low plasticity					
	Silt and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts					
		CH	Inorganic clays of high plasticity, fat clays					
		OH	Organic clays of medium to high plasticity, organic silts					
		Pt	Peat and other highly organic soils					



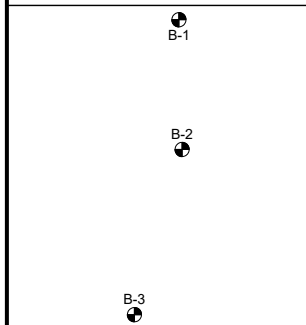
^aDivision of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.
^bBorderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

Appendix D





Subsurface Cross Sections



Plan View

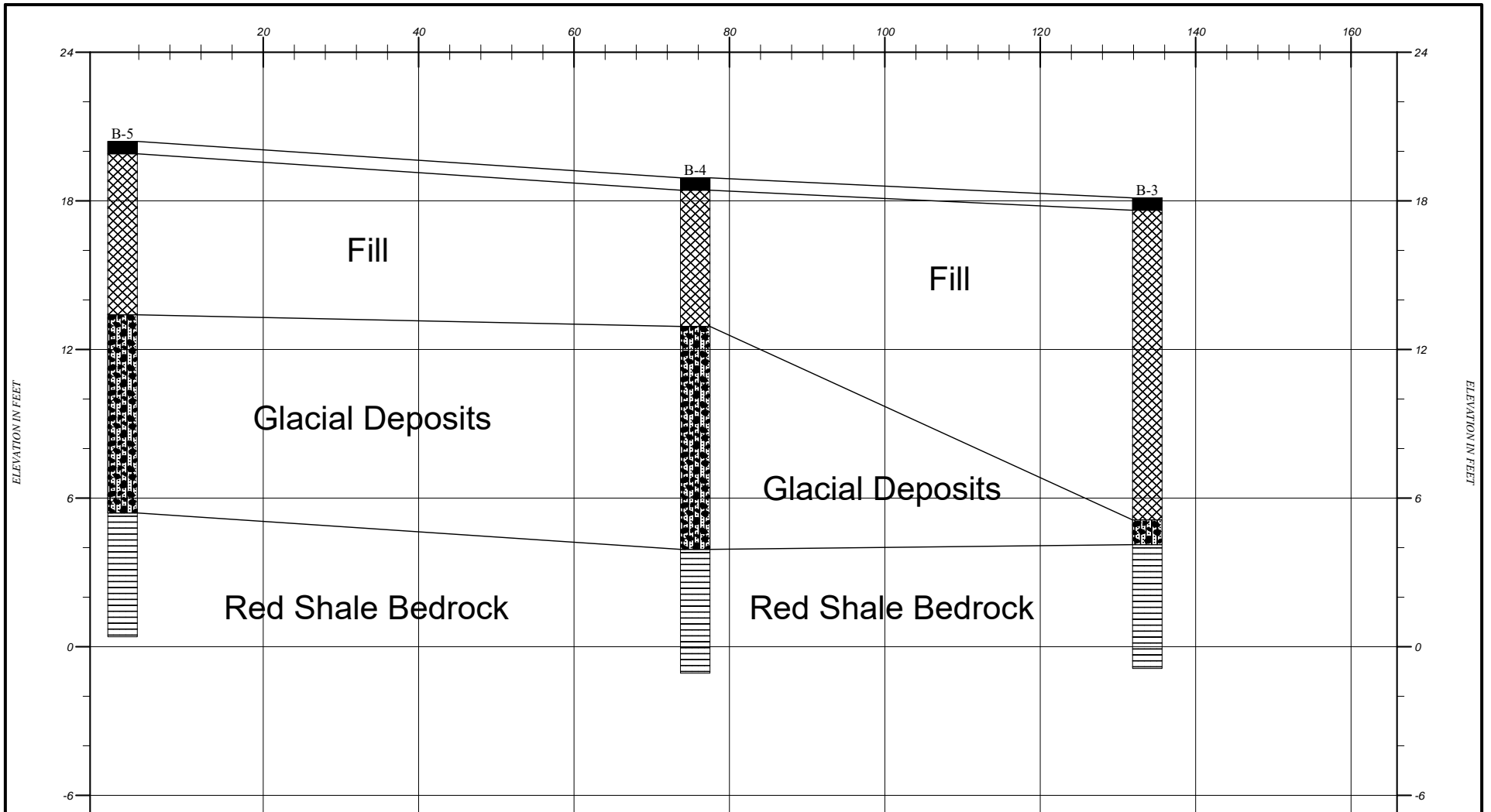


Strata symbols

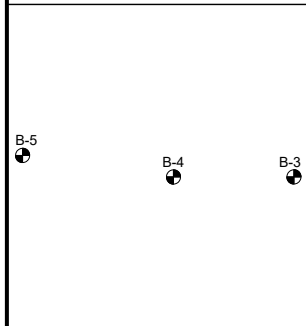
-  Paving
-  Fill
-  Glacial Deposit
-  Shale

Remington & Vernick Engineers
GENERALIZED SOIL PROFILE





HORIZONTAL SCALE: 1"=20'	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE: 1"=6'		12/11/2020
Caldwell & Elizabethtown Parking Garage		
PROJECT NO. 2000F020		FIGURE NUMBER 1



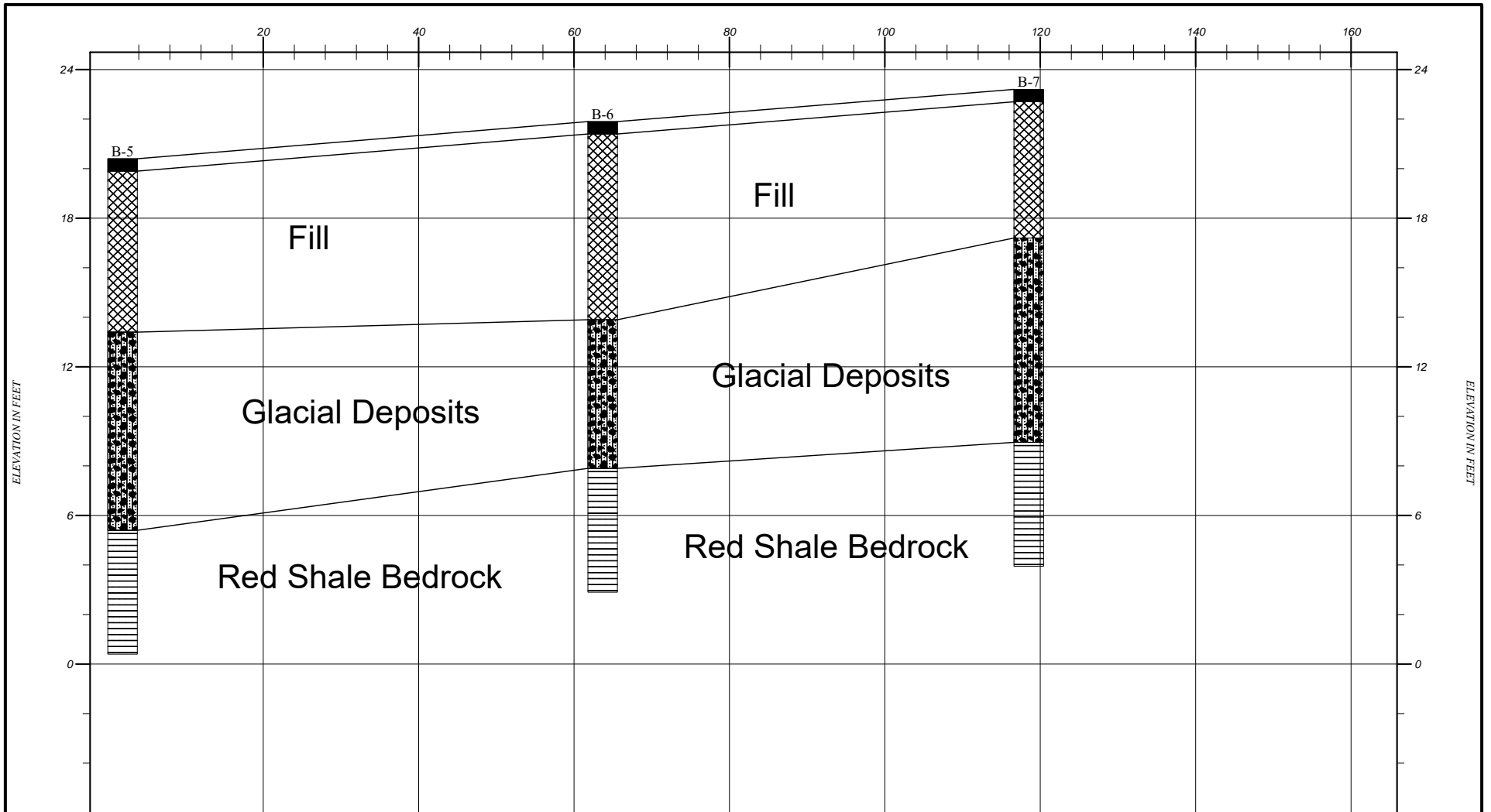
Plan View



Strata symbols

-  Paving
-  Fill
-  Glacial Deposits
-  Shale

Remington & Vernick Engineers GENERALIZED SOIL PROFILE		
HORIZONTAL SCALE: 1"=20'	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE: 1"=6'		12/11/2020
Caldwell & Elizabethtown Parking Garage		
PROJECT NO. 2000F020	FIGURE NUMBER 2	







Plan View

B-7

B-6

B-5

Strata symbols

-  Paving
-  Fill
-  Glacial Deposits
-  Shale

Remington & Vernick Engineers
GENERALIZED SOIL PROFILE

HORIZONTAL SCALE: 1"=20'	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE: 1"=6'		12/11/2020

Caldwell & Elizabethtown Parking Garage

PROJECT NO. 2000F020

FIGURE NUMBER

3

Appendix E

Soil Lab Test Results

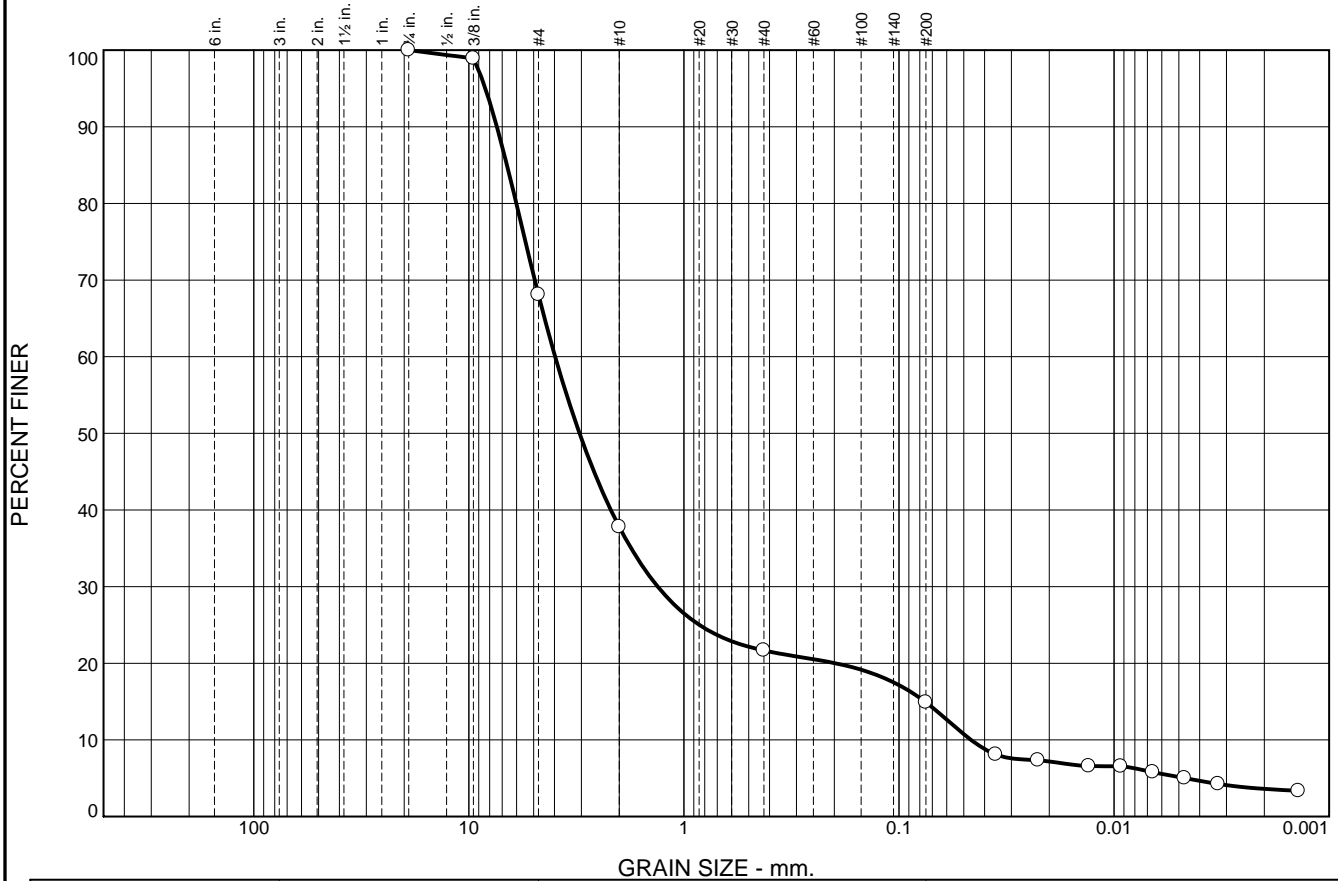


SUMMARY OF LABORATORY TEST DATA

Project Name: Caldwell Elizabethtown Parking Deck
 Client Name: Remington & Vernicks Engineers
 TRC Project #: 422671

SAMPLE IDENTIFICATION			ASTM Soil Group	Moisture Content (%)	GRAIN SIZE DISTRIBUTION				Dry Unit Weight (PCF)	Unconfined Compressive Strength (TSF)
Boring #	Sample #	Depth (ft)			Gravel (%)	Sand (%)	Silt (%)	Clay (%)		
B-1	S-4	6.0-8.0	SM	7.4	31.9	53.2	9.7	5.2	-	-
B-2	S-4	6.0-8.0	SM	8.3	22.4	59.4	11.0	7.2	-	-
B-4	S-4 & S-5	6.0-10.0	SM	12.5	16.5	40.8	26.4	16.3	-	-
B-4	C-1	10.0-15.0	-	-	-	-	-	-	158.8	819
B-5	S-4	6.0-8.0	SM	14.2	15.1	43.3	24.4	17.2	-	-
B-5	S-5	8.0-10.0	SM	11.8	21.1	31.1	32.3	15.5	-	-
B-6	S-5	8.0-10.0	SC-SM	7.2	7.7	79.0	5.8	7.5	-	-
B-6	C-1	13.0-18.0	-	-	-	-	-	-	160.9	443
B-7	S-4 & S-5	6.0-10.0	SC-SM	12.6	11.0	65.0	13.7	10.3	-	-

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	31.9	30.3	16.1	6.8	9.7	5.2

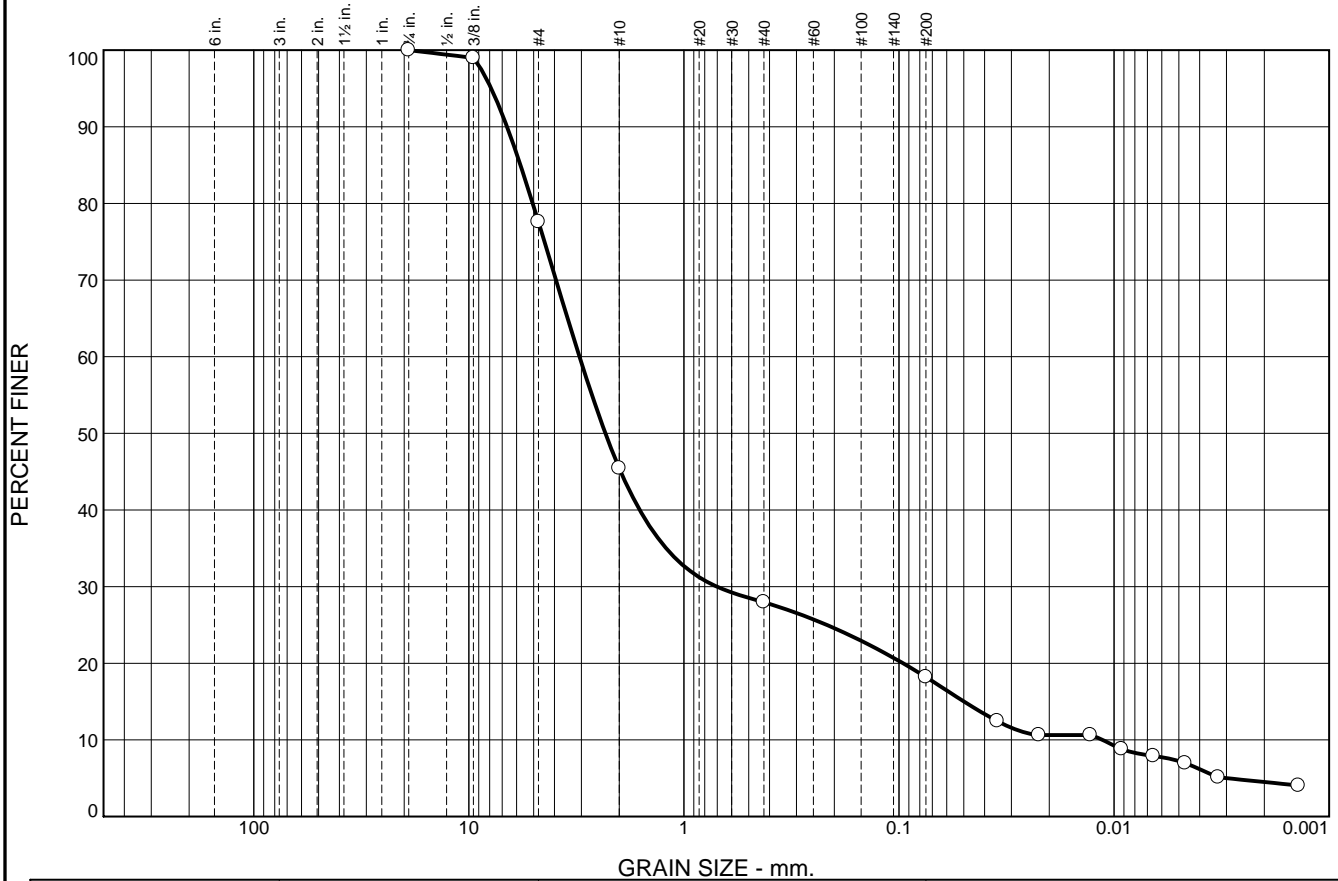
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		6.6517	3.9708	3.0581	1.3240	0.0758	0.0462	9.55	85.92

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN SILTY SAND WITH GRAVEL	12/08/20	SM	7.4

<p>Project No. 422671 Client: REMINGTON & VERNICK ENGINEERS</p> <p>Project: CALDWELL ELIZABETHTOWN PARKING DECK</p> <p>○ Source of Sample: B-1 Depth: 6.0-8.0 FT Sample Number: S-4</p>	<p>Remarks:</p> <p>○ SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION</p>
<p>TRC Engineers, Inc.</p> <p>Mt. Laurel, NJ</p>	
<p>Figure 1</p>	

Tested By: CWZ 12/08/20 **Checked By:** JPB 12/08/20

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	22.4	32.1	17.5	9.8	11.0	7.2

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		5.7583	3.0588	2.3185	0.7033	0.0499	0.0113	14.30	270.51

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN SILTY SAND WITH GRAVEL	12/08/20	SM	8.3

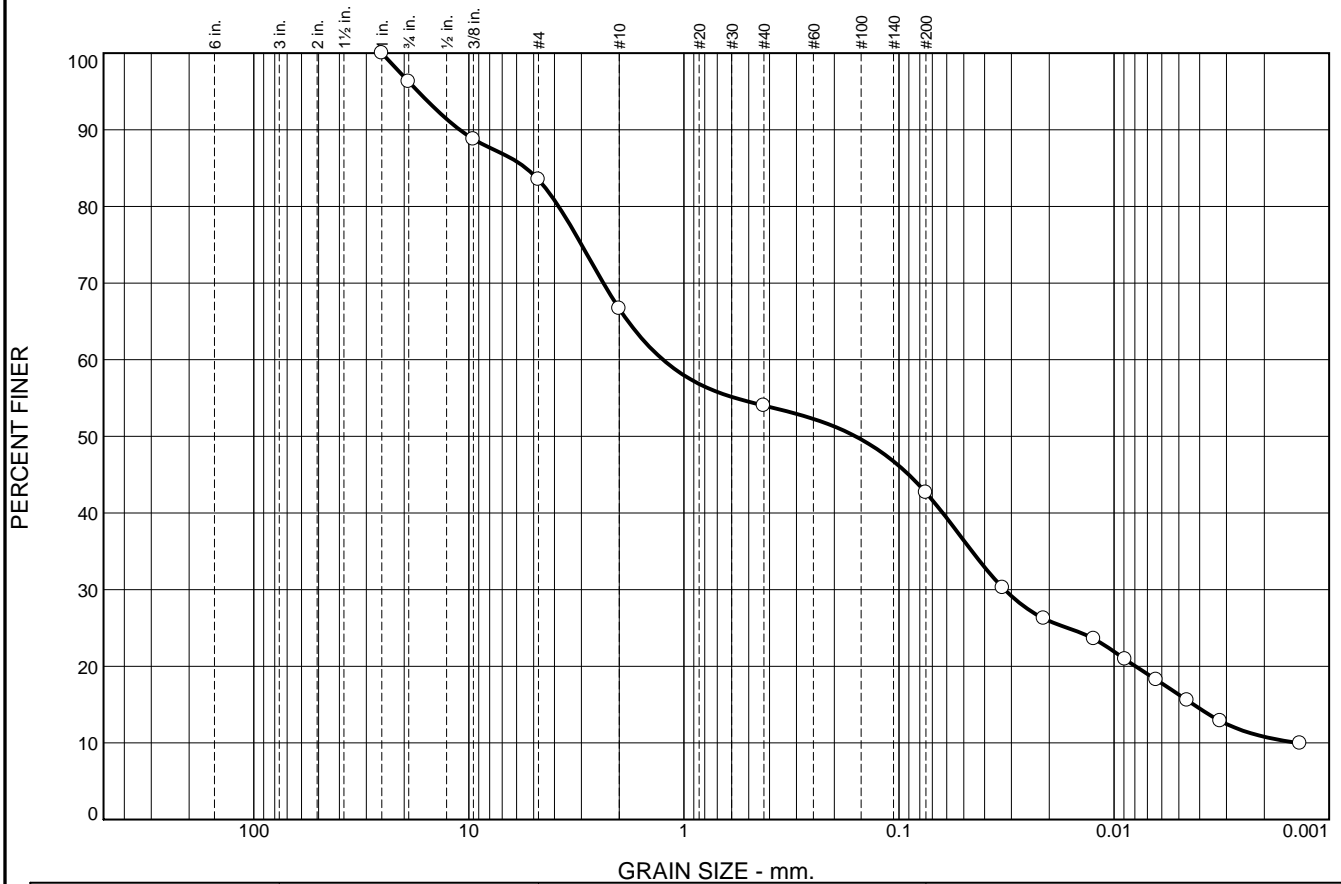
Project No. 422671 Client: REMINGTON & VERNICK ENGINEERS Project: CALDWELL ELIZABETHTOWN PARKING DECK	Remarks: ○ SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION
○ Source of Sample: B-2 Depth: 6.0-8.0 FT Sample Number: S-4	

TRC Engineers, Inc.
Mt. Laurel, NJ

Figure 2

Tested By: CWZ 12/08/20 **Checked By:** JPB 12/08/20

Particle Size Distribution Report



%	+3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	3.7	12.8	16.8	12.7	11.3	26.4	16.3

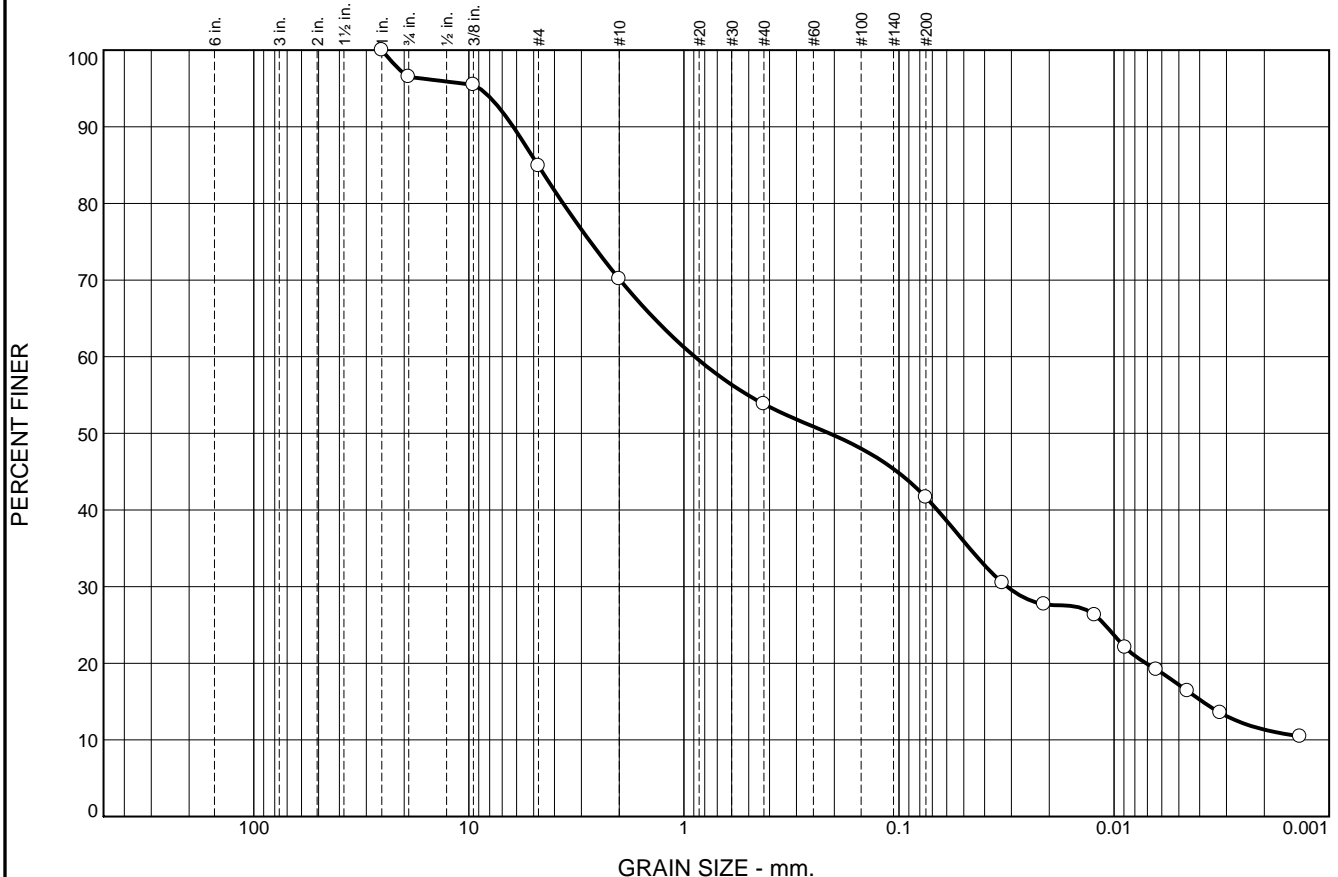
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○		5.4262	1.2513	0.1592	0.0323	0.0043	0.0014	0.59	887.49

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN SILTY SAND WITH GRAVEL	12/08/20	SM	12.5

<p>Project No. 422671 Client: REMINGTON & VERNICK ENGINEERS</p> <p>Project: CALDWELL ELIZABETHTOWN PARKING DECK</p> <p>○ Source of Sample: B-4 Depth: 6.0-10.0 FT Sample Number: S-4 & S-5</p>	<p>Remarks:</p> <p>○ SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION</p>
<p>TRC Engineers, Inc.</p> <p>Mt. Laurel, NJ</p>	
<p>Figure 3</p>	

Tested By: CWZ 12/08/20 **Checked By:** JPB 12/08/20

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.5	11.6	14.7	16.4	12.2	24.4	17.2

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		4.7718	0.8901	0.2110	0.0314	0.0039			

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN SILTY SAND WITH GRAVEL	12/08/20	SM	14.2

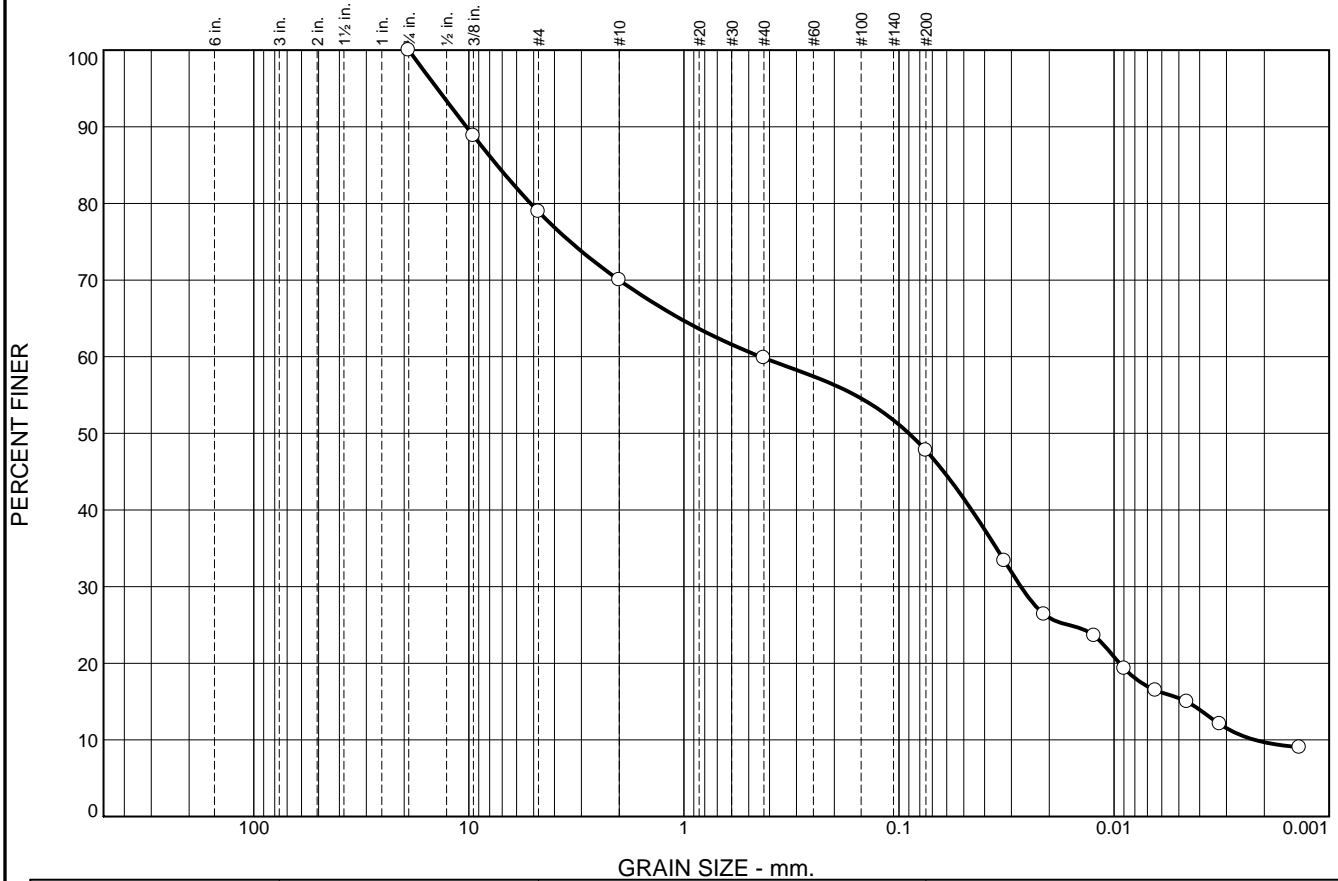
Project No. 422671 Client: REMINGTON & VERNICK ENGINEERS Project: CALDWELL ELIZABETHTOWN PARKING DECK	Remarks: ○ SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION
○ Source of Sample: B-5 Depth: 6.0-8.0 FT Sample Number: S-4	

TRC Engineers, Inc.
Mt. Laurel, NJ

Figure 4

Tested By: CWZ 12/08/20 **Checked By:** JPB 12/08/20

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	21.1	8.9	10.2	12.0	32.3	15.5

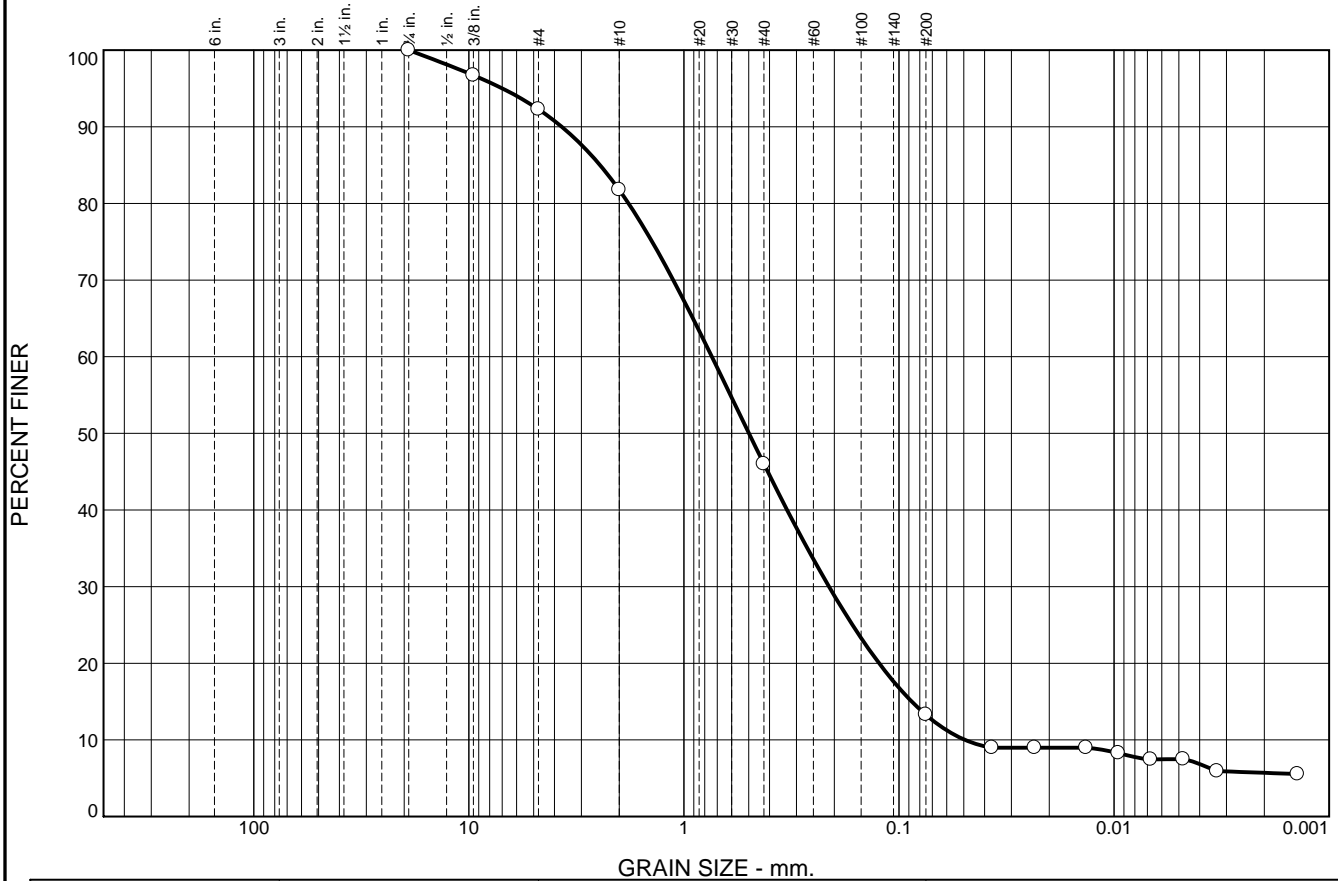
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		7.3958	0.4397	0.0900	0.0271	0.0046	0.0022	0.76	198.48

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN SILTY SAND WITH GRAVEL	12/08/20	SM	11.8

<p>Project No. 422671 Client: REMINGTON & VERNICK ENGINEERS</p> <p>Project: CALDWELL ELIZABETHTOWN PARKING DECK</p> <p>○ Source of Sample: B-5 Depth: 8.0-10.0 FT Sample Number: S-5</p>	<p>Remarks:</p> <p>○ SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION</p>
<p>TRC Engineers, Inc.</p> <p>Mt. Laurel, NJ</p>	
<p>Figure 5</p>	

Tested By: CWZ 12/08/20 **Checked By:** JPB 12/08/20

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	7.7	10.5	35.8	32.7	5.8	7.5

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		2.4558	0.7416	0.4987	0.2116	0.0872	0.0494	1.22	15.02

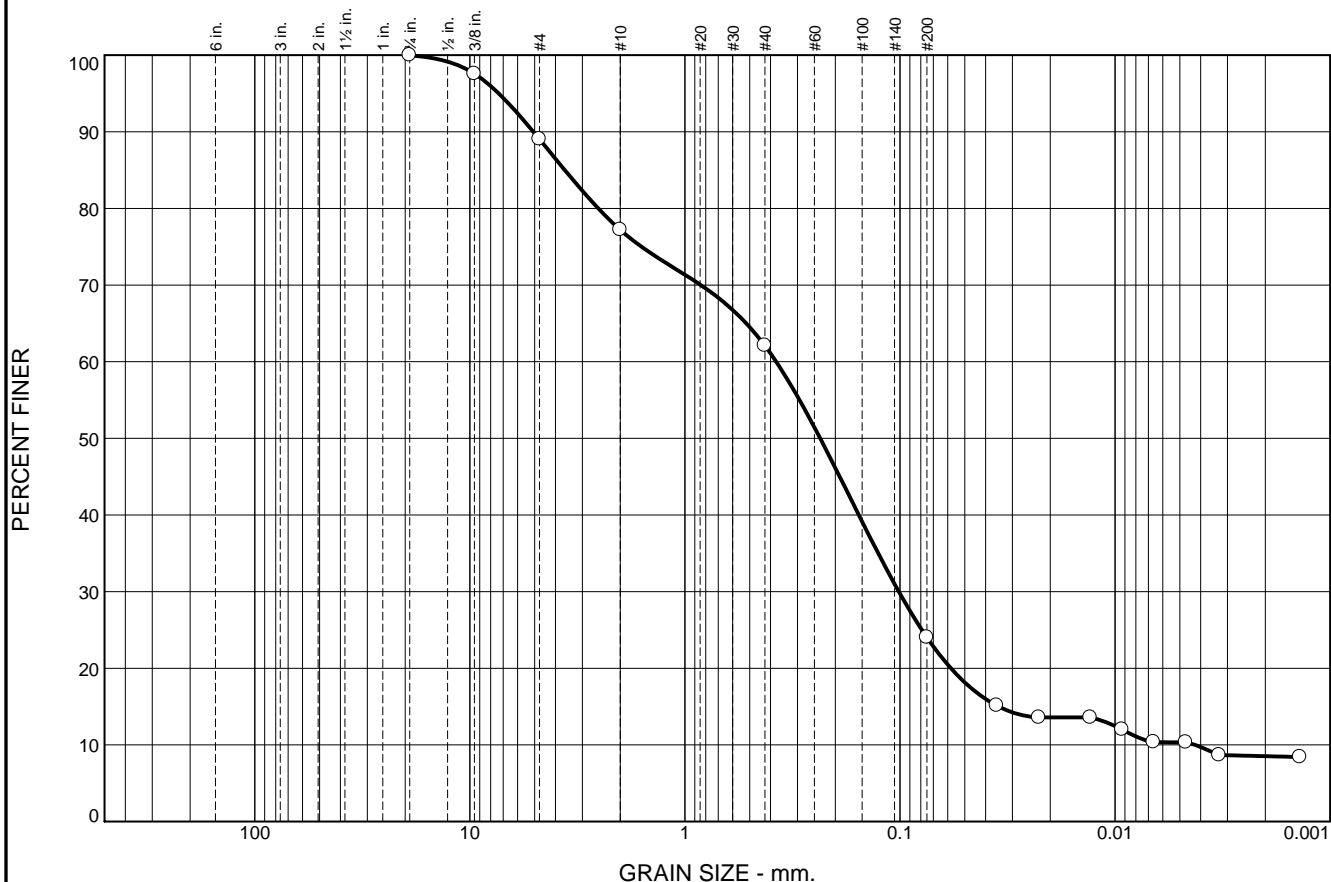
MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN SILTY, CLAYEY SAND	12/08/20	SC-SM	7.2

<p>Project No. 422671 Client: REMINGTON & VERNICK ENGINEERS</p> <p>Project: CALDWELL ELIZABETHTOWN PARKING DECK</p> <p>○ Source of Sample: B-6 Depth: 8.0-10.0 FT Sample Number: S-5</p>	<p>Remarks:</p> <p>○ SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION</p>
<p>TRC Engineers, Inc.</p> <p>Mt. Laurel, NJ</p>	

Figure 6

Tested By: CWZ 12/08/20 **Checked By:** JPB 12/08/20

Particle Size Distribution Report



%	+3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	11.0	11.8	15.1	38.1	13.7	10.3

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○		3.6180	0.3764	0.2350	0.1013	0.0348	0.0042	6.43	88.80

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN SILTY, CLAYEY SAND	12/08/20	SC-SM	12.6

<p>Project No. 422671 Client: REMINGTON & VERNICK ENGINEERS</p> <p>Project: CALDWELL ELIZABETHTOWN PARKING DECK</p> <p>○ Source of Sample: B-7 Depth: 6.0-10.0 FT Sample Number: S-4 & S-5</p>	<p>Remarks:</p> <p>○ SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION</p>
<p>TRC Engineers, Inc.</p> <p>Mt. Laurel, NJ</p>	

Figure 7

Tested By: CWZ 12/08/20 **Checked By:** JPB 12/08/20

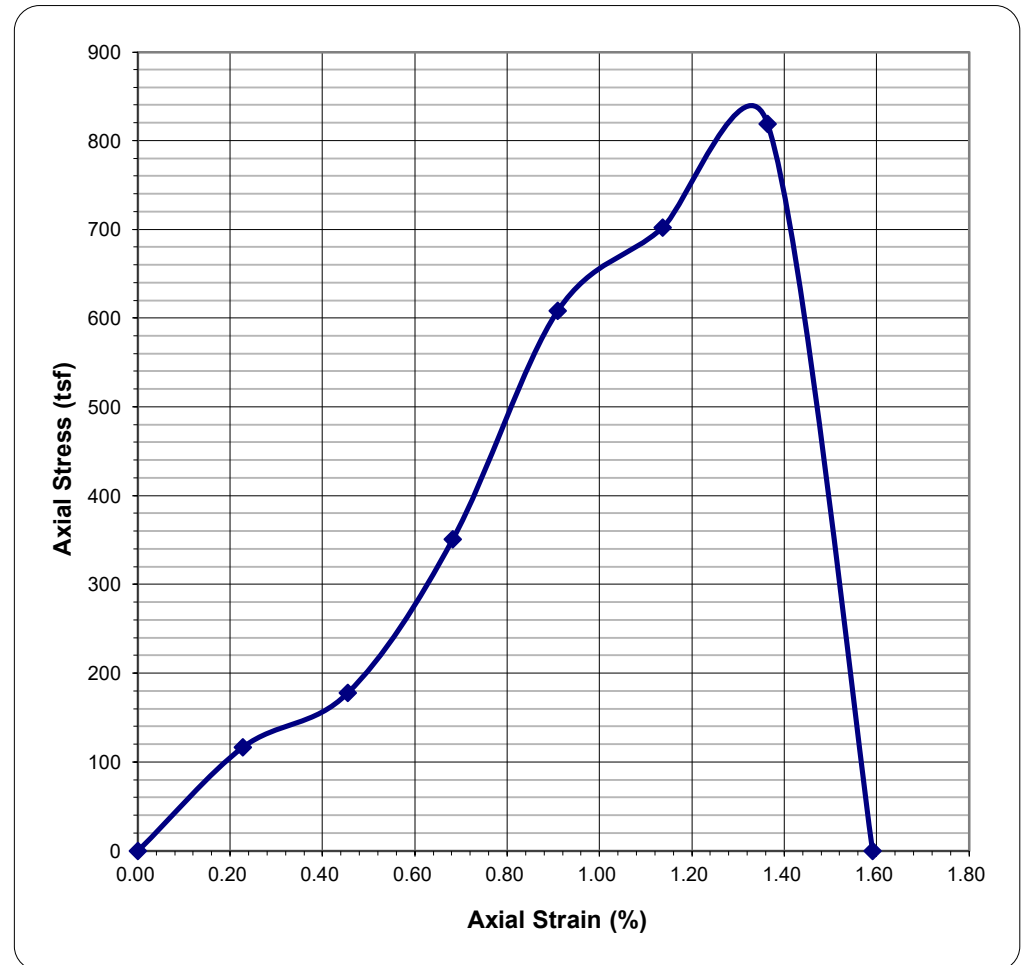
TRC Engineers, Inc.
Soil Mechanics Laboratory

Unconfined Compression Strength Test of Rock Core

Project Name:	Caldwell Elizabethtown Parking Deck		
Project No.:	422671.0000	Average Sample Diameter (in.):	1.979
Boring No.:	B-4	Cross Sectional Area (sq. in.)	3.076
Sample No.:	C-1	Average Sample Height (in.):	4.400
Depth (ft):	10.0-15.0	Sample Mass (g):	564.22
		Unit Weight (PCF)	158.8
		Sample Description:	RED-BROWN SHALE

Test Data

Strain Dial (in.)	Load (lb)	Strain (%)	Stress (tsf)
0.000	0	0.00	0
0.010	5000	0.23	117
0.020	7600	0.45	178
0.030	15000	0.68	351
0.040	26000	0.91	609
0.050	30000	1.14	702
0.060	35000	1.36	819
0.070	0	1.59	0



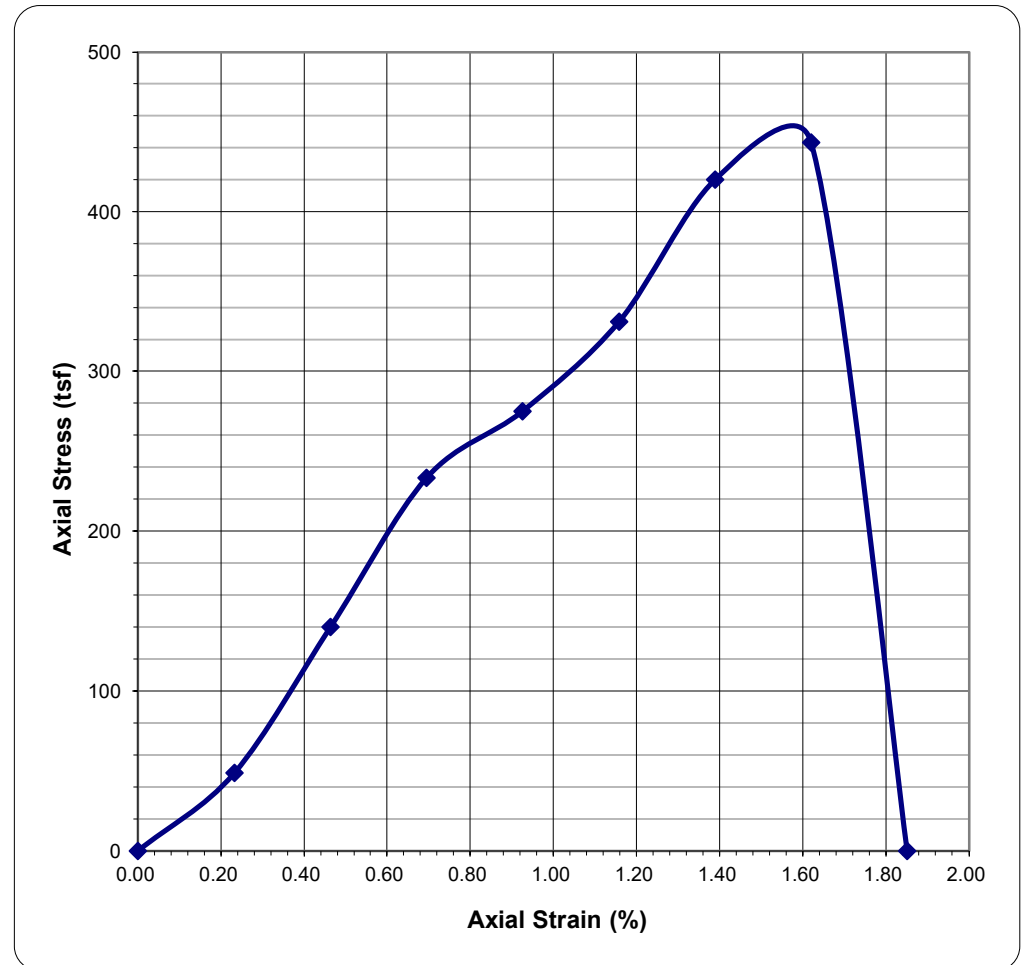
TRC Engineers, Inc.
Soil Mechanics Laboratory

Unconfined Compression Strength Test of Rock Core

Project Name:	Caldwell Elizabethtown Parking Deck		
Project No.:	422671.0000	Average Sample Diameter (in.):	1.982
Boring No.:	B-6	Cross Sectional Area (sq. in.)	3.086
Sample No.:	C-1	Average Sample Height (in.):	4.322
Depth (ft):	13.0-18.0	Sample Mass (g):	563.05
		Unit Weight (PCF)	160.9
		Sample Description:	RED-BROWN SHALE

Test Data

Strain Dial (in.)	Load (lb)	Strain (%)	Stress (tsf)
0.000	0	0.00	0
0.010	2100	0.23	49
0.020	6000	0.46	140
0.030	10000	0.69	233
0.040	11800	0.93	275
0.050	14200	1.16	331
0.060	18000	1.39	420
0.070	19000	1.62	443
0.080	0	1.85	0





Union County Courthouse Parking Deck Phase 1
Pre-Bid Meeting October 17, 2023 at 11:00 AM

Sign In Sheet

Name	Firm	Phone #	E-mail
Rocco Martino SR	LB Electric	945-521-4568	rmartino@lb-electric.com
Mark JANTOSCH	Caravella Demo	973-884-4900	Estimates@CaravellaDemo.com
Anthony Vicciardo	GRAMERCY Group Inc.	866-380-0642	Estimating@gramercy.com
ROBERT LEWIN	GRAMERCY GROUP INC	646.294.7224	RLEWIN@GRAMERCYUSA.COM
GORAN VUCENAK	B & B RESTORATION INC	973-696-6869	GORAN@B&BRESTORATION.COM
DAN VENNELL	R.N. BEST ASSOC	267-966-8292	dvennell@rnbest.com
Andrew Aloia	USA Labels		
BRIAN TREMATORE	BTP + H	973-494-3359	btrematore@trematore.com
NIC D'INNO	Terminal Cons	201-939-9150	ndinno@terminalconstruction.com
GEORGE BASKARAN	LB ELECTRIC	973-511-2200	GBASKARAN@LBELECTRIC.com
Aditya Ajith MARK CANDIA	3C DRILLING 3C Drill	954-655-7033 315-200-1205	adi@3CDRILLING.com mcandia@gmail.com
Matthew Ferraro	VP Engineering	908-389-5208	mferraro@vpj.org
Rick Matris	VP	908-389-3675	
TROY MANZUOLI	MAST CONSULT	914-400-9194	TManzuo1@mast.com
Ali Malik	Madina Restoration	347-210-0070	MadinaCorp1@gmail.com
Jozef Graczelc	MAST		

SPECIFICATIONS

FOR

**Union County Courthouse Parking Deck, City of
Elizabeth, County of Union, New Jersey**

Phase 1

BA#5-2023; Union County Engineering Project# 2019-026

October 2023

**UNION COUNTY
BOARD OF COUNTY COMMISSIONERS**

Sergio Granados Chairman
Kimberly Palmieri-Mouded, Vice Chair
James E. Baker, Jr., Commissioner
Joseph C. Bodek, Commissioner
Dr. Angela R. Garretson, Commissioner
Bette Jane Kowalski, Commissioner
Lourdes M. Leon, Commissioner
Alexander Mirabella, Commissioner
Rebecca Williams, Commissioner

CLERK OF THE BOARD

James E. Pellettiere, RMC

COUNTY MANAGER

Edward T. Oatman

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

Joseph J. Policay, Jr., CPWM
Assistant Director, Department of Engineering, Public Works and
Facilities Management

**COUNTY ENGINEER
DIVISION OF ENGINEERING**

Ricardo Matias, PE, CME, CFM

Prepared by:

USA Architects, Planners and Interior Designers, Ltd.
20 North Doughty Avenue
Somerville, New Jersey
(T) 908-722-2300
Andrew P. Adornato, AIA

**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 **November 14, 2023 at 10:30 a.m.**, prevailing time, in the **3rd Floor Conference Room**, U.C. Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey for:

**Union County Courthouse Parking Deck, City of Elizabeth,
County of Union, New Jersey
Phase 1
BA#5-2023; Union County Engineering Project# 2019-026**

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.

Bidders on this project are required to be pre-classified by the State of NJ, Division of Property Management and Construction (DPMC) under classifications #C008 (General Construction), #C021 (Demolition), C030 (Plumbing), #C047 (Electrical) and C092 (Asbestos Removal/Treatment) 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.

Please note the successful bidder will be required to sign a *PROJECT LABOR AGREEMENT (PLA)* for this project. A form PLA is included in the bid package for your review. Further, take note of all documents referring to the PLA and any action required on same.

A **pre-bid meeting** will be held on October 17, 2023 at 11:00 am. **ATTENDANCE TO THIS PRE-BID MEETING IS HIGHLY RECOMMENDED!** The meeting will be held at the Union County Facilities Management Conference Room, located to the right of the rear main entrance of the Union County Courthouse, 2 Broad Street, City of Elizabeth, New Jersey. Specific questions regarding the project will be addressed at the pre-bid meeting.

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. If hand delivered, please note that parking and security access at the County Complex may cause delays and bidders should take them into consideration in order to submit a timely bid. **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.

MICHELLE HAGOPIAN, ASSISTANT DIRECTOR OF PURCHASING

***Union County Board of County Commissioners
We're Connected to You!***

NB-1

**Union County Courthouse Parking Deck, City of Elizabeth,
County of Union, New Jersey, Phase 1
BA#5-2023; Union County Engineering Project# 2019-026**

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- Section 5: OBLIGATION OF BIDDER TO INSPECT SITE AND CONTRACT DOCUMENTS
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Section 56: NEW JERSEY SALES AND USE TAX REQUIREMENTS

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Section 58: FEDERAL TERMS

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Bid Form

Consent of Surety

Bidder Signature Page

Bidder Disclosure Statement

Subcontractor Identification Statement: List of Subcontractors

Subcontractor Identification Certification

Acknowledgement of Addendum

Contractor Business Registration Certificate

Affirmative Action Requirement

Experience Statement

Certificate of Bidder Showing Ability to Perform Contract

Non-Collusion Affidavit

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Revised: 2022.01.12

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 Certificate of Insurance Statement
 Collection of Use Tax on Sales to Local Governments Statement
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 Byrd Anti-Lobbying Amendment Certification
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INSURANCE AND BONDS AIA DOCUMENT A-101/2017 EXHIBIT A

(Sample form until contract is awarded)

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(Sample form until contract is awarded)

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Appendix B: Civil Specifications

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A-2	Demolition + Floor Plans + Details (Annex)

CIVIL

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C-2.00	Existing Conditions Plan
C-3.00	Demolition Plan
C-4.00	Traffic Control
C-500	Site Plan
C-6.00	Soil Erosion and Sediment Control Plan
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C-7.01	Construction Details II
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**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: Michelle Hagopian, Assistant Director, Division of Purchasing
Telephone: 908-527-4130
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ucbids@ucnj.org

TITLE OF PROJECT: **Union County Courthouse Parking Deck, City of Elizabeth,
County of Union, New Jersey, Phase 1
BA#5-2023; Union County Engineering Project# 2019-026**

BIDDER: Bidder shall be a single overall contract bidder

ENGINEER:

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

COUNTY ENGINEER:

Ricardo S. Matias, PE, CME, CFM
Union County
Division of Engineering

CONSTRUCTION MANAGER:

Mast Construction Services
96 E. Main Street
Little Falls, NJ 07424

ARCHITECT:

USA Architects, Planners and Designers, Ltd.
20 North Doughty Avenue
Somerville, NJ 08876

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 Contractor'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 Assistant Director, Division of Purchasing at ucbids@ucnj.org 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 Assistant Director, Division of Purchasing at ucbids@ucnj.org, 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 Office of the Division of Purchasing 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 Assistant Director, Division of Purchasing 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.

10. 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.

11. 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, defend, 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.”

12. 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.

13. 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".

14. 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.

15. 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.

16. 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.

17. 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)

18. 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.

19. 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.

20. 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 56 of these General Specifications.

UNION LABOR IS PREFERRED ON ALL COUNTY WORK AND, WHERE NOTED, SUBJECT TO A PROJECT LABOR AGREEMENT TO BE EXECUTED BY THE CONTRACTOR AND CONSTRUCTION MANAGER PRIOR TO COMMENCEMENT OF

THE WORK. FAILURE OF ANY CONTRACTOR TO COMPLY WITH THIS PROVISION CONSTITUTES A DEFAULT, RESULTING IN IMMEDIATE STOPPAGE OF THE WORK. ANY LOSSES OR OTHER DAMAGES INCURRED BY OTHER PARTIES AS A RESULT OF SAID DEFAULT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

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)

21. 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.

22. 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.

23. 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.

24. 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.

25. 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.

26. 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.

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. 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.

34. PERMITS

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

35. 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.

36. 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".

37. 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.

38. 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.

39. 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.

40. 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.

41. 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.

42. 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.

43. AFFIRMATIVE ACTION REQUIREMENTS

(REVISED 01/2022)

EXHIBIT B

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE

N.J.S.A. 10:5-31 et seq. (P.L.1975, c.127)

N.J.A.C. 17:27-1.1 et seq.

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, 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 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 Dept. of LWD, Construction EEO Monitoring Program, 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 Dept. of LWD, Construction EEO Monitoring Program is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Dept. of LWD, Construction EEO Monitoring Program, 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 Dept. of LWD, Construction EEO Monitoring Program, 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 nondiscrimination 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 Dept. of LWD, Construction EEO Monitoring Program. 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 Dept. of LWD, Construction EEO Monitoring Program, 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 Dept. of LWD, Construction EEO Monitoring Program.

(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 Dept. of LWD, Construction EEO Monitoring Program and submitted promptly to the Dept. of LWD, Construction EEO Monitoring Program 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 Dept. of LWD, Construction EEO

Monitoring Program an initial project workforce report (Form AA-201) electronically provided to the public agency by the Dept. of LWD, Construction EEO Monitoring Program, 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 Dept. of LWD, Construction EEO Monitoring Program, 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 Dept. of LWD, Construction EEO Monitoring Program as may be requested by the Dept. of LWD, Construction EEO Monitoring Program 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 Dept. of LWD, Construction EEO Monitoring Program for conducting a compliance investigation pursuant to N.J.A.C. 17:27-1.1 et seq.

44. 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.

45. 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.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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.

Proof of registration 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.

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.

51. PROJECT LABOR AGREEMENT (To be signed where the overall project cost exceeds \$5 Million, irrespective of Phasing)

An Executive Order of Governor James E. McGreevey dated January 17, 2002, requires the use of a Project Labor Agreement in public construction contracts. This Executive Order was codified as N.J.S.A. 52:38-1 et seq. as a result of P.L. 2002, Chapter 44. Contractor must be prepared to abide by the terms of the within Project Labor Agreement, including obtaining the necessary and applicable Letters of Assent from subcontractors (of any tier). Through said Letters of Assent the subcontractors (of any tier) also must be prepared to abide by the terms of the Project Labor Agreement.

Contractor's failure to enter into this Project Labor Agreement shall result in the County's valid refusal to enter into a contract, for the performance of the Work with Contractor and shall constitute a default under the Contract. In addition, Contractor will be required to submit the completed Letters of Assent to the County with the executed Project Labor Agreement. The Project Labor Agreement is to be executed only where the total Project cost is \$5 Million or more, irrespective of Phasing.

ARTICLE 1 - PREAMBLE

WHEREAS, the COUNTY OF UNION, on behalf of itself, and Project Management Firms ("PMF") acting as Construction Managers, and reflecting the objectives of the COUNTY OF UNION ("UC"), as Owner, desires to provide for the efficient, safe, quality, and timely completion of a construction project for the County in a manner designed to afford lower reasonable costs to Union County, the Union County Freeholder Board, and the Public it represents, and the advancement of public policy objectives; **(See Project Labor Agreement attached)**

WHEREAS, this Project Labor Agreement will foster the achievement of these goals, inter alia by:

- (1) ensuring a reliable source of skilled and experienced labor;
- (2) standardizing the terms and conditions governing the employment of labor on the Project;
- (3) permitting wide flexibility in Work scheduling and shift hours and times; from those which otherwise might obtain;
- (4) receiving negotiated adjustments as to Work rules and staffing requirements from those which otherwise might obtain;
- (5) providing comprehensive and standardized mechanisms for the settlement of Work disputes, including those relating to jurisdiction;
- (6) avoiding the costly delays of potential strikes, slowdowns,

- walkouts, picketing and other disruptions arising from Work disputes, and promote labor harmony and peace for the duration of the Projects.
- (7) furthering public policy objectives as to improved employment opportunities for minorities, women and the economically disadvantaged in the construction industry;
 - (8) expediting the construction process; and,

WHEREAS, the signatory Unions desire the stability, security and Work opportunities afforded by a Project Labor Agreement; and

WHEREAS, the Parties desire to maximize Project safety conditions for both workers and the public,

NOW, THEREFORE, the Parties enter into this Agreement:

SECTION 1. PARTIES TO THE AGREEMENT

This is a Project Labor Agreement ("Agreement") entered into by and between UC and its successors and assigns, General Contractors to be named, for certain construction Work to be performed on construction performed pursuant to the "Local Public Contracts Law" in the State of New Jersey and by the Union County Building and Construction Trades Council, AFL-CIO, on behalf of itself and its affiliates and members.

ARTICLE 2 - GENERAL CONDITIONS

SECTION 1. DEFINITIONS

Throughout this Agreement, the Union party and the Building Trades Council are referred to singularly and collectively as "the Union(s)" where specific reference is made to "Local Unions" that phrase is sometimes used; the term "Contractor(s)" shall include the Project Management Firm and all signatory Contractors, and their subcontractors of whatever tier, engaged in on-site Project construction Work within the scope of this Agreement as defined in Article 3; County of Union (UC) is referenced as (Owner); the Union County Building and Construction Trades Council, AFL-CIO is referenced as the BTC, and the Work covered by this Agreement (as defined in Article 3) is referred to as the "Project".

SECTION 2. CONDITIONS FOR AGREEMENT TO BECOME EFFECTIVE

The Agreement shall not become effective unless executed by the BTC, the PMF, and the General Contractor and will remain in effect until the **final** completion of the **Project**.

SECTION 3. ENTITIES BOUND & ADMINISTRATION OF AGREEMENT

This Agreement shall be binding on all signatory Unions and the Project Management Firms and all signatory Contractors performing on-site Project Work, including site preparation and staging areas, as defined in Article 3. The Contractors shall include in any subcontract that they let, for performance during the term of this Agreement, a requirement that their subcontractors, of whatever tier, become signatory and bound by this Agreement with respect to subcontracted Work performed within the scope of Article 3. This Agreement shall be administered by the PMF on behalf of all Contractors.

SECTION 4. SUPREMACY CLAUSE

This Agreement, together with the local Collective Bargaining Agreements appended hereto as Schedule A represents the complete understanding of all signatories and supersedes any national agreement, local agreement or other collective bargaining agreement of any type which would otherwise apply to this Project, in whole or in part. Where a subject covered by the provisions, explicit or implicit, of this Agreement is also covered by a Schedule A, the provisions of this Agreement shall prevail. It is further understood that neither the PMF nor any Contractor shall be required to sign any other agreement as a condition of performing Work on this Project. No practice, understanding or agreement between a Contractor and Local Union, which is not explicitly set forth in this Agreement shall be binding on this Project unless endorsed in writing by the PMF.

SECTION 5. LIABILITY

The liability of any Contractor and the liability of any Union under this Agreement shall be several and not joint. The PMF and any Contractor shall not be liable for any violations of this Agreement by any other Contractor and the BTC and Local Unions shall not be liable for any violations of this Agreement by any other Union.

SECTION 6. THE CONSTRUCTION PROJECT MANAGER

UC shall require in its bid specifications for all Work within the scope of Article 3 that all successful bidders, and their subcontractors of whatever tier, become bound by, and signatory to, this Agreement. UC is not a party to and shall not be liable in any manner under this Agreement. It is understood that nothing in this Agreement shall be construed as limiting the sole discretion of UC in determining which Contractors shall be awarded contracts for Project Work. It is further understood that UC has sole discretion at any time to terminate, delay or suspend the Work, in whole or part, on this Project.

SECTION 7. AVAILABILITY AND APPLICABILITY TO ALL SUCCESSFUL BIDDERS

The Unions agree that this Agreement will be made available to, and will fully apply to any successful bidder for Project Work who becomes signatory thereto, without regard to whether that successful bidder performs Work at other sites on either a union or non-union basis and without regard to whether employees of such successful bidder are, or are not, members of any unions. This Agreement shall not apply to the Work of any Contractor or PMF, which is performed at any location other than the Project site, as defined in Article 3, Section 1.

ARTICLE 3 - SCOPE OF THE AGREEMENT

The Project Work covered by this Agreement shall be as defined and limited by the following sections of this Article.

SECTION 1: THE WORK

This Agreement shall apply to building construction conducted by the County of Union pursuant to the "Local Public Contracts Law" in the State of New Jersey. This scope of Work may be amended time to time by UC to include Work not performed under the "Local Public Contracts Law".

The scope of Work is confined to the on-site Project Work contained in the scope of the General Contractor's final construction contract.

SECTION 2. EXCLUDED EMPLOYEES

The following persons are not subject to the provisions of this Agreement, even though performing Work on the Project:

Superintendents, supervisors (excluding superintendents and general supervisors and forepersons specifically covered by a craft's Schedule A), engineers, inspectors and testers (excluding divers specifically covered by a craft's Schedule A), quality control/assurance personnel, timekeepers, mail carriers, clerks, office workers, messengers, guards, non-manual employees, and all professional, engineering, administrative and management persons;

Employees of UC or any State agency, authority or entity or employees of any municipality or county or other public employer;

Employees and entities engaged in off-site manufacture, modifications, repair,

maintenance, assembly, painting, handling or fabrication of project components, materials, equipment or machinery, unless such offsite operations are covered by the New Jersey Prevailing Wage Act by being dedicated exclusively to the performance of the public works contract or building project and are adjacent to the site of Work, or involved in deliveries to and from the Project site, excepting local deliveries of all major construction materials including fill, ready mix, asphalt and item 4 which are covered by this Agreement.

Employees of the PMF or General Contractor, excepting those performing manual, on-site construction labor who will be covered by this Agreement;

Employees engaged in on-site equipment warranty.

Employees engaged in geophysical testing (whether land or water) other than boring for core samples;

Employees engaged in laboratory or specialty testing or inspections;

Employees engaged in ancillary Project Work performed by third parties such as electric utilities, gas utilities, telephone utility companies, and railroads.

SECTION 3. NON-APPLICATION TO CERTAIN ENTITIES

This Agreement shall not apply to the parents, affiliates, subsidiaries, or other joint or sole ventures of any Contractor or of PMF, which do not perform Work at this Project. It is agreed, for the purposes of this Agreement only, that this Agreement does not have the effect of creating any joint employment, single employer or alter ego status among the owners, the PMF and/or any Contractor. The Agreement shall further not apply to UC or any other state or county agency, authority, or other municipal or public entity and nothing contained herein shall be construed to prohibit or restrict UC or its employees of any other state authority, agency or entity and its employees from performing on or off-site Work related to the Project. As the contracts which comprise the Project Work are completed and accepted, the Agreement shall not have further force or effect on such items or areas except where inspections, additions, repairs, modifications, check-out and/or warranty Work are assigned in writing (copy to Local Union involved) by the General Contractor for performance under the terms of this Agreement.

ARTICLE 4 - UNION RECOGNITION AND EMPLOYMENT

SECTION 1. PRE-HIRE RECOGNITION

The Contractors recognize the signatory Unions as the sole and exclusive bargaining representatives of all craft employees who are performing on-site Project Work within the scope of this Agreement as defined in Article 3.

SECTION 2. UNION REFERRAL

- A. The Contractors agree to hire Project, craft employees covered by this Agreement through the job referral systems and hiring halls (where the referrals meet the qualifications set forth in items 1,2, and 4 subparagraph B) established in the Local Unions' area collective bargaining agreements (attached as Schedule A to this Agreement).

Notwithstanding this, the Contractors shall have sole rights to determine the competency of all referrals; the number of employees required (except with regard to pile driving); the selection of employees to be laid-off (subject to the applicable procedures in Schedule A for permanent and/or temporary layoffs and except as provided in Article 5, Section 3); and the sole right to reject any applicant referred by a Local Union, subject to the show-up payments required in the applicable Schedule A. In the event that a Local Union is unable to fill any request for qualified employees within a 48-hour period after such requisition is made by the Contractor (Saturdays, Sundays, and holidays excepted), the Contractor may employ qualified applicants from another competent source. In the event that the Local Union does not have a job referral system, the Contractor shall give the Local Union first preference to refer applicants, subject to the other provisions of this Article. The Contractor shall notify the Local Union of the Project, craft employees hired within its jurisdiction from any source other than referral by the Union.

- B. A Contractor may request by name, and the Local will honor, referral of persons who have applied to the Local for Project Work and who meet the following qualifications as determined by a Committee of 3 designated, respectively, by the applicable Local Union, the PMF and a mutually selected third party or, in the absence of agreement, the permanent arbitrator (or designee) designated in Article 7:
- (1) possess any license required by NJ law for Project Work to be performed;
 - (2) have worked a total of at least 1000 hours in the Construction craft during the prior 3 years;
 - (3) were on the Contractor's active payroll for at least 60 out of the 180 calendar days prior to the contract award;
 - (4) have demonstrated ability to safely perform the basic function of the applicable trade.

No more than 12 per centum of the employees covered by this Agreement, per Contractor by craft, shall be hired through the special provisions above (any fraction shall be rounded to the next highest whole number).

C. A certified MBE/WBE contractor may request from the Workforce Coordinator, through the PMF, an exception to, and waiver of, the above per centum limitation upon the number of its employees to be hired through the special provision of Section 2.B above. This exception is based upon hardship and demonstration by the contractor that the Project Work would be the contractor's only job and that it would be obliged to lay off qualified minority and female employees in its current workforce moving from the last job.

The exception and waiver are also conditioned upon the employees meeting the qualifications as set forth in Section 2.B above.

SECTION 3. NON-DISCRIMINATION IN REFERRALS

The Unions represent that their hiring halls and referral systems will be operated in a non-discriminatory manner and in full compliance with all applicable federal, state and local laws and regulations, which require equal employment opportunities. Referrals shall not be affected in any way by the rules, regulations, bylaws, constitutional provisions or any other aspects or obligations of union membership, policies or requirements and shall be subject to such other conditions as are established in this Article. No employment applicant shall be discriminated against by any referral system or hiring hall because of the applicant's union membership, or lack thereof.

SECTION 4. MINORITY AND FEMALE REFERRALS

In the event a Union either fails, or is unable, to refer qualified minority or female applicants in percentages equaling Project affirmative action goals as set forth in UC's bid specifications, the Contractor may employ qualified minority or female applicants from any other available source as Apprentice Equivalents. Apprentice Equivalents will have completed a DOL approved training program, applied to take a construction Apprenticeship test, and will be paid at not less than the applicable equivalent Apprentice rate. With the approval of the Local Administrative Committee (LAC), experience in construction related areas may be accepted as meeting the above requirements.

SECTION 5. CROSS AND QUALIFIED REFERRALS

The Unions shall not knowingly refer to a Contractor an employee then employed by another Contractor working under this Agreement. The Local Unions will exert their utmost efforts to recruit sufficient numbers of skilled and qualified craft employees to fulfill the requirements of the Contractor.

SECTION 6. UNION DUES / WORKING ASSESSMENTS

All employees covered by this Agreement shall be subject to the union security

provisions contained in the applicable Schedule A local agreements, as amended from time to time, but only for the period of time during which they are performing on-site Project Work and only to the extent of rendering payment of the applicable union dues and assessments uniformly required for union membership in the Local Union, signatory to this Agreement, which represents the craft in which the employee is performing Project Work. No employee shall be discriminated against at the Project site because of the employee's union membership or lack thereof. In the case of unaffiliated employees, the dues payment can be received by the Unions as a working assessment fee.

SECTION 7. CRAFT FOREPERSONS AND GENERAL FOREPERSONS

The selection of craft forepersons and/or general forepersons and the number of forepersons required shall be solely the responsibility of the Contractor except where otherwise provided by specific provisions of an applicable Schedule A. All forepersons shall take orders exclusively from the designated Contractor representatives. Craft foreperson shall be designated as working forepersons at the request of the Contractor, except when an existing local Collective Bargaining Agreement prohibits a foreperson from working when the craftsperson he is leading exceed a specified number.

ARTICLE 5 - UNION REPRESENTATION

SECTION 1. LOCAL UNION REPRESENTATIVE

Each Local Union representing on-site Project employees shall be entitled to designate, in writing (copy to General Contractor involved and the PMF), one representative, and the Business Manager, who shall be afforded access to the Project.

SECTION 2. STEWARDS

- A. Each Local Union shall have the right to designate a working journey person as a Steward and an alternate, and shall notify the Contractor and PMF of the identity of the designated Steward (and alternate) prior to the assumption of such duties. Stewards shall not exercise supervisory functions and will receive the regular rate of pay for their craft classifications. There will be no non-working Stewards on the Project.
- B. In addition to their Work as an employee, the Steward shall have the right to receive complaints or grievances and to discuss and assist in their adjustment with the Contractor's appropriate supervisor. Each Steward shall be concerned with the employees of the Steward's Contractor and, if applicable, subcontractors of that Contractor, but not with the employees of any other

Contractor. The Contractor will not discriminate against the Steward in the proper performance of Union duties.

- B. The Stewards shall not have the right to determine when overtime shall be worked, or who shall work overtime, except pursuant to a Schedule A provision providing procedures for the equitable distribution of overtime.

SECTION 3. LAYOFF OF A STEWARD

Contractors agree to notify the appropriate Union, 24 hours prior to the layoff of a Steward, except in cases of discipline or discharge for just cause. If a Steward is protected against layoff by a Schedule A, such provisions shall be recognized to the extent the Steward possesses the necessary qualifications to perform the Work required. In any case in which a Steward is discharged or disciplined for just cause, the Local Union involved shall be notified immediately by the Contractor.

ARTICLE 6 - MANAGEMENT'S RIGHTS

SECTION 1. RESERVATION OF RIGHTS

Except as expressly limited by a specific provision of this Agreement, Contractors retain full and exclusive authority for the management of their Project operations including, but not limited to: the right to direct the work force, including determination as to the number to be hired and the qualifications therefore; the promotion, transfer, layoff of its employees; or the discipline or discharge for just cause of its employees; the assignment and schedule of Work; the promulgation of reasonable Project Work rules; and, the requirement, timing and number of employees to be utilized for overtime work. No rules, customs, or practices, which limit or restrict productivity or efficiency of the individual, as determined by the Contractor, GC or PMF, and/or joint working efforts with other employees shall be permitted or observed.

SECTION 2. MATERIALS, METHODS & EQUIPMENT

There shall be no limitations or restriction upon the Contractors' choice of materials, techniques, methods, technology or design, or, regardless of source or location, upon the use and installation of equipment, machinery, package units, pre-cast, pre-fabricated, pre-finished, or pre-assembled materials, tool, or other labor-saving devices. Contractors may, without restriction, install or use materials, supplies or equipment regardless of their source. The on-site installation or application of such items shall be performed by the craft having jurisdiction over such Work; provided, however, it is recognized that other personnel having special qualifications may participate, in a supervisory capacity, in the installation, check-out or testing of specialized or unusual

equipment or facilities as designated by the Contractor. Notwithstanding the foregoing statement of Contractor rights, prefabrication issues relating to work traditionally performed at the job site shall be governed pursuant to the terms of the applicable Schedule A. There shall be no restrictions as to Work, which is performed off-site for the Project, except for work done in a fabrication center, tool yard, or batch plant dedicated exclusively to the performance of Work on the Project, and located adjacent to the “site of Work”.

ARTICLE 7 - WORK STOPPAGES AND LOCKOUTS

SECTION 1. NO STRIKES-NO LOCKOUT

There shall not be strikes, sympathy strikes, picketing, work stoppages, slowdowns, hand billing, demonstrations or other disruptive activity at the Project for any reason by any Union or employee against any Contractor or employer while performing Work at the Project. There shall be no other Union, or concerted or employee activity which disrupts or interferes with the operation of the existing free flow of traffic in the project area. Failure of any Union or employee to cross any picket line established by any union, signatory or non-signatory to this Agreement, or the picket or demonstration line of any other organization, at or in proximity to the Project site is a violation of this Article. There shall be no lockout at the Project by any signatory Contractor. Contractors and Unions shall take all steps necessary to ensure compliance with this Section 1 and to ensure uninterrupted construction and the free flow of traffic in the project area for the duration of this Agreement.

SECTION 2. DISCHARGE FOR VIOLATION

A Contractor may discharge any employee violating Section 1 above, and any such employee will not be eligible thereafter for referral under this Agreement for a period of 100 days.

SECTION 3. NOTIFICATION

If a Contractor contends that any Union has violated this Article, it will notify the appropriate district or area council of the Local Union involved advising of such fact, with copies of the notification to the Local Union and the BTC. The district or area council, and the BTC shall each instruct, order and otherwise use their best efforts to cause the employees, and/or the Local Unions to immediately cease and desist from any violation of this Article. A district or area council, or the BTC complying with these obligations shall not be liable for the unauthorized acts of a Local Union or its members.

SECTION 4. EXPEDITED ARBITRATION

Any Contractor or Union alleging a violation of Section 1 of this Article may utilize the expedited procedure set forth below (in lieu of, or in addition to, any actions at law or equity) that may be brought.

- A. A party invoking this procedure shall notify J.J. Pierson who shall serve as Arbitrator under this expedited arbitration procedure. Copies of such notification will be simultaneously sent to the alleged violator and, if a Local Union is alleged to be in violation, it's International, UC, the PMF, the BTC, and the GC.
- B. The Arbitrator shall thereupon, after notice as to time and place to the Contractor, the GC, the Local Union involved, the BTC, and the PMF, hold a hearing within 48 hours of receipt of the notice invoking the procedure it is contended that the violation still exists. The hearing will not, however, be scheduled for less than 24 hours after the notice to the district or area council required by Section 3 above.
- C. All notices pursuant to this Article may be by telephone, telegraph, hand delivery, or fax, confirmed by overnight delivery, to the arbitrator, Contractor or Union involved. The hearing may be held on any day including Saturdays or Sundays. The hearing shall be completed in one session, which shall not exceed 8 hours duration (no more than 4 hours being allowed to either side to present their case, and conduct their cross examination) unless otherwise agreed. A failure of any Union or Contractor to attend the hearing shall not delay the hearing of evidence by those present or the issuance of an award by the Arbitrator.
- D. The sole issue at the hearing shall be whether a violation of Section 1, above, occurred. If a violation is found to have occurred, the Arbitrator shall issue a Cease and Desist Award restraining such violation and serve copies on the Contractor and Union involved. The Arbitrator shall have no authority to consider any matter in justification, explanation or mitigation of such violation or to award damages, which issue is reserved solely for court proceedings, if any. The Award shall be issued in writing within 3 hours after the close of the hearing, and may be issued without an Opinion. If any involved party desires an Opinion, one shall be issued within 15 calendar days, but its issuance shall not delay compliance with, or enforcement of, the Award.
- E. An Award issued under this procedure may be enforced by any court of competent jurisdiction upon the filing of the Agreement together with the Award. Notice of the filing of such enforcement proceedings shall be given to

the Union or Contractor involved. In any court proceeding to obtain a temporary or preliminary order enforcing the arbitrator's Award as issued under this expedited procedure, the involved Union and Contractor waive their right to a hearing and agree that such proceedings may be ex parte, provided notice is given to opposing counsel. Such agreement does not waive any party's right to participate in a hearing for a final court order of enforcement or in any contempt proceeding.

- F. Any rights created by statute or law governing arbitration proceedings which are inconsistent with the procedure set forth in this Article, or which interfere with compliance thereto, are hereby waived by the Contractors and Unions to whom they accrue.

- G. The fees and expenses of the Arbitrator shall be equally divided between the involved Contractor and Union.

SECTION 5. ARBITRATION OF DISCHARGES FOR VIOLATION

Procedures contained in Article 9 shall not be applicable to any alleged violation of this Article, with the single exception that an employee discharged for violation of Section 1, above, may have recourse to the procedures of Article 9 to determine only if the employee did, in fact, violate the provisions of Section 1 of this Article; but not for the purpose of modifying the discipline imposed where a violation is found to have occurred.

ARTICLE 8. - LOCAL ADMINISTRATIVE COMMITTEE (LAC)

SECTION 1. THE LOCAL ADMINISTRATIVE COMMITTEE WILL MEET ON A REGULAR BASIS TO:

- (1) Implement and oversee the Agreement procedures and initiatives;
- (2) Monitor the effectiveness of the Agreement; and
- (3) Identify opportunities to improve efficiency and Work execution.

SECTION 2. COMPOSITION

The LAC will be co-chaired by the President of the Building and Construction Trades Council or his designee, and designated official of UC. It will be comprised of representatives of the local unions signatory to the project labor agreement (PLA) and representatives of the PMF and other contractors on the Project.

ARTICLE 9 - GRIEVANCE & ARBITRATION PROCEDURE

SECTION 1. PROCEDURE FOR RESOLUTION OF GRIEVANCES

Any question, dispute or claim arising out of, or involving the interpretation or application of this Agreement (other than jurisdictional disputes or alleged violations of Article 7, Section 1) shall be considered a grievance and shall be resolved pursuant to the exclusive procedure of the steps described below; provided, in all cases, that the question, dispute or claim arose during the term of this Agreement.

Step 1:

- (a) When any employee covered by this Agreement feels aggrieved by a claimed violation of this Agreement, the employee shall, through the Local Union business representative or job steward give notice of the claimed violation to the Work site representative of the involved Contractor. To be timely, such notice of the grievance must be given within 7 calendar days after the act, occurrence, or event giving rise to the grievance, or after the act, occurrence or event became known

or should have become known to the Union. The business representative of the Local Union or the job steward and the Work site representative of the involved Contractor shall meet and endeavor to adjust the matter within 7 calendar days after timely notice has been given. If they fail to resolve the matter within the prescribed period, the grieving party, may, within 7 calendar days thereafter, pursue Step 2 of the grievance procedure by serving the involved Contractor and the General Contractor with written copies of the grievance setting forth a description of the claimed violation, the date on which the grievance occurred, the provisions of the Agreement alleged to have been violated. Grievances and disputes settled at Step 1 are non-precedential except as to the specific Local Union, employee and Contractor directly involved, unless the settlement is accepted in writing, by the General Contractor, as creating a precedent.

- (b) Should any signatory to this Agreement have a dispute (excepting jurisdictional disputes or alleged violations of Article 7, Section 1) with any other signatory to this Agreement and, if after conferring, a settlement is not reached within 7 calendar days, the dispute shall be reduced to writing and proceed to Step 2 in the same manner as outlined in subparagraph (a) for the adjustment of employee grievances.

Step 2:

The Business Manager or designee of the involved Local Union, together with representatives of the BTC, the involved Contractor, and the General Contractor shall meet in Step 2 within 5 calendar days of the written grievance to arrive at a satisfactory settlement.

Step 3:

- (a) If the grievance shall have been submitted but not resolved in Step 2, any of the participating Step 2 entities may, within 14 calendar days after the initial Step 2 meeting, submit the grievance in writing (copies to other participants) to J.J. Pierson, who shall act as the Arbitrator under this procedure. The Labor Arbitration Rules of the American Arbitration Association shall govern the conduct of the arbitration hearing, at which all Step 2 participants shall be parties. The decision of the Arbitrator shall be final and binding on the involved Contractor, Local Union and employees and the fees and expenses of such arbitration's shall be borne equally by the involved Contractor and Local Union.

- (b) Failure of the grieving party to adhere to the time limits set forth in this Article shall render the grievance null and void. These time limits may be extended only by written consent of the PMF, involved Contractor and involved Local Union at the particular step where the extension is agreed upon. The Arbitrator shall have authority to make decisions only on the issues presented to him and shall not have the authority to change, add to, delete or modify any provision of this Agreement.

SECTION 2. LIMITATION AS TO RETROACTIVITY

No arbitration decision or award may provide retroactivity of any kind exceeding 30 calendar days prior to the date of service of the written grievance on the construction Project Manager and the involved Contractor or Local Union.

SECTION 3. PARTICIPATION BY GENERAL CONTRACTOR

The General Contractor shall be notified by the involved Contractor of all actions at Steps 2 and 3 and, at its election, may participate in full in all proceedings at these Steps, including Step 3 arbitration.

ARTICLE 10 - JURISDICTIONAL DISPUTES

SECTION 1. NO DISRUPTIONS

There will be no strikes, sympathy strikes, work stoppages, slowdowns, picketing or other disruptive activity of any kind arising out of any jurisdictional dispute. Pending the resolution of the dispute, the Work shall continue uninterrupted and as assigned by the Contractor. No jurisdictional dispute shall excuse a violation of Article 7.

SECTION 2. ASSIGNMENT

- A. There shall be a mandatory pre-job markup/assignment meeting prior to the commencement of any Work. Attending such meeting shall be designated representatives of the Union signatories to this Agreement, the PMF, and the involved Contractors. Best efforts will be made to schedule the pre-job meeting in a timely manner after Notice to Proceed is issued but not later than 30 days prior to the start of the Project.

- C. All Project construction Work assignments shall be made by the Contractor according to the area practice.

SECTION 3. PROCEDURE FOR SETTLEMENT OF LABOR DISPUTES

- A. Any Union having a jurisdictional dispute with respect to Project Work assigned to another Union will submit the dispute in writing to the Administrator, Plan for the Settlement of Jurisdictional Disputes in the Construction Industry ("the Plan") within 72 hours and send a copy of the letter to the other Union involved, the Contractor involved, the General Contractor, the BTC, and the district or area councils of the unions involved. Upon receipt of a dispute letter from any union, the Administrator will invoke the procedures set forth in the Plan to resolve the jurisdictional dispute. The jurisdictional dispute letter shall contain the information described in Article IV of the Plan.

- B. Within 5 calendar days of receipt of the dispute letter, there shall be meeting of the General Contractor, the Contractor involved, the Local Unions involved and designees of the BTC and the district or area councils of the Local Unions involved for the purpose of resolving the jurisdictional dispute.

- C. In order to expedite the resolution of jurisdictional disputes, the parties have agreed in advance to select Plan Arbitrator Pierson to hear all unsolved jurisdictional disputes arising under this Agreement. All other rules and procedures of the Plan shall be followed. If Plan Arbitrator Pierson is not

available to hear the dispute within the time limits of the Plan, the Plan's arbitrator selection process shall be utilized to select another arbitrator. In the event that a union involved in the dispute is not a member of the BTC, the dispute shall be submitted directly to Arbitrator Pierson.

- D. The Arbitrator will render a short-form decision within 5 days of the hearing based upon the evidence submitted at the hearing, with a written decision to follow within 30 days of the close of hearing.
- E. This Jurisdictional Dispute Resolution Procedure will only apply to Work performed by Local Unions at the Project.
- F. Any Local Union involved in a jurisdictional dispute on this Project shall continue working in accordance with Section 2 above and without disruption of any kind.

SECTION 4. AWARD

Any jurisdictional award pursuant to Section 3 shall be final and binding on the disputing Local Unions and the involved Contractor on this Project only, and may be enforced in any court of competent jurisdiction. Such award or resolution shall not establish a precedent on any other construction work not covered by this Agreement. In all disputes under this Article, the General Contractor and the involved Contractors shall be considered parties in interest.

SECTION 5. LIMITATIONS

The Jurisdictional Dispute Arbitrator shall have no authority to assign Work to a double crew, that is, to more employees than the minimum required by the Contractor to perform the Work involved; nor to assign Work to employees who are not qualified to perform the Work involved; not to assign Work being performed by non-union employees to union employees. This does not prohibit the establishment, with the agreement of the involved Contractor, of composite crews where more than 1 employee is needed for the job. The aforesaid determinations shall decide only to whom the disputed Work belongs.

SECTION 6. NO INTERFERENCE WITH WORK

There shall be no interference or interruption of any kind with the Work of the Project while any jurisdictional dispute is being resolved. The Work shall proceed as assigned by the Contractor until finally resolved under the applicable procedure of this Article. The award shall be confirmed in writing to the involved parties. There shall be no strike, work stoppage or interruption in protest of any such award.

ARTICLE 11 - WAGES AND BENEFITS

SECTION 1. CLASSIFICATION AND BASE HOURLY RATE

All employees covered by this Agreement shall be classified in accordance with the Work performed and paid the base hourly wage rates for those classifications as specified in the attached Schedules A, as amended during this Agreement. Recognizing, however, that special conditions may exist or occur on the Project, the parties, by mutual agreement may establish rates and/or hours for one or more classifications, which may differ from Schedules A. Parties to such agreements shall be the General Contractor, the Contractor involved, the involved Local Unions and the BTC.

SECTION 2. EMPLOYEE BENEFIT FUNDS

- A. The Contractors agree to pay contributions on behalf of all employees covered by this Agreement to the established employee benefit funds in the amounts designated in the appropriate Schedule A; provided, however, that the Contractor and the Union agree that only such bona fide employee benefits as are explicitly required under N.J.S.A 34:11-56.30 of the New Jersey State Labor Law shall be included in this requirement and paid by the Contractor on this Project. Bona fide jointly trusted fringe benefit plans established or negotiated through collective bargaining during the life of this Agreement may be added if similarly protected under N.J.S.A. 34:11-56-30. Contractors shall not be required to contribute to non-N.J.S.A 34:11-56.30 benefits, trusts or plans.

- D. The Contractor agrees to be bound by the written terms of the legally established Trust Agreements specifying the detailed basis on which payments are to be paid into, and benefits paid out of, such Trust Funds but only with regard to Work done on this Project and only for those employees to whom this Agreement requires such benefit Payments.

- D. Should any Contractor or sub-contractor become delinquent in the payment of contributions to the fringe benefit funds, then the subcontractor at the next higher tier, or upon notice of the delinquency claim from the Union or the Funds, agrees to withhold from the subcontractor such disputed amount from the next advance, or installment payment for Work performed until the dispute has been resolved.

ARTICLE 12 - HOURS OF WORK, PREMIUM PAYMENTS, SHIFTS AND HOLIDAYS

SECTION 1. WORK WEEK AND WORK DAY

- A. The standard work week shall consist of 40 hours of work at straight time rates per one of the following schedules:
 - 1) Five-Day Work Week: Monday-Friday, 5 days, 8 hours plus 1/2 hour unpaid lunch period each day.
 - (2) Four-Day Work Week: Monday-Thursday; 4 days, 10 hours plus 1/2 hour unpaid lunch period each day.

- B. The Day Shift shall commence between the hours of 6:00 a.m. and 9:00 a.m. and shall end between the hours of 2:30 p.m. and 7:30 p.m. Starting and quitting times shall occur at the employees' place of work as may be designated by the Contractor.

- C. Scheduling - The Contractor shall have the option of scheduling either a five-day work week, or four-day work week (when mutually agreed upon on a craft-by-craft basis). The Contractor shall also have the option to set the work day hours consistent with Project requirements, the Project schedule, and minimization of interference with County operations traffic flow. When conditions beyond the control of the Contractor, such as severe weather, power failure, fire or natural disaster, prevent the performance of Project Work on a regularly scheduled work day, the Contractor may, with mutual agreement of the Local Union on a craft-by-craft basis, schedule Friday (where on 4, 10's) during the calendar week in which a workday was lost, at straight time pay; providing the employees involved work a total of 40 hours or less during that work week.

- D. Notice - Contractors shall provide not less than 5 days prior notice to the Local Union involved as to the work week and work hours schedules to be worked or such lesser notice as may be mutually agreed upon.

SECTION 2. OVERTIME

Overtime pay for hours outside of the standard work week and work day, described in paragraph A above, shall be paid in accordance with the applicable Schedule A. There will be no restriction upon the Contractor's scheduling of overtime or the non-discriminatory designation of employees who shall be worked, except as noted in Article 5, Section 2. There shall be no pyramiding of overtime pay under any circumstances. The Contractor shall have the right to schedule work so as to minimize overtime.

SECTION 3. SHIFTS

- A. Flexible Schedules - Scheduling of shift work shall remain flexible in order to meet Project schedules and existing Project conditions including the minimization of interference with County operations. It is not necessary to work a day shift in order to schedule a second shift. Shifts must be worked a minimum of five consecutive work days, must have prior approval of the Construction Project Manager and must be scheduled with not less than five work days notice to the Local Union.
- B. Second/Shift - The second shift (starting between 2 p.m. and 8p.m.) shall consist of 8 hours work (or 10 hours of work) for an equal number of hours pay at the straight time rate plus 15% in lieu of overtime and exclusive of a 1/2 hour unpaid lunch period.
- C. Flexible Starting Times - Shift starting times will be adjusted by the Contractor as necessary to fulfill Project requirements subject to the notice requirements of paragraph A.
- D. Four Tens - When working a four-day work week, the standard work day shall consist of 10 hours work for 10 hours of pay at the straight time rate exclusive of an unpaid 1/2 hour meal period and regardless of the starting time. This provision is applicable to night shifts only, and such night shifts are subject to the shift differential in paragraph B above.
- E. It is agreed that when Project circumstances require a deviation from the above shifts, the involved unions, Contractors and the General Contractor shall adjust the starting times of the above shifts or establish shifts which meet the Project requirements. It is agreed that neither party will unreasonably withhold their agreement.

SECTION 4. HOLIDAYS

- A. Schedule - There shall be 8 recognized holidays on the Project:

New Years Day	Labor Day
Presidents Day	Veterans Day
Memorial Day	Thanksgiving Day
Fourth of July	Christmas Day

*Work shall be scheduled on Good Friday pursuant to the craft's Schedule A.

All said holidays shall be observed on the dates designated by New Jersey State Law. In the absence of such designations, they shall be observed on the calendar date except those holidays which occur on Sunday shall be

observed on the following Monday. Holidays falling on Saturday are to be observed on the preceding Friday.

- B. Payment - Regular holiday pay, if any, and/or premium pay for work performed on such a recognized holiday shall be in accordance with the applicable Schedule A.
- C. Exclusivity - No holidays other than those listed in Section 4-A above shall be recognized nor observed except in Presidential Election years when Election Day is a recognized holiday.

SECTION 5. REPORTING PAY

- A. Employees who report to the Work location pursuant to regular schedule and who are not provided with work or whose work is terminated early by a Contractor, for whatever reason, shall receive minimum reporting pay in accordance with the applicable Schedule A.
- B. When an employee, who has completed their scheduled shift and left the Project site, is "called back" to perform special Work of a casual, incidental or irregular nature, the employee shall receive pay for actual hours worked with a minimum guarantee, as may be required by the applicable Schedule A.
- C. When an employee leaves the job or Work location of their own volition or is discharged for cause or is not working as a result of the Contractor's invocation of Section 7 below, they shall be paid only for the actual time worked.
- D. Except as specifically set forth in this Article there shall be no premiums, bonuses, hazardous duty, high time or other special payments of any kind.
- E. There shall be no pay for time not actually worked except as specifically set forth in this Agreement and except where an applicable Schedule A requires a full weeks pay for forepersons.

SECTION 6. PAYMENT OF WAGES

- A. Payday - Payment shall be made by check, drawn on a New Jersey bank with branches located within commuting distance of the job site. Paychecks shall be issued by the Contractor at the job site by 10 a.m. on Thursdays. In the event that the following Friday is a bank holiday, paychecks shall be issued on Wednesday of that week. Not more than 3 days wages shall be held back in any pay period. Paycheck stubs shall contain the name and business address of the Contractor, together with an itemization of deductions from

gross wages.

- B. Termination-Employees who are laid-off or discharged for cause shall be paid in full for that which is due them at the time of termination. The Contractors shall also provide the employee with a written statement setting forth the date of lay off or discharge.

SECTION 7. EMERGENCY WORK SUSPENSION

A Contractor or PMF may, if considered necessary for the protection of life and /or safety of employees or others, suspend all or a portion of Project Work. In such instances, employees will be paid for actual time worked; provided, however, that when a Contractor request that employees remain at the job site available for Work, employees will be paid for "stand-by" time at their hourly rate of pay.

SECTION 8. INJURY/DISABILITY

An employee who, after commencing Work, suffers a work-related injury or disability while performing work duties, shall received no less than 8 hours wages for that day. Further, the employee shall be rehired at such time as able to return to duties provided there is still work available on the Project for which the employee is qualified and able to perform.

SECTION 9. TIME KEEPING

A Contractor may utilize brassing or other systems to check employees in and out. Each employee must check in and out. The Contractor will provide adequate facilities for checking in and out in an expeditious manner.

SECTION 10. MEAL PERIOD

A Contractor shall schedule an unpaid period of not more than 1/2 hour duration at the Work location between the 3rd and 5th hour of the scheduled shift. A Contractor may, for efficiency of operation, establish a schedule which coordinates the meal periods of two or more crafts. If an employee is required to work through the meal period, the employee shall be compensated in a manner established in the applicable Schedule A.

SECTION 11. BREAK PERIODS

There will be not rest periods, organized coffee breaks or other non-working time established during working hours. Individual coffee containers will be permitted at the employee's Work location. Local area practice will prevail for coffee breaks that are not organized.

ARTICLE 13 – APPRENTICES

SECTION 1. RATIOS

Recognizing the need to maintain continuing supportive programs designed to develop adequate numbers of competent workers in the construction industry and to provide craft entry opportunities for minorities, women and economically disadvantaged non-minority males, Contractors will employ apprentices in their respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured. Contractors may utilize apprentices and such other appropriate classifications as are contained in the applicable Schedule A in a ratio not to exceed 25% of the work force by craft (without regard to whether a lesser ratio is set forth in Schedule A), unless the applicable Schedules A provide for a higher percentage. Apprentices and such other classifications as are appropriate shall be employed in a manner consistent with the provisions of the appropriate Schedule A.

SECTION 2. DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

To assist the Contractors in attaining a maximum effort on this Project, the Unions agree to work in close cooperation with, and accept monitoring by, the New Jersey State and Federal Departments of Labor to ensure that minorities, women, or economically disadvantaged are afforded opportunities to participate in apprenticeship programs which result in the placement of apprentices on this Project. To further ensure that this Contractor effort is attained, up to 50% of the apprentices placed on this Project should be first year, minority, women or economically disadvantaged apprentices. The Local Unions will cooperate with Contractor request for minority, women or economically disadvantaged referrals to meet this Contractor effort.

ARTICLE 14 - SAFETY PROTECTION OF PERSON AND PROPERTY

SECTION 1. SAFETY REQUIREMENTS

Each Contractor will ensure that applicable OSHA requirements and other requirements set forth in the contract documents are at all times maintained on the Project and the employees and Unions agree to cooperate fully with these efforts. Employees must perform their work at all times in a safe manner and protect themselves and the property of the Contractor and the Owner from injury or harm. Failure to do so will be grounds for discipline, including discharge.

SECTION 2. CONTRACTOR RULES

Employees covered by this Agreement shall at all times be bound by the reasonable safety, security, and visitor rules as established by the Contractors and the PMF for this Project. Such rules will be published and posted in conspicuous places throughout the

Project.

SECTION 3. INSPECTIONS

The Contractors and PMF retain the right to inspect incoming shipments of equipment, apparatus, machinery and construction materials of every kind.

ARTICLE 15 - NO DISCRIMINATION

SECTION 1. COOPERATIVE EFFORTS

The Contractors and Unions agree that they will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin or age in any manner prohibited by law or regulation. It is recognized that special procedures maybe established by Contractors and Local Unions and the New Jersey State Department of Labor and Workforce Development for the training and employment of persons who have not previously qualified to be employed on construction projects of the type covered by this Agreement. The parties to this Agreement will assist in such programs and agree to use their best efforts to ensure that the goals for female and minority employment are met on this Project.

SECTION 2. LANGUAGE OF AGREEMENT

The use of the masculine or feminine gender in this Agreement shall be construed as including both genders.

ARTICLE 16 - GENERAL TERMS

SECTION 1. PROJECT RULES

The Project Management Firm and the Contractors shall establish such reasonable Project rules as are appropriate for the good order of the Project, provided they do not violate the terms of this agreement. These rules will be explained at the pre-job conference and posted at the Project site and may be amended thereafter as necessary. Failure of an employee to observe these rules and regulations shall be grounds for discipline, including discharge. The fact that no order was posted prohibiting a certain type of misconduct shall not be a defense to an employee disciplined or discharged for such misconduct when the action taken is for cause.

SECTION 2. TOOLS OF THE TRADES

The welding/cutting torch and chain fall are tools of the trade having jurisdiction over the work performed. Employees using these tools shall perform any of the Work of the trade. There shall be no restrictions on the emergency use of any tools or equipment by

any qualified employee or on the use of any tools or equipment for the performance of work within the employee's jurisdiction.

SECTION 3. SUPERVISION

Employees shall work under the supervision of the craft foreperson or general foreperson.

SECTION 4. TRAVEL ALLOWANCES

There shall be no payments for travel expenses; travel time, subsistence allowance or other such reimbursements or special pay except as expressly set forth in this Agreement and in Schedule A limited to travel expenses.

SECTION 5. FULL WORK DAY

Employees shall be at their staging area at the starting time established by the Contractor and shall be returned to their staging area by quitting time after performing their assigned functions under the supervision of the Contractor. The signatories reaffirm their policy of a fair day's work for a fair day's wage.

SECTION 6. COOPERATION

The Project Management Firm and the Unions will cooperate in seeking any New Jersey statutory Department of Labor and Workforce Development approvals that may be required for implementation of any terms of this Agreement.

ARTICLE 17 - SAVINGS AND SEPARABILITY

SECTION 1. THIS AGREEMENT

In the event that the application of any provision of this Agreement is enjoined, on either an interlocutory or permanent basis, or otherwise found in violation of law, the provision involved shall be rendered, temporarily or permanently, null and void but the remainder of the Agreement shall remain in full force and effect. In such event, the Agreement shall remain in effect for contracts already bid and awarded or in construction where the Contractor voluntarily accepts the Agreement. The parties to this Agreement will enter into negotiations for a substitute provision in conformity with the law and the intent of the parties for contracts to be let in the future.

SECTION 2. THE BID SPECIFICATIONS

In the event that the General Contractor's bid specifications, or other action, requiring

that a successful bidder become signatory to this Agreement is enjoined, on either an interlocutory or permanent basis, or otherwise found in violation of law such requirement shall be rendered, temporarily or permanently, null and void but the Agreement shall remain in full force and effect to the extent allowed by law. In such event, the Agreement shall remain in effect for contracts already bid and awarded or in constructions where the Contractor voluntarily accepts the Agreement. The parties will enter in to negotiations as to modifications to the Agreement to reflect the court action taken and the intent of the parties for contracts to be let in the future.

SECTION 3. NON-LIABILITY

In the event of an occurrence referenced in Section 1 or Section 2 of this Article, neither UC, the Project Management Firm, or any Contractor, or any signatory Union shall be liable, directly or indirectly, for any action taken, or not taken, to comply with any court order, injunction or determination. Project bid specifications will be issued in conformance with court orders in effect and no retroactive payments or other action will be required if the original court determination is ultimately reversed.

SECTION 4. NON-WAIVER

Nothing in this Article shall be construed as waiving the prohibitions of Article 7 as to signatory Contractors and signatory Unions.

ARTICLE 18 – FUTURE CHANGES IN SCHEDULE “A” AREA CONTRACTS

SECTION 1. CHANGES TO AREA CONTRACTS

- A. Schedules “A” to this Agreement shall continue to full force and effect until the Contractor and/or Union parties to the Area Collective Bargaining Agreements which are the basis for Schedules A notify the General Contractor in writing of the mutually agreed upon changes in provisions of such agreements which are applicable to the Project, and their effective dates.
- B. It is agreed that any provisions negotiated into Schedules “A” collective bargaining agreements will not apply to work on this Project than those uniformly required of contractors for construction work normally covered by those agreements; nor shall any provisions be recognized or applied on this Project if it may be construed to apply exclusively, or predominantly, to work covered by this Project Agreement.
- C. Any disagreement between signatories to this Agreement over the incorporation into Schedules “A” of provisions agreed upon in the negotiations of Area Collective Bargaining Agreements shall be resolved

in accordance with the procedure set forth in Article 9 of this Agreement.

SECTION 2. LABOR DISPUTES DURING AREA CONTRACT NEGOTIATIONS

The Unions agree that there will be not strikes, work stoppages, sympathy actions, picketing, slowdowns or other disruptive activity or other violations of Article 7 affecting the Project by any Local Union involved in the renegotiations of Area Local Collective Bargaining Agreements nor shall there be any lock-out on the Project affective a Local Union during the course of such renegotiations.

IN WITNESS WHEREOF the parties hereto have, either individually or by their duly authorized representative, caused this Agreement to be executed and to become effective as of the _____ day of _____, 2023.

ATTEST:

COUNTY OF UNION

By: _____
James E. Pellettier
Clerk of the Board

By: _____
Edward T. Oatman
County Manager

Bruce H. Bergen, ESQ.
County Counsel

ATTEST:

CONTRACTOR

Corporate Secretary/Notary Public

President/Authorized Signatory

Print Name

Print Name

Print Title

ATTEST:

CONSTRUCTION MANAGER FIRM

Corporate Secretary/Notary Public

President/Authorized Signatory

Print Name

Print Name

Print Title

UNION COUNTY BUILDING & CONSTRUCTION TRADES COUNCIL

and on behalf of the following: Asbestos Local #32, Boilermakers Local #28, Bricklayers Local #4, Carpenters Local #715, Electricians Local #102, Elevator Construction Local #1, Ironworkers Local #480, Laborers Local #394, Operating Engineers Local #825, Painters Local #711, Plumbers Local #24, Roofers Local #4, Sheet Metal Workers Local #22, Sheet Metal Workers Local #25, Sheet Metal Workers Local #137, Sprinkler Fitters Local #696, Steam Fitters Local #475, Teamsters Local #408

ATTEST:

Witness

Print Name

LETTER OF ASSENT REQUIRED FROM ALL SUBCONTRACTORS
(OF ANY TIER)

County of Union Project Labor Agreement

The undersigned, as a Contractor(s) or Subcontractor(s) on a Contract which is part of the _____Project, for and in consideration of the award of a Contract to perform Work on said Project, and in further consideration of the mutual promises made in the Project Labor Agreement, a copy of which was received and is acknowledged, hereby:

- (1) On behalf of itself and all its employees, accepts and agrees to be bound by terms and conditions of the Project Labor Agreement, together with any and all amendments and supplements now existing or which are later made thereto, and understands that any act of non-compliance with all such terms and conditions, including but not limited to, evidence of compliance with the pre-employment controlled substance testing, will subject the non-complying Contractor or employee(s) to being prohibited from the Project Site until full compliance is obtained.
- (2) Certified that it has no commitments or agreements, which would preclude its full compliance with the terms and conditions of said Project Labor Agreement.
- (3) Agrees to secure from any Contractor(s) (as defined in said Project Labor Agreement) which is or becomes a Subcontractor(s) (of any tier), a duly executed Letter of Assent in form identical to this document prior to commencement of any Work.

DATED:

Name of Contractor/Company

Signature of Authorized Representative

Print Name and Title

General Contractor

Contract Number (BA#)

*** To be signed if Project is subject to Project Labor Agreement – See Section 51.**

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).

57. RESOLUTION NO. 2014-408

WHEREAS, the County of Union recognizes there is a need to ensure that all work on significant public construction and maintenance contracts is performed by responsible, qualified firms that maintain the capacity, expertise, personnel, and other qualifications and resources necessary to successfully perform public contracts in a timely, reliable, and cost-effective manner; and

WHEREAS, in order to effectuate the purpose of selecting responsible contractors for significant public contracts and to protect Union County's capital investments in such contracts prospective contractors and subcontractors should be required to meet pre-established, clearly-defined, minimum standards relating to contractor responsibility, including retirements and criteria concerning qualifications, competency) expertise, adequacy of resources, including equipment, financial and personnel, and satisfactory records regarding past project performance, safety, legal compliance and business integrity; and

WHEREAS, the County has a compelling interest in assuring that its Public Works Projects meet the highest standard of safety and quality; and

WHEREAS, due to the critical impact that skilled construction craft labor has on public works projects, and due to the limited availability of skilled construction craft labor and imminent craft labor skill shortages, it is necessary to require contractors and subcontractors to participate in established, formal apprenticeship training programs for the purpose of both promoting successful project delivery and ensuring future workforce development; and

WHEREAS, an apprenticeship program is a structured system of training designed to prepare individuals for occupations and lifelong careers in skilled trades and crafts by providing a wage-paying job that incorporates extensive workplace and classroom training under the supervision of experienced workers, in preparation for highly skilled occupations; and

WHEREAS, apprenticeship programs are a critical component in public safety, by ensuring that workers on public projects are properly trained, able, competent and capable craftsmen, and provide assurance of compliance with the County's bid specifications and achieve high quality standards; and

WHEREAS, for an apprenticeship program to be fully effective, the public and private sectors must recognize its value and commit to supporting its mission; and

WHEREAS, Union County has long recognized the value of apprenticeship programs through its support of the Union County Vocational-Technical Schools, which offer training programs to help ensure that Union County will continue to produce a skilled and educated work force in the trade specialties, and thus, strengthen Union County's economy by fostering the development of highly paid trade and craft careers; and

WHEREAS, the use of apprenticeship programs or apprenticeship trained employees on Union County Public Works Projects will serve the dual goal of providing the County with assurance that its public works projects are completed with a well-trained workforce, in a highly skilled and timely fashion, while creating opportunities for careers in the skilled trades and craft industry for County residents; and

WHEREAS, the County of Union also recognizes that it is beneficial to their employees to utilize fair business, employment, and training practices that have a positive impact on local communities affected by such contracts:

NOW, THEREFORE, BE IT RESOLVED by the Board of Chosen Freeholders of the County of Union as follows:

1. The County of Union shall require compliance with the provisions of this Resolution by business entities seeking to provide services to the County of Union as specified herein. The requirements of this Resolution are intended to supplement, not replace, existing contractor qualifications and performance standards or criteria currently required by law, public policy or contracting documents, including but not limited to Union County's DPMC classification and Project Labor Agreement policies
2. All contractors and subcontractors that perform significant work on any public facility or public works project, including construction, alteration, renovation, repair, service, or maintenance work, shall meet the requirements of this Resolution. For purposes of this Resolution, the term "significant work" shall be defined as any work or activity covered under the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq.

3. All firms engaged in contracts covered by this Resolution shall be qualified responsible contractors or subcontractors that have sufficient capabilities in all respects to successfully perform contracts on which they are engaged, including the necessary experience, equipment, technical skills and qualifications and organizational, financial and personnel resources. Firms bidding on public contracts shall also be required to have a satisfactory past performance record and a satisfactory record of legal compliance, integrity and business ethics. Compliance with these standards shall be established by compliance with the requirements set forth in paragraph 8 of this Resolution.

4. As a condition of performing work on public works contracts over the public works threshold, the general contractor shall provide certification that he and each subcontractor working on the project shall have at least one (1) employee who has successfully completed the OSHA 10-hour construction safety and health course. As a condition of performing work on public works contracts of \$500,000.00 or more total cost of project, the general contractor shall provide certification that each subcontractor working on the project shall have at least one (1) employee who has successfully completed the OSHA 30-hour construction safety and health course.

5. All contractors and subcontractors that perform significant work on any public facility or public works project shall be required to affirmatively provide evidence of and confirm compliance with proof of participation in an Apprenticeship Program currently registered and approved by the United States Department of Labor ("USDOL"), the New Jersey Department of Labor ("NJDOL") or any state having equal to or higher requirements as either the USDOL or NJDOL apprenticeship programs. Additionally, Apprenticeship Programs shall meet the criteria set forth in Section 8(i) of this Resolution.

6. As a condition of performing work on public works contracts subject to this Resolution, a general contractor seeking award of a contract shall submit a Contractor Responsibility Certification at the time it submits its bid for contract.

7. The Contractor Responsibility Certification shall be completed on a form provided by the Union County Purchasing Department and shall reference the project for which a bid is being submitted by name and contract or project number.

8. In the Contractor Responsibility Certification, general contractors and subcontractors shall certify the following facts regarding their past performance and work history and its current qualifications and

performance capabilities:

- a. The firm has all valid, effective licenses, registrations or certificates required by federal, state, county, or local law, including, but not limited to, licenses, registrations, certificates required to: (1) do business in the designated locale; and (2) perform the contract work it seeks to perform. These shall include, but not be limited to, licenses, registrations or certificates for any type of trade work or specialty work, which the firm proposes to self perform.
- b. The firm meets the bonding requirements for the contract, as required by applicable law or contract specifications and any insurance requirements, as required by applicable law or contract specifications, including general liability insurance, workers compensation insurance and unemployment requirements.
- c. The firm has not been debarred by any federal, state or local government agency or authority in the past three (3) years.
- d. The firm has not defaulted on any project in the past three (3) years.
- e. The firm has not had any type of business, contracting or trade license, registration, or other certification suspended or revoked in the past three (3) years.
- f. The firm has not been cited and found guilty for a willful violation of federal or state safety laws in the past three (3) years.
- g. The firm and/or its owners have not been convicted of any crime relating to the contracting business by a final decision of a court or government agency in the past three (3) years.
- h. The firm will pay all craft employees that it employs on the project the current wage rates and benefits as required under applicable Federal or State prevailing wage laws.
- i. The firm participates in an Apprenticeship Program that is currently registered with the USDOL, the NJDOL or any state having equal to or higher requirements as either the USDOL or NJDOL apprenticeship programs, for each craft or trade in which it apprentices. The firm shall provide proof of meeting this qualification standard by submitting appropriate documentation as an attachment to this Certification. The firm shall continue to

participate in applicable apprenticeship programs for the full duration of the contract work. The apprenticeship program in which the firm participates shall have graduated at least one (1) enrollee in each of the past three (3) years.

9. The County of Union may conduct any additional inquiries to verify that the prospective awardee and its subcontractors have the technical qualifications and performance capabilities necessary to successfully perform the contract and that the firms have a sufficient record of legal compliance and business integrity to justify the award of a public contract. In conducting such inquiries, the County of Union may seek relevant information from the firm, its prior clients or customers, its subcontractors or any other relevant source.

10. If any provision of this Resolution shall be held to be invalid or unenforceable by a court of competent jurisdiction, any such holding shall not invalidate any other provisions of this Resolution and all remaining provisions shall remain in full force and effect.

NOW, THEREFORE, BE IT RESOLVED by the Board of Chosen Freeholders of the County of Union that it hereby establishes and adopts the Responsible Contractor Policy, and it hereby authorizes the County Manager to sign any and all documents necessary to make said Policy effective immediately.

58. FEDERAL TERMS

TERMS AND CONDITIONS APPLICABLE TO ALL CONTRACTS/PURCHASES FUNDED, IN WHOLE OR IN PART, BY FEDERAL FUNDS.

The provisions set forth below apply to all contracts funded, in whole or in part, by Federal funds as required by 2 CFR 200.317.

1. CONTRACTING WITH SMALL AND MINORITY BUSINESSES, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS

Pursuant to 2 CFR 200.321, the State must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Accordingly, if subawards are to be made the Contractor shall:

- (1) Include qualified small and minority businesses and women's business enterprises on solicitation lists;
- (2) Assure that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
- (3) Divide total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority

- businesses, and women's business enterprises;
- (4) Establish delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and,
 - (5) Use the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

2. DOMESTIC PREFERENCE FOR PROCUREMENTS

Pursuant to 2 CFR 200.322, where appropriate, the State has a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). If subawards are to be made the Contractor shall include a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). For purposes of this section:

- (1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
- (2) "Manufactured products" means items and construction materials composed in whole or in part of nonferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

3. PROCUREMENT OF RECOVERED MATERIALS

Where applicable, in the performance of contract, pursuant to 2 CFR 200.323, the contractor must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$ 10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

To the extent that the scope of work or specifications in the contract requires the contractor to provide recovered materials the scope of work or specifications are modified to require that as follows.

- i. In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired—
 1. Competitively within a timeframe providing for compliance with the contract performance schedule;
 2. Meeting contract performance requirements; or
 3. At a reasonable price.
- ii. Information about this requirement, along with the list of EPA-designated items, is available at EPA's Comprehensive Procurement Guidelines web site, <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>.
- iii. The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the Solid Waste Disposal Act."

4. EQUAL EMPLOYMENT OPPORTUNITY

Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor." See, 2 CFR Part 200, Appendix II, para. C.

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

- (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. 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 setting forth the provisions of this nondiscrimination clause.
- (2) The contractor 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 race, color, religion, sex, sexual orientation, gender identity, or national origin.
- (3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such

employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

- (4) The contractor will send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his/her books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- (8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

5. DAVIS-BACON ACT, 40 U.S.C. 3141-3148, AS AMENDED

When required by Federal program legislation, all prime construction

contracts in excess of \$2,000 shall be done in compliance with the Davis-Bacon Act (40 U.S.C. 3141- 3144, and 3146-3148) and the requirements of 29 C.F.R. pt. 5 as may be applicable. The contractor shall comply with 40 U.S.C. 3141-3144, and 3146-3148 and the requirements of 29 C.F.R. pt. 5 as applicable. Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. Additionally, contractors are required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

6. COPELAND ANTI-KICKBACK ACT

Where applicable, the Contractor must comply with Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States").

- a. Contractor. The Contractor shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into the OGS centralized contract.
- b. Subcontracts. The Contractor or subcontractor shall insert in any subcontracts the clause above and such other clauses as FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.
- c. Breach. A breach of the clauses above may be grounds for termination of the OGS centralized contract, and for debarment as a Contractor and subcontractor as provided in 29 C.F.R. § 5.12.

7. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT, 40 U.S.C. 3701-3708

Where applicable, all contracts awarded by the non-Federal entity in excess of \$ 100,000 that involve the employment of mechanics or laborers must comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5).

- (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on

such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

- (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of \$27 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.
- (3) Withholding for unpaid wages and liquidated damages. The unauthorized user shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.
- (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

8. RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT

If the Federal award meets the definition of "funding agreement" under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part

401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

9. CLEAN AIR ACT, 42 U.S.C. 7401-7671Q, AND THE FEDERAL WATER POLLUTION CONTROL ACT, 33 U.S.C. 1251-1387, AS AMENDED

Where applicable, Contracts and subgrants of amounts in excess of \$150,000, must comply with the following:

Clean Air Act

1. The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.
2. The contractor agrees to report each violation to the Division of Purchase and Property and understands and agrees that the Division of Purchase and Property will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.
3. The contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA.

Federal Water Pollution Control Act

1. The contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.
2. The contractor agrees to report each violation to the Division of Purchase and Property and understands and agrees that the Division of Purchase and Property will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.
3. The contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA.

10. DEBARMENT AND SUSPENSION (EXECUTIVE ORDERS 12549 AND 12689)

- (1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the contractor is required to verify that none of the contractor's principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).

- (2) The contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
- (3) This certification is a material representation of fact relied upon by the State or authorized user. If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to the State or authorized user, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.
- (4) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

11. BYRD ANTI-LOBBYING AMENDMENT, 31 U.S.C. 1352

Contractors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

12. PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

- (a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:
 - (1) Procure or obtain;
 - (2) Extend or renew a contract to procure or obtain; or
 - (3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

13. CONTRACTS FOR MORE THAN THE SIMPLIFIED ACQUISITION THRESHOLD

Contracts for more than the simplified acquisition threshold, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate

14. TERMINATION FOR CONVENIENCE PROVISION

All contracts in excess of \$10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

15. BONDING REQUIREMENTS

For construction or facility improvement contracts or subcontracts exceeding the Simplified Acquisition Threshold, the Federal awarding agency or pass-through entity may accept the bonding policy and requirements of the non-Federal entity provided that the Federal awarding agency or pass-through entity has made a determination that the Federal interest is adequately protected. If such a determination has not been made, the minimum requirements must be as follows:

(a) A bid guarantee from each bidder equivalent to five percent of the bid price. The "bid guarantee" must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid

as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.

(b) A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's requirements under such contract.

(c) A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

EDWARD T. OATMAN
COUNTY MANAGER

Bidders Name _____
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.

_____ 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 certain types 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
- _____ Acknowledgement of Project Labor Agreement (PLA)
- _____ Time of Completion
- _____ Disclosure of Investment Activities in Iran
- _____ Federal Non-Debarment Certification
- _____ BYRD Anti-Lobbying Amendment Certification
- _____ Certification Regarding Lobbying
- _____ Disclosure of Lobbying Activities (LLL 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 THE DIVISION OF PURCHASING AT ucbids@ucnj.org.

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.**

BID FORM

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

**Union County Courthouse Parking Deck, City of Elizabeth,
County of Union, New Jersey, Phase 1
BA#5-2023; Union County Engineering Project# 2019-026**

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 ALLOWANCES:

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

Three Hundred Thousand Dollars

Written

\$ 300,000.00

Figures

B. 3RD PARTY TESTING & INSPECTION ALLOWANCE

Fifty Thousand Dollars

Written

\$ 50,000.00

Figures

TOTAL LUMP SUM PLUS ALLOWANCE A & B AMOUNTS:

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) (Add/Deduct):

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 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.

- Unit Price #1: Acoustical Ceiling & Wall Texture/Stucco \$/SF (non-N.J.A.C. 5:23-8): \$ _____
- Unit Price #2: Sprayed-on Fire Proofing (SOFP) \$/SF (non-N.J.A.C. 5:23-8): \$ _____
- Unit Price #3: Finish & Brown Coat Plaster \$/SF (Non-N.J.A.C. 5:23-8): \$ _____
- Unit Price #4: Pipe Insulation \$/LF (Wrap and Cut): \$ _____
- Unit Price #5: Fitting Insulation \$/Unit (Wrap and Cut): \$ _____
- Unit Price #6: Door Caulk \$/SF (Non-N.J.A.C. 5:23-8): \$ _____
- Unit Price #7: VAT/Mastic \$/SF (non-N.J.A.C. 5:23-8): \$ _____
- Unit Price #8: Brick Expansion Joint \$/SF (non-N.J.A.C. 5:23-8): \$ _____
- Unit Price #9: Flashing \$/LF (non-N.J.A.C. 5:23-8): \$ _____
- Unit Price #10: Window Caulking \$/LF (non-N.J.A.C. 5:23-8): Unit \$ _____
- Unit Price #11: Wall/Ceiling Demolition \$/SF (non-N.J.A.C. 5:23-8): \$ _____

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 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.

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):

Name of Individual or Business Entity	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.**

Stockholder/Partner/Member and Corresponding Entity Listed in Part II	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:	

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)

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

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: _____

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.

Proof of registration 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.

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.

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

TAXPAYER NAME: TAX REG TEST ACCOUNT
 TRADE NAME: CLIENT REGISTRATION
 TAXPAYER IDENTIFICATION #: 070-007-302/000
 SEQUENCE NUMBER: 0107230
 ADDRESS: 847 ROEBLING AVE, TRENTON NJ 08611
 ISSUANCE DATE: 01/14/04
 EFFECTIVE DATE: 01/01/01

FORM-BRC(06-01) This Certificate is NOT assignable or transferable. It must be conspicuously displayed at above address.

STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE

Taxpayer Name: TAX REG TEST ACCOUNT
 Trade Name:
 Address: 847 ROEBLING AVE, TRENTON, NJ 08611
 Certificate Number: 1093907
 Date of Issuance: October 14, 2004

For Office Use Only:
 20041014112823633

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

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.

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.

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

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 _____

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?

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

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

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

Bidders Name _____

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.

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.

Bidders Name _____

CONTRACTOR PERFORMANCE RECORD
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____.

**AFFIDAVIT REGARDING LIST OF DEBARRED,
SUSPENDED OR DISQUALIFIED BIDDERS**

STATE OF NEW JERSEY / _____)
Specify, if Other) SS:
COUNTY OF _____)

I, _____, of the (City, Town, Borough, etc.) of _____
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. I have executed the said Proposal with full authority to do so. Said Bidder is
not at the time of the making this 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.

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.**

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 contract for goods or services with a public entity?

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

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.

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.

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.

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.

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.

ACKNOWLEDGEMENT OF PROJECT LABOR AGREEMENT
(Projects of \$5 Million or more irrespective of Phasing)

Contractor _____, hereby acknowledges that the
within Project, upon which the undersigned has submitted a Bid Proposal, requires the
execution of a Project Labor Agreement and the utilization of union employees. The
undersigned agrees to execute the PLA and comply with all terms and conditions of
same in the performance of the Work.

Attest:

Contractor: _____

By: _____

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 **Three Hundred (300) 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

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 _____

**CERTIFICATION OF NON-DEBARMENT
FOR FEDERAL GOVERNMENT CONTRACTS**
N.J.S.A. 52:32-44.1 (P.L. 2019, c.406)

This certification shall be completed, certified to, and submitted to the contracting unit prior to contract award, except for emergency contracts where submission is required prior to payment.

PART I: VENDOR INFORMATION	
Individual or Organization Name	
Physical Address of Individual or Organization	
Unique Entity ID (if applicable)	
CAGE/NCAGE Code (if applicable)	
Check the box that represents the type of business organization:	

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

PART II – CERTIFICATION OF NON-DEBARMENT: Individual or Organization			
I hereby certify that the individual or organization listed above in Part I is not debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; 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 date of contract award by 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, 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 County of Union, permitting the County of Union to declare any contract(s) resulting from this certification void and unenforceable.			
Full Name (Print):		Title:	
Signature:		Date:	

PART III – CERTIFICATION OF NON-DEBARMENT: Individual or Entity Owning Greater than 50 Percent of Organization

Section A (Check the Box that applies)

<input type="checkbox"/>	Below is the name and address of the stockholder in the corporation who owns more than 50 percent of its voting stock, or of the partner in the partnership who owns more than 50 percent interest therein, or of the member of the limited liability company owning more than 50 percent interest therein, as the case may be.
--------------------------	---

Name of Individual or Organization	
---	--

Physical Address	
-------------------------	--

OR

<input type="checkbox"/>	No one stockholder in the corporation owns more than 50 percent of its voting stock, or no partner in the partnership owns more than 50 percent interest therein, or no member in the limited liability company owns more than 50 percent interest therein, as the case may be.
--------------------------	---

Section B (Skip if no Business entity is listed in Section A above)

<input type="checkbox"/>	Below is the name and address of the stockholder in the corporation who owns more than 50 percent of the voting stock of the organization’s parent entity, or of the partner in the partnership who owns more than 50 percent interest in the organization’s parent entity, or of the member of the limited liability company owning more than 50 percent interest in organization’s parent entity, as the case may be.
--------------------------	---

Stockholder/Partner/Member Owning Greater Than 50 Percent of Parent Entity	
---	--

Physical Address	
-------------------------	--

OR

<input type="checkbox"/>	No one stockholder in the parent entity corporation owns more than 50 percent of its voting stock, no partner in the parent entity partnership owns more than 50 percent interest therein, or no member in the parent entity limited liability company owns more than 50 percent interest therein, as the case may be.
--------------------------	--

Section C – Part III Certification

I hereby certify that no individual or organization that is debarred by the federal government from contracting with a federal agency owns greater than 50 percent of the **Organization listed above in Part I** or, if applicable, owns greater than 50 percent of a parent entity of **<name of organization>** _____ . I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; 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 date of contract award by 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, 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 County of Union, permitting the County of Union to declare any contract(s) resulting from this certification void and unenforceable.

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

Part IV – CERTIFICATION OF NON-DEBARMENT: Contractor – Controlled Entities	
Section A	
<input type="checkbox"/>	Below is the name and address of the corporation(s) in which the Organization listed in Part I owns more than 50 percent of voting stock, or of the partnership(s) in which the Organization listed in Part I owns more than 50 percent interest therein, or of the limited liability company or companies in which the Organization listed above in Part I owns more than 50 percent interest therein, as the case may be.
Name of Business Entity	Physical Address
Add additional sheets if necessary	
OR	
<input type="checkbox"/>	The Organization listed above in Part I does not own greater than 50 percent of the voting stock in any corporation and does not own greater than 50 percent interest in any partnership or any limited liability company.

Section B (skip if no business entities are listed in Section A of Part IV)			
<input type="checkbox"/>	Below are the names and addresses of any entities in which an entity listed in Part III A owns greater than 50 percent of the voting stock (corporation) or owns greater than 50 percent interest (partnership or limited liability company).		
Name of Business Entity Controlled by Entity Listed in Section A of Part IV	Physical Address		
Add additional Sheets if necessary			
OR			
<input type="checkbox"/>	No entity listed in Part III A owns greater than 50 percent of the voting stock in any corporation or owns greater than 50 percent interest in any partnership or limited liability company.		
Section C – Part IV Certification			
<p>I hereby certify that the Organization listed above in Part I does not own greater than 50 percent of any entity that that is debarred by the federal government from contracting with a federal agency and, if applicable, does not own greater than 50 percent of any entity that in turns owns greater than 50 percent of any entity debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; 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 date of contract award by 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, 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 County of Union, permitting the County of Union to declare any contract(s) resulting from this certification void and unenforceable.</p>			
Full Name (Print):		Title:	
Signature:		Date:	

BYRD ANTI-LOBBYING AMENDMENT CERTIFICATION
(To be submitted with each bid, proposal or offer exceeding \$100,000)

The undersigned, [Company] _____ certifies, to the best of his or her knowledge, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Contractor, [Company] _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. § 3801 et seq., apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Representative

Name and Title of Contractor's Authorized Representative

Date

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents of all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, United States Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Organization: _____

Street address: _____

City, State, Zip: _____

CERTIFIED BY: (type or print)

TITLE: _____

(signature)

(date)

DISCLOSURE OF LOBBYING ACTIVITIES (LLL Form)

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352 0348-0046

N/A – My agency does not engage in any lobbying activities

<p>1. Type of Federal Action:</p> <p><input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance</p>	<p>2. Status of Federal Action:</p> <p><input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. Initial award <input type="checkbox"/> c. Post-award</p>	<p>3. Report Type:</p> <p><input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change</p> <p>For Material Change Only: year _____ quarter _____ date of last report _____</p>
<p>4. Name and Address of Reporting Entity:</p> <p><input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known:</p> <p>Congressional District, if known:</p>	<p>5. If Reporting Entity in NO.4 is a Subawardee, enter Name and Address of Prim:</p> <p>Congressional District, if known:</p>	
<p>6. Federal Department/Agency:</p>	<p>7. Federal Program Name/Description:</p> <p>CDFA NUMBER, if applicable _____</p>	
<p>8. Federal Action Number, if known:</p>	<p>9. Award Amount, if known:</p> <p>\$ _____</p>	
<p>10. a. Name and address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i></p>	<p>b. Individuals Performing Services <i>(including address if different from No. 10a) (las name, first name, MI):</i></p>	
<p>11. Information request through this form is authorized by title 31 U.S.C. Section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.</p>	<p style="text-align: right;">Signature:</p> <p>_____</p> <p>Print Name: _____ Title: _____ Telephone NO.: _____ Date: _____</p>	

Federal Use Only:

Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract, grant, or loan award number, the application/proposal control number assigned by the Federal agency.) Include prefixes, e.g. "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. A) Enter the full name, address, city, state and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.
B) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter last name, first name and middle initial (MI).
11. The certifying official shall sign and date the form; print his/her name, title, and telephone number.

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.

Init.

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)
------	-----------------------	-------------------------

§ 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
---------------	-----------

§ 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
----------	-----------

§ 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

	03/01/23
Journeyman (Mechanic)	W44.23 B28.63 T72.86

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

	01/01/23
Foreman	W53.50 B46.66 T100.16
General Foreman	W55.50 B47.71 T103.21
Journeyman	W48.50 B44.92 T93.42

Craft: Boilermaker APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
1000 Hours	65%	70%	75%	80%	85%	90%	95%			
Benefit =	38.07	39.03	40.03	41.00	41.99	42.97	43.93			

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

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.
- 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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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

	01/01/23
Foreman	W35.45 B17.78 T53.23
General Foreman	W35.95 B17.78 T53.73
Mechanic	W33.95 B17.78 T51.73

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

	06/01/23
Deputy Foreman	W51.00 B36.28 T87.28
Foreman	W55.75 B36.28 T92.03
Journeyman	W48.00 B36.28 T84.28

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	24.29	26.00	27.73	29.43		

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

	05/04/23
Foreman	W62.72 B37.56 T100.28
Journeyman	W54.54 B32.73 T87.27

Craft: Carpenter APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	40%	55%	65%	80%	90%					
Benefit	59% of	Appren	tice	Wage	for all	intervals	+ \$0.56			

Ratio of Apprentices to Journeymen - 1:3

For Solar installation- all work on solar projects that fall under the jurisdiction of the carpenters, and does not require an electrician, the ratio of Apprentices to Journeymen shall be 1:1.

Craft: Carpenter COMMENTS/NOTES

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES REGISTERED AS OF 5-1-19:

INTERVAL	PERIOD AND RATES									
Yearly	40%	55%	65%	80%	90%					
Benefits	59% of apprentice wage rate for all intervals + \$0.56									

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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

- 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

	05/04/23
Foreman	W62.72 B37.47 T100.19
Journeyman	W54.54 B32.64 T87.18

Craft: Carpenter - Resilient Flooring

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	40%	55%	65%	80%	90%					
Benefit	59%	of	Appren	tice	Wage	for all	intervals	+ \$0.47		

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

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES REGISTERED AS OF 5-1-19:

INTERVAL PERIOD AND RATES
 Yearly 40% 55% 65% 80%
 Benefits 59% of apprentice wage rate for all intervals + \$0.47

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

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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.

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: Carpenter-Residential Construction

PREVAILING WAGE RATE

	07/19/23
Foreman	W52.62 B11.78 T64.40
Journeyman	W45.76 B10.97 T56.73

Craft: Carpenter-Residential Construction

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	40%	55%	65%	80%						
Benefit	12% of	Appren	tice	wage rate	for all	intervals	+ \$5.47			

Ratio of Apprentices to Journeymen - 1:3

Craft: Carpenter-Residential Construction

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.

RESIDENTIAL CONSTRUCTION:

All residential construction (excluding commercial buildings and institutional housing), no more than four (4) floors in height above grade consisting of those projects involving the construction, alteration, or repair of town houses or row houses, single family homes, mobile homes, multi-family homes, mixed-use buildings that include commercial space on the first floor or below grade, and apartment buildings.

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

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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: 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

PREVAILING WAGE RATE

	05/02/23
Foreman	W48.02 B29.51 T77.53
General Foreman	W52.38 B29.51 T81.89
Journeyman	W43.65 B29.51 T73.16

Craft: Commercial Painter

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
6 Months	40%	45%	55%	65%	70%	75%	80%	80%		
Benefits	8.85	8.85	11.25	11.25	12.30	12.30	15.10	15.10		

Ratio of Apprentices to Journeymen - 1:4

Craft: Commercial Painter

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: Diver PREVAILING WAGE RATE

	06/01/23
Diver	W63.24 B51.72 T114.96
Tender	W51.50 B51.72 T103.22

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/Pile Driver

PREVAILING WAGE RATE

	06/01/23
Foreman	W59.23 B51.72 T110.95
Foreman (Concrete Form Work)	W58.13 B38.36 T96.49
Journeyman	W51.50 B51.72 T103.22
Journeyman (Concrete Form Work)	W50.55 B38.36 T88.91

Craft: Dockbuilder/Pile Driver

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
Yearly	20.60	25.75	33.48	41.20						
Benefits	33.96	for all	intervals							

Ratio of Apprentices to Journeymen - *

* When there are 4 or fewer Dockbuilders/Pile Drivers on a job, no more than 1 may be an apprentice. When there are 5 or more Dockbuilders/Pile Drivers, there may be 1 apprentice for every 5 Dockbuilders/Pile Drivers.

Craft: Dockbuilder/Pile Driver

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE FOR CONCRETE FORM WORK ONLY:

INTERVAL	PERIOD AND RATES			
Yearly	20.22	25.28	32.86	40.44
Benefits	26.14	for all	intervals	

CREOSOTE HANDLING:

When handling creosote products on land piling, 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/Pile Driver 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

	05/02/23
Foreman	W47.17 B29.54 T76.71
General Foreman	W49.31 B29.54 T78.85
Journeyman	W42.88 B29.54 T72.42

Craft: Drywall Finisher

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	40%	50%		60%	70%		80%	90%		
6 Months										
Benefits	Intervals	1 to 2 =	11.45	Intervals	3 to 4 =	14.33	Intervals	5 to 6 =	18.04	

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

	05/29/23	06/03/24
Cable Splicer	W68.06 B43.20 T111.26	W69.72 B44.96 T114.68
Foreman (11-20 Journeymen)	W72.39 B45.95 T118.34	W74.15 B47.84 T121.99
Foreman (1-3 Journeymen)	W68.06 B43.20 T111.26	W69.72 B44.96 T114.68
Foreman (4-10 Journeymen)	W71.15 B45.17 T116.32	W72.89 B47.02 T119.91
General Foreman (21-30 Journeymen)	W74.24 B47.14 T121.38	W76.06 B49.06 T125.12
General Foreman (31-60 Journeymen)	W80.43 B51.07 T131.50	W82.39 B53.15 T135.54
General Foreman (61+ Journeymen)	W81.67 B51.85 T133.52	W83.66 B53.97 T137.63
Journeyman	W61.87 B39.30 T101.17	W63.38 B40.89 T104.27
Sub-Foreman	W70.52 B44.79 T115.31	W72.25 B46.61 T118.86

Craft: Electrician

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
Yearly	40%	49%	58%	68%	80%		of Jour	neyman	Wage	Rate
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

	11/28/22	12/04/23	12/02/24
Journeyman Technician (1-2 Workers on Job)	W45.86 B27.05 T72.91	W47.08 B27.78 T74.86	W48.21 B28.45 T76.66
Master Tech/General Foreman (26 + Workers on Job)	W59.62 B35.16 T94.78	W61.20 B36.12 T97.32	W62.67 B36.99 T99.66
Senior Technician/Lead Foreman (16-25 Workers on Job)	W54.57 B32.19 T86.76	W56.03 B33.05 T89.08	W57.37 B33.86 T91.23
Technician A/Foreman (9-15 Workers on Job)	W52.28 B30.84 T83.12	W53.67 B31.67 T85.34	W54.96 B32.43 T87.39
Technician B/Working Foreman (4-8 Workers on Job)	W49.99 B29.48 T79.47	W51.32 B30.28 T81.60	W52.55 B31.01 T83.56
Technician C/Foreman (3 Workers on Job)	W47.69 B28.14 T75.83	W48.96 B28.89 T77.85	W50.14 B29.59 T79.73

Craft: Electrician - Teledata (15 Voice/Data Lines & Less)

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefits	7.45	7.45	8.51	9.15	10.22	11.49	12.98	14.26	15.76	17.24

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 11-28-22:

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefits	7.67	7.67	8.76	9.43	10.52	11.84	13.38	14.69	16.22	17.76

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 12-4-23:

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefits	7.88	7.88	9.00	9.68	10.80	12.15	13.73	15.09	16.66	18.23

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 12-2-24:

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

INTERVAL	PERIOD AND RATES									
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefits	8.07	8.07	9.22	9.91	11.07	12.45	14.06	15.44	17.06	18.68

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 7:00 AM and 5:30 PM.

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 before or after 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. Hours in excess of 10 on Saturday and all hours on Sunday and holidays shall be paid at double the regular rate, inclusive of benefits.

- Four 10-hour days may be worked Monday through Friday, between the hours of 7:00 AM and 5:30 PM. A make-up day may be used for a day not being worked during the four 10-hour day schedule if a holiday occurs during the week or for any other conditions that prevent an employee from working the four 10-hour day schedule.

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. Saturday holidays will be observed the preceding Friday.

**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

	05/29/23	06/03/24
Cable Splicer	W68.37 B42.89 T111.26	W70.04 B44.66 T114.70
Certified Welder	W65.26 B40.95 T106.21	W66.86 B42.62 T109.48
Equipment Operator	W62.15 B39.00 T101.15	W63.67 B40.60 T104.27
Foreman (11-20 Journeymen workers on job)	W72.72 B45.62 T118.34	W74.50 B47.50 T122.00
Foreman (1-3 Journeymen workers on job)	W68.37 B42.89 T111.26	W70.04 B44.66 T114.70
Foreman (4-10 Journeymen workers on job)	W71.47 B44.86 T116.33	W73.23 B46.70 T119.93
General Foreman (21-30 Journeymen workers on job)	W74.58 B46.81 T121.39	W76.41 B48.71 T125.12
General Foreman (31-60 Journeymen workers on job)	W80.80 B50.70 T131.50	W82.78 B52.76 T135.54
General Foreman (61+ Journeymen workers on job)	W82.04 B51.48 T133.52	W84.05 B53.58 T137.63
Groundman	W37.29 B23.41 T60.70	W38.21 B24.35 T62.56
Journeyman Lineman/Technician	W62.15 B39.00 T101.15	W63.67 B40.60 T104.27
Sub-Foreman	W70.85 B44.46 T115.31	W72.59 B46.27 T118.86

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician- Outside Commercial

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
1000 Hours	60%	65%	70%	75%	80%	85%	90%			
Benefits	61.75% of	Journey	man	wage	+	\$.01				

Craft: Electrician- Outside Commercial

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE AS OF 5-29-23:

Interval Period and Rates
 1000 Hours 60% 65% 70% 75% 80% 85% 90%
 Benefits 62.75% of the Journeyman wage + \$.01

APPRENTICE RATE SCHEDULE AS OF 6-3-24:

Interval Period and Rates
 1000 Hours 60% 65% 70% 75% 80% 85% 90%
 Benefits 63.75% of the Journeyman wage + \$.01

* 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,

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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	31.65	34.29	36.93	39.56	42.20	44.84	47.78			
Benefits	28.02	29.62	31.20	32.80	34.40	36.00	37.58			

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

Craft: Elevator Constructor

PREVAILING WAGE RATE

	03/29/23
Journeyman	W77.49 B45.23 T122.72

Craft: Elevator Constructor

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	34.60	42.62	50.37	58.12						
Benefits	35.56	36.49	38.02	39.55						

Ratio of Apprentices to Journeymen - 1:1

Craft: Elevator Constructor

COMMENTS/NOTES

The regular workday shall consist of either 7 or 8 hours to be established at the beginning of the project, between 7:00 AM and 4:30 PM.

OVERTIME:

For all hours worked before or after the regular workday, Monday through Friday, and all hours on Saturday and Sunday, shall be paid at double the hourly rate. Holiday pay is one days wages (8 hours) plus double the hourly rate for all hours worked.

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. 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

	03/29/23
Journeyman	W60.89 B44.07 T104.96

Craft: Elevator Modernization & Service

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	34.60	33.49	39.58	45.67						
Benefits	35.50	36.07	37.52	38.97						

Ratio of Apprentices to Journeymen - 1:1

Craft: Elevator Modernization & Service

COMMENTS/NOTES

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.

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

	06/20/23
* Leadman	W52.53 B30.38 T82.91
Foreman	W54.53 B30.62 T85.15
General Foreman	W56.53 B30.86 T87.39
Journeyman	W50.53 B30.14 T80.67

Craft: Glazier APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
	50%	55%	60%	65%	70%	75%	80%	90%		
6 Months										
Benefits	10.16	10.16	12.85	12.85	16.15	16.15	17.64	17.64		

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

	09/20/22	09/19/23
Foreman	W60.72 B36.22 T96.94	W60.97 B37.97 T98.94
General Foreman	W63.06 B37.33 T100.39	W63.31 B39.08 T102.39
Journeyman	W58.44 B35.66 T94.10	W58.69 B37.41 T96.10

Craft: Heat & Frost Insulator

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	27.51	32.64	39.31	45.91						
Benefits	21.73	25.78	28.63	31.61						

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

	09/20/22	09/19/23
Asbestos Helper	W36.89	W36.89
Abatement	B24.92	B24.92
	T61.81	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

	02/01/23	02/01/24	02/01/25	02/01/26
Foreman	W63.28 B34.92 T98.20	W0.00 B0.00 T100.20	W0.00 B0.00 T102.20	W0.00 B0.00 T104.20
General Foreman	W65.78 B34.92 T100.70	W0.00 B0.00 T102.70	W0.00 B0.00 T104.70	W0.00 B0.00 T106.70
Journeyman	W58.28 B34.92 T93.20	W0.00 B0.00 T95.20	W0.00 B0.00 T97.20	W0.00 B0.00 T99.20

Craft: Industrial Painter- Bridges

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	50%	70%	90%							
6 Months										
Benefits	13.65	20.81	27.43							

Ratio of Apprentices to Journeymen - 1:3

Craft: Industrial Painter- Bridges

COMMENTS/NOTES

* Industrial Painters perform work on all industrial structures, such as bridges.

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, except Veterans Day, which shall be paid at time and one-half the regular rate.
- During a regular work week schedule, Saturday may be used as a make-up day lost to inclement weather, paid at the regular rate.
- Four 10-hour days may be worked, at the regular rate, Monday through Thursday. When the four 10-hour day schedule is used, the 11th and 12th hours shall be paid at time and one-half the regular rate. After the 12th hour, a worker shall be paid at double the regular rate. Friday may be used as a make-up day lost to inclement weather, paid at the regular rate.

**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, 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- Structural Steel

PREVAILING WAGE RATE

	02/01/23	02/01/24	02/01/25	02/01/26
Foreman	W52.02	W0.00	W0.00	W0.00
	B32.57	B0.00	B0.00	B0.00
	T84.59	T86.59	T88.59	T90.59
General Foreman	W54.52	W0.00	W0.00	W0.00
	B32.57	B0.00	B0.00	B0.00
	T87.09	T89.09	T91.09	T93.09
Journeyman	W47.02	W0.00	W0.00	W0.00
	B32.57	B0.00	B0.00	B0.00
	T79.59	T81.59	T83.59	T85.59

Craft: Industrial Painter- Structural Steel

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	SEE	INDUST	RIAL	PAINTER	BRIDGES					

Ratio of Apprentices to Journeymen - 1:3

Craft: Industrial Painter- Structural Steel

COMMENTS/NOTES

* Industrial Painters perform work on all industrial structures, such as 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, except for Veterans Day, which shall be paid at time and one-half the regular rate.
- During the regular work week schedule, Saturday may be used to make-up a day lost to inclement weather, paid at the regular rate.
- Four 10-hour days may be worked, at the regular rate, Monday through Thursday. When the four 10-hour day schedule is used, the 11th and 12th hours shall be paid at time and one-half the regular rate. After the 12th hour, a worker shall be paid at double the regular rate. Friday may be used as a make-up day lost to inclement weather, paid at the regular rate.

**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, 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

	02/01/23	02/01/24	02/01/25	02/01/26
Foreman	W53.07 B32.22 T85.29	W0.00 B0.00 T87.29	W0.00 B0.00 T89.29	W0.00 B0.00 T91.29
General Foreman	W55.57 B32.22 T87.79	W0.00 B0.00 T89.79	W0.00 B0.00 T91.79	W0.00 B0.00 T93.79
Journeyman	W48.07 B32.22 T80.29	W0.00 B0.00 T82.29	W0.00 B0.00 T84.29	W0.00 B0.00 T86.29

Craft: Industrial Painter- Water Tanks

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	50%	70%	90%							
6 Months										
Benefits	13.65	20.81	27.43							

Ratio of Apprentices to Journeymen - 1:3

Craft: Industrial Painter- Water Tanks

COMMENTS/NOTES

* Industrial Painters perform work on all industrial structures, such as 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, except Veterans Day, which shall be paid at time and one-half the regular rate.
- During a regular work week schedule, Saturday may be used to make-up a day lost to inclement weather, paid at the regular rate.
- Four 10-hour days may be worked, at the regular rate, Monday through Thursday. When the four 10-hour day schedule is used, the 11th and 12th hours shall be paid at time and one-half the regular rate. After the 12th hour, a worker shall be paid at double the regular rate. Friday may be used as a make-up day lost to inclement weather, paid at the regular rate.

**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, 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: Ironworker PREVAILING WAGE RATE

	07/07/23
Rod /Fence Foreman	W49.89 B49.67 T99.56
Rod/Fence Journeyman	W46.89 B49.67 T96.56
Structural Foreman	W52.19 B49.67 T101.86
Structural Journeyman	W49.19 B49.67 T98.86

Craft: Ironworker APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	50%	60%		Yearly	70%	80%	90%			
Benefits	same as	journeyma n	amount							

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

	09/05/23
Foreman	W44.75 B24.71 T69.46
Journeyman (Handler)	W39.78 B24.71 T64.49

Craft: Laborer - Asbestos & Hazardous Waste Removal

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	22.07	25.75	29.42	33.10						
Benefits	22.06	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

	06/01/23
Class A Journeyman	W38.00 B32.17 T70.17
Class B Journeyman	W37.00 B32.17 T69.17
Class C Journeyman	W31.45 B32.17 T63.62
Foreman	W42.75 B32.17 T74.92
General Foreman	W47.50 B32.17 T79.67

Craft: Laborer - Building

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
	60%	70%	80%	90%	of Class B	wage rate				
6 Months										
Benefit	28.92	28.92	28.92	28.92						

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%.

- When an irregular shift must be established this shift shall receive the regular rate plus an additional 10%.

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	23.98	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

	04/01/23
* Skilled Tradesman (only applies to Modular Construction)	W27.90 B5.45 T33.35
Foreman (person directing crew, regardless of his skill classification)	W31.90 B5.45 T37.35
Laborer (for single family and stand-alone duplex owned by single owner)	W17.85 B2.95 T20.80
Residential and Modular Construction Laborer	W23.90 B5.45 T29.35

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: Millwright

PREVAILING WAGE RATE

	05/04/23
Foreman	W64.35 B38.57 T102.92
Journeyman	W55.96 B33.62 T89.58

Craft: Millwright

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
6 Months	40%	55%	65%	80%	90%					
Benefits	59% of	Appren	tice	Wage	Rate	for all	intervals	+ \$0.61		

Ratio of Apprentices to Journeymen - 1:3

Craft: Millwright

COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- When there are 2 or more Millwrights on a job, 1 shall be designated as a Foreman.

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 15%, 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 15% and the third shift shall receive the regular rate plus 20%, 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 15% and the third shift shall receive the regular rate plus 20%, 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 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: Operating Engineer PREVAILING WAGE RATE

Rates are located in the
"Statewide" rate package

Craft: Operating Engineer APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	60%	70%	80%	90%						

Ratio of Apprentices to Journeymen - *

* 1 apprentice for each piece of heavy equipment. At least 10 pieces of heavy equipment or a minimum of 5 Operating Engineers must be on site.

Craft: Operating Engineer COMMENTS/NOTES

Operating Engineer rates are located in the "Statewide" rate package.

**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

	12/07/22
Apprentice (1st year)	W29.15 B14.75 T43.90
Apprentice (2nd year)	W33.25 B25.70 T58.95
Foreman (Charge Person)	W42.05 B26.48 T68.53
Journeyman 1 (at least 1 year of working exp. as a journeyman)	W37.28 B26.48 T63.76
Journeyman 2 (at least 2 years of working exp. as a journeyman)	W41.05 B26.48 T67.53

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

	05/02/23
Foreman	W52.82 B29.51 T82.33
Journeyman	W48.02 B29.51 T77.53

Craft: Paperhanger APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	SEE	COMME R	CIAL	PAINTER						

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

Craft: Pipefitter PREVAILING WAGE RATE

	05/02/23
Foreman	W58.68 B49.97 T108.65
Journeyman	W54.43 B46.36 T100.79

Craft: Pipefitter APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	35%	45%	55%	65%	75%					
Benefit	26.80	29.79	32.79	35.78	38.78					

Ratio of Apprentices to Journeymen - 1:5

Craft: Pipefitter COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- When there are 2 or more Journeyman Pipefitters on a job, 1 shall be designated a Foreman.
- There shall be a Foreman for every 8 Journeyman Pipefitters on a job.

The regular workday shall be 8 hours between 7:00 AM and 3:30 PM.

SHIFT DIFFERENTIAL:

- 2nd Shift (3:30 PM-11:30 PM) shall work 7.5 hours and receive 8 hours pay at the regular rate, plus 10% per hour on the total rate.
- 3rd Shift (11:30 PM-7:00 AM) shall work 7 hours and receive 8 hours pay at the regular rate, plus 15% per hour on the total rate.

OVERTIME:

- All hours worked in excess of 8 per day, Monday through Friday, and all hours worked on Saturday, shall be paid at time and one-half, inclusive of benefits. All hours on Sunday and holidays shall be paid at double time, inclusive of benefits.
- By mutual agreement, employees may work four 10-hour days, Monday to Thursday, at straight time rate. Friday may be used as a make-up day for a day lost to inclement weather, and may be paid at straight time. If Friday is not a make-up day, the first 8 hours shall be paid at time and one-half, inclusive of benefits; hours in excess of 8 shall be paid at double time, inclusive of benefits.

SHIFT DIFFERENTIAL (Maintenance Work Only):

- 2nd Shift (3:30 PM-11:30 PM) shall work 7.5 hours and receive 8 hours pay at the regular rate, plus 10% per hour on the total rate.
- 3rd Shift (11:30 PM-7:00 AM) shall work 7 hours and receive 8 hours pay at the regular rate, plus 15% per hour on the total rate.

OVERTIME (Maintenance Work Only):

- All hours in excess of 8 per day, Monday through Saturday, shall be paid at time and one-half, inclusive of benefits. All

**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

	05/02/23
Foreman	W64.25 B41.62 T105.87
General Foreman	W68.41 B41.62 T110.03
Journeyman	W59.49 B41.62 T101.11

Craft: Plumber APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	30%	45%	55%	65%	75%					
Benefits	17.09	23.48	25.72	27.96	30.19					

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

	06/13/23
Foreman	W46.77 B30.81 T77.58
Journeyman	W43.77 B30.81 T74.58

Craft: Roofer APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
6 Months	17.50	21.88	26.26	28.45	30.63	32.83	35.01	39.39		
Benefits	2.16	2.16	27.31	27.31	27.31	27.31	27.31	27.31		

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

	06/13/23
Foreman	W42.32 B41.76 T84.08
Journeyman	W40.07 B41.76 T81.83

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	13.85	15.77	17.72	19.69	22.11	24.09	26.07	28.06	30.04	32.02

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

	07/19/23
Foreman	W58.90 B49.52 T108.42
General Foreman	W59.90 B49.52 T109.42
Journeyman	W55.40 B49.52 T104.92

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

	07/01/23
Foreman	W71.62 B37.55 T109.17
General Foreman	W75.17 B37.55 T112.72
Journeyman	W67.12 B37.55 T104.67

Craft: Sprinkler Fitter

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
1000 Hours									80%	85%
Benefits							Intervals	9 to 10	Jourymn	Ben.

Craft: Sprinkler Fitter

COMMENTS/NOTES

Apprentice rate schedule for those apprentices registered as of 7-1-13:

Interval Period and Rates
 1000 Hrs. 25% 30% 40% 45% 55% 60% 70% 75% 85% 90%
 Ben. 13.85 13.85 29.30 29.30 29.30 29.30 Intervals 7-10 Journy. Ben.

Apprentice rate schedule for those apprentices registered as of 7-1-22:

Interval Period and Rates
 1000 Hrs. 30% 35% 40% 45% 50% 55% 60% 70% 85% 95%
 Ben. 13.85 13.85 29.30 29.30 29.30 29.30 Intervals 7-10 Journy. Ben.

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.

**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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Tile Finisher-Marble PREVAILING WAGE RATE

	07/07/23
Finisher	W49.65 B36.82 T86.47

Craft: Tile Finisher-Marble APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	40%	60%	65%	70%	75%	85%	95%			
Benefits	Interval 1	thru 5 =	75% of	jyrnm. ben	rate	Interval 6	thru 7 =	full jyrnm	benefit	rate

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**

	06/13/23
Finisher	W48.36 B32.52 T80.88
Setter	W62.98 B35.75 T98.73

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

	07/07/23
Tile Setter	W63.12 B39.49 T102.61

Craft: Tile Setter - Marble

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	40%	60%	65%	70%	75%	85%	95%			
Benefits	Interval 1	thru 5 =	75% of	jyrm. ben	rate	Interval 6	thru 7 =	full jyrm	benefit	rate

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

	08/09/23
Grinder or Assistant	W59.04 B39.69 T98.73
Mechanic	W60.65 B39.70 T100.35
Terrazzo Resinous Worker	W50.47 B32.37 T82.84

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

	05/01/23	05/01/24
Bucket, Utility, Pick-up, Fuel Delivery trucks	W43.56 B41.78 T85.34	W45.41 B43.28 T88.69
Dump truck, Asphalt Distributor, Tack Spreader	W43.56 B41.78 T85.34	W45.41 B43.28 T88.69
Euclid-type vehicles (large, off-road equipment)	W43.66 B41.78 T85.44	W45.51 B43.28 T88.79
Helper on Asphalt Distributor truck	W43.56 B41.78 T85.34	W45.41 B43.28 T88.69
Low Boy Driver	W45.16 B41.78 T86.94	W47.01 B43.28 T90.29
Slurry Seal, Seeding/Fertilizing/ Mulching truck	W43.56 B41.78 T85.34	W45.41 B43.28 T88.69
Straight 3-axle truck	W43.56 B41.78 T85.34	W45.41 B43.28 T88.69
Tractor Trailer (all types)	W43.66 B41.78 T85.44	W45.51 B43.28 T88.79
Vacuum or Vac-All truck (entire unit)	W43.56 B41.78 T85.34	W45.41 B43.28 T88.69
Winch Trailer	W43.76 B41.78 T85.54	W45.61 B43.28 T88.89

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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

TRUCK FOREMAN: \$.75 cents per hour above regular rate. Overtime shall be increased accordingly.

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 \$40.03.
- As of 5-1-23, benefits on overtime shall be \$41.53.
- As of 5-1-24, benefits on overtime shall be \$43.03.

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

	05/01/23	05/01/24
Driver	W35.87 B41.78 T77.65	W37.62 B43.28 T80.90

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 5:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must be established for 5 consecutive workdays.
- Any work started outside of the allowed start time, 6:00 AM to 9:00 AM, except for * tidal work, shall be considered an irregular shift and paid at straight time, plus 15% for the first eight hours, inclusive of benefits.
- * FOR TIDAL WORK- 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 hour shift is completed between the hours of 5:00 AM and 6:30 PM.
- All time worked in excess of an established shift (an established shift is a shift that is determined at the time of the bid) shall be paid at the applicable overtime rate. When a portion of an established shift works into Saturday, Sunday or a holiday, that time worked shall be paid at the established shift rate.
- When working with other trades who receive a higher irregular shift differential, these employees shall also receive the higher differential 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 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 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 Veterans Day.

For projects bid after April 1, 2020, on hazardous waste removal work of any kind, including a state or federally designated site, where the operating engineer is required to wear level A, B, or C personal protection, the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour.

- An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$1.00 per hour.

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2023

Rate	Fringe	Total
57.63	37.65	95.28

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:

07/01/2023

Rate	Fringe	Total
57.63	37.65	95.28

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:

07/01/2023

Rate	Fringe	Total
55.72	37.65	93.37

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:

07/01/2023

Rate	Fringe	Total
55.72	37.65	93.37

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, tigger, aerial platform hoist, house car)
- Hopper
- Hopper Doors (power operated)
- Ladder (motorized)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2023

Rate	Fringe	Total
55.72	37.65	93.37

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:

07/01/2023

Rate	Fringe	Total
55.72	37.65	93.37

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:

07/01/2023

Rate	Fringe	Total
50.38	37.65	88.03

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:

07/01/2023

Rate	Fringe	Total
47.80	37.65	85.45

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

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OPERATING ENGINEERS Rates Expiration Date :

Effective Dates:

07/01/2023

Rate	Fringe	Total
57.96	37.65	95.61

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (minimum)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2023

Rate	Fringe	Total
59.22	37.65	96.87

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:

07/01/2023

Rate	Fringe	Total
59.22	37.65	96.87

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:

07/01/2023

Rate	Fringe	Total
54.09	37.65	91.74

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:

07/01/2023

Rate	Fringe	Total
54.09	37.65	91.74

CLASSIFICATIONS:

Steam Generator or Boiler

Stone Spreader

Tamping Machine (vibrating ride-on type)

Temporary Heating Plant (Nelson or other type, including
proprane, 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:

07/01/2023

Rate	Fringe	Total
61.04	37.65	98.69

CLASSIFICATIONS:

Helicopter Pilot/Engineer

Effective Dates:

07/01/2023

Rate	Fringe	Total
65.72	37.65	103.37

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:

07/01/2023

Rate	Fringe	Total
64.72	37.65	102.37

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:

07/01/2023

Rate	Fringe	Total
61.22	37.65	98.87

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types) , under 100 tons with a boom (including jib and/or leads) 140 ft. and over

Effective Dates:

07/01/2023

Rate	Fringe	Total
63.72	37.65	101.37

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:

07/01/2023

Rate	Fringe	Total
60.22	37.65	97.87

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 5:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must be established for 5 consecutive workdays.
- Any work started outside of the allowed start time, 6:00 AM to 9:00 AM, except for * tidal work, shall be considered an irregular shift and paid at straight time, plus 15% for the first eight hours, inclusive of benefits.
- * FOR TIDAL WORK- 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 hour shift is completed between the hours of 5:00 AM and 6:30 PM.
- All time worked in excess of an established shift (an established shift is a shift that is determined at the time of the bid) shall be paid at the applicable overtime rate. When a portion of an established shift works into Saturday, Sunday or a holiday, that time worked shall be paid at the established shift rate.
- When working with other trades who receive a higher irregular shift differential, these employees shall also receive the higher differential 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 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 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 Veterans Day.

For projects bid after April 1, 2020, on hazardous waste removal work of any kind, including a state or federally designated site, where the operating engineer is required to wear level A, B, or C personal protection, the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour.

- An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$1.00 per hour.

Effective Dates:

07/01/2023

Rate	Fringe	Total
62.85	37.65	100.50

CLASSIFICATIONS:

Helicopter Co-Pilot & Communications Engineer

TERRITORY
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STRUCTURAL STEEL ERECTION Rates Expiration Date :

Effective Dates:

07/01/2023

Rate	Fringe	Total
58.79	37.65	96.44

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:

07/01/2023

Rate	Fringe	Total
56.13	37.65	93.78

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:

07/01/2023

Rate	Fringe	Total
54.60	37.65	92.25

CLASSIFICATIONS:

Compressor (Single)

Generators

Welding Machines, Gas, Diesel, Or Electric Converters of any type-single

Welding System, Multiple (Rectifier Transformer Type)

Effective Dates:

07/01/2023

Rate	Fringe	Total
50.84	37.65	88.49

CLASSIFICATIONS:

Assistant Engineer/Oiler

Drillers Helper

Field Engineer - Transit/Instrument Man

Maintenance Apprentice (Deckhand)

Maintenance Apprentice (Oiler)

Off Road Back Dump

Effective Dates:

07/01/2023

Rate	Fringe	Total
58.41	37.65	96.06

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (Minimum)

Effective Dates:

07/01/2023

Rate	Fringe	Total
47.80	37.65	85.45

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

07/01/2023

Rate	Fringe	Total
59.55	37.65	97.20

CLASSIFICATIONS:

Field Engineer-Chief of Party

Vacuum Truck

Effective Dates:

07/01/2023

Rate	Fringe	Total
67.74	37.65	105.39

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:

07/01/2023

Rate	Fringe	Total
66.08	37.65	103.73

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:

07/01/2023

Rate	Fringe	Total
63.24	37.65	100.89

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:

07/01/2023

Rate	Fringe	Total
61.58	37.65	99.23

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:

07/01/2023

Rate	Fringe	Total
63.24	37.65	100.89

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 5:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must be established for 5 consecutive workdays.
- Any work started outside of the allowed start time, 6:00 AM to 9:00 AM, except for * tidal work, shall be considered an irregular shift and paid at straight time, plus 15% for the first eight hours, inclusive of benefits.
- * FOR TIDAL WORK- 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 hour shift is completed between the hours of 5:00 AM and 6:30 PM.
- All time worked in excess of an established shift (an established shift is a shift that is determined at the time of the bid) shall be paid at the applicable overtime rate. When a portion of an established shift works into Saturday, Sunday or a holiday, that time worked shall be paid at the established shift rate.
- When working with other trades who receive a higher irregular shift differential, these employees shall also receive the higher differential 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 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 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 Veterans Day.

For projects bid after April 1, 2020, on hazardous waste removal work of any kind, including a state or federally designated site, where the operating engineer is required to wear level A, B, or C personal protection, the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour.

- An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$1.00 per hour.

Effective Dates:

07/01/2023

Rate	Fringe	Total
59.22	37.65	96.87

CLASSIFICATIONS:

Driller

Effective Dates:

07/01/2023

Rate	Fringe	Total
52.38	37.65	90.03

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:

03/01/2023

Rate	Fringe	Total
50.30	35.73	86.03

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

03/01/2023

Rate	Fringe	Total
50.00	35.73	85.73

CLASSIFICATIONS:

Heading Foreman, Shaft Foreman, Rod Foreman, Electrician Foreman, Rigging Foreman

FREE AIR TUNNEL JOBS **Rates Expiration Date :**

Effective Dates:

03/01/2023

Rate	Fringe	Total
49.50	35.73	85.23

CLASSIFICATIONS:

Iron Foreman, Caulking Foreman, Form Foreman, Cement Finishing Foreman, Concrete Foreman, Track Foreman, Cleanup Foreman, Grout Foreman

Effective Dates:

03/01/2023

Rate	Fringe	Total
52.00	35.73	87.73

CLASSIFICATIONS:

Blaster

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.95	35.73	84.68

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.60	35.73	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:

03/01/2023

Rate	Fringe	Total
48.45	35.73	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:

03/01/2023

Rate	Fringe	Total
48.05	35.73	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:

07/01/2023

Rate	Fringe	Total
57.97	37.65	95.62

CLASSIFICATIONS:

Driller

Effective Dates:

07/01/2023

Rate	Fringe	Total
51.13	37.65	88.78

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:

10/01/2022			10/01/2023
Rate	Fringe	Total	Total
43.94	14.54	58.48	60.48

CLASSIFICATIONS:

Lead Dredgerman, Operator, Leverman

Licensed Tug Operator (over 1000 HP)

Effective Dates:

10/01/2022			10/01/2023
Rate	Fringe	Total	Total
38.00	14.18	52.18	53.93

CLASSIFICATIONS:

Derrick Operator, Spider/Spill Barge Operator

Engineer, Electrician, Chief Welder, Chief Mate

Fill Placer, Operator II

Licensed Boat Operator

Maintenance Engineer

Effective Dates:

10/01/2022			10/01/2023
Rate	Fringe	Total	Total
35.77	14.05	49.82	51.47

CLASSIFICATIONS:

Certified Welder

OPERATING ENGINEERS MARINE-DREDGING **Rates Expiration Date :**

Effective Dates:

10/01/2022			10/01/2023
Rate	Fringe	Total	Total
34.79	13.74	48.53	50.14

CLASSIFICATIONS:

Mate, Drag Barge Operator, Steward, Assistant Fill Placer

Welder

Effective Dates:

10/01/2022			10/01/2023
Rate	Fringe	Total	Total
33.67	13.67	47.34	48.91

CLASSIFICATIONS:

Boat Operator

Effective Dates:

10/01/2022			10/01/2023
Rate	Fringe	Total	Total
27.97	13.33	41.30	42.63

CLASSIFICATIONS:

Shoreman, Deckhand, Rodman, Scowman

Effective Dates:

10/01/2022			10/01/2023
Rate	Fringe	Total	Total
39.16	14.25	53.41	55.20

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

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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:

03/01/2023

Rate	Fringe	Total
51.80	35.73	87.53

CLASSIFICATIONS:

Paving Foreman

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.35	35.73	84.08

CLASSIFICATIONS:

Head Raker

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.50	35.73	84.23

CLASSIFICATIONS:

Screedman

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

ASPHALT LABORERS - SOUTH Rates Expiration Date :

Effective Dates:

03/01/2023

Rate	Fringe	Total
47.95	35.73	83.68

CLASSIFICATIONS:

Tampers, Smoothers, Kettlemen,
Painters, Shovelers, Roller Boys

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.05	35.73	83.78

CLASSIFICATIONS:

Milling Controller

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.25	35.73	83.98

CLASSIFICATIONS:

Traffic Control Coordinator

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.20	35.73	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:

10/18/2022

Rate	Fringe	Total
0.00	0.00	65.92

CLASSIFICATIONS:

Helper (4th year helper)

Effective Dates:

10/18/2022

Rate	Fringe	Total
0.00	0.00	75.24

CLASSIFICATIONS:

Driller

Effective Dates:

10/18/2022

Rate	Fringe	Total
0.00	0.00	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:

03/01/2023

Rate	Fringe	Total
47.55	35.73	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:

03/01/2023

Rate	Fringe	Total
48.25	35.73	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:

03/01/2023

Rate	Fringe	Total
48.50	35.73	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:

03/01/2023

Rate	Fringe	Total
52.05	35.73	87.78

CLASSIFICATIONS:

"A" Rate:

blaster

Effective Dates:

03/01/2023

Rate	Fringe	Total
51.80	35.73	87.53

CLASSIFICATIONS:

"FOREMAN" Rate:

labor foreman, asphalt foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

03/01/2023

Rate	Fringe	Total
52.80	35.73	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:

03/01/2023

Rate	Fringe	Total
47.55	35.73	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:

03/01/2023

Rate	Fringe	Total
47.55	35.73	83.28

CLASSIFICATIONS:

wagon drill or drill master helper; powder carrier; magazine tender; signal man

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date :**

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.25	35.73	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:

03/01/2023

Rate	Fringe	Total
48.25	35.73	83.98

CLASSIFICATIONS:

wagon or directional drill operator; drill master

Effective Dates:

03/01/2023

Rate	Fringe	Total
52.05	35.73	87.78

CLASSIFICATIONS:

blaster

Effective Dates:

03/01/2023

Rate	Fringe	Total
51.80	35.73	87.53

CLASSIFICATIONS:

labor foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

03/01/2023

Rate	Fringe	Total
52.80	35.73	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:

03/01/2023

Rate	Fringe	Total
48.50	35.73	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:

07/01/2023

Rate	Fringe	Total
57.34	34.70	92.04

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:

07/01/2023

Rate	Fringe	Total
57.34	34.70	92.04

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

07/01/2023

Rate	Fringe	Total
33.84	24.32	58.16

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:

11/02/2022

Rate	Fringe	Total
63.90	29.83	93.73

CLASSIFICATIONS:

Pipeline Journeyman Welder

Effective Dates:

11/02/2022

Rate	Fringe	Total
63.90	29.83	93.73

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

11/02/2022

Rate	Fringe	Total
40.53	22.15	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:

03/01/2023

Rate	Fringe	Total
51.80	35.73	87.53

CLASSIFICATIONS:

Asphalt Foreman

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.50	35.73	84.23

CLASSIFICATIONS:

Asphalt Screedman

Effective Dates:

03/01/2023

Rate	Fringe	Total
48.25	35.73	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:

03/01/2023

Rate	Fringe	Total
47.55	35.73	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 6:00 AM and 6:00 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:

	12/04/2022		12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
61.07	42.13	103.20	106.36	109.56

CLASSIFICATIONS:

Chief Lineman

Effective Dates:

	12/04/2022		12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
57.61	39.75	97.36	100.35	103.36

CLASSIFICATIONS:

Journeyman Lineman

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Effective Dates:

	12/04/2022		12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
57.61	39.75	97.36	100.35	103.36

CLASSIFICATIONS:

Special License Operator

Effective Dates:

	12/04/2022		12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
57.03	39.35	96.38	99.35	102.32

CLASSIFICATIONS:

Transit Man

Effective Dates:

	12/04/2022		12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
55.31	38.16	93.47	96.33	99.21

CLASSIFICATIONS:

Line Equipment Operator

Effective Dates:

	12/04/2022		12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
48.39	33.38	81.77	84.29	86.81

CLASSIFICATIONS:

Dynamite Man

Effective Dates:

	12/04/2022		12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
72.01	49.68	121.69	125.44	129.20

CLASSIFICATIONS:

General Foreman

Effective Dates:

	12/04/2022		12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
66.25	45.71	111.96	115.41	118.85

CLASSIFICATIONS:

Assistant General Foreman

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
64.52	44.51	109.03	112.40	115.76

CLASSIFICATIONS:

Line Foreman

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
46.66	32.19	78.85	81.28	83.72

CLASSIFICATIONS:

Street Light Mechanical Leader

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
44.36	30.60	74.96	77.26	79.58

CLASSIFICATIONS:

Groundman Winch Operator

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
44.36	30.60	74.96	77.26	79.58

CLASSIFICATIONS:

Groundman Truck Operator

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
43.78	30.20	73.98	76.26	78.55

CLASSIFICATIONS:

Street Light Mechanic

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
43.78	30.20	73.98	76.26	78.55

CLASSIFICATIONS:

Line Equipment Mechanic

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
37.45	25.84	63.29	65.23	67.17

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
34.57	23.85	58.42	60.21	62.02

CLASSIFICATIONS:

Groundman 1st Year

Effective Dates:

12/04/2022			12/03/2023	12/01/2024
Rate	Fringe	Total	Total	Total
57.03	39.35	96.38	99.35	102.32

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:

12/04/2022

Rate	Fringe	Total
67.52	55.11	122.63

CLASSIFICATIONS:

General Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Effective Dates:

12/04/2022

Rate	Fringe	Total
60.14	50.62	110.76

CLASSIFICATIONS:

Foreman

Effective Dates:

12/04/2022

Rate	Fringe	Total
56.97	48.72	105.69

CLASSIFICATIONS:

Small Job Foreman

Effective Dates:

12/04/2022

Rate	Fringe	Total
52.75	46.18	98.93

CLASSIFICATIONS:

Heavy Equipment Operator

Effective Dates:

12/04/2022

Rate	Fringe	Total
52.75	46.18	98.93

CLASSIFICATIONS:

Cable Splicer

Effective Dates:

12/04/2022

Rate	Fringe	Total
52.75	46.18	98.93

CLASSIFICATIONS:

Journeyman Lineman

Effective Dates:

12/04/2022

Rate	Fringe	Total
52.75	46.18	98.93

CLASSIFICATIONS:

Journeyman Welder

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Effective Dates:

12/04/2022

Rate	Fringe	Total
52.75	46.18	98.93

CLASSIFICATIONS:

Journeyman Painter

Effective Dates:

12/04/2022

Rate	Fringe	Total
42.20	39.80	82.00

CLASSIFICATIONS:

Light Equipment Operator

Effective Dates:

12/04/2022

Rate	Fringe	Total
36.93	36.60	73.53

CLASSIFICATIONS:

Groundman Truck Driver

Effective Dates:

12/04/2022

Rate	Fringe	Total
34.29	35.02	69.31

CLASSIFICATIONS:

Groundman 3rd Year

Effective Dates:

12/04/2022

Rate	Fringe	Total
31.65	33.42	65.07

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

12/04/2022

Rate	Fringe	Total
29.01	31.83	60.84

CLASSIFICATIONS:

Groundman 1st Year

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

ELECTRICIAN- UTILITY WORK (SOUTH) Rates Expiration Date :

Effective Dates:

12/04/2022

Rate	Fringe	Total
23.21	28.31	51.52

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:

03/01/2023

Rate	Fringe	Total
75.46	35.73	111.19

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

03/01/2023

Rate	Fringe	Total
75.01	35.73	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:

03/01/2023

Rate	Fringe	Total
74.26	35.73	109.99

CLASSIFICATIONS:

Iron Foreman, Caulking Foreman, Form Foreman, Cement Finishing Foreman, Concrete Foreman, Track Foreman, Clean-up Foreman, Grout Foreman

Effective Dates:

03/01/2023

Rate	Fringe	Total
78.01	35.73	113.74

CLASSIFICATIONS:

Blaster

Effective Dates:

03/01/2023

Rate	Fringe	Total
73.43	35.73	109.16

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

03/01/2023

Rate	Fringe	Total
72.91	35.73	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:

03/01/2023

Rate	Fringe	Total
72.68	35.73	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)

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS Rates Expiration Date :

Effective Dates:

03/01/2023

Rate	Fringe	Total
72.08	35.73	107.81

CLASSIFICATIONS:

All others (including Powder Watchman, Change House Attendant, Top Laborer, Job Steward)

SECTION 011000 - SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY OF WORK

- A. Project Description: Project name is Demolition of Courthouse Parking Deck at Caldwell Place and Elizabeth town Plaza, Elizabeth, NJ for the County of Union, and further identified as Project #2023-090 on the Contract Documents prepared by USA Architects.
- B. Owner: County of Union
 - 1. Owner's Representative: Ricardo Matias, County Engineer.
- C. Construction Manager: MAST Construction Services, Inc., 96 E. Main Street, Little Falls, NJ 07424
- D. Architect: USA Architects, 20 No. Doughty Avenue, Somerville, NJ 08876.
- E. Related Documents include Drawings and general provisions of contract, including General and Supplementary Conditions, Instructions to Bidders, and other Division and Specification Sections, all of which apply to work in this section and contracts listed below.
 - 1. Project Narrative appended to this Section.
- F. The Contract and work will include all components of the project
 - 1. General Scope: Construction includes: abatement, demolition, utility connections, site work and grading, backfill and compaction, temporary sidewalks/bridging, temporary fencing, temporary retaining walls, and other work included in the contract documents.
- G. Web-based Project Software: The Contractor is required to utilize the Construction Manager's Project Management Software: Autodesk Construction Cloud through the entire duration of the project for the submission of all documents which include but are not limited to RFI's and submittals. Autodesk will be administered by the Construction Manager for the project.

1.2 WORK BY OWNER

- A. General: Cooperate Fully with Owner so that work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Contractor is responsible for coordinating their work on this Contract through the Construction Manager, with the preceding and concurrent work performed by Owner.

1.3 INTENT OF THE SPECIFICATIONS

A. The intent of these Specifications is to describe the materials and methods of construction required for the performance of the work. In general, it is intended that the drawings shall delineate the detailed extent of the work. When there is a discrepancy between drawings, referenced specifications, and standards and this specification, this specification shall govern.

B. The following apply:

1. Protect all existing construction. Damage to existing construction or equipment shall be restored to the satisfaction of the Architect at no additional cost to the Owner.

3. The following work hour schedule shall be strictly adhered to. Failure to do so shall be cause to immediately terminate the Agreement between Owner and Contractor. It shall be understood by all parties if work is to be performed on weekends and holidays, the Contractor can perform said work only if approved by the Owner beforehand.
 - 1) Working hours on Monday through Friday shall be 7:00 A.M. to 3:30 P.M.
 - 2) On holidays, Saturdays and Sundays working hours subject to local ordinances and Owner approval.

Note: Contractor shall verify local ordinances and adjust the above hours accordingly as to exact start and stoppage times allowed.

4. Contractor shall upon completion of the day's work inspect and clean any debris located in the area of work. Contractor shall provide all necessary precaution to protect existing building and contents during the demolition and installation process. The Contractor shall be responsible to remove and replace any item or finishes damaged during the execution of the Work.

5. The Contractor shall report any discrepancies between the documents and field conditions to the architect ten (10) days prior to submission of a proposal so that the architect may clarify the discrepancy. Failure to report any discrepancies will nullify any extra cost, once a contract has been awarded.

6. Construction Sequencing: In order to minimize impact on county operations, the contractor is required to sequence accordingly.

- 1) Create Temporary vehicular travel lanes and the temporary pedestrian sidewalks and crosswalks.
- 2) A) Trench, install, connect, test and inspect new water line from the main to service the New Annex Building; and B) Abatement of the entire garage structure.
- 3) Demolition of the garage structure.
- 4) Backfill/compaction, grading, establishment of site security for future use.

C. CONTRACTS

1. Contract Type: A single prime contract based on a stipulated price.
2. The specifications contain the Bid Proposal Form for a single overall contract including all the work consisting of General Construction, Plumbing, and Electrical, and all the work necessary to provide the County of Union with a cleared, backfilled, compacted, graded and secured site, with all required certificates of completion and best quality of workmanship with substantial completion taking place no later than the milestone dates outlined under paragraph 2.1.A of this section.

D. KNOWLEDGE OF CONTRACT REQUIREMENTS

1. The Contractor and its subcontractors, sub-subcontractors and materialmen shall consult in detail the General Conditions, all divisions and sections of the specification, all drawings and all addenda for instructions and requirements pertaining to the work and shall provide all labor, materials, equipment, and services necessary to furnish, install and complete the work in strict conformance with all provisions thereof.
2. The Contractor will be held to have examined the site of the work prior to submitting its proposal and informed it, its subcontractors, sub-subcontractors, and materialmen of all existing conditions affecting the execution of the work.
3. The Contractor will be held to have examined the Contract Documents, and modifications thereto, as they may affect subdivisions of the work and informed it, its subcontractors, sub-subcontractors, and materialmen of all conditions thereof affecting the execution of the work.
4. The scope of work for the Contract is not necessarily limited to the description of each section of the specifications and the illustrations shown on the drawings. Include all minor items not expressly indicated in the contract documents, or as might be found necessary as a result of field conditions, in order to complete the work as it is intended, without any gaps between the various subdivisions of work of the contractors and their subcontractors.

5. The contractor will be held to be thoroughly familiar with all conditions affecting labor in the neighborhood of the project including, but not limited to, unions, incentive pay, procurement, living and commuting conditions and to have informed its subcontractors and sub-subcontractors thereof.

E. CONTRACT DOCUMENTS INFORMATION

1. The Contract Documents are prepared in accordance with available information as to existing conditions and locations. If, during construction, conditions are revealed at variance with the contract documents, notify the Architect immediately so that supplementary instructions may be issued.
2. The specifications determine the kinds and methods of installation of the various materials, the drawings establish the quantities, dimensions and details of materials, the schedules on the drawings give the location, type, and extent of the material.
3. Should the drawings, specifications or schedules disagree in themselves or with either or both of the others, the better quality or greater quantity of work or materials shall be performed and provided, unless otherwise directed in writing by the Architect.
4. Dimensions given on the drawings govern scale measurements and large-scale drawings govern small-scale drawings, except as to anything omitted unless such omission is expressly noted on the larger scale drawings.
5. Whenever a material, article or piece of equipment is referred to in the singular number in the contract documents, it shall be the same as referring to it in the plural. As many such materials, articles or pieces of equipment shall be provided as are required to complete the work.
6. The Construction Manager, Architect and Owner do not assume any responsibility for the content and accuracy of any surveys, utility information, subsurface reports and other information provided through their office, by others, to the Contractor. The Contractor is responsible to obtain any additional information that is required in this regard for the performance of the work.

F. Contractor Use of Premises: Limit use of the premises to construction activities in areas indicated; allow for Owner occupancy and use by the public.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.

2. Keep driveways and entrances clear at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize requirements for storage of materials.
 3. If it becomes necessary for certain short-term activities to be performed outside of the site enclosure fence or over public areas, the Contractor will be responsible for all related costs including traffic control and premium time work in order to comply with all local regulations.
 4. The Contractor shall ensure that proper parking and material storage is provided for their staff as required so as not to interrupt the facility's operation.
 5. The Contractor, their subcontractors, vendors, etc. shall not erect any sign on the Project site without the prior written consent of the Owner. This consent may be at the sole discretion of the Owner.
 6. The golf course is located on a site with limited space for contractor field offices and trailers. Currently, the Contractor will be permitted to establish their field office, the field office for the Construction Manager and their storage and staging areas as described in these specifications.
- G. The Contractor will provide temporary partitions to separate ongoing work when and as required. All areas impacted by the work will be cleaned, minimally, at the end of each work shift or at the daily conclusion of the work. No tools, equipment, etc. is to be staged or stored out of the protected area.
- I. Partial Owner Occupancy: Coordination of the skybridge abatement, demolition, and reconstruction of then adjoining exterior wall must be coordinated with the Owner to ensure uninterrupted functionality of the connected New Annex Building during normal public operating hours.
1. Obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
- J. It shall be understood that the working hours for this project shall be between the hours indicated above. All interior spaces affected by the work shall be swept clean daily and restored to their original condition at the end of each working day.

- K. The Contractor is to provide all information regarding the status of equipment and materials, especially those with long or impacted lead times, to the Construction Manager on a monthly basis or more frequently if required.
- L. 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 services according to requirements indicated:
 - 1. Notify Architect, Construction Manager and Owner not less than 2 days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- M. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruptions to Owner occupancy, with Owner.
 - 1. Notify Architect, Construction Manager and Owner not less than 2 days in advance of proposed disruptive operations
- N. Smoking: Smoking is prohibited on the project site at all times.
- O. Controlled Substances: It shall be the Contractor's responsibility to prevent illegal drug use on the Project. Use of illegal drugs or substances on the Project site by any employee of the Contractor or any subcontractor, shall subject the employee to permanent removal from the site. Persistent use of illegal drugs or substances by employees of the Contractor or any of its subcontractors, shall constitute a default under the construction contract.
- P. SCOPE OF WORK (PROJECT NARRATIVE)

1. General Description:

The project proposes abatement and demolition of the Union County Courthouse Parking Deck located at the southeast corner of Elizabethtown Plaza and Caldwell Place in Elizabeth, NJ. The parking deck consists of a ground floor, 2 basement levels, 5 levels of above-ground parking, and a top level (7th floor) which formerly housed juvenile detention, police training, and miscellaneous county storage space. A skybridge which connects the 7th floor of the garage with the 5th floor of the neighboring Courthouse Annex is also to be abated and demolished, including utility disconnections and fill-in work to the Annex façade.

A new underground water service line must also be extended from the existing Elizabethtown Plaza main to the basement mechanical space in the Courthouse Annex, located on the opposite side of the Annex from the garage to be demolished. This utility work must be completed, tested, and inspected prior to the start of demolition, but abatement can and should occur concurrently with this new water line installation.

Temporary vehicular lanes and safe pedestrian pathways are to be established prior to the start of construction activities. Upon the completion of demolition, the site must be prepared for eventual future use via backfill and compaction, grading for proper drainage, and making secure against trespass or intrusion.

2. General Construction:

Construction includes: abatement, demolition, utility connections, site work and grading, backfill and compaction, temporary sidewalks/bridging, temporary fencing, temporary retaining walls, and other work included in the contract documents.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Change procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 21 00 - Allowances: Payment procedures relating to allowances.
- B. Section 01 78 00 - Closeout Submittals: Project record documents.

1.03 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703, current edition.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 15 days after date of Commencement of the Work.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization, bonds and insurance, and phased work.
- F. Provide sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports and so that no line item exceeds five percent of the Contract Sum. Round amounts to nearest whole dollar, the total shall equal the Contract Sum.
- G. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- H. Include within each line item, a direct proportional amount of Contractor's overhead and profit.
- I. Revise schedule to list approved Change Orders, with each Application For Payment.
- J. Closeout Costs: Include separate line items under Contractor and principal subcontracts for project closeout requirements in an amount totaling a minimum of 5% of Contract Sum and subcontract amount.

1.04 TAXES

- A. The owner is exempt from any local, state or federal sales, use or excise tax. The owner will not pay for state sales and use tax that are included in any invoices.

1.05 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Use Form AIA G732 and Form AIA G703, current edition.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- H. Submit one electronic and three hard-copies of each Application for Payment.
- I. Submit the following prior to the first Application for Payment. No payment will be approved until these have been submitted.
 - 1. Evidence of Affirmative Action Compliance.
 - 2. Proof of Business Registration.
 - 3. Copy of the building permit.
 - 4. Name and qualifications of a proposed superintendent.
 - 5. Names of persons or entities proposed for each principal portion of the Work.
 - 6. Submittal schedule.
 - 7. Schedule of values.
 - 8. Insurance certificates naming the Owner, Architect, and Architect's consultants as additional insureds under the Contractor's commercial general liability policy.
- J. Include the following with each application during construction:
 - 1. Transmittal letter as specified for submittals in Section 01 30 00.
 - 2. Construction progress schedule, revised and current as specified in Section 01 32 16.
 - 3. Current construction photographs specified in Section 01 30 00.
 - 4. Partial release of liens from major subcontractors and vendors.
 - 5. Certified payrolls.
 - 6. Affidavits attesting to off-site stored products.
 - 7. Updated Construction Schedule
 - 8. Daily Construction Reports
 - 9. Updated Change Order Log

- K. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.06 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.
- B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 days.
- D. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 25 00.
- E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
- F. Substantiation of Costs: Provide full information required for evaluation.
 - 1. Provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- G. Overhead and Profit:
 - 1. For all extra Work performed by Contractor:

- a. The gross cost to the Owner shall include the net cost of the Work to the Contractor plus an allowance for overhead and profit (inclusive of bond and insurance) not to exceed 15% of the net cost.
2. For all extra Work performed by a Subcontractor:
 - a. 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 (inclusive of bond and insurance) not to exceed 10% of the Subcontractor's cost (for a maximum aggregate total of 21%).
- H. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- K. Promptly enter changes in Project Record Documents.

1.07 APPLICATION FOR FINAL PAYMENT

- A. Forms:
 1. AIA G706 "Contractor's Affidavit of Payment of Debts and Claims"
 2. AIA Document G706A "Contractor's Affidavit of release of Liens"
 3. AIA Document G707 "Consent of Surety to Final Payment"
- B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- C. Application for Final Payment will not be considered until the following have been accomplished:
 1. All closeout procedures specified in Section 01 70 00.
 2. Conditions listed in AIA Document A201 § 9.10.2.
 3. Pursuant to N.J.S.A. 52:32-44, submit a complete and accurate list of all subcontractors used and their addresses.
 4. Completion of items specified for completion after Substantial Completion.
 5. Ensure that unsettled claims will be settled.
 6. Ensure that incomplete Work is not accepted and will be completed without undue delay.
 7. Transmittal of required Project construction records to the Owner.
 8. Certified property survey (if applicable).
 9. Proof that taxes, fees, and similar obligations were paid.
 10. Removal of temporary facilities and services.
 11. Removal of surplus materials, rubbish, and similar elements.

12. Completion of training necessary for the Owners personnel to operate all systems trouble-free.
13. Execution of maintenance agreements and assurance that maintenance is on-going.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROGRESS PAYMENTS PROCEDURE

- A. Submit applications for payment within the time period stipulated in the Agreement.
- B. The Architect will review and respond to the application within the time period stipulated in the Agreement.
- C. The Owner will make payment within 30 days of the date established for the progress payment.
- D. 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.
- E. The Contractor shall pay each Subcontractor, no later than ten days after receipt of payment from the Owner.

END OF SECTION

SECTION 01 21 00 – ALLOWANCES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this Section.

1.2 SUMMARY

- A. Selected materials and equipment, and in some cases, installation, are included in Contract Documents by allowances. Allowances are established to defer selection until more information is available. Other requirements will be issued by a Change Order.
- B. Types of allowances required include the following:
 - 1. Contingency allowance.
 - 2. Testing and Inspection Allowance
- C. Procedures for submitting and handling Change Orders are included in Division 1 Section "012000 Price and Payment Procedures."
- F. Lump Sum and Contingency Allowances:
 - 1. Contractor's overhead, profit, supervision, and related costs for products and equipment ordered by Owner under the lump sum and contingency allowance are as follows:
 - a. For all contingency allowance work performed by the contractor and all subcontractors, the gross cost to the Owner shall not exceed an overhead and profit margin as per the terms set forth in section 01200 Price and Payment Procedures.
 - 2. Allowances shall include costs of specific products and materials ordered under the Allowance, including delivery.
 - 3. Use Allowances only as directed by the Architect and Construction Manager and only by Change Order, which designates amount(s) to be charged to the Allowance.
 - 4. At Project Closeout, credit unused amounts remaining in the Allowances to the Owner by Change Order.
- G. Testing and Inspection Allowances:

Testing and inspection allowances include the cost of engaging testing agencies, actual tests and inspections and reporting results.

1. The allowance does not include incidental labor required to assist the testing agency or for costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the contract sum. Contractors are not entitled to overhead and profit markups on Testing and Inspection allowance draws.
2. Costs of testing and inspection services not required by the contract documents are not included in the allowance.
3. At Project Closeout, credit unused amounts remaining in the testing and inspection allowance to the Owner.

H. Unused Materials: Return unused materials for credit to the Owner, after installation has been completed and accepted.

1. If it is not feasible to return unused material, prepare unused material for the Owner's storage, and deliver to the storage space as directed. Otherwise, disposal is the Contractor's responsibility.

I. Inspection: Inspect products covered by an allowance promptly upon delivery for damage or defects.

J. Preparation: Coordinate materials and installation for each allowance with related materials and installations to ensure that each allowance item is integrated with related construction activities.

K. SCHEDULE OF ALLOWANCES

1. Allowance No. 1: Contingency Allowance: Contractor shall include the lump sum of Two Hundred Fifty Thousand Dollars (**\$250,000.00**) in their bid to cover changes as directed by the Owner.
2. Allowance No. 2: Testing and Inspection Allowance: Contractor shall include the sum of Fifty Thousand Dollars \$50,000.00 in their bid for special testing and inspections as required by NJ Uniform Construction Code and as required by the Contract Documents.

END OF SECTION

SECTION 01 22 00 - UNIT PRICES

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.

1.2 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if:
 - 1. The estimated quantities of Work required by the Contract Documents are increased or decreased.
 - 2. If no estimate of quantity is given in the bidding documents for inclusion in the base or alternate bids.
 - 3. Unit prices as listed in the proposal form.

1.3 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, profit, and applicable taxes.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices.
- C. Schedule: A "Unit Price Schedule" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials described under each unit price.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 UNIT PRICE SCHEDULE

- A. Unit Price No. 1: Acoustical Ceiling & Wall Texture/Stucco (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Per Square foot.
- B. Unit Price No. 2: Sprayed On Fire Proofing (SOFP) (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Per Square foot.
- C. Unit Price No. 3: Finish & Brown Coat Plaster (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Per Square foot.

- D. Unit Price No. 4: Pipe Insulation (Wrap and Cut)
 - 1. Unit of measurement: Per Linear Foot.

- E. Unit Price No. 5: Fitting Insulation (Wrap and Cut)
 - 1. Unit of measurement: .Per Unit

- F. Unit Price No. 6: Door Caulk (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Square foot.

- G. Unit Price No. 7: VAT/Mastic (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Square foot.

- H. Unit Price No. 8: Brick Expansion Joint (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Square foot.

- I. Unit Price No. 9: Flashing (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Linear foot.

- J. Unit Price No. 10: Window Caulking (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Linear foot.

- K. Unit Price No. 11: Wall/Ceiling Demolition (Non N.J.A.C. 5:23-8)
 - 1. Unit of measurement: Square foot

END OF SECTION

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

1.2 DEFINITIONS

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
 - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
 - a. Unavailability.
 - b. Regulatory changes.
 - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
 - a. Substitution requests offering advantages solely to the Contractor will not be considered.

1.3 REFERENCE STANDARDS

- A. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase) Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
 - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
 - a. Waiver includes claims related to providing custom aesthetic effects, colors, or finishes to meet the intent expressed in the Contract Documents.

6. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
 1. Note explicitly any non-compliant characteristics.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
 1. Contractor's Substitution Request documentation must include the following:
 - a. Project Information:
 - 1) Official project name and number.
 - 2) Owner's, Architect's, and Contractor's names.
 - b. Substitution Request Information:
 - 1) Discrete and consecutive Substitution Request number, and descriptive subject/title.
 - 2) Indication of whether the substitution is for cause or convenience.
 - 3) Issue date.
 - 4) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
 - 5) Description of Substitution.
 - 6) Reason why the specified item cannot be provided.
 - 7) Differences between proposed substitution and specified item.
 - 8) Description of how proposed substitution affects other parts of work.
 - c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
 - 1) Physical characteristics.
 - 2) In-service performance.
 - 3) Expected durability.
 - 4) Visual effect.
 - 5) Sustainable design features.
 - 6) Warranties.
 - 7) Other salient features and requirements.
 - 8) Include, as appropriate or requested, the following types of documentation:
 - (a) Product Data:
 - (b) Samples.
 - (c) Certificates, test, reports or similar qualification data.
 - (d) Drawings, when required to show impact on adjacent construction elements.
 - d. Impact of Substitution:
 - 1) Savings to Owner for accepting substitution.
 - 2) Change to Contract Time due to accepting substitution.
- D. Limit each request to a single proposed substitution item.
 1. Submit an electronic document, combining the request form with supporting data into single document.

3.2 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
 - 1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request. See this form for additional information and instructions.
 - 2. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- B. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
- C. Submit request for Substitution for Convenience within 14 days of discovery of its potential advantage to the project or the date of Commencement of the Work, whichever is later, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
 - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
 - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
 - 3. Bear the costs engendered by proposed substitution of:
 - a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
 - b. Other construction by Owner.
 - c. Other unanticipated project considerations.
- D. Substitutions will not be considered under one or more of the following circumstances:
 - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 - 2. Without a separate written request.
 - 3. When acceptance will require revisions to Contract Documents.

3.3 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.
 - 1. Architect's decision following review of proposed substitution will be noted on the submitted form.

3.4 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.5 CLOSEOUT ACTIVITIES

- A. Include completed Substitution Request Forms as part of the Project record.

END OF SECTION

SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Number of copies of submittals.
- F. Requests for Information (RFI) procedures.
- G. Submittal procedures.

1.2 RELATED REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: General product requirements.
- B. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.

1.3 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Architect:
 - 1. Requests for Interpretation (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRECONSTRUCTION MEETING

- A. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Construction Manager
 - 4. Contractor.

- B. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of schedule of values, and progress schedule.
 - 5. Designation of personnel representing the parties to Contract and <1|A/E|>.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.

- C. The Construction Manager will record minutes and distribute copies within three business days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.2 SITE MOBILIZATION MEETING

- A. Architect will schedule meeting at the Project site prior to Contractor occupancy.

- B. Meeting may be conducted as part of the Preconstruction Meeting.

- C. Attendance Required:
 - 1. Contractor.
 - 2. Owner.
 - 3. Architect.
 - 4. Construction Manager
 - 5. Contractor's superintendent.
 - 6. Major subcontractors.

- D. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements.
 - 3. Construction facilities and controls provided by Owner.
 - 4. Temporary utilities provided by Owner.

5. Survey and building layout.
 6. Security and housekeeping procedures.
 7. Schedules.
 8. Application for payment procedures.
 9. Procedures for testing.
 10. Procedures for maintaining record documents.
 11. Requirements for start-up of equipment.
 12. Inspection and acceptance of equipment put into service during construction period.
- E. The Construction Manager will record minutes and distribute copies within three business days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.3 PROGRESS MEETINGS

- A. Attendance Required:
1. Contractor.
 2. Owner.
 3. Architect.
 4. Construction Manager
 5. Contractor's superintendent.
 6. Major subcontractors.
- B. Agenda: The Construction Manager will prepare the meeting agenda for progress meetings and will distribute to all invited parties. Significant items that could affect progress will be reviewed along with topics appropriate to the status of the project, as well as overall construction progress as it relates to the Contractor's Construction Schedule. Topics of discussion may include the following:
1. Review minutes of previous meetings.
 2. Review of work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of RFIs log and status of responses.
 7. Review of off-site fabrication and delivery schedules.
 8. Maintenance of progress schedule.
 9. Corrective measures to regain projected schedules.
 10. Planned progress during succeeding work period.
 11. Coordination of projected progress.
 12. Maintenance of quality and work standards.
 13. Effect of proposed changes on progress schedule and coordination.
 14. Other business relating to work.
- C. The Construction Manager will record minutes and distribute copies within three business days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.4 PREINSTALLATION MEETINGS - SEE SECTION **01 70 00**.

3.5 **REQUESTS FOR INTERPRETATION (RFI)**

- A. Definition: A request seeking one of the following:
1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.
 2. Prepare in a format and with content acceptable to Owner.
 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
 - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
 - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
 3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.

- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
 - 1. Official Project name and number, and any additional required identifiers established in Contract Documents.
 - 2. Owner's, Architect's, and Contractor's names.
 - 3. Discrete and consecutive RFI number, and descriptive subject/title.
 - 4. Issue date, and requested reply date.
 - 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 - 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
 - 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

- G. Processing: Allow **5 business days** for initial review. Allow more time if processing must be delayed for coordination with other RFI's. The Architect will advise the Contractor when an RFI must be delayed for coordination.
 - 1. No extension of time will be authorized because of failure to transmit RFI's sufficiently in advance of the Work to permit processing

- H. Web-based Project Software: The Contractor is required to utilize the Construction Manager's Project Management Software: Autodesk Construction Cloud through the entire duration of the project for the submission of all documents which include but are not limited to RFI's and submittals. Autodesk will be administered by the Construction Manager for the project.

3.6 SUBMITTAL SCHEDULE

- A. Submit to Architect for review a schedule for submittals in tabular format.
 - 1. Submit at the same time as the preliminary schedule.
 - 2. Coordinate with Contractor's construction schedule and schedule of values.
 - 3. Format schedule to allow tracking of status of submittals throughout duration of construction.
 - 4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
 - 5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.

- a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.7 SUBMITTAL SUBMISSION

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
 1. Web-based Project Software: The Contractor is required to utilize the Construction Manager's Project Management Software: Autodesk Construction Cloud through the entire duration of the project for the submission of all documents which include but are not limited to RFI's and submittals. Autodesk will be administered by the Construction Manager for the project.
 2. All submittals received for review shall contain the Contractor's stamp of approval. Submittals received by the Architect and/or Engineers which do not contain the Contractor's stamp of approval will be returned to the Contractor without review and must be properly resubmitted. No delay claims will be entertained.

3.8 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
 1. Processing: Allow **15 calendar days** for initial review. Allow more time if processing must be delayed for coordination with other submittals. The Architect will advise the Contractor when a submittal must be delayed for coordination. Allow two weeks for reprocessing each submittal.
 - a. No extension of time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.
- B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
 1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Architect's and consultants' actions on items submitted for review:
 1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved", or language with same legal meaning.
 - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.

- 1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
 - 2) Non-responsive resubmittals may be rejected.
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".
 - 1) Resubmit revised item, with review notations acknowledged and incorporated.
 - 2) Non-responsive resubmittals may be rejected.
 - b. "Rejected".
 - 1) Submit item complying with requirements of Contract Documents.
- E. Architect's and consultants' actions on items submitted for information:
 1. Items for which no action was taken:
 - a. "Received" - to notify the Contractor that the submittal has been received for record only.
 2. Items for which action was taken:
 - a. "Reviewed" - no further action is required from Contractor.

END OF SECTION

SECTION 01 32 16 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, with network analysis diagrams and reports.

1.2 PROJECT PHASING & MILESTONE DATES

- A. Mobilize on site and commence work within 14 days after Notice to Proceed.
- B. Comply with all individual phasing and sequencing requirements in the contract documents
- C. Substantial Completion – **183** Calendar Days from Notice to Proceed
- D. Overall Final Completion – **213** Calendar Days from Notice to Proceed

Contractor must maintain these dates. Failure shall cause contractor to be charged liquidated damages and possible fees incurred by design professionals extending construction administration past final completion date.

1.3 SUBMITTALS

- A. Within 5 days after date of Commencement of the Work, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 10 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 5 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.

1.4 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.2 CONTENT

- A. The Contractor is to formulate and submit a precedence-based network diagram project schedule for the Work using Primavera P6 or other approved precedence based scheduling program. The schedule is to be provided in both pdf and XER formats based on the following requirements:
 1. Obtain the information from their subcontractors and vendors required to formulate and prepare a critical path composite bar chart schedule of the Work based on time scale network logic.
 2. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the Contractor's schedule of values.
 3. Within each time bar, indicate estimated completion percentage in 10 percent increments. As work progresses, place a contrasting mark in each bar to indicate actual completion.
 4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.
 5. Coordinate the schedule of values, list of subcontractors, submittal schedule, progress reports, payment requests and other schedules with this schedule.
 6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures, such as punch list formulation and the Contractor's procedures such as equipment start-up necessary for certification of Substantial Completion.
 7. Indicate important stages of construction for each major portion of the Work, including submittal, release of long lead items, the selection of allowance items if any, review, testing and installation.
 8. Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities. Indicate milestone dates set forth in this section and elsewhere in the Contract Documents.
 9. Following response to the initial submittal, print and distribute copies to the Construction Manager, Architect, Owner, subcontractors and other parties required to comply with scheduled dates. Post copies in the project meeting room and temporary field office. When revisions are made, distribute 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 construction activities.
10. Revise the schedule after each meeting, event or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting, or as required by the Construction Manager.
 11. Provide a copy of the XER files for the base line schedule and all required updates to the Construction Manager when and as requested and on a monthly basis concurrently with the submittal of the Contractor's payment application.
 12. In addition to showing the critical path, the schedule shall also include milestones, float, predecessors, and successors. Any constraints shall also be clearly identified.
- B. If the project, or any component that includes a required completion date is not complete for the use of that component by the milestone dates specified in Article 2.1 of this section and elsewhere in the Contract Documents, the Contractor shall pay the Owner the sum of \$1,000 (One Thousand Dollars) per calendar day as liquidated damages, not as a penalty. For each calendar day until the work is completed.
- C. There will be no bonus or incentive paid should the work, or any portion thereof, be completed in advance of the specified activity milestone date or phase completion date.
- D. 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 Contractors' Construction Schedule, as set forth in General Conditions. This update must also reflect any other impacts to the schedule resulting from delays, concurrent or non-concurrent, for which any Contractor is responsible. No claims will be evaluated or accepted without inclusion of the substantiation requirements set forth in this article.
- E. If the Contractor is delayed in the progress of the Work at any time by the Owner, Architect, or Construction Manager, due to the incorporation of any major changes to the Work, the Contractor shall not assert any claim regarding the same to any of these parties and the Contractor's sole remedy shall be limited to an extension to the time, and costs as permitted by law, of completion in the amount deemed to be reasonable by the Architect and Construction Manager.
- F. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- G. Identify each item by specification section number.
- H. Provide sufficient detail so that no activity exceeds five percent of the Contract Sum.
- I. Identify work of separate stages and other logically grouped activities.
- J. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

- K. Coordinate content with schedule of values specified in Section 01 20 00 - Price and Payment Procedures.
- L. Provide legend for symbols and abbreviations used.

3.3 NETWORK ANALYSIS

- A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
- B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
- C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
 - 1. Preceding and following event numbers.
 - 2. Activity description.
 - 3. Estimated duration of activity, in maximum 15 day intervals.
 - 4. Earliest start date.
 - 5. Earliest finish date.
 - 6. Actual start date.
 - 7. Actual finish date.
 - 8. Latest start date.
 - 9. Latest finish date.
 - 10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
 - 11. Monetary value of activity, keyed to Schedule of Values.
 - 12. Percentage of activity completed.
 - 13. Responsibility.
- D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.
- E. Required Reports: List activities in sorts or groups:
 - 1. By preceding work item or event number from lowest to highest.
 - 2. By amount of float, then in order of early start.

3.4 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, and resubmit within 5 days.

3.5 UPDATING SCHEDULE

- A. Save baseline schedule for comparison to future schedules.
- B. Maintain schedules to record actual start and finish dates of completed activities.
- C. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- D. Annotate diagrams to graphically depict current status of Work.
- E. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- F. Indicate changes required to maintain Date of Substantial Completion.
- G. Submit reports required to support recommended changes.
- H. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.

3.6 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

3.7 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report, recording information concerning events at the site. Submit duplicate copies to the Architect and Construction Manager at weekly intervals. Include the following information:
 - 1. List of subcontractors at the site.
 - 2. High and low temperatures, general weather conditions.
 - 3. Accidents, stoppages, delays, shortages, losses.
 - 4. Emergency procedures.
 - 5. Change Orders received, implemented.
 - 6. Partial Completions, occupancies.
 - 7. Substantial Completions authorized.

3.8 UPCOMING WORK SUMMARY

- A. Prepare summary report (Two-Week Look Ahead) for submission at Progress Meetings 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.

3.9 RECOVERY SCHEDULE:

- A. When periodic update indicates the Work is 14 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.

END OF SECTION

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. References and standards.
- D. Testing and inspection agencies and services.
- E. Control of installation.
- F. Mock-ups.
- G. Tolerances.
- H. Manufacturers' field services.
- I. Defect Assessment.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- B. Section 01 42 16 - Definitions.
- C. Section 01 42 19 - Reference Standards.
- D. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.3 REFERENCE STANDARDS

- A. IAS AC89 - Accreditation Criteria for Testing Laboratories 2021.

1.4 DEFINITIONS

- A. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.
 - 1. Design Services Types Required:

- a. Construction-Related: Services Contractor needs to provide in order to carry out the Contractor's sole responsibilities for construction means, methods, techniques, sequences, and procedures.
 - b. Design-Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.
- B. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
- 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Compliance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
 - 2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
- 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

- E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit report within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
- F. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.
- B. Quality-Control Personnel Qualifications. Engage a person with requisite training and experience to implement and manage quality assurance (QA) and quality control (QC) for the project.

1.7 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups shall be a comparison standard for the remaining Work.
- C. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.4 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 30 days in advance of required observations.
 - 1. Observer subject to approval of Architect.
 - 2. Observer subject to approval of Owner.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.5 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Owner, it is not practical to remove and replace the work, Owner will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 42 16 - DEFINITIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Other definitions are included in individual specification sections.

1.2 DEFINITIONS

1. Architect.
 2. Change Order.
 3. Claim.
 4. Construction Change Directive.
 5. Construction Manager
 6. Contract.
 7. Contract Document.
 8. Contract Sum.
 9. Contract Time.
 10. Contractor.
 11. Date of Commencement of the Work.
 12. day.
 13. defective.
 14. Drawings.
 15. Instruments of Service.
 16. Modification.
 17. Owner.
 18. Product Data.
 19. Project.
 20. Samples.
 21. Separate Contractor.
 22. Shop Drawings.
 23. Specifications.
 24. Subcontractor.
 25. (Date of) Substantial Completion.
 26. Sub-subcontractor.
 27. Work.
- B. Furnish: When referring to products, means to purchase and deliver.
 - C. Install: When used in connection with "furnish," includes unloading (if not provided by delivery carrier), inspecting for damage, uncrating, and other handling at the site.

- D. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
- E. Provide: When referring to products, means to furnish and install.
- F. Shall: Must; be obliged to (expressing imperative mood, not future tense).
- G. Supply: To furnish and install.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of each prime contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
 - 3. Temporary heat.
 - 4. Ventilation.
 - 5. Sanitary facilities, including drinking water.
 - 6. Storm and sanitary sewer.
- C. Support facilities include, but are not limited to, the following:
 - 1. Field offices and storage sheds.
 - 2. Dewatering facilities and drains.
 - 3. Temporary enclosures.
 - 4. Hoists.
 - 5. Temporary project identification signs and bulletin boards.
 - 6. Waste disposal services.
 - 7. Rodent and pest control.
 - 8. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, and lights.
 - 3. Sidewalk bridge or enclosure fence for the site.
 - 4. Environmental protection.
 - 5. Construction enclosure fence and gates
 - 6. Temporary exitways

1.3 REGULATIONS

- A. Comply with applicable laws and regulations.
- B. Storage and Fabrication Sheds: Install sheds, equipped to accommodate materials and equipment involved. Sheds may be open shelters or enclosed spaces within the building.
- C. Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures. Install where facilities will best serve the Project. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.
- D. Toilets: Install self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material. Use of pit-type privies will not be permitted. Temporary toilets must be located only in the Laydown Area as identified in these specifications.
- E. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up. Dispose of drainage properly. Supply cleaning compounds. Wash Facilities must be located only in the Laydown Area as identified in these specifications.
- F. Drinking Water Facilities: Provide containerized tap-dispenser bottled-water type drinking water units.
- G. Collection and Disposal of Waste: Provide waste removal facilities and services as required to maintain the site in clean and orderly condition. Collect waste daily. Comply with NFPA 241 for removal of combustible waste. Enforce requirements strictly. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose in a lawful manner. Provide containers with lids. If materials to be recycled or reused on the project must be stored on site, provide suitable non-combustible containers.

1.4 USE CHARGES

- A. General: Cost or use charges for temporary facilities are **not** chargeable to the Owner or the Architect. The Architect will not accept a prime contractor's cost or use charges for temporary services or facilities as a basis of claim for an adjustment in the Contract Sum or the Contract Time.
- B. Water Service: Cost of water used is by Contractor.

1. Provide and maintain suitable quality water service for construction operations at time of project mobilization.
2. Connect to existing water source.
3. Provide separate metering and reimburse Owner for cost of water used.

C. Other entities using temporary services and facilities include, but are not limited to, the following:

1. Sub- contractors.
2. The Owner's work forces.
3. The Architect.
4. Testing agencies.
5. Personnel of government agencies.

1.5 SUBMITTALS

- A. Temporary Utilities: The contractor shall submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.
- B. Implementation and Termination Schedule: Within 15 days of the date established for submittal of the Contractor's Construction Schedule, the contractor shall submit a schedule indicating implementation and termination of each temporary utility for which the contractor is responsible.

1.6 QUALITY ASSURANCE

- A. Regulations: The contractor shall comply with industry standards and with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 1. Building code requirements.
 2. Health and safety regulations.
 3. Utility company regulations.
 4. Police, fire department and rescue squad rules.
 5. Environmental protection regulations.
- B. Standards: The contractor shall comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
 1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with the normal application of trade regulations and union jurisdictions.
 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

- A. Temporary Utilities: The contractor shall prepare a schedule indicating dates for implementation and termination of each temporary utility for which the contractor is responsible. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: The contractor shall provide new materials. If acceptable to the Architect, undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for use intended.
- B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."
 - 1. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses indicated.
 - 2. For fences and vision barriers, provide minimum 3/8-inch- thick exterior plywood.
 - 3. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- thick exterior plywood.
 - 4. For temporary interior partitions and enclosure walls provide 1/2" thick fire rated plywood one side, over 1/2" type "X" gypsum board securely fastened to both sides of 20 Ga. 4" metal studs at 16" o.c. – (1) hr fire rating. Run the plywood up to 8'-0" AFF. Run the gypsum boards up to the deck above. Doors and frames to be (1) hr rated hollow metal knock down type – "B" label. Provide R-11 fiberglass batt insulation at temporary partitions and enclosure walls located at exterior walls.
- C. Roofing Materials: Provide UL Class A standard-weight asphalt shingles or UL Class C mineral-surfaced roll roofing on roofs of job-built temporary offices, shops, and sheds.
- D. Paint: Comply with requirements of Division 9 Section "Painting."

1. For sign panels and applied graphics, provide exterior-grade alkyd gloss enamel over exterior primer.
 2. For interior walls of temporary offices, provide 2 coats interior latex-flat wall paint.
- E. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- F. Water: Provide potable water approved by local health authorities.
- G. Open-Mesh Fencing: Provide 0.12-inch thick, galvanized 2-inch chainlink fabric fencing 8 feet high with galvanized looped-wire top strand (not barbed) and galvanized steel pipe posts, 1-1/2 inches I.D. for line posts, bottom and top rails and 2-1/2 inches I.D. for corner posts.

2.2 EQUIPMENT

- A. General: The contractor shall provide new equipment. If acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4-inch heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge. It shall be the Contractor's responsibility to provide the necessary measures to keep the water hoses, along with the temporary water system piping, from freezing. The Contractor shall also be responsible to shut down the temporary water system at the supply valve at the end of each day's work for as long as temporary water is provided. No contractor shall modify the temporary water system without consulting with, and obtaining approval in writing from the Contractor.
- C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Offices: The contractor shall provide its own mobile units as specified elsewhere in this Section.
- H. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Temporary toilets must be located only in the Laydown Area as identified in these specifications.
- I. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required at no additional cost to the Owner.
- B. The Contractor shall provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
 - 1. Arrange with the company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
 - 3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.

- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period.
 - 1. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 V, ac 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
- D. Temporary Lighting: When an overhead floor or roof deck has been installed, provide temporary lighting with local switching. This includes the sidewalk shed and New Annex colonnade.
 - 1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
- E. Temporary Heat: Provide temporary heat 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 safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize energy consumption.
- F. Heating Facilities: Provide vented, self-contained, LP-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open flame, or salamander-type heating units is prohibited.
 - 2. The Mechanical Contractor shall replace the filters and thoroughly clean the HVAC units used for temporary heat. Filters used for this purpose shall not be taken from the number required by the Contract Documents.
- G. Sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.

- H. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted. Temporary toilets must be located only in the Laydown Area as identified in these specifications.
 - 1. Provide separate facilities for male and female personnel.
- I. Wash Facilities: Install wash facilities supplied with potable water for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
 - 1. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
- J. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.3 SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities in the designated Laydown Area.
 - 1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops, and sheds located within the construction area or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. Field Offices: The General Contractor shall provide an insulated, weathertight temporary office of sufficient size to accommodate required office personnel at the Project Site. Keep the office clean and orderly for use for small meetings.
 - 3. The Contractor's field office shall be a new or reconditioned trailer.
 - a. Provide heating sufficient to maintain a minimum of 70F interior temp during the winter. Provide air conditioning sufficient to maintain a maximum of 75F interior temp during the summer.
 - b. Provide adequate space for a meeting area
 - c. Provide adequate furnishings and equipment to meet all contract requirements of your work.
 - 4. Provide, pay, assemble, install and maintain all service, support, supplies, bathroom supplies, cables, consumables, ink, paper, folders, utilities, film and development,

usage charges, warranty and maintenance required to operate aforementioned equipment and facility.

5. All facilities, equipment and furnishings are to be provided, assembled and installed within fourteen (14) days of the Notice to Proceed. No payments will be released to the Contractor until this contract requirement is satisfied and all facilities are fully operational. All facilities, equipment and furnishing are to remain on site until thirty days after punch list completion, or sooner if directed by the Construction Manager and, at that time, all furnishings and equipment as previously listed will be transferred to the Owner.
- D. Web-based Project Software: The Contractor is required to utilize the Construction Manager's Project Management Software: Autodesk Construction Cloud through the entire duration of the project for the submission of all documents which include but are not limited to RFI's and submittals. Autodesk will be administered by the Construction Manager for the project.
- E. Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.
- G. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, use the same facilities. Maintain the site, excavations, and construction free of water.
- H. Temporary Enclosures: Provide temporary enclosure for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
 1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar materials.
 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 4. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use UL labeled, fire-retardant-treated material for framing and main sheathing.
- I. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

- J. Temporary Site Lighting: Install exterior yard and sign lights so signs are visible when Work is being performed.
- K. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.
- L. Rodent and Pest Control: Before foundation work has been completed, retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- M. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.
- B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10, "Standard for Portable Fire Extinguishers," and NFPA 241, "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
 - 4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- D. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
 - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- F. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid using tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities and good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 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.
 - 2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when 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 the 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 the property of the Contractor. The Owner reserves the right to take possession of project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
 - a. Replace air filters and clean inside of ductwork and housings.
 - b. Replace significantly worn parts and parts subject to unusual operating conditions.
 - c. Replace lamps burned out or noticeably dimmed by hours of use.

3.6 TRAFFIC CONTROL PLAN

- A. The Traffic Control Plan must be put in place prior to the start of abatement and demolition activities, and must be strictly adhered to throughout the entire project until final completion and certification.

END OF SECTION

SECTION 01 51 00 - TEMPORARY UTILITIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities: Provision of electricity, lighting, heat, ventilation, and water.

1.2 RELATED REQUIREMENTS

- A. Section 01 50 00 - Temporary Facilities and Controls:
 - 1. Temporary telecommunications services for administrative purposes.
 - 2. Temporary sanitary facilities required by law.

1.3 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.

1.4 TEMPORARY ELECTRICITY

- A. Cost: By Contractor
- B. Connect to Owner's existing power service.
 - 1. Do not disrupt Owner's need for continuous service.
- C. Provide temporary electric feeder from existing building electrical service at location as directed.
- D. Complement existing power service capacity and characteristics as required.
- E. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- F. Provide main service disconnect and over-current protection at convenient location and meter.
- G. Permanent convenience receptacles may be utilized during construction.
- H. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.5 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain LED, compact fluorescent, or high-intensity discharge lighting as suitable for the application for construction operations in accordance with requirements of 29 CFR 1926 and authorities having jurisdiction.

- B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.
- C. Provide and maintain 0.25 watt/sq ft H.I.D. lighting to interior work areas after dark for security purposes.
- D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- E. Maintain lighting and provide routine repairs.

1.6 TEMPORARY HEATING

- A. Cost of Energy: By Contractor.
- B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.
- C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.
- D. Owner's existing heat plant may be used.
- E. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.7 TEMPORARY VENTILATION

- A. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.8 TEMPORARY WATER SERVICE

- A. Cost of Water Used: By Contractor
- B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.
- C. Connect to existing water source.
 - 1. Exercise Measures to conserve water
 - 2. Provide separate metering and reimburse Owner for cost of water used.
- D. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Re-use of existing products.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.2 RELATED REQUIREMENTS

- A. Section 01 25 00 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- B. Section 01 40 00 - Quality Requirements: Product quality monitoring.

1.3 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.1 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.2 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. VOC: Comply with the most stringent of federal, State, and local requirements, and these specifications.
- C. Use of products having any of the following characteristics is not permitted unless specifically indicated otherwise:
 - 1. Made outside the United States, its territories, Canada, or Mexico.
 - 2. Made using or containing CFC's or HCFC's.
 - 3. Made of wood from newly cut old growth timber.
 - 4. Containing lead, cadmium, or asbestos.

2.3 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.4 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.1 SUBSTITUTION LIMITATIONS

- A. See Section 01 25 00 - Substitution Procedures.

3.2 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.3 STORAGE AND PROTECTION

- A. Provide protection of stored materials and products against theft, casualty, or deterioration.
- B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
 - 1. Structural Loading Limitations: Handle and store products and materials so as not to exceed static and dynamic load-bearing capacities of project floor and roof areas.
- C. Store and protect products in accordance with manufacturers' instructions.
- D. Store with seals and labels intact and legible.
- E. Arrange storage of materials and products to allow for visual inspection for the purpose of determination of quantities, amounts, and unit counts.
- F. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- G. For exterior storage of fabricated products, place on sloped supports above ground.
- H. Provide off-site storage and protection when site does not permit on-site storage or protection.

- I. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- J. Comply with manufacturer's warranty conditions, if any.
- K. Do not store products directly on the ground.
- L. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- M. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- N. Prevent contact with material that may cause corrosion, discoloration, or staining.
- O. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- P. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Cleaning and protection.
- F. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- G. General requirements for maintenance service.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittals procedures.
- B. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.
- C. Section 01 50 00 - Temporary Facilities and Controls: Temporary interior partitions.
- D. Section 01 76 10 - Temporary Protective Coverings: Materials for protection of installed work.
- E. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.4 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. During Owner Occupancy: Excessively noisy tools and operations will not be tolerated inside the building; excessively noisy includes jackhammers.

1.5 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- C. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- D. Coordinate completion and clean-up of work of separate sections.
- E. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.1 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.

- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.4 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.5 RENOVATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of renovation work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 .
- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 - 2. Remove items indicated on drawings.
 - 3. Relocate items indicated on drawings.
 - 4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.

5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
 - D. Protect existing work to remain.
 1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
 - E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
 2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
 4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.
 - F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
 - G. Refinish existing surfaces as indicated:
 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
 - H. Clean existing systems and equipment.
 - I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
 - J. Do not begin new construction in renovation areas before demolition is complete.
 - K. Comply with all other applicable requirements of this section.
- 3.6 CUTTING AND PATCHING
- A. Whenever possible, execute the work by methods that avoid cutting or patching.
 - B. See Renovation article above for additional requirements.
 - C. Perform whatever cutting and patching is necessary to:

1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.
- J. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 2. Match color, texture, and appearance.
 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
- 3.7 PROGRESS CLEANING
- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.8 PROTECTION OF INSTALLED WORK

- A. See Section 01 76 10 for temporary protective covering materials.
- B. Protect installed work from damage by construction operations.
- C. Provide special protection where specified in individual specification sections.
- D. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- E. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- F. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- G. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.
- H. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- I. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.9 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.10 FINAL CLEANING

- A. Execute final cleaning after Substantial Completion but before making final application for payment.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

- F. Clean filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.11 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Architect and Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- E. Owner will occupy all of the building as specified in Section 01 10 00.
- F. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- G. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- H. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- I. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.12 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.

- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 76 10 - TEMPORARY PROTECTIVE COVERINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary protective coverings for installed floors, walls, and other surfaces.

1.2 REFERENCE STANDARDS

- A. ANSI A135.4 - Basic Hardboard 2012 (Reaffirmed 2020).
- B. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board 2022.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.
- D. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films 2023, with Errata.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes available; and installation instructions.
- C. Shop Drawings: Indicate existing finished surfaces to be protected.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide materials that are easily removed without damage to the surfaces covered and with the following characteristics:
 - 1. Water resistant.
 - 2. Vapor permeable.
 - 3. Impact resistant.
 - 4. Slip resistant.
 - 5. Flame retardant.

2.2 MATERIALS

- A. Sheet Materials:

1. Corrugated polypropylene sheet.
 2. Recycled paperboard/plastic composite sheet.
 3. Recycled paperboard sheet.
 4. Wood Hardboard: ANSI A135.4, tempered, 1/4 inch thick nominal.
 5. Plywood, 1/2 inch thick nominal.
 6. Fiberboard: ASTM C208, 1/2 inch thick nominal.
 7. Flame Retardance: Meet requirements of NFPA 701.
 8. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
- B. Rolled Materials:
1. Self-adhering polyethylene film.
 2. Recycled cellulose fiberboard paper.
 3. Laminated glass fiber reinforced kraft paper.
 4. Rosin coated paper.
 5. Flame Retardance: Meet requirements of NFPA 701.
 6. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
- C. Corner and Door Jamb Protection Materials:
1. Cardboard, shaped specifically for application.
 2. PVC plastic.
- D. Tape: Type recommended by protective covering material manufacturer.

PART 3 EXECUTION

3.1 PREPARATION

- A. Remove dirt and debris from surfaces to be protected.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Trim or overlap sheet materials to fit area to be covered.
- C. Roll out and cut rolled materials to fit area to be covered.
- D. Tape seams. Avoid taping directly to finished surfaces.
- E. Stretch self-adhering film materials to completely cover surface.

3.3 REMOVAL

- A. Remove protective coverings prior to Date of Substantial Completion. Reuse or recycle materials if possible.

END OF SECTION

SECTION 01 78 00 - CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Operation and Maintenance Data.
- B. Warranties and bonds.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. A certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect.
- C. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
- D. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 1. Drawings.
 2. Specifications.
 3. Addenda.
 4. Change Orders and other modifications to the Contract.
 5. Reviewed shop drawings, product data, and samples.
 6. Manufacturer's instruction for assembly, installation, and adjusting.
 7. Cross references from design drawings to shop drawings.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 1. Measured depths of foundations in relation to finish first floor datum.
 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 4. Field changes of dimension and detail.

3.2 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.

- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
 - C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
 - D. Include color coded wiring diagrams as installed.
 - E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
 - F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - 1. Include HVAC outdoor and exhaust air damper calibration strategy.
 - a. Include provisions which ensure that full closure of dampers can be achieved.
 - 2. Include Carbon Dioxide Monitoring Protocol.
 - 3. Include Carbon Monoxide Monitoring Protocol.
 - 4. Include Frost Mitigation Strategy for ventilation heat-recovery system.
 - G. Provide servicing and lubrication schedule, and list of lubricants required.
 - H. Include manufacturer's printed operation and maintenance instructions.
 - I. Include sequence of operation by controls manufacturer.
 - J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - K. Provide control diagrams by controls manufacturer as installed.
 - L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 - M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
 - N. Include test and balancing reports.
 - O. Additional Requirements: As specified in individual product specification sections.
- 3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS
- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Photocopies of warranties and bonds.
 - 4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

3.6 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

SECTION 02 41 00 - DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alteration purposes.
- C. Abandonment and removal of existing utilities and utility structures.

1.2 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations 2022, with Errata (2021).

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Site Plan: Indicate:
 - 1. Areas for temporary construction and field offices.
- C. Demolition Plan: Submit demolition plan as required by OSHA and local AHJs.
 - 1. Indicate extent of demolition, removal sequencing, bracing and shoring, and location and construction of barricades and fences.
 - 2. Demolition firm qualifications.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.4 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.1 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Comply with applicable requirements of NFPA 241.
 - 3. Use of explosives is not permitted.
 - 4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 5. Provide, erect, and maintain temporary barriers and security devices.
 - 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 8. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
 - 9. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
 - 10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Do not begin removal until built elements to be salvaged or relocated have been removed.
- D. Protect existing structures and other elements to remain in place and not removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.
- E. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- F. Perform demolition in a manner that maximizes salvage and recycling of materials.
 - 1. Dismantle existing construction and separate materials.
 - 2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.
- G. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.2 EXISTING UTILITIES

- A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

3.3 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
 - 1. Verify construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Separate areas in which demolition is being conducted from areas that remain occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.
- D. Remove existing work as indicated and required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction indicated.
 - 2. Remove items indicated on drawings.

- E. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as indicated.
- F. Protect existing work to remain.
 - 1. Prevent movement of structure. Provide shoring and bracing as required.
 - 2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
 - 4. Patch to match new work.

3.4 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Nonstructural dimension lumber framing.
- B. Preservative treated wood materials.
- C. Fire retardant treated wood materials.
- D. Concealed wood blocking, nailers, and supports.

1.2 RELATED REQUIREMENTS

- A. Section 09 21 16 - Gypsum Board Assemblies for metal backing and flexible wood backing.

1.3 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- B. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing 2010 (Reapproved 2017).
- C. ASTM F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs 2022.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- E. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings 2018.
- F. AWPA U1 - Use Category System: User Specification for Treated Wood 2021.
- G. FM 1-49 - Perimeter Flashing 2016.
- H. PS 1 - Structural Plywood 2009 (Revised 2019).
- I. PS 20 - American Softwood Lumber Standard 2020.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

- B. Product Data: Provide technical data on fire retardant treatment, wood preservative materials, adhesives, and application instructions.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Stud Framing (2 by 2 through 2 by 6):
 - 1. Grade: No. 2.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 3 or Utility Grade.
 - 2. Boards: Standard or No. 3.
 - 3. Coordinate with Section 09 21 16 - Gypsum Board Assemblies for metal backing and flexible wood backing.

2.3 CONSTRUCTION PANELS

- A. Parapet Sheathing: Plywood, PS 1, Grade C-D, Exposure I.
- B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.4 ACCESSORIES

A. Fasteners and Anchors:

1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for use with galvanized metals and stainless steel complying with ASTM F593 Group 2 for use with stainless steel metals, for high humidity and preservative-treated wood locations; unfinished steel elsewhere.
2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
3. Anchors: Bolt or ballistic fastener for anchorages to steel.

2.5 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.

1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:

1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat wood in exterior walls and parapets.
 - c. Treat wood in contact with roofing, flashing, or waterproofing.
 - d. Do not use treated wood in direct contact with the ground.

C. Preservative Treatment:

1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber exposed to weather.
 - c. Treat lumber in contact with masonry or concrete.

PART 3 EXECUTION

3.1 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.
- E. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- F. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.4 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- C. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.5 INSTALLATION OF CONSTRUCTION PANELS

- A. Wall and Parapet Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
- B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

3.6 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.7 CLEANING

- A. Waste Disposal:
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.
 - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.2 RELATED REQUIREMENTS

- A. Section 09 21 16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

1.3 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants 2017.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications 2022.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.
- E. ASTM C1311 - Standard Specification for Solvent Release Sealants 2014.
- F. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants 2018.
- G. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness 2015 (Reapproved 2021).
- H. SCAQMD 1168 - Adhesive and Sealant Applications 1989 (Amended 2017).
- I. SWRI (VAL) - SWR Institute Validated Products Directory Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.

1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 2. List of backing materials approved for use with the specific product.
 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 4. Substrates the product should not be used on.
 5. Substrates for which use of primer is required.
 6. Substrates for which laboratory adhesion and/or compatibility testing is required.
 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 8. Sample product warranty.
 9. Certification by manufacturer indicating that product complies with specification requirements.
 10. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- 1.5 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- 1.6 WARRANTY
- A. See Section 01 78 00 Closeout Submittals for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 JOINT SEALANT APPLICATIONS

A. Scope:

1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated below.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - 1) Exception: Such gaps and openings in gypsum board and plaster finished stud walls and suspended ceilings.
 - 2) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
 - c. Other joints indicated below.
3. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.

1. Lap Joints in Sheet Metal Fabrications: Butyl sealant, non-curing.
2. Lap Joints between Manufactured Metal Panels: Butyl sealant, non-curing.

C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.

1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
2. Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous water immersion.
3. Floor Joints in Wet Areas: Self-leveling polyurethane "traffic-grade" sealant suitable for continuous water immersion.
4. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; clear.
5. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.

6. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
7. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.

- D. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".

2.2 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.3 NONSAG JOINT SEALANTS

- A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.

1. Movement Capability: Plus 100 percent and minus 50 percent, minimum.
2. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
3. Color: To be selected by Architect from manufacturer's standard range.
4. Cure Type: Single-component, neutral moisture curing.
5. Manufacturers:
 - a. Dow Chemical Company; DOWSIL 790 Silicone Building Sealant : consumer.dow.com/en-us/industry/ind-building-construction.html.
 - b. Pecora Corporation; Pecora 890 NST (Non-Staining Technology) : www.pecora.com.
 - c. Momentive Performance Materials, Inc; SCS2700 SilPruf LM: www.siliconeforbuilding.com.
 - d. Sika Corporation; Sikasil WS-290: www.usa-sika.com.
 - e. Tremco Commercial Sealants & Waterproofing; Spectrem 1 : www.tremcosealants.com.
 - f. Approved equal.

- B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.

1. FDA suitable for indirect food additives, NSF recognized for direct food contact, or USDA accepted for use in meat and poultry processing plants.
2. Color: White.
3. Manufacturers:
 - a. Pecora Corporation; Pecora 898 NST (Non-Staining Technology) : www.pecora.com.
 - b. Polymeric Systems; 601 FG: www.polymericsystems.com.
 - c. Sika Corporation; Sikasil GP: www.usa-sika.com.
 - d. Approved equal.

- C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.

- D. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface.
- E. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
 - 1. Color: Standard colors matching finished surfaces, Type OP (opaque).
- F. Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.

2.4 SELF-LEVELING SEALANTS

- A. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Color: To be selected by Architect from manufacturer's standard range.
 - 3. Manufacturers:
 - a. Sika Corporation; Sikaflex-1c SL: www.usa-sika.com.
 - b. W. R. MEADOWS, Inc; POURTHANE SL: www.wrmeadows.com.
 - c. Approved equal.
- B. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
 - 1. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
 - 2. Joint Width, Minimum: 1/8 inch.

2.5 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 - 1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
 - 2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
 - 3. Open Cell: 40 to 50 percent larger in diameter than joint width.
 - 4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.2 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.3 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- E. Install bond breaker backing tape where backer rod cannot be used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

- G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.
- J. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Gypsum board.
- C. Joint treatment and accessories.

1.2 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.3 REFERENCE STANDARDS

- A. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing 2020.
- B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing 2015, with Errata (2020).
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members 2015.
- F. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017.
- G. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board 2004 (Reapproved 2020).
- H. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2017.
- I. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.

- J. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products 2020.
- K. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.
- L. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications 2022.
- M. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness 2018.
- N. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs 2020.
- O. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base 2019.
- P. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel 2018.
- Q. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel 2017.
- R. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.
- S. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels 2019.
- T. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels 2019, with Editorial Revision (2020).
- U. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2016.
- V. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems 2013a (Reapproved 2017).
- W. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings 2021.
- X. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- Y. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials 2020.
- Z. GA-216 - Application and Finishing of Gypsum Panel Products 2016, with Errata.
- AA. UL (FRD) - Fire Resistance Directory Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data:
- C. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.2 METAL FRAMING MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.
- B. Area Separation Wall Studs and Accessories: AISI S220; galvanized sheet steel, of size and properties necessary to comply with specified performance requirements.
- C. Non-structural Framing Accessories:
 - 1. Partial Height Wall Framing Support: Provides stud reinforcement and anchored connection to floor.
 - a. Materials: ASTM A36/A36M formed sheet steel support member with factory-welded ASTM A1003/A1003M steel plate base.
 - b. Design assembly at guardrails and reception desks to resist the following forces applied to the top of the assembly and in any direction, without damage or permanent set:
 - 1) Distributed Loads: 75 pounds per linear foot.
 - 2) Concentrated Loads: 200 pounds.
 - c. Products:
 - 1) ClarkDietrich; Pony Wall (PW): www.clarkdietrich.com.
 - 2) The Steel Network; MidWall: www.steelnetwork.com.
 - 3) Substitutions: See Section 01 60 00 - Product Requirements.
 - 2. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.
 - 3. Metal Backing: ASTM A653/A653M G90 galvanized steel.
 - a. Provide framing and backing members as indicated or as required to support finishes, fixtures, specialty items, and trim.
 - b. In walls, provide backing attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

- c. Where ceiling-mounting is indicated, provide backing and supplementary supports above ceiling, unless other method of support is explicitly indicated.
4. Flexible Wood Backing: Fire-retardant-treated wood with sheet steel connectors.

2.3 BOARD MATERIALS

- A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
 - a. Glass mat faced gypsum panels are required wherever board is installed before building is enclosed and conditioned.
 3. Unfaced fiber-reinforced gypsum panels as defined in ASTM C1278/C1278M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
 4. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
 5. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Ceilings: 5/8 inch.

2.4 GYPSUM BOARD ACCESSORIES

- A. Mullion Trim Cap: Sound barrier mullion trim caps of aluminum and sound absorbing foam, capable of accommodating variations in adjacent surfaces.
 1. Fasteners: Concealed.
 2. Sound Transmission: STC 55.
 3. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84.
 4. Finish: Anodized, natural.
 5. Products:
 - a. MULL-it-OVER Products; Mullion Trim Cap: www.mullitoverproducts.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
 1. Types: As indicated on drawings or required for finished appearance.
- C. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 1. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
 2. Joint Compound: Drying type, vinyl-based, ready-mixed.
- D. Finishing Compound: Surface coat and primer, takes the place of skim coating.

- E. High Build Drywall Surfer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
- F. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.
- G. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.
- H. Nails for Attachment to Wood Members: ASTM C514.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.2 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
 - 1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.
- D. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
 - 1. Single-Layer Applications: Screw attachment.
- E. Replace gypsum board that directly or indirectly has been damaged by exposure to moisture or mold.

3.3 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
 - 1. Not more than 30 feet apart on walls, soffits, and ceilings over 50 feet long or more than 900 square feet in area.
 - 2. Where a control joint occurs in a fire or an acoustically rated assembly, provide gypsum blocking behind the joint.
- B. Corner Beads: Install at external corners, using longest practical lengths.

- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.4 JOINT TREATMENT

- A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.
- B. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.
- C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
 - 2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 - 4. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
 - 5. Level 0: Temporary partitions.
- D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
 - 2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile.
- E. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.5 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Prime surfaces to receive wall coverings.
 - 3. Mechanical and Electrical:
 - a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
 - b. In finished areas, paint shop-primed items.
 - c. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
 - d. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
 - 6. Marble, granite, slate, and other natural stones.
 - 7. Floors, unless specifically indicated.
 - 8. Ceramic and other tiles.
 - 9. Brick, architectural concrete, cast stone, integrally colored plaster, and stucco.
 - 10. Glass.
 - 11. Acoustical materials, unless specifically indicated.
 - 12. Concealed pipes, ducts, and conduits.
 - 13. Operating and moving parts of operating equipment, including valve and damper operators, linkages, sensing devices, and motor and fan shafts.

1.2 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.
- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.
- D. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).
- E. SSPC-SP 2 - Hand Tool Cleaning 2018.
- F. SSPC-SP 6 - Commercial Blast Cleaning 2007.
- G. SSPC-SP 13 - Surface Preparation of Concrete 2018.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
 - 2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures.
- E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Finish Materials: 1 gallon of each color and type; from the same product run, store where directed.
 - 3. Label each container with color, type, and room locations in addition to the manufacturer's label.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.6 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.
- D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
 - 1. Benjamin Moore: www.benjaminmoore.com.
 - 2. PPG Paints: www.ppgpaints.com.
 - 3. Sherwin-Williams Company: www.sherwin-williams.com.
- C. Primer Sealers: Same manufacturer as top coats.

- D. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
 3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 4. Supply each paint material in quantity required to complete entire project's work from a single production run.
 5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
 - 1) Opaque, Flat: 50 g/L, maximum.
 - 2) Opaque, Nonflat: 150 g/L, maximum.
 - 3) Opaque, High Gloss: 250 g/L, maximum.
 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Colors: As indicated on drawings.
1. Extend colors to surface edges; colors may change at any edge as directed by Architect.
 2. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.3 PAINT SYSTEMS - INTERIOR

- A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry units, brick, wood, plaster, uncoated steel, shop primed steel, galvanized steel, aluminum, and acoustical ceilings.
1. Two top coats and one coat primer.
 2. Top Coat(s): High Performance Architectural Interior Latex.
 - a. Products:
 - 1) Benjamin Moore Ultra Spec 500, 537, Eggshell.

- 2) Benjamin Moore Scuff-X, 485, Eggshell.
 - 3) Sherwin-Williams Pre-Catalyzed Waterbased Epoxy, K45 Series, Eg-Shel.
 - 4) Sherwin-Williams ProMar 200 HP Series, Low Gloss Eg-Shel.
 - 5) Substitutions: Section 01 60 00 - Product Requirements.
3. Top Coat(s): Institutional Low Odor/VOC Interior Latex.
 - a. Products:
 - 1) Benjamin Moore Ultra Spec 500, 535, Flat.
 - 2) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Flat.
 - 3) Substitutions: Section 01 60 00 - Product Requirements.
 4. Top Coat Sheen:
 - a. Flat; use this sheen for ceilings and other overhead surfaces.
 - b. Semi-Gloss; Use this sheen at all locations unless indicated otherwise.
 5. Primer: As specified under "PRIMERS" below.

B. Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals:

1. Medium duty applications include doors, door frames, railings, handrails, guardrails, and balustrades.
2. Two top coats and one coat primer.
3. Top Coat(s): Interior Urethane or Epoxy-Modified Latex.
 - a. Products:
 - 1) Benjamin Moore Corotech Polyamide Epoxy Coating, V400, Gloss.
 - 2) PPG Paints Aquapon WB EP Two-Component Waterborne Epoxy Coating, 98E-1/98E-98 Series, Gloss.
 - 3) Sherwin-Williams Waterbased Catalyzed Epoxy, B73 Series, Gloss.
 - 4) Substitutions: Section 01 60 00 - Product Requirements.
4. Top Coat Sheen:
 - a. Gloss: Use this sheen unless indicated otherwise.
5. Primer: As specified under "PRIMERS" below.

2.4 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.

1. Alkali Resistant Water Based Primer; For Smooth Concrete.
 - a. Products:
 - 1) Benjamin Moore Insl-x Aqua Lock Primer Sealer.
 - 2) PPG Paints Perma-Crete Interior/Exterior Alkali Resistant Primer, 4-603XI.
 - 3) Sherwin-Williams Loxon Concrete & Masonry Primer, A24W8300.
 - 4) Substitutions: Section 01 60 00 - Product Requirements.
2. Interior/Exterior Latex Block Filler; For Rough Concrete and Masonry.
 - a. Products:
 - 1) Benjamin Moore Insl-x Aqua Lock Primer Sealer.
 - 2) PPG Paints: 6-15XI Speedhide Masonry Hi Fill Latex Block Filler.
 - 3) Sherwin-Williams Loxon Block Surfacer, A24W00200.

- 4) Substitutions: Section 01 60 00 - Product Requirements.
3. Interior Drywall Primer Sealer.
 - a. Products:
 - 1) Benjamin Moore Ultra Spec 500 Interior Latex Primer, N534.
 - 2) PPG Paints Speedhide Interior Latex Sealer, 6-2.
 - 3) Sherwin-Williams ProMar 200 Zero VOC Interior Latex Primer, B28 W02600
 - 4) Substitutions: Section 01 60 00 - Product Requirements.
4. Interior Rust-Inhibitive Water Based Primer; MPI #107.
 - a. Products:
 - 1) Benjamin Moore Ultra Spec HP Acrylic Metal Primer, HP04.
 - 2) PPG Paints Pitt-Tech Plus Interior/Exterior DTM Waterborne Acrylic Primer/Finish, 4020 PF Series.
 - 3) Sherwin-Williams Pro-Cryl Universal Primer, B66-310 Series.
 - 4) Sherwin-Williams Pro Industrial Pro-Cryl Primer, B66-310 Series.
 - 5) Substitutions: Section 01 60 00 - Product Requirements.
5. Latex Primer for Interior Wood; Plaster; or Gypsum Wallboard.
 - a. Products:
 - 1) Benjamin Moore Ultra Spec 500 Interior Latex Primer, N534.
 - 2) Sherwin-Williams Premium Wall & Wood Interior Latex Primer, B28W08111; except ProMar 200 Zero VOC Interior Latex Primer, B28W02600, for gypsum wallboard.
 - 3) Substitutions: Section 01 60 00 - Product Requirements.

2.5 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been adequately prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Plaster and Stucco: 12 percent.
 - 3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
 - 4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
 - 5. Concrete Floors and Traffic Surfaces: 8 percent.

3.2 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- G. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.
 - 1. Fill joints of knock-down frames.

3.3 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 220517 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Sleeves.
 - 2. Stack-sleeve fittings.
 - 3. Sleeve-seal systems.
 - 4. Sleeve-seal fittings.
 - 5. Grout.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVES

- A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.
- B. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.
- C. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.
- D. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.
- E. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.

2.2 STACK-SLEEVE FITTINGS

- A. Description: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flashing.

- 1. Underdeck Clamp: Clamping ring with setscrews.

2.3 SLEEVE-SEAL SYSTEMS

- A. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

- 1. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 2. Pressure Plates: Stainless steel.
 - 3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.4 SLEEVE-SEAL FITTINGS

- A. Description: Manufactured plastic, sleeve-type, waterstop assembly made for imbedding in concrete slab or wall. Unit has plastic or rubber waterstop collar with center opening to match piping OD.

2.5 GROUT

- A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Nonshrink; recommended for interior and exterior applications.
- C. Design Mix: 5000-psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
1. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.
 2. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.
- D. Install sleeves for pipes passing through interior partitions.
1. Cut sleeves to length for mounting flush with both surfaces.
 2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
 3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint.
- E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials.

3.2 STACK-SLEEVE-FITTING INSTALLATION

- A. Install stack-sleeve fittings in new slabs as slabs are constructed.
1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
 2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section.
 3. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.
 4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
 5. Using grout, seal the space around outside of stack-sleeve fittings.
- B. Fire-Barrier Penetrations: Maintain indicated fire rating of floors at pipe penetrations. Seal pipe penetrations with firestop materials.

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service

pipng entries into building.

- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

- A. Install sleeve-seal fittings in new walls and slabs as they are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout, seal the space around outside of sleeve-seal fittings.

3.5 SLEEVE AND SLEEVE-SEAL SCHEDULE

- A. Use sleeves and sleeve seals for the following piping-penetration applications:
 - 1. Exterior Concrete Walls above Grade:
 - a. Piping Smaller Than NPS 6: Galvanized-steel-pipe sleeves.
 - 2. Exterior Concrete Walls below Grade:
 - a. Piping Smaller Than NPS 6: Galvanized-steel wall sleeves with sleeve-seal system
 - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
 - 3. Concrete Slabs-on-Grade:
 - a. Piping Smaller Than NPS 6: Galvanized-steel-pipe sleeves with sleeve-seal system.
 - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
 - 4. Concrete Slabs above Grade:
 - a. Piping Smaller than NPS 6 Galvanized-steel-pipe sleeves, PVC-pipe sleeves.

5. Interior Partitions:
 - a. Piping Smaller than NPS 6 Galvanized-steel-pipe sleeves, PVC-pipe sleeves.

END OF SECTION 220517

SECTION 220518 ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Escutcheons.
 - 2. Floor plates.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. BrassCraft Manufacturing Co.; a Masco company.
 - 2. Dearborn Brass.
 - 3. Jones Stephens Corp.
 - 4. Keeney Manufacturing Company (The).
 - 5. ProFlo; a Ferguson Enterprises, Inc. brand.
 - 6. Or approved equal

2.2 ESCUTCHEONS

- A. One-Piece, Steel Type: With polished, chrome-plated finish and setscrew fastener.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped steel with polished, chrome-plated finish and spring-clip fasteners.
- C. One-Piece, Stamped-Steel Type: With polished, chrome-plated finish and spring-clip fasteners.
- D. Split-Plate, Stamped-Steel Type: With polished, chrome-plated finish; concealed and exposed-rivet hinge; and spring-clip fasteners.

2.3 FLOOR PLATES

- A. Split Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.
- B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.
 - 1. Escutcheons for New Piping:
 - a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep pattern.
 - b. Chrome-Plated Piping: One-piece steel with polished, chrome-plated finish.
 - c. Insulated Piping: One-piece steel with polished, chrome-plated **[polished brass]** finish.
 - d. Insulated Piping: One-piece stamped steel or split-plate, stamped steel with concealed hinge with polished, chrome-plated finish.
 - e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece steel with polished, chrome-plated finish.
 - f. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece stamped steel or split-plate, stamped steel with concealed hinge with polished, chrome-plated finish.
 - g. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece steel with polished, chrome-plated finish.
 - h. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece stamped steel or split-plate, stamped steel with concealed hinge with polished, chrome-plated finish.
- C. Install floor plates for piping penetrations of equipment-room floors.
- D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
 - 1. New Piping: Split floor plate.
 - 2. Existing Piping: Split floor plate.

3.2 FIELD QUALITY CONTROL

- A. Using new materials, replace broken and damaged escutcheons and floor plates.

END OF SECTION 220518

SECTION 220519 METERS AND GAGES FOR PLUMBING PIPING

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. Bimetallic-actuated thermometers.
 - 2. Liquid-in-glass thermometers.
 - 3. Thermowells.
 - 4. Dial-type pressure gages.
 - 5. Gage attachments.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of meter and gage.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For meters and gages to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 BIMETALLIC-ACTUATED THERMOMETERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ashcroft Inc.
 - 2. Ernst Flow Industries.

3. Marsh Bellofram.
 4. Miljoco Corporation.
 5. Or approved equal
- B. Standard: ASME B40.200.
- C. Case: Liquid-filled and sealed type(s); stainless steel with 3-inch nominal diameter.
- D. Dial: Nonreflective aluminum with permanently etched scale markings and scales in deg F.
- E. Connector Type(s): Union joint, adjustable angle, with unified-inch screw threads.
- F. Connector Size: 1/2 inch, with ASME B1.1 screw threads.
- G. Stem: 0.25 or 0.375 inch in diameter; stainless steel.
- H. Window: Plain glass.
- I. Ring: Stainless steel.
- J. Element: Bimetal coil.
- K. Pointer: Dark-colored metal.
- L. Accuracy: Plus or minus 1 percent of scale range.

2.2 LIQUID-IN-GLASS THERMOMETERS

- A. Metal-Case, Compact-Style, Liquid-in-Glass Thermometers:
1. Standard: ASME B40.200.
 2. Case: Cast aluminum; 6-inch nominal size.
 3. Case Form: Back angle unless otherwise indicated.
 4. Tube: Glass with magnifying lens and blue or red organic liquid.
 5. Tube Background: Nonreflective aluminum with permanently etched scale markings graduated in deg F.
 6. Window: Glass or plastic.
 7. Stem: Aluminum or brass and of length to suit installation.
 - a. Design for Thermowell Installation: Bare stem.
 8. Connector: 3/4 inch, with ASME B1.1 screw threads.
 9. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.

2.3 THERMOWELLS

- A. Thermowells:

1. Standard: ASME B40.200.
2. Description: Pressure-tight, socket-type fitting made for insertion into piping tee fitting.
3. Material for Use with Copper Tubing: CNR or CUNI.
4. Material for Use with Steel Piping: CRES.
5. Type: Stepped shank unless straight or tapered shank is indicated.
6. External Threads: NPS 1/2, NPS 3/4, or NPS 1, ASME B1.20.1 pipe threads.
7. Internal Threads: 1/2, 3/4, and 1 inch, with ASME B1.1 screw threads.
8. Bore: Diameter required to match thermometer bulb or stem.
9. Insertion Length: Length required to match thermometer bulb or stem.
10. Lagging Extension: Include on thermowells for insulated piping and tubing.
11. Bushings: For converting size of thermowell's internal screw thread to size of thermometer connection.

B. Heat-Transfer Medium: Mixture of graphite and glycerin.

2.4 PRESSURE GAGES

A. Direct-Mounted, Metal-Case, Dial-Type Pressure Gages:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Ametek U.S. Gauge.
 - b. Ashcroft Inc.
 - c. Ernst Flow Industries.
 - d. Trerice, H. O. Co.
 - e. Or approved equal
2. Standard: ASME B40.100.
3. Case: Liquid-filled Sealed Open-front, pressure relief type(s); cast aluminum or drawn steel; 4-1/2-inch nominal diameter.
4. Pressure-Element Assembly: Bourdon tube unless otherwise indicated.
5. Pressure Connection: Brass, with NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
6. Movement: Mechanical, with link to pressure element and connection to pointer.
7. Dial: Nonreflective aluminum with permanently etched scale markings graduated in psi.
8. Pointer: Dark-colored metal.
9. Window: Glass.
10. Ring: Metal.
11. Accuracy: Grade A, plus or minus 1 percent of middle half of scale range.

2.5 GAGE ATTACHMENTS

- A. Snubbers: ASME B40.100, brass; with NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe threads and piston-type surge-dampening device. Include extension for use on insulated piping.
- B. Valves: Brass or stainless-steel needle, with NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe threads.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install thermowells with socket extending one-third of pipe diameter and in vertical position in piping tees.
- B. Install thermowells of sizes required to match thermometer connectors. Include bushings if required to match sizes.
- C. Install thermowells with extension on insulated piping.
- D. Fill thermowells with heat-transfer medium.
- E. Install direct-mounted thermometers in thermowells and adjust vertical and tilted positions.
- F. Install remote-mounted thermometer bulbs in thermowells and install cases on panels; connect cases with tubing and support tubing to prevent kinks. Use minimum tubing length.
- G. Install direct-mounted pressure gages in piping tees with pressure gage located on pipe at the most readable position.
- H. Install remote-mounted pressure gages on panel.
- I. Install valve and snubber in piping for each pressure gage for fluids.
- J. Install thermometers in the following locations:
 - 1. Inlet and outlet of each water heater.
 - 2. Inlets and outlets of each domestic water heat exchanger.
 - 3. Inlet and outlet of each domestic hot-water storage tank.
 - 4. Inlet and outlet of each remote domestic water chiller.
- K. Install pressure gages in the following locations:
 - 1. Building water service entrance into building.
 - 2. Inlet and outlet of each pressure-reducing valve.
 - 3. Suction and discharge of each domestic water pump.
- L. Install meters and gages adjacent to machines and equipment to allow service and maintenance of meters, gages, machines, and equipment.
- M. Adjust faces of meters and gages to proper angle for best visibility.

3.2 THERMOMETER SCHEDULE

- A. Thermometers at inlet and outlet of each domestic water heater shall be one of the following:

1. Liquid-filled, bimetallic-actuated type.
 2. Metal case, compact-style, liquid-in-glass type.
- B. Thermometer stems shall be of length to match thermowell insertion length.

3.3 THERMOMETER SCALE-RANGE SCHEDULE

- A. Scale Range for Domestic Cold-Water Piping: 0 to 100 deg F.
- B. Scale Range for Domestic Hot-Water Piping: 0 to 250 deg F.

3.4 PRESSURE-GAGE SCHEDULE

- A. Pressure gages at discharge of each water service into building shall be the following:
1. Liquid-filled,-mounted, metal case.
- B. Pressure gages at inlet and outlet of each water pressure-reducing valve shall be the following:
1. Liquid-filled,-mounted, metal case.
 2. Test plug with chlorosulfonated polyethylene synthetic self-sealing rubber inserts.
- C. Pressure gages at suction and discharge of each domestic water pump shall be the following:
1. Liquid-filled, direct-mounted, metal case.
 2. Test plug with chlorosulfonated polyethylene synthetic self-sealing rubber inserts.

3.5 PRESSURE-GAGE SCALE-RANGE SCHEDULE

- A. Scale Range for Water Service Piping: 0 to 100 psi.
- B. Scale Range for Domestic Water Piping: 0 to 100 psi.

END OF SECTION 220519

SECTION 220523.12 BALL VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Brass ball valves.
 - 2. Bronze ball valves.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of valve.
 - 1. Certification that products comply with NSF 61 and NSF 372.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
 - 1. ASME B1.20.1 for threads for threaded end valves.
 - 2. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
 - 3. ASME B16.18 for solder-joint connections.
 - 4. ASME B31.9 for building services piping valves.
- C. NSF Compliance: NSF 61 and NSF 372 for valve materials for potable-water service.
- D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
- E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- F. Valve Sizes: Same as upstream piping unless otherwise indicated.
- G. Valve Actuator Types:
 - 1. Gear Actuator: For quarter-turn valves NPS 4 and larger.

2. Handlever: For quarter-turn valves smaller than NPS 4.

H. Valves in Insulated Piping:

1. Include 2-inch stem extensions.
2. Extended operating handles of nonthermal-conductive material and protective sleeves that allow operation of valves without breaking vapor seals or disturbing insulation.
3. Memory stops that are fully adjustable after insulation is applied.

2.2 BRASS BALL VALVES

A. Brass Ball Valves, One-Piece:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. KITZ Corporation.
 - b. Or approved equal
2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 400 psig.
 - c. Body Design: One piece.
 - d. Body Material: Forged brass or bronze.
 - e. Ends: Threaded and soldered.
 - f. Seats: PTFE.
 - g. Stem: Brass or stainless steel.
 - h. Ball: Chrome-plated brass or stainless steel.
 - i. Port: Reduced.

B. Brass Ball Valves, Two-Piece with Full Port and Brass Trim, Threaded or Soldered Ends:

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. American Valve, Inc.
 - b. Apollo Flow Controls; Conbraco Industries, Inc.
 - c. Crane; a Crane brand.
 - d. Elkhart Products Corporation.
 - e. Or approved equal
2. Description:
 - a. Standard: MSS SP-110 or MSS SP-145.
 - b. CWP Rating: 600 psig.
 - c. Body Design: Two piece.

- d. Body Material: Forged brass.
- e. Ends: Threaded and soldered.
- f. Seats: PTFE.
- g. Stem: Brass.
- h. Ball: Chrome-plated brass.
- i. Port: Full.

C. Brass Ball Valves, Two-Piece with Full Port and Brass Trim, Press Ends:

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. American Valve, Inc.
 - b. Apollo Flow Controls; Conbraco Industries, Inc.
 - c. Crane; a Crane brand.
 - d. NIBCO INC.
 - e. WATTS.
 - f. Or approved equal
2. Description:
 - a. Standard: MSS SP-110 or MSS SP-145.
 - b. CWP Rating: Minimum 200 psig.
 - c. Body Design: Two piece.
 - d. Body Material: Forged brass.
 - e. Ends: Press.
 - f. Press Ends Connection Rating: Minimum 200 psig.
 - g. Seats: PTFE or RPTFE.
 - h. Stem: Brass.
 - i. Ball: Chrome-plated brass.
 - j. Port: Full.
 - k. O-Ring: Buna-N or EPDM.

D. Brass Ball Valves, Two-Piece with Regular Port and Brass Trim:

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. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. Milwaukee Valve Company.
 - c. NIBCO INC.
 - d. WATTS.
 - e. Or approved equal
2. Description:
 - a. Standard: MSS SP-110.

- b. CWP Rating: 600 psig.
- c. Body Design: Two piece.
- d. Body Material: Forged brass.
- e. Ends: Threaded and soldered.
- f. Seats: PTFE.
- g. Stem: Brass.
- h. Ball: Chrome-plated brass.
- i. Port: Regular.

2.3 BRONZE BALL VALVES

A. Bronze Ball Valves, One-Piece:

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. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. NIBCO INC.
 - c. WATTS.
 - d. Or approved equal
2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 400 psig.
 - c. Body Design: One piece.
 - d. Body Material: Bronze.
 - e. Ends: Threaded.
 - f. Seats: PTFE.
 - g. Stem: Bronze.
 - h. Ball: Chrome-plated brass.
 - i. Port: Reduced.

B. Bronze Ball Valves, Two-Piece with Full Port, and Bronze or Brass Trim, Threaded or Soldered Ends:

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. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. Crane; a Crane brand.
 - c. Milwaukee Valve Company.
 - d. NIBCO INC.
 - e. WATTS.
 - f. Or approved equal

2. Description:
 - a. Standard: MSS SP-110 or MSS-145.
 - b. CWP Rating: 600 psig.
 - c. Body Design: Two piece.
 - d. Body Material: Bronze.
 - e. Ends: Threaded and soldered.
 - f. Seats: PTFE.
 - g. Stem: Bronze or brass.
 - h. Ball: Chrome-plated brass.
 - i. Port: Full.

C. Bronze Ball Valves, Two-Piece with Full Port, and Bronze or Brass Trim, Press Ends:

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. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. Milwaukee Valve Company.
 - c. NIBCO INC.
 - d. WATTS.
 - e. Or approved equal

2. Description:
 - a. Standard: MSS SP-110 or MSS-145.
 - b. CWP Rating: Minimum 200 psig.
 - c. Body Design: Two piece.
 - d. Body Material: Bronze.
 - e. Ends: Press.
 - f. Press Ends Connections Rating: Minimum 200 psig.
 - g. Seats: PTFE or RTPFE.
 - h. Stem: Bronze or brass.
 - i. Ball: Chrome-plated brass.
 - j. Port: Full.
 - k. O-Ring Seal: EPDM or Buna-N.

D. Bronze Ball Valves, Two-Piece with Regular Port and Bronze or Brass Trim:

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. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. DynaQuip Controls.
 - c. NIBCO INC.
 - d. WATTS.

- e. Or approved equal
- 2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 600 psig.
 - c. Body Design: Two piece.
 - d. Body Material: Bronze.
 - e. Ends: Threaded.
 - f. Seats: PTFE.
 - g. Stem: Bronze or brass.
 - h. Ball: Chrome-plated brass.
 - i. Port: Regular.

PART 3 - EXECUTION

3.1 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.

3.2 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
- B. Select valves with the following end connections:
 - 1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.
 - 2. For Steel Piping, NPS 2 and Smaller: Threaded ends.

3.3 LOW-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (150 PSIG OR LESS)

- A. Pipe NPS 2 and Smaller:
 - 1. Bronze and Brass Valves: May be provided with solder-joint ends instead of threaded ends.
 - 2. Brass ball valves, one piece.
 - 3. Bronze ball valve, one piece with bronze trim.

4. Brass ball valves, two-piece with full port and brass trim.
5. Bronze ball valves, two-piece with full port and bronze or brass trim.

3.4 HIGH-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (150 TO 200 PSIG)

A. Pipe NPS 2 and Smaller:

1. Bronze and Brass Valves: May be provided with solder-joint ends instead of threaded ends.
2. Brass ball valve, one piece.
3. Bronze ball valve with bronze trim, one piece.
4. Brass ball valves, two-piece with full port and brass trim.
5. Bronze ball valves, two-piece with full port and bronze or brass trim.

3.5 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Brass ball valve, one piece. Provide with threaded or solder-joint ends.
2. Bronze ball valve, one piece with bronze trim. Provide with threaded or solder-joint ends.
3. Brass ball valves, two-piece with full port and brass trim. Provide with threaded solder or press connection-joint ends.
4. Bronze ball valves, two-piece with full port and bronze or brass trim. Provide with threaded solder or press-connection-joint ends.

END OF SECTION 220523.12

SECTION 220523.14 CHECK VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Bronze swing check valves.
 - 2. Bronze swing check valves, press ends.
 - 3. Iron swing check valves.
 - 4. Iron swing check valves with closure control.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of valve.
 - 1. Certification that products comply with NSF 61.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
 - 1. ASME B1.20.1 for threads for threaded end valves.
 - 2. ASME B16.1 for flanges on iron valves.
 - 3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
 - 4. ASME B16.18 for solder joint.
 - 5. ASME B31.9 for building services piping valves.
- C. Drinking Water System Components - Health Effects and Drinking Water System Components - Lead Content Compliance: NSF 61 and NSF 372.
- D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
- E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- F. Valve Sizes: Same as upstream piping unless otherwise indicated.

- G. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE SWING CHECK VALVES

- A. Bronze Swing Check Valves with Bronze Disc, Class 125:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Valve, Inc.
 - b. Apollo Flow Controls; Conbraco Industries, Inc.
 - c. Crane; a Crane brand.
 - d. NIBCO INC.
 - e. WATTS.
 - f. Or approved equal
2. Description:
 - a. Standard: MSS SP-80, Type 3.
 - b. CWP Rating: 200 psig.
 - c. Body Design: Horizontal flow.
 - d. Body Material: ASTM B62, bronze.
 - e. Ends: Threaded or soldered. See valve schedule articles.
 - f. Disc: Bronze.

- B. Bronze Swing Check Valves with Nonmetallic Disc, Class 125:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. Crane; a Crane brand.
 - c. NIBCO INC.
 - d. Stockham; a Crane brand.
 - e. WATTS.
 - f. Or approved equal
2. Description:
 - a. Standard: MSS SP-80, Type 4.
 - b. CWP Rating: 200 psig.
 - c. Body Design: Horizontal flow.
 - d. Body Material: ASTM B62, bronze.
 - e. Ends: Threaded or soldered. See valve schedule articles.
 - f. Disc: PTFE.

- C. Bronze Swing Check Valves, Press Ends:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. Elkhart Products Corporation.
 - c. Milwaukee Valve Company.
 - d. NIBCO INC.
 - e. Or approved equal

2. Description:
 - a. Standard: MSS SP-80 and MSS SP-139.
 - b. CWP Rating: Minimum 200 psig.
 - c. Body Design: Horizontal flow.
 - d. Body Material: ASTM B584, bronze.
 - e. Ends: Press.
 - f. Press Ends Connection Rating: Minimum 200 psig
 - g. Disc: Brass or bronze.

PART 3 - EXECUTION

3.1 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.
- E. Install swing check valves for proper direction of flow in horizontal position with hinge pin level.

3.2 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valve applications are not indicated, use the following:
 1. Pump-Discharge Check Valves:
 - a. NPS 2 and Smaller: Bronze swing check valves with bronze or nonmetallic disc.

- b. NPS 2-1/2 and Larger for Domestic Water: Iron swing check valves with lever and weight or spring; metal-seat or resilient-seat check valves.
 - c. NPS 2-1/2 and Larger for Sanitary Waste and Storm Drainage: Iron swing check valves with lever and weight or spring.
 - B. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
 - C. End Connections:
 - 1. For Copper Tubing, NPS 2 and Smaller: Threaded or soldered or press-ends.
 - 2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged or threaded.
 - 3. For Copper Tubing, NPS 5 and Larger: Flanged.
 - 4. For Steel Piping, NPS 2 and Smaller: Threaded.
 - 5. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged or threaded.
 - 6. For Steel Piping, NPS 5 and Larger: Flanged.
- 3.4 LOW-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (150 PSIG OR LESS)
 - A. Pipe NPS 2 and Smaller:
 - 1. Horizontal and Vertical Applications: Bronze swing check valves with bronze disc, Class 125, with soldered or threaded end connections.
- 3.5 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE
 - A. Pipe NPS 2 and Smaller:
 - 1. Bronze swing check valves bronze disc, Class 125, with soldered or threaded end connections.
 - 2. Bronze swing check valves with press-end connections.

END OF SECTION 220523.14

SECTION 220523.15 GATE VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Bronze gate valves.
 - 2. Iron gate valves.
 - 3. Chainwheels.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of valve.
 - 1. Certification that products comply with NSF 61 and NSF 372.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
 - 1. ASME B1.20.1 for threads for threaded end valves.
 - 2. ASME B16.1 for flanges on iron valves.
 - 3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
 - 4. ASME B16.18 for solder joint.
 - 5. ASME B31.9 for building services piping valves.
- C. NSF Compliance: NSF 61 and NSF 372 for valve materials for potable-water service.
- D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
- E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- F. Valve Sizes: Same as upstream piping unless otherwise indicated.
- G. RS Valves in Insulated Piping: With 2-inch stem extensions.

- H. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE GATE VALVES

- A. Bronze Gate Valves, NRS, Class 125:

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. American Valve, Inc.
 - b. Apollo Flow Controls; Conbraco Industries, Inc.
 - c. NIBCO INC.
 - d. WATTS.
 - e. Or approved equal
2. Description:
 - a. Standard: MSS SP-80, Type 1.
 - b. CWP Rating: 200 psig.
 - c. Body Material: Bronze with integral seat and screw-in bonnet.
 - d. Ends: Threaded or solder joint.
 - e. Stem: Bronze.
 - f. Disc: Solid wedge; bronze.
 - g. Packing: Asbestos free.
 - h. Handwheel: Malleable iron, bronze, or aluminum.

- B. Bronze Gate Valves, RS, Class 125:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Valve, Inc.
 - b. Apollo Flow Controls; Conbraco Industries, Inc.
 - c. Crane; a Crane brand.
 - d. NIBCO INC.
 - e. Or approved equal
2. Description:
 - a. Standard: MSS SP-80, Type 2.
 - b. CWP Rating: 200 psig.
 - c. Body Material: Bronze with integral seat and screw-in bonnet.
 - d. Ends: Threaded or solder joint.
 - e. Stem: Bronze.
 - f. Disc: Solid wedge; bronze.
 - g. Packing: Asbestos free.
 - h. Handwheel: Malleable iron, bronze, or aluminum.

C. Bronze Gate Valves, Press Ends:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. Elkhart Products Corporation.
 - c. Hammond Valve.
 - d. Milwaukee Valve Company.
 - e. NIBCO INC.
 - f. Or approved equal
2. Description:
 - a. Standard: MSS SP-80 and MSS SP-139.
 - b. CWP Rating: Minimum 200 psig.
 - c. Body Material: Bronze with integral seat and union-ring bonnet.
 - d. Ends: Press.
 - e. Press Ends Connection Rating: Minimum 200 psig.
 - f. Stem: Brass or bronze non-rising.
 - g. Disc: Solid wedge; bronze.
 - h. Packing: Graphite.
 - i. Port: Full.
 - j. Handwheel: Malleable iron, bronze, or aluminum.

2.3 IRON GATE VALVES

A. Iron Gate Valves, NRS, Class 125:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. Crane; a Crane brand.
 - c. Milwaukee Valve Company.
 - d. NIBCO INC.
 - e. Or approved equal
2. Description:
 - a. Standard: MSS SP-70, Type I.
 - b. CWP Rating: 200 psig.
 - c. Body Material: Gray iron with bolted bonnet.
 - d. Ends: Flanged.
 - e. Trim: Bronze.
 - f. Disc: Solid wedge.
 - g. Packing and Gasket: Asbestos free.

- B. Iron Gate Valves, OS&Y, Class 125:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. Crane; a Crane brand.
 - c. Milwaukee Valve Company.
 - d. NIBCO INC.
 - e. Or approved equal
 - 2. Description:
 - a. Standard: MSS SP-70, Type I.
 - b. CWP Rating: 200 psig.
 - c. Body Material: Gray iron with bolted bonnet.
 - d. Ends: Flanged.
 - e. Trim: Bronze.
 - f. Disc: Solid wedge.
 - g. Packing and Gasket: Asbestos free.

PART 3 - EXECUTION

3.1 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.

3.2 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. Use gate valves for shutoff service only.
- B. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.

3.4 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze gate valves, NRS, Class 125 with soldered ends.
2. Bronze gate valves, press ends.

B. Pipe NPS 2-1/2 and Larger: Iron gate valves, NRS, Class 125 with flanged ends.

END OF SECTION 220523.15

SECTION 220529 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Thermal hanger-shield inserts.
4. Fastener systems.
5. Pipe-positioning systems.
6. Equipment supports.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
2. Section 220516 "Expansion Fittings and Loops for Plumbing Piping" for pipe guides and anchors.
3. Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment" for vibration isolation devices.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations.
- C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Structural-Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M.

- B. Pipe Welding Qualifications: Qualify procedures and operators according to "2015 ASME Boiler and Pressure Vessel Code, Section IX."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design trapeze pipe hangers and equipment supports.
- B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
 - 1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
 - 2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
 - 3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

2.2 METAL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Galvanized Metallic Coatings: Pregalvanized, hot-dip galvanized, or electro-galvanized.
 - 3. Nonmetallic Coatings: Plastic coated or epoxy powder coated.
 - 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
 - 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.
- B. Copper Pipe and Tube Hangers:
 - 1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
 - 2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

2.3 TRAPEZE PIPE HANGERS

- A. Description: MSS SP-58, Type 59, shop- or field-fabricated pipe-support assembly, made from structural-carbon-steel shapes, with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.4 THERMAL HANGER-SHIELD INSERTS

- A. Insulation-Insert Material for Cold Piping: ASTM C552, Type II cellular glass with 100-psig or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength and vapor barrier.
- B. Insulation-Insert Material for Hot Piping: Water-repellent-treated, ASTM C533, Type I calcium silicate with 100-psig ASTM C552, Type II cellular glass with 100-psig or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength.
- C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.5 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Hilti, Inc.
 - b. ITW Ramset/Red Head; Illinois Tool Works, Inc.
 - c. MKT Fastening, LLC.
 - d. Simpson Strong-Tie Co., Inc.
 - e. Or approved equal
 - B. Mechanical-Expansion Anchors: Insert-wedge-type anchors, for use in hardened portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (B-line).
 - b. Empire Tool and Manufacturing Co., Inc.
 - c. Hilti, Inc.
 - d. ITW Ramset/Red Head; Illinois Tool Works, Inc.
 - e. MKT Fastening, LLC.
 - f. Or approved equal
 - 2. Indoor Applications: Zinc-coated or stainless steel.
 - 3. Outdoor Applications: Stainless steel.

2.6 PIPE-POSITIONING SYSTEMS

- A. Description: IAPMO PS 42 positioning system composed of metal brackets, clips, and straps for positioning piping in pipe spaces; for plumbing fixtures in commercial applications.

2.7 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural-carbon-steel shapes.

2.8 MATERIALS

- A. Aluminum: ASTM B221.
- B. Carbon Steel: ASTM A1011/A1011M.
- C. Structural Steel: ASTM A36/A36M carbon-steel plates, shapes, and bars; black and galvanized.
- D. Stainless Steel: ASTM A240/A240M.
- E. Grout: ASTM C1107/C1107M, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation, for penetrations through fire-rated walls, ceilings, and assemblies.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components, so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

3.2 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-58. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
 - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size, or install intermediate supports for smaller-diameter pipes as specified for individual pipe hangers.
 - 2. Field fabricate from ASTM A36/A36M carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.
- C. Thermal Hanger-Shield Installation: Install in pipe hanger or shield for insulated piping.
- D. Fastener System Installation:
 - 1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete, after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
 - 2. Install mechanical-expansion anchors in concrete, after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- E. Pipe-Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.
- F. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- G. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- H. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- I. Install lateral bracing with pipe hangers and supports to prevent swaying.
- J. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms, and install reinforcing bars through openings at top of inserts.
- K. Load Distribution: Install hangers and supports, so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- L. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- M. Insulated Piping:
 - 1. Attach clamps and spacers to piping.

- a. Piping Operating Above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating Below Ambient Air Temperature: Use thermal hanger-shield insert with clamp sized to match OD of insert.
 - c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
2. Install MSS SP-58, Type 39 protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 3. Install MSS SP-58, Type 40 protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
 - b. NPS 4: 12 inches long and 0.06 inch thick.
 - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
 - d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
 - e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.
 5. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
 6. Thermal Hanger Shields: Install with insulation of same thickness as piping insulation.

3.3 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment, and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.4 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

- C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work.

3.5 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.6 PAINTING

- A. Touchup: Clean field welds and abraded, shop-painted areas. Paint exposed areas immediately after erecting hangers and supports. Use same materials as those used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded, shop-painted areas on miscellaneous metal are specified in Section 099123 "Interior Painting."
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas, and apply galvanizing-repair paint to comply with ASTM A780/A780M.

3.7 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-58 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finishes.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports and metal trapeze pipe hangers and attachments for general service applications.
- F. Use copper-plated pipe hangers and copper or stainless-steel attachments for copper piping and tubing.
- G. Use padded hangers for piping that is subject to scratching.
- H. Use thermal hanger-shield inserts for insulated piping and tubing.

- I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
 2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
 3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
 4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
 5. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
 6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated, stationary pipes NPS 3/4 to NPS 8.
 7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
 8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
 9. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
 10. Split Pipe Ring with or without Turnbuckle Hangers (MSS Type 11): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 8.
 11. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 3.
 12. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
 13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
 14. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
 15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
 16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
 17. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction occurs.
 18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS 24, from single rod if horizontal movement caused by expansion and contraction occurs.
 19. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 if longitudinal movement caused by expansion and contraction occurs but vertical adjustment is unnecessary.
 20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes NPS 2 to NPS 24 if small horizontal movement caused by expansion and contraction occurs and vertical adjustment is unnecessary.

21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes NPS 2 to NPS 30 if vertical and lateral adjustment during installation, in addition to expansion and contraction, is required.
- J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.
- K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment of up to 6 inches for heavy loads.
 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11 split pipe rings.
 4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
 5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.
- L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable-Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 6. C-Clamps (MSS Type 23): For structural shapes.
 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
 11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
 12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb.

- b. Medium (MSS Type 32): 1500 lb.
 - c. Heavy (MSS Type 33): 3000 lb.
- 13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
- 14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
- 15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 - 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 - 3. Thermal Hanger-Shield Inserts: For supporting insulated pipe.
- N. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
 - 2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
 - 3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.
 - 4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
 - 5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load, and limit variability factor to 25 percent to allow expansion and contraction of piping system from hanger.
 - 6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load, and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.
 - 7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load, and limit variability factor to 25 percent to allow expansion and contraction of piping system from trapeze support.
 - 8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
 - a. Horizontal (MSS Type 54): Mounted horizontally.
 - b. Vertical (MSS Type 55): Mounted vertically.
 - c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.
- O. Comply with MSS SP-58 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

- P. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.
- Q. Use pipe-positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION 220529

SECTION 220553 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Equipment labels.
 - 2. Warning signs and labels.
 - 3. Pipe labels.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

- A. Plastic Labels for Equipment:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. Brimar Industries, Inc.
 - c. Carlton Industries, LP.
 - d. Champion America.
 - e. Craftmark Pipe Markers.
 - f. Or approved equal
 - 2. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
 - 3. Letter Color: White.
 - 4. Background Color: Black.
 - 5. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
 - 6. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
 - 7. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.

8. Fasteners: Stainless-steel rivets or self-tapping screws.
 9. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.
- C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number, and identify Drawing numbers where equipment is indicated (plans, details, and schedules) and the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Brady Corporation.
 2. Brimar Industries, Inc.
 3. Carlton Industries, LP.
 4. Champion America.
 5. Craftmark Pipe Markers.
 6. Or approved equal
- B. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
- C. Letter Color: White.
- D. Background Color: Red.
- E. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- F. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- G. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
- H. Fasteners: Stainless-steel rivets or self-tapping screws.
- I. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- J. Label Content: Include caution and warning information plus emergency notification instructions.

2.3 PIPE LABELS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Actioncraft Products, Inc.; a division of Industrial Test Equipment Co., Inc.
 - 2. Brady Corporation.
 - 3. Brimar Industries, Inc.
 - 4. Carlton Industries, LP.
 - 5. Champion America.
 - 6. Craftmark Pipe Markers.
 - 7. Or approved equal
- B. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- C. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to partially cover circumference of pipe and to attach to pipe without fasteners or adhesive.
- D. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- E. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with piping-system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
 - 2. Lettering Size: Size letters according to ASME A13.1 for piping.

PART 3 - EXECUTION

3.1 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

3.2 PIPE LABEL INSTALLATION

- A. Piping Color Coding: Painting of piping is specified in Section 099123 "Interior Painting."
- B. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Near each valve and control device.

2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

C. Pipe Label Color Schedule:

1. Domestic Water Piping
 - a. Background: Safety green.
 - b. Letter Colors: White.
2. Sanitary Waste and Storm Drainage Piping:
 - a. Background Color: Safety black.
 - b. Letter Color: White.

END OF SECTION 22 05 53

SECTION 220719 PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes insulating the following plumbing piping services:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Domestic recirculating hot-water piping.
4. Domestic chilled-water piping for drinking fountains.
5. Sanitary waste piping exposed to freezing conditions.
6. Storm-water piping exposed to freezing conditions.
7. Roof drains and rainwater leaders.
8. Supplies and drains for handicap-accessible lavatories and sinks.

B. Related Sections:

1. Section 220716 "Plumbing Equipment Insulation" for equipment insulation.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail attachment and covering of heat tracing inside insulation.
3. Detail insulation application at pipe expansion joints for each type of insulation.
4. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
5. Detail removable insulation at piping specialties, equipment connections, and access panels.
6. Detail application of field-applied jackets.
7. Detail application at linkages of control devices.

C. Samples: For each type of insulation and jacket indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material test reports.

- C. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.
- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 - 1. Insulation Installed Indoors: Flame-spread index of 25 or less and smoke-developed index of 50 or less.
 - 2. Insulation Installed Outdoors: Flame-spread index of 75 or less and smoke-developed index of 150 or less.
- C. Comply with the following applicable standards and other requirements specified for miscellaneous components:
 - 1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.5 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
- B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.
- C. Coordinate installation and testing of heat tracing.

1.6 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come into contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested in accordance with ASTM C871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable in accordance with ASTM C795.
- E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- F. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Comply with ASTM C552.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Pittsburgh Corning Corporation.
 - b. Or approved equal
 - 2. Preformed Pipe Insulation: Type II, Class 1, without jacket.
 - 3. Preformed Pipe Insulation: Type II, Class 2, with factory-applied ASJ jacket.
 - 4. Factory fabricate shapes in accordance with ASTM C450 and ASTM C585.
 - 5. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
- G. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C534/C534M, Type I for tubular materials.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Aeroflex USA.
 - b. Armacell LLC.
 - c. K-Flex USA.
 - d. Or approved equal
- H. Mineral-Fiber, Preformed Pipe: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C547.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. Knauf Insulation.
 - c. Manson Insulation Inc.
 - d. Owens Corning.
 - e. Or approved equal
 2. Preformed Pipe Insulation: Type I, Grade A with factory-applied ASJ.
 3. 850 deg F.
 4. Factory fabricate shapes in accordance with ASTM C450 and ASTM C585.
 5. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
- I. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C534/C534M or ASTM C1427, Type I, Grade 1, for tubular materials.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Armacell LLC.
 - b. Or approved equal
- 2.2 ADHESIVES
- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Cellular-Glass Adhesive: Two-component, thermosetting urethane adhesive containing no flammable solvents, with a service temperature range of minus 100 to plus 200 deg F.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Foster Brand; H. B. Fuller Construction Products.
- C. Flexible Elastomeric and Polyolefin Adhesive: Solvent-based adhesive.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Aeroflex USA.
 - b. Armacell LLC.
 - c. Foster Brand; H. B. Fuller Construction Products.
 - d. K-Flex USA.
 - e. Or approved equal
 2. Flame-spread index shall be 25 or less and smoke-developed index shall be 50 or less as tested in accordance with ASTM E84.

3. Wet Flash Point: Below 0 deg F.
4. Service Temperature Range: 40 to 200 deg F.
5. Color: Black.

D. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Or approved equal

E. ASJ Adhesive and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A, for bonding insulation jacket lap seams and joints.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Mon-Eco Industries, Inc.
 - d. Or approved equal

F. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Dow Consumer Solutions.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. P.I.C. Plastics, Inc.
 - d. Speedline Corporation.
 - e. Or approved equal

2.3 MASTICS AND COATINGS

A. Materials shall be compatible with insulation materials, jackets, and substrates.

B. Vapor-Retarder Mastic, Water Based: Suitable for indoor use on below-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Knauf Insulation.
 - d. Vimasco Corporation.

- e. Or approved equal
 - 2. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.
 - 3. Service Temperature Range: 0 to plus 180 deg F.
 - 4. Comply with MIL-PRF-19565C, Type II, for permeance requirements.
 - 5. Color: White.
- C. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Knauf Insulation.
 - d. Mon-Eco Industries, Inc.
 - e. Vimasco Corporation.
 - f. Or approved equal
 - 2. Water-Vapor Permeance: ASTM E96/E96M, greater than 1.0 perm at manufacturer's recommended dry film thickness.
 - 3. Service Temperature Range: 0 to plus 180 deg F Minus 20 to plus 180 deg F.
 - 4. Color: White.

2.4 SEALANTS

- A. Materials shall be as recommended by the insulation manufacturer and shall be compatible with insulation materials, jackets, and substrates.
- B. Joint Sealants:
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Mon-Eco Industries, Inc.
 - d. Pittsburgh Corning Corporation.
 - e. Or approved equal
 - 2. Permanently flexible, elastomeric sealant.
 - 3. Service Temperature Range: Minus 58 to plus 176 deg F.
 - 4. Color: White or gray.
- C. FSK and Metal Jacket Flashing Sealants:
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Mon-Eco Industries, Inc.
 - d. Or approved equal
2. Fire- and water-resistant, flexible, elastomeric sealant.
 3. Service Temperature Range: Minus 40 to plus 250 deg F.
 4. Color: Aluminum.
- D. ASJ Flashing Sealants and PVC Jacket Flashing Sealants:
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Or approved equal
 2. Fire- and water-resistant, flexible, elastomeric sealant.
 3. Service Temperature Range: Minus 40 to plus 250 deg F.
 4. Color: White.

2.5 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C1136, Type I.
 2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C1136, Type I.
 3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C1136, Type II.

2.6 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C1136, Type I, unless otherwise indicated.
- B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.
- C. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Johns Manville; a Berkshire Hathaway company.

- b. P.I.C. Plastics, Inc.
 - c. Proto Corporation.
 - d. Speedline Corporation.
 - e. Or approved equal
2. Adhesive: As recommended by jacket material manufacturer.
 3. Color: White.
 4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
 - a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

2.7 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C1136.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. 3M Industrial Adhesives and Tapes Division.
 - b. Avery Dennison Corporation, Specialty Tapes Division.
 - c. Ideal Tape Co., Inc., an American Biltrite Company.
 - d. Knauf Insulation.
 - e. Or approved equal
 2. Width: 3 inches.
 3. Thickness: 11.5 mils.
 4. Adhesion: 90 ounces force/inch in width.
 5. Elongation: 2 percent.
 6. Tensile Strength: 40 lbf/inch in width.
 7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C1136.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. 3M Industrial Adhesives and Tapes Division.
 - b. Avery Dennison Corporation, Specialty Tapes Division.
 - c. Ideal Tape Co., Inc., an American Biltrite Company.
 - d. Knauf Insulation.
 - e. Or approved equal
 2. Width: 3 inches.
 3. Thickness: 6.5 mils.

4. Adhesion: 90 ounces force/inch in width.
 5. Elongation: 2 percent.
 6. Tensile Strength: 40 lbf/inch in width.
 7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.
- C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. 3M Industrial Adhesives and Tapes Division.
 - b. Ideal Tape Co., Inc., an American Biltrite Company.
 - c. Or approved equal
 2. Width: 2 inches.
 3. Thickness: 6 mils.
 4. Adhesion: 64 ounces force/inch in width.
 5. Elongation: 500 percent.
 6. Tensile Strength: 18 lbf/inch in width.
- D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. 3M Industrial Adhesives and Tapes Division.
 - b. Avery Dennison Corporation, Specialty Tapes Division.
 - c. Ideal Tape Co., Inc., an American Biltrite Company.
 - d. Knauf Insulation.
 - e. Or approved equal
 2. Width: 2 inches.
 3. Thickness: 3.7 mils.
 4. Adhesion: 100 ounces force/inch in width.
 5. Elongation: 5 percent.
 6. Tensile Strength: 34 lbf/inch in width.

2.8 SECUREMENTS

- A. Bands:
1. Stainless Steel: ASTM A240/A240M, Type 304; 0.015 inch thick, 1/2 inch wide with wing seal or closed seal.
 2. Aluminum: ASTM B209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with wing seal or closed seal.
- B. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.

- C. Wire: 0.080-inch nickel-copper alloy.

2.9 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Buckaroos, Inc.
 - b. Just Manufacturing.
 - c. McGuire Manufacturing.
 - d. MVG Molded Products.
 - e. Truebro.
 - f. Or approved equal
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.

B. Protective Shielding Piping Enclosures:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Truebro.
 - b. Zurn Industries, LLC.
 - c. Or approved equal
2. Description: Manufactured plastic enclosure for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with ADA requirements.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:
 1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range of between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

2. Carbon Steel: Coat carbon steel operating at a service temperature of between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
- C. Coordinate insulation installation with the tradesman installing heat tracing. Comply with requirements for heat tracing that apply to insulation.
- D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless steel surfaces, use demineralized water.

3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and of thicknesses required for each item of pipe system, as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during storage, application, and finishing. Replace insulation materials that get wet.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 1. Install insulation continuously through hangers and around anchor attachments.
 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends attached to structure with vapor-barrier mastic.
 3. Install insert materials and insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward-clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward-clinching staples along edge at 4 inches o.c.
 - a. For below-ambient services, apply vapor-barrier mastic over staples.
 - 4. Cover joints and seams with tape, in accordance with insulation material manufacturer's written instructions, to maintain vapor seal.
 - 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 25 percent of its nominal thickness.
- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches in similar fashion to butt joints.
- P. For above-ambient services, do not install insulation to the following:
 - 1. Vibration-control devices.
 - 2. Testing agency labels and stamps.
 - 3. Nameplates and data plates.
 - 4. Cleanouts.

3.3 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.

3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.
- C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 4. Seal jacket to wall flashing with flashing sealant.
- D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.
1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.
- F. Insulation Installation at Floor Penetrations:
1. Pipe: Install insulation continuously through floor penetrations.
 2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.4 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials, except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, Mechanical Couplings, and Unions:
1. Install insulation over fittings, valves, strainers, flanges, mechanical couplings, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
 2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as that of adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and

- irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as that used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
 4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as that used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
 5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers, so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 6. Insulate flanges, mechanical couplings, and unions, using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Stencil or label the outside insulation jacket of each union with the word "union" matching size and color of pipe labels.
 7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
 8. For services not specified to receive a field-applied jacket, except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing, using PVC tape.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as that of adjoining pipe insulation.
 2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union at least 2 times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless steel or aluminum bands. Select band material compatible with insulation and jacket.

3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.5 INSTALLATION OF CELLULAR-GLASS INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands, and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward-clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive, as recommended by insulation material manufacturer, and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of 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 same thickness as that of pipe insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as that of straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of cellular-glass insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.

3. Install insulation to flanges as specified for flange insulation application.

3.6 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

- A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- B. Insulation Installation on Pipe Flanges:
 1. Install pipe insulation to outer diameter of pipe flange.
 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of 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 same thickness as that of pipe insulation.
 4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- C. Insulation Installation on Pipe Fittings and Elbows:
 1. Install mitered sections of pipe insulation.
 2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- D. Insulation Installation on Valves and Pipe Specialties:
 1. Install preformed valve covers manufactured of same material as that of pipe insulation when available.
 2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
 3. Install insulation to flanges as specified for flange insulation application.
 4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.7 INSTALLATION OF MINERAL-FIBER INSULATION

- A. Insulation Installation on Straight Pipes and Tubes:
 1. Secure each layer of preformed pipe insulation to pipe with wire or bands, and tighten bands without deforming insulation materials.
 2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
 3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches o.c.

4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive, as recommended by insulation material manufacturer, and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of 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. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as that of straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as that of straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.8 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as that of pipe insulation.

4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- C. Insulation Installation on Pipe Fittings and Elbows:
1. Install mitered sections of polyolefin pipe insulation.
 2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- D. Insulation Installation on Valves and Pipe Specialties:
1. Install cut sections of polyolefin pipe and sheet insulation to valve body.
 2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
 3. Install insulation to flanges as specified for flange insulation application.
 4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.9 FIELD-APPLIED JACKET INSTALLATION

- A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.
1. Draw 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 lagging adhesive.
 3. Completely encapsulate insulation with coating, leaving no exposed insulation.
- B. Where FSK jackets are indicated, install as follows:
1. Draw jacket material smooth and tight.
 2. Install lap or joint strips with same material as jacket.
 3. Secure jacket to insulation with manufacturer's recommended adhesive.
 4. Install jacket 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-barrier mastic.
- C. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.
1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.
- D. Where metal jackets are indicated, install 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.

3.10 FINISHES

- A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
 - 1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coat Material: Interior, flat, latex-emulsion size.
- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
- C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.
- D. Do not field paint aluminum or stainless steel jackets.

3.11 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections.
- B. Engage a qualified testing agency to perform tests and inspections.
- C. Perform tests and inspections.
- D. Tests and Inspections: Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- E. All insulation applications will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports.

3.12 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
 - 1. Drainage piping located in crawl spaces.

2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.13 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Cold Water:

1. NPS 1 and Smaller: Insulation shall be one of the following:
 - a. Flexible Elastomeric: 1/2 inch thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
 - c. Polyolefin: 1 inch thick.
2. NPS 1-1/4 and Larger: Insulation shall be one of the following:
 - a. Flexible Elastomeric: 1 inch thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
 - c. Polyolefin: 1 inch thick.

B. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be one of the following:
 - a. Flexible Elastomeric: 3/4 inch thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
 - c. Polyolefin: 1 inch thick.
2. NPS 1-1/2 and Larger: Insulation shall be one of the following:
 - a. Flexible Elastomeric: 1 inch thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
 - c. Polyolefin: 1 inch thick.

C. Stormwater and Overflow:

1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Flexible Elastomeric: 1 inch thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
 - c. Polyolefin: 1 inch thick.

D. Roof Drain and Overflow Drain Bodies:

1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Flexible Elastomeric: 1 inch thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
 - c. Polyolefin: 1 inch thick.

- E. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Flexible Elastomeric: 1/2 inch thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
 - c. Polyolefin: 3/4 inch thick.

END OF SECTION 22 07 19

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Copper tube and fittings.
2. Ductile-iron pipe and fittings.
3. Piping joining materials.
4. Encasement for piping.
5. Transition fittings.
6. Dielectric fittings.

- B. Related Requirements:

1. Section 221113 "Facility Water Distribution Piping" for water-service piping and water meters outside the building from source to the point where water-service piping enters the building.

1.3 ACTION SUBMITTALS

- A. Product Data: For transition fittings and dielectric fittings.
- B. Coordination Drawings: Plumbing systems, drawn to scale, on which the following items are shown and coordinated with each other, using input from the installers of the items involved:
 1. Domestic water piping.

1.4 INFORMATIONAL SUBMITTALS

- A. System purging and disinfecting activities report.
- B. Field quality-control reports.

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.
- B. Potable-water piping and components shall comply with NSF 14, NSF 61, and NSF 372.

2.2 COPPER TUBE AND FITTINGS

- A. Hard Copper Tube: ASTM B88, Type L water tube, drawn temper.
- B. Soft Copper Tube: ASTM B88, Type L water tube, annealed temper.
- C. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
- D. Bronze Flanges: ASME B16.24, Class 150, with solder-joint, press-connect, or threaded ends.
- E. Copper Unions:
 - 1. MSS SP-123.
 - 2. Cast-copper-alloy, hexagonal-stock body.
 - 3. Ball-and-socket, metal-to-metal seating surfaces.
 - 4. Solder-joint or threaded ends.
- F. Copper Press-Connect Fittings:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide products by Viega LLC; ProPress or comparable products by one of the following:
 - a. Apollo Flow Controls; Conbraco Industries, Inc., ApolloXpress.
 - b. Elkhart Products Corporation.
 - c. NIBCO INC.
 - d. Or approved equal
 - 2. Fittings for NPS 2 and Smaller: Cast-bronze or wrought-copper fitting with EPDM-rubber, O-ring seal in each end.
 - 3. Fittings for NPS 2-1/2 to NPS 4: Wrought-copper fitting with EPDM-rubber, O-ring seal in each end.
 - 4. Press Ends: Unpressed fitting identification feature to the fitting wall.
 - 5. Sealing Element: EPDM.
- G. Cast Copper Alloy Pipe Flanges with Press-Connect Fittings:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Viega LLC; ProPress Copper or comparable products by one of the following:

- a. NIBCO INC.
 - b. Or approved equal
2. Flanges: ASME B 16.24, Class 150, powder coated steel plate; two-piece design.
 3. NPS 2-1/2 thru NPS 4 Fittings: Stainless steel grip ring and EPDM O-ring seal in each end.
 4. Housing: Copper or bronze.
 5. Press Ends: Unpressed fitting identification feature to the fitting wall.
 6. Sealing Element: EPDM.

2.3 DUCTILE-IRON PIPE AND FITTINGS

A. Mechanical-Joint, Ductile-Iron Pipe:

1. AWWA C151/A21.51, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.
2. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

B. Standard-Pattern, Mechanical-Joint Fittings:

1. AWWA C110/A21.10, ductile or gray iron.
2. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

C. Compact-Pattern, Mechanical-Joint Fittings:

1. AWWA C153/A21.53, ductile iron.
2. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

D. Push-on-Joint, Ductile-Iron Pipe:

1. AWWA C151/A21.51.
2. Push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.

E. Standard-Pattern, Push-on-Joint Fittings:

1. AWWA C110/A21.10, ductile or gray iron.
2. Gaskets: AWWA C111/A21.11, rubber.

F. Compact-Pattern, Push-on-Joint Fittings:

1. AWWA C153/A21.53, ductile iron.
2. Gaskets: AWWA C111/A21.11, rubber.

G. Plain-End, Ductile-Iron Pipe: AWWA C151/A21.51.

2.4 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials:

1. AWWA C110/A21.10, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
2. 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 B32, lead-free alloys.

D. Flux: ASTM B813, water flushable.

E. Brazing Filler Metals: AWS A5.8M/A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.5 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. A.Y. McDonald Mfg. Co.
 - b. Capitol Manufacturing Company.
 - c. Central Plastics Company.
 - d. HART Industrial Unions, LLC.
 - e. Jomar Valve.
 - f. Matco-Norca.
 - g. WATTS.
 - h. Wilkins.
 - i. Zurn Industries, LLC.
 - j. Or approved equal
2. Standard: ASSE 1079.
3. Pressure Rating: 125 psig minimum at 180 deg F.
4. End Connections: Solder-joint, or press-connect joint, copper alloy and threaded ferrous.

C. Dielectric Flanges:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Capitol Manufacturing Company.

- b. Central Plastics Company.
 - c. Matco-Norca.
 - d. WATTS.
 - e. Wilkins.
 - f. Zurn Industries, LLC.
 - g. Or approved equal
 2. Standard: ASSE 1079.
 3. Factory-fabricated, bolted, companion-flange assembly.
 4. Pressure Rating: 125 psig minimum at 180 deg F.
 5. End Connections: Solder-joint, threaded, or press-connect, copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.
- D. Dielectric-Flange Insulating Kits:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Central Plastics Company.
 - d. Pipeline Seal and Insulator, Inc.
 - e. Or approved equal
 2. Nonconducting materials for field assembly of companion flanges.
 3. Pressure Rating: 150 psig.
 4. Gasket: Neoprene or phenolic.
 5. Bolt Sleeves: Phenolic or polyethylene.
 6. Washers: Phenolic with steel backing washers.
- E. Dielectric Nipples:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Elster Perfection Corporation.
 - b. Grinnell Mechanical Products.
 - c. Matco-Norca.
 - d. Precision Plumbing Products.
 - e. Victaulic Company.
 - f. Or approved equal
 2. Standard: IAPMO PS 66.
 3. Electroplated steel nipple complying with ASTM F1545.
 4. Pressure Rating and Temperature: 300 psig at 225 deg F.
 5. End Connections: Male threaded.
 6. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 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 copper tubing under building slab according to CDA's "Copper Tube Handbook."
- C. Install ductile-iron piping under building slab with restrained joints according to AWWA C600 and AWWA M41.
- D. Install underground copper tube in PE encasement according to ASTM A674 or AWWA C105/A21.5.
- E. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping" and with requirements for drain valves and strainers in Section 221119 "Domestic Water Piping Specialties."
- F. Install shutoff valve immediately upstream of each dielectric fitting.
- G. Install water-pressure-reducing valves downstream from shutoff valves. Comply with requirements for pressure-reducing valves in Section 221119 "Domestic Water Piping Specialties."
- H. Install domestic water piping level and plumb.
- I. Rough-in domestic water piping for water-meter installation according to utility company's requirements.
- J. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.
- K. 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.
- L. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

- M. Install piping to permit valve servicing.
- N. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.
- O. Install piping free of sags and bends.
- P. Install fittings for changes in direction and branch connections.
- Q. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.
- R. Install pressure gages on suction and discharge piping for each plumbing pump and packaged booster pump. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping."
- S. Install thermostats in hot-water circulation piping. Comply with requirements for thermostats in Section 221123 "Domestic Water Pumps."
- T. Install thermometers on inlet and outlet piping from each water heater. Comply with requirements for thermometers in Section 220519 "Meters and Gages for Plumbing Piping."
- U. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- V. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- W. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

3.3 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 for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.
- E. Soldered Joints for Copper Tubing: Apply ASTM B813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B828 or CDA's "Copper Tube Handbook."
- F. Press-Connect Joints for Copper Tubing: Join copper tube and pressure-connect fittings with tools recommended by fitting manufacturer.
 - 1. Mark proper insertion depth prior to making press connection.
- G. 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.

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 unions.
- C. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric flange kits or nipples.

3.5 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- B. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
 - 1. Vertical Piping: MSS Type 8 or 42, clamps.
 - 2. Individual, Straight, Horizontal Piping Runs:
 - a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
 - b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
 - 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. Support vertical piping and tubing at base and at each floor.
- D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.
- E. 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 (DN 65): 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.

F. Install supports for vertical copper tubing every 10 feet.

G. Support piping and tubing not listed in this article according to MSS SP-58 and manufacturer's written instructions.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. 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 that required by plumbing code.
4. Equipment (ManaBloc/MiniBloc): 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 for identification materials and installation in Section 220553 "Identification for Plumbing Piping and Equipment."

B. Label pressure piping with system operating pressure.

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

- a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
 - b. 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:
 - 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 authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.
 - c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
 - d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
2. Piping Tests:
- a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
 - b. 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.
 - c. 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.
 - d. 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 it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
 - e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
 - f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.

- a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
 - b. Adjust calibrated balancing valves to flows indicated.
5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
 6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
 7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
 8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect 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. Repeat procedures if biological examination shows contamination.
 - e. Submit water samples in sterile bottles to authorities having jurisdiction.

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. Include copies of water-sample approvals from authorities having jurisdiction.
- D. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.11 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. Under-building-slab, domestic water, building-service piping, NPS 3 and smaller shall be the following:
 - 1. Soft copper tube, ASTM B88, Type L; wrought-copper, solder-joint fittings and copper press-connect fittings; and press-connect joints.
- E. Under-building-slab, combined domestic water, building-service, and fire-service-main piping, NPS 6 to NPS 12, shall be the following:
 - 1. Mechanical-joint, ductile-iron pipe; standard or compact pattern, mechanical-joint fittings; and mechanical joints.
- F. Aboveground domestic water piping, NPS 2 and smaller, shall be one of the following:
 - 1. Hard copper tube, ASTM B88, Type L wrought-copper, solder-joint fittings; and soldered joints.
 - 2. Hard copper tube, ASTM B88, Type L copper press-connect fittings; and press-connect joints.
- G. Aboveground domestic water piping, NPS 2-1/2 to NPS 4, shall be one of the following:
 - 1. Hard copper tube, ASTM B88, Type L wrought-copper, solder-joint fittings; and soldered joints.
 - 2. Hard copper tube, ASTM B88, Type L; copper press-connect fittings; and press-connect joints.

3.12 VALVE SCHEDULE

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Shutoff Duty: Use ball or gate valves for piping NPS 2 and smaller. Use ball or gate 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 ball valves with flanged ends for piping NPS 2-1/2 and larger.
 3. Hot-Water Circulation Piping, Balancing Duty: Memory-stop or Thermostatic balancing valves. Refer to Drawing Schedule.
 4. Drain Duty: Hose-end drain valves.
- B. Use check valves to maintain correct direction of domestic water flow to and from equipment.

END OF SECTION 22 11 16

SECTION 221119 DOMESTIC WATER PIPING SPECIALTIES

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. Vacuum breakers.
2. Backflow preventers.
3. Water pressure-reducing valves.
4. Balancing valves.
5. Temperature-actuated, water mixing valves.
6. Strainers.
7. Outlet boxes.
8. Hose stations.
9. Hose bibbs.
10. Wall hydrants.
11. Drain valves.
12. Water-hammer arresters.
13. Air vents.
14. Trap-seal primer valves.
15. Trap-seal primer systems.
16. Specialty valves.
17. Flexible connectors.
18. Water meters.

- B. Related Requirements:

1. Section 220519 "Meters and Gages for Plumbing Piping" for thermometers, pressure gages, and flow meters in domestic water piping.
2. Section 221116 "Domestic Water Piping" for water meters.
3. Section 224500 "Emergency Plumbing Fixtures" for water tempering equipment.
4. Section 224713 "Drinking Fountains" for water filters for water coolers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Shop Drawings: For domestic water piping specialties.
 - 1. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

- A. 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.
- B. NSF Compliance as required by authorities having jurisdiction:
 - 1. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components.
 - 2. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9."
 - 3. Comply with NSF 372, "Drinking Water System Components – Lead Content."

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

- A. Potable-water piping and components shall comply with NSF 61.

2.2 PERFORMANCE REQUIREMENTS

- A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.3 VACUUM BREAKERS

- A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model 35XL (Lead-Free) or comparable product by one of the following:
 - a. Conbraco Industries, Inc.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
 2. Standard: ASSE 1001.
 3. Size: NPS 1/4 to NPS 2, as required to match connected piping.
 4. Body: Bronze.
 5. Inlet and Outlet Connections: Threaded.
 6. Finish: Rough bronze.
- B. Hose-Connection Vacuum Breakers:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model BFP-8F or comparable product by one of the following:
 - a. Cash Acme; a division of Reliance Worldwide Corporation.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
 2. Standard: ASSE 1011.
 3. Body: Bronze, nonremovable, with manual drain.
 4. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
 5. Finish: Rough bronze.
- C. Laboratory-Faucet Vacuum Breakers:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model 730 or comparable product by one of the following:
 - a. Conbraco Industries, Inc.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
 2. Standard: ASSE 1035.
 3. Size: NPS 1/4 or NPS 3/8 matching faucet size.
 4. Body: Bronze.
 5. End Connections: Threaded.
 6. Finish: Chrome plated.
- D. Spill-Resistant Vacuum Breakers:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model 460 or comparable product by one of the following:
 - a. Conbraco Industries, Inc.

- b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
- 2. Standard: ASSE 1056.
 - 3. Operation: Continuous-pressure applications.
 - 4. Size: NPS 1/4 to NPS 25, as required to match connected piping.
 - 5. Accessories:
 - a. Valves: Ball type, on inlet and outlet.

2.4 BACKFLOW PREVENTERS

A. Intermediate Atmospheric-Vent Backflow Preventers:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model 760 or comparable product by one of the following:
 - a. Cash Acme; a division of Reliance Worldwide Corporation.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
- 2. Standard: ASSE 1012.
- 3. Operation: Continuous-pressure applications.
- 4. Size: NPS 1/2 to NPS 3/4, as required to match connected piping.
- 5. Body: Bronze.
- 6. End Connections: Union, solder joint.
- 7. Finish: Chrome plated.

B. Reduced-Pressure-Principle Backflow Preventers:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model 375A (Lead-Free) or comparable product by one of the following:
 - a. Conbraco Industries, Inc.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
- 2. Standard: ASSE 1013, CSA B64.4, IAPMO, USC FCCCHR, UL Listed, FMG approved, and AWWA C511.
- 3. Operation: Continuous-pressure applications.
- 4. Pressure Loss: 12 psig maximum, through middle third of flow range.
- 5. Size: NPS 1/2 to NPS 10.
- 6. Body: Bronze for NPS 2-1/2 and larger.
- 7. Configuration: Designed for horizontal, straight-through flow.
- 8. Accessories:
 - a. Valves NPS 2 and Smaller: Ball type with threaded ends on inlet and outlet.

- b. Valves NPS 2-1/2 and Larger:
 - 1) Valve Type: Non-rising stem gate valves.
 - 2) End Connection: Flanged end connections.
 - c. Air-Gap Fitting: ASME A112.1.2, matching backflow-preventer connection.
 - d. Strainer Option: Cast iron wye strainer.
- C. Double-Check, Backflow-Prevention Assemblies:
- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model 350A (Lead-Free) or comparable product by one of the following:
 - a. Conbraco Industries, Inc.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
 - 2. Standard: ASSE 1015.
 - 3. Operation: Continuous-pressure applications unless otherwise indicated.
 - 4. Pressure Loss: 5 psig maximum, through middle third of flow range.
 - 5. Size: NPS 1/2 to NPS 12.
 - 6. Body: Bronze for NPS 2 and smaller; cast iron with interior lining that complies with AWWA C550 for NPS 2-1/2 and larger.
 - 7. Configuration: Designed for horizontal flow.
 - 8. Accessories:
 - a. Valves NPS 2 and Smaller: Ball type with threaded ends on inlet and outlet.
 - b. Valves NPS 2-1/2 and Larger:
 - 1) Valve Type: Non-rising stem gate valves.
 - 2) End Connection: Flanged end connections.
 - c. Strainer Option: Epoxy coated wye strainer.
- D. Beverage-Dispensing-Equipment Backflow Preventers:
- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model 375ST (Lead-Free) or comparable product by one of the following:
 - a. Conbraco Industries, Inc.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
 - 2. Standard: ASSE 1022.
 - 3. Operation: Continuous-pressure applications.
 - 4. Size: NPS 1/4 to NPS 1.
 - 5. Body: Stainless steel.

6. End Connections: Threaded.

E. Hose-Connection Backflow Preventers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Conbraco Industries, Inc.
 - b. Watts; a Watts Water Technologies company.
 - c. Woodford Manufacturing Company; a division of WCM Industries, Inc.
 - d. Or approved equal
2. Standard: ASSE 1052.
3. Operation: Up to 10-foot head of water back pressure.
4. Inlet Size: NPS 1/2 or NPS 3/4.
5. Outlet Size: Garden-hose thread complying with ASME B1.20.7.
6. Capacity: At least 3-gpm flow.

2.5 WATER PRESSURE-REDUCING VALVES

A. Water Regulators:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model 70XL (Lead-Free) or comparable product by one of the following:
 - a. Cash Acme; a division of Reliance Worldwide Corporation.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
2. Standard: ASSE 1003.
3. Pressure Rating: Initial working pressure of 150 psig.
4. Size: NPS 1/2 to NPS 3.
5. Body: Bronze.
6. Valves for Booster Heater Water Supply: Include integral bypass.
7. End Connections: Threaded.

B. Water-Control Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model ZW204 (Lead-Free) or comparable product by one of the following:
 - a. CLA-VAL.
 - b. OCV Control Valves.
 - c. Or approved equal
2. Description: Pilot-operated, diaphragm-type, single-seated, main water-control valve.

3. Pressure Rating: Initial working pressure of 150 psig minimum with AWWA C550 or FDA-approved, interior epoxy coating. Include small pilot-control valve, restrictor device, specialty fittings, and sensor piping.
4. Main Valve Body: Cast- or ductile-iron body with AWWA C550 or FDA-approved, interior epoxy coating; or stainless-steel body.
 - a. Size: NPS 1-1/2 to NPS 10.
 - b. Pattern: Globe-valve design.
 - c. Trim: Stainless steel.
5. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.

2.6 BALANCING VALVES

A. Memory-Stop Balancing Valves:

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. Conbraco Industries, Inc.
 - b. Bell & Gossett
 - c. Crane Co.; Crane Valve Group; Crane Valves.
 - d. Crane Co.; Crane Valve Group; Jenkins Valves.
 - e. Crane Co.; Crane Valve Group; Stockham Div.
 - f. Hammond Valve.
 - g. Milwaukee Valve Company.
 - h. NIBCO Inc.
 - i. Red-White Valve Corp.
 - j. Or approved equal
2. Standard: MSS SP-110 for two-piece, copper-alloy ball valves.
3. Pressure Rating: 400-psig minimum CWP.
4. Size: NPS 2 or smaller.
5. Body: Copper alloy.
6. Port: Standard or full port.
7. Ball: Chrome-plated brass.
8. Seats and Seals: Replaceable.
9. End Connections: Solder joint or threaded.
10. Handle: Vinyl-covered steel with memory-setting device.

2.7 TEMPERATURE-ACTUATED, WATER MIXING VALVES

A. Water-Temperature Limiting Devices:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model ZW1017XL (Lead-Free) or comparable product by one of the following:
 - a. Leonard Valve Company.
 - b. Powers; a division of Watts Water Technologies, Inc.
 - c. Or approved equal
2. Standard: ASSE 1017.
3. Pressure Rating: 125 psig.
4. Type: Thermostatically controlled, water mixing valve.
5. Material: Bronze body with corrosion-resistant interior components.
6. Connections: Threaded union inlets and outlet.
7. Accessories: Check stops on hot- and cold-water supplies, and adjustable, temperature-control handle.
8. Valve Finish: Rough bronze.

B. Individual-Fixture, Water Tempering Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Wilkins; Model ZW3870XLT (Lead-Free) or comparable product by one of the following:
 - a. Cash Acme; a division of Reliance Worldwide Corporation.
 - b. Watts; a Watts Water Technologies company.
 - c. Or approved equal
2. Standard: ASSE 1016, thermostatically controlled, water tempering valve.
3. Pressure Rating: 125 psig minimum unless otherwise indicated.
4. Body: Bronze body with corrosion-resistant interior components.
5. Temperature Control: Adjustable.
6. Inlets and Outlet: Threaded.
7. Finish: Rough or chrome-plated bronze.

2.8 STRAINERS FOR DOMESTIC WATER PIPING

A. Y-Pattern Strainers:

1. Pressure Rating: 125 psig minimum unless otherwise indicated.
2. Body: Bronze for NPS 2 and smaller; cast iron with interior lining that complies with AWWA C550 for NPS 2-1/2 and larger.
3. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
4. Screen: Stainless steel with round perforations unless otherwise indicated.
5. Perforation Size:
 - a. Strainers NPS 2 and Smaller: 0.020 inch.
 - b. Strainers NPS 2-1/2 to NPS 4: 0.045 inch.

- c. Strainers NPS 5 and Larger: 0.10 inch.
- 6. Drain: Factory-installed, hose-end drain valve.

2.9 OUTLET BOXES

A. Clothes Washer Outlet Boxes:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Light Commercial Products; or comparable product by one of the following:
 - a. Acorn Engineering Company.
 - b. Guy Gray Manufacturing Co., Inc.
 - c. IPS Corporation.
 - d. LSP Products Group, Inc.
 - e. Oatey.
 - f. Plastic Oddities.
 - g. Symmons Industries, Inc.
 - h. Watts; a Watts Water Technologies company.
 - i. Whitehall Manufacturing; a div. of Acorn Engineering Company.
 - j. Or approved equal
- 2. Mounting: Recessed.
- 3. Material and Finish: Enameled-steel, epoxy-painted-steel, or plastic box and faceplate.
- 4. Faucet: Combination valved fitting or separate hot- and cold-water valved fittings complying with ASME A112.18.1. Include garden-hose thread complying with ASME B1.20.7 on outlets.
- 5. Supply Shutoff Fittings: NPS 1/2 gate, globe, or ball valves and NPS 1/2 copper, water tubing.
- 6. Drain: NPS 1-1/2 standpipe and P-trap for direct waste connection to drainage piping.
- 7. Inlet Hoses: Two 60-inch-long, rubber household clothes washer inlet hoses with female, garden-hose-thread couplings. Include rubber washers.
- 8. Drain Hose: One 48-inch-long, rubber household clothes washer drain hose with hooked end.

B. Icemaker Outlet Boxes:

- 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. Acorn Engineering Company.
 - b. IPS Corporation.
 - c. LSP Products Group, Inc.
 - d. Oatey.
 - e. Plastic Oddities.

f. Or approved equal

2. Mounting: Recessed.
3. Material and Finish: Enameled-steel, epoxy-painted-steel, or plastic box and faceplate.
4. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 or smaller copper tube outlet.
5. Supply Shutoff Fitting: NPS 1/2 gate, globe, or ball valve and NPS 1/2 copper, water tubing.

2.10 HOSE STATIONS

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. ARCHON Industries, Inc.
2. Armstrong International, Inc.
3. Cooney Brothers, Inc.
4. DynaFluid Ltd.
5. Leonard Valve Company.
6. Strahman Valves, Inc.
7. T & S Brass.
8. Or approved equal

2.11 HOSE BIBBS

A. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 1/2 or NPS 3/4 threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig.
7. Vacuum Breaker: Integral, nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Finish for Equipment Rooms: Rough bronze, or chrome or nickel plated.
9. Finish for Service Areas: Rough bronze.
10. Finish for Finished Rooms: Chrome or nickel plated.
11. Operation for Equipment Rooms: Wheel handle or operating key.
12. Operation for Service Areas: Wheel handle.
13. Operation for Finished Rooms: Operating key.
14. Include operating key with each operating-key hose bibb.
15. Include integral wall flange with each chrome- or nickel-plated hose bibb.

2.12 WALL HYDRANTS

A. Nonfreeze Wall Hydrants:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Light Commercial Products or comparable product by one of the following:
 - a. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
 - c. Or approved equal
2. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
3. Pressure Rating: 125 psig.
4. Operation: Loose key.
5. Casing and Operating Rod: Of length required to match wall thickness. Include wall clamp.
6. Inlet: NPS 3/4 or NPS 1.
7. Outlet: Concealed, with integral vacuum breaker and garden-hose thread complying with ASME B1.20.7.
8. Box: Deep, flush mounted with cover.
9. Box and Cover Finish: Polished nickel bronze.
10. Outlet: Exposed, with integral vacuum breaker and garden-hose thread complying with ASME B1.20.7.
11. Nozzle and Wall-Plate Finish: Polished nickel bronze.
12. Operating Keys(s): Two with each wall hydrant.

B. Nonfreeze, Hot- and Cold-Water Wall Hydrants:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Specification Drainage Products; Z1325 or comparable product by one of the following:
 - a. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
 - c. Or approved equal
2. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
3. Pressure Rating: 125 psig.
4. Operation: Loose key.
5. Casing and Operating Rods: Of length required to match wall thickness. Include wall clamps.
6. Inlet: NPS 3/4 or NPS 1.
7. Outlet: Concealed.
8. Box: Deep, flush mounted with cover.
9. Box and Cover Finish: Polished nickel bronze.
10. Vacuum Breaker:
 - a. Nonremovable, manual-drain-type, hose-connection vacuum breaker complying with ASSE 1011 or backflow preventer complying with ASSE 1052.

- b. Garden-hose thread complying with ASME B1.20.7 on outlet.

- 11. Operating Keys(s): Two with each wall hydrant.

2.13 DRAIN VALVES

A. Gate-Valve-Type, Hose-End Drain Valves:

- 1. Standard: MSS SP-80 for gate valves.
- 2. Pressure Rating: Class 125.
- 3. Size: NPS 3/4.
- 4. Body: ASTM B 62 bronze.
- 5. Inlet: NPS 3/4 threaded or solder joint.
- 6. Outlet: Garden-hose thread complying with ASME B1.20.7 and cap with brass chain.

B. Stop-and-Waste Drain Valves:

- 1. Standard: MSS SP-110 for ball valves or MSS SP-80 for gate valves.
- 2. Pressure Rating: 200-psig minimum CWP or Class 125.
- 3. Size: NPS 3/4.
- 4. Body: Copper alloy or ASTM B 62 bronze.
- 5. Drain: NPS 1/8 side outlet with cap.

2.14 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Specification Drainage Products; Z1700 or comparable product by one of the following:
 - a. Precision Plumbing Products, Inc.
 - b. Sioux Chief Manufacturing Company, Inc.
 - c. Or approved equal
- 2. Standard: ASSE 1010 or PDI-WH 201.
- 3. Type: Copper tube with piston.
- 4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.15 AIR VENTS

A. Bolted-Construction Automatic Air Vents:

- 1. Body: Bronze.
- 2. Pressure Rating and Temperature: 125-psig minimum pressure rating at 140 deg F.
- 3. Float: Replaceable, corrosion-resistant metal.

4. Mechanism and Seat: Stainless steel.
5. Size: NPS 3/8 minimum inlet.
6. Inlet and Vent Outlet End Connections: Threaded.

2.16 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Z1021 or comparable product by one of the following:
 - a. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - b. Watts; a Watts Water Technologies company.
 - c. Precision Piping Products.
 - d. Or approved equal
2. Standard: ASSE 1018.
3. Pressure Rating: 125 psig minimum.
4. Body: Bronze.
5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

2.17 TRAP-SEAL PRIMER SYSTEMS

A. Trap-Seal Primer Systems:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Zurn Industries, LLC; Z1020XL or comparable product by one of the following:
 - a. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - b. Precision Piping Products
 - c. Watts; a Watts Water Technologies company.
 - d. Or approved equal
2. Standard: ASSE 1044.
3. Piping: NPS 3/4, ASTM B 88, Type L; copper, water tubing.
4. Cabinet: Surface-mounted steel box with stainless-steel cover.
5. Electric Controls: 24-hour timer, solenoid valve, and manual switch for 120-V ac power.
 - a. 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.
6. Vacuum Breaker: ASSE 1001.
7. Size Outlets: NPS 1/2.

2.18 FLEXIBLE CONNECTORS

- 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. Flex-Hose Co., Inc.
 2. Flexicraft Industries.
 3. Flex Pression, Ltd.
 4. Flex-Weld Incorporated.
 5. Hyspan Precision Products, Inc.
 6. Mercer Gasket & Shim, Inc.
 7. Metraflex, Inc.
 8. Proco Products, Inc.
 9. TOZEN Corporation.
 10. Unaflex.Universal Metal Hose; a Hyspan company
 11. Or approved equal
- B. Stainless-Steel-Hose Flexible Connectors: Corrugated-stainless-steel tubing with stainless-steel wire-braid covering and ends welded to inner tubing.
1. Working-Pressure Rating: Minimum 200 psig.
 2. End Connections NPS 2 and Smaller: Threaded steel-pipe nipple.

2.19 WATER METERS

- A. Displacement-Type Water Meters:
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. AALIANT; a Venture Measurement product line.
 - b. ABB.
 - c. Badger Meter, Inc.
 - d. Carlon Meter.
 - e. Mueller Co. Ltd.; a subsidiary of Mueller Water Products Inc.
 - f. Schlumberger Limited; Water Services.
 - g. Sensus.
 - h. Or approved equal
 2. Description:
 - a. Standard: AWWA C700.
 - b. Pressure Rating: 150-psig working pressure.
 - c. Body Design: Nutating disc; totalization meter.
 - d. Registration: In gallons or as required by utility company.
 - e. Case: Bronze.

f. End Connections: Threaded.

B. Turbine-Type Water Meters:

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. AALIANT; a Venture Measurement product line.
- b. ABB.
- c. Badger Meter, Inc.
- d. Hays Fluid Controls.
- e. Master Meter, Inc.
- f. McCrometer, Inc.
- g. Mueller Co. Ltd.; a subsidiary of Mueller Water Products Inc.
- h. Schlumberger Limited; Water Services.
- i. SeaMetrics Inc.
- j. Sensus.
- k. Or approved equal

2. Description:

- a. Standard: AWWA C701.
- b. Pressure Rating: [150-psig working pressure.
- c. Body Design: Turbine; totalization meter.
- d. Registration: In gallons, or as required by utility company.
- e. Case: Bronze.
- f. End Connections for Meters NPS 2 and Smaller: Threaded.
- g. End Connections for Meters NPS 2-1/2 and Larger: Flanged.

C. Compound-Type Water Meters:

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. ABB.
- b. Badger Meter, Inc.
- c. Master Meter, Inc.
- d. Mueller Co. Ltd.; a subsidiary of Mueller Water Products Inc.
- e. Schlumberger Limited; Water Services.
- f. Sensus.
- g. Or approved equal

2. Description:

- a. Standard: AWWA C702.
- b. Pressure Rating: 150-psig working pressure.

- c. Body Design: With integral mainline and bypass meters; totalization meter.
 - d. Registration: In gallons or as required by utility company.
 - e. Case: Bronze.
 - f. Pipe Connections: Flanged.
- D. Remote Registration System: Direct-reading type complying with AWWA C706; modified with signal-transmitting assembly, low-voltage connecting wiring, and remote register assembly as required by utility company.
- E. Remote Registration System: Encoder type complying with AWWA C707; modified with signal-transmitting assembly, low-voltage connecting wiring, and remote register assembly as required by utility company.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install backflow preventers in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.
- 1. Locate backflow preventers in same room as connected equipment or system.
 - 2. Install drain for backflow preventers with atmospheric-vent drain connection with air-gap fitting, fixed air-gap fitting, or equivalent positive pipe separation of at least two pipe diameters in drain piping and pipe-to-floor drain. Locate air-gap device attached to or under backflow preventer. Simple air breaks are unacceptable for this application.
 - 3. Do not install bypass piping around backflow preventers.
- B. Install water regulators with inlet and outlet shutoff valves and bypass with memory-stop balancing valve. Install pressure gages on inlet and outlet.
- C. Install water-control valves with inlet and outlet shutoff valves and bypass with globe valve. Install pressure gages on inlet and outlet.
- D. Install balancing valves in locations where they can easily be adjusted.
- E. Install temperature-actuated, water mixing valves with check stops or shutoff valves on inlets and with shutoff valve on outlet.
- F. Install Y-pattern strainers for water on supply side of each control valve, water pressure-reducing valve and pump.
- G. Install outlet boxes recessed in wall or surface mounted on wall. Install 2-by-4-inch fire-retardant-treated-wood blocking, wall reinforcement between studs. Comply with requirements for fire-retardant-treated-wood blocking in Section 061000 "Rough Carpentry."

- H. Install hose stations with check stops or shutoff valves on inlets and with thermometer on outlet.
- I. Install water-hammer arresters in water piping according to PDI-WH 201.
- J. Install air vents at high points of water piping.
- K. Install supply-type, 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.
- L. Install drainage-type, trap-seal primer valves as lavatory trap with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting.
- M. Install trap-seal primer systems with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust system for proper flow.

3.2 CONNECTIONS

- A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Fire-retardant-treated-wood blocking is specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for electrical connections.

3.3 LABELING AND IDENTIFYING

- A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
 - 1. Pressure vacuum breakers.
 - 2. Intermediate atmospheric-vent backflow preventers.
 - 3. Reduced-pressure-principle backflow preventers.
 - 4. Double-check, backflow-prevention assemblies.
 - 5. Carbonated-beverage-machine backflow preventers.
 - 6. Dual-check-valve backflow preventers.
 - 7. Reduced-pressure-detector, fire-protection, backflow-preventer assemblies.
 - 8. Water pressure-reducing valves.
 - 9. Calibrated balancing valves.
 - 10. Primary, thermostatic, water mixing valves.
 - 11. Outlet boxes.
 - 12. Hose stations.
 - 13. Supply-type, trap-seal primer valves.
 - 14. Trap-seal primer systems.

- B. 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. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.4 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Test each reduced-pressure-principle backflow preventer and double-check, backflow-prevention assembly according to authorities having jurisdiction and the device's reference standard.
- B. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Set field-adjustable pressure set points of water pressure-reducing valves.
- B. Set field-adjustable flow set points of balancing valves.
- C. Set field-adjustable temperature set points of temperature-actuated, water mixing valves.

END OF SECTION 22 11 19

SECTION 260500 COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- 1) Electrical Drawings
- 2) Project Specifications

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. Section Includes:
 1. Electrical equipment coordination and installation.
 2. Sleeves for raceways and cables.
 3. Sleeve seals.
 4. Grout.
 5. Common electrical installation requirements.

1.4 DEFINITIONS

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
- B. NBR: Acrylonitrile-butadiene rubber.

1.5 SUBMITTALS

- A. Product Data: For sleeve seals.

1.6 COORDINATION

- A. Coordinate arrangement, mounting, and support of electrical equipment:
 1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.

2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
 3. To allow right of way for piping and conduit installed at required slope.
 4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
- B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.
- C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 08 Section "Access Doors and Frames."
- D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping"."

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Sleeves for Rectangular Openings: Galvanized sheet steel.
1. Minimum Metal Thickness:
 - a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and no side more than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
 - b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches (1270 mm) and 1 or more sides equal to, or more than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

2.2 SLEEVE SEALS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
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. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Metraflex Co.
 - d. Pipeline Seal and Insulator, Inc.

e. Or approved equal.

2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
3. Pressure Plates: Plastic. Include two for each sealing element.
4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
 - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants."
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

- A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 26 05 00

SECTION 260526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

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 methods and materials for grounding systems and equipment, plus the following special applications:
 - 1. Equipment grounding.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.
- C. Operation and Maintenance Data: For grounding to include the following in emergency, operation, and maintenance manuals:
 - 1. Instructions for periodic testing and inspection of grounding features at test wells, ground rings, grounding connections for separately derived systems based on NETA MTS.
 - a. Tests shall be to determine if ground resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if they do not.
 - b. Include recommended testing intervals.

1.4 QUALITY ASSURANCE

- A. 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.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: No.4 AWG conductor.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 2 inches in cross section, unless otherwise indicated; with insulators.

2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
- B. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.

2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
3. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 1. Feeders and branch circuits.
 2. Lighting circuits.
 3. Receptacle circuits.
 4. Single-phase motor and appliance branch circuits.
 5. Three-phase motor and appliance branch circuits.
 6. Flexible raceway runs.
- B. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
 3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

3.4 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections and prepare test reports:
 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test

wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.

- a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
- b. Perform tests by fall-of-potential method according to IEEE 81.

END OF SECTION 26 05 26

SECTION 260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

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. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.
- B. Related Sections include the following:
 - 1. Division 26 Section "Vibration And Seismic Controls For Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

- A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. Steel slotted support systems.
 - 2. Nonmetallic slotted support systems.

1.6 QUALITY ASSURANCE

- A. Comply with NFPA 70.

1.7 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories."

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 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. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - g. Or approved equal.
 - 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 - 4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 - 5. Channel Dimensions: Selected for applicable load criteria.
- B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- diameter holes at a maximum of 8 inches o.c., in at least 1 surface.
 - 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. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. Fabco Plastics Wholesale Limited.
 - d. Seasafe, Inc.
 - e. Or approved equal
2. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
 3. Fitting and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.
 4. Rated Strength: Selected to suit applicable load criteria.
- C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- D. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - 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) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
 - 5) Or approved equal
 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - 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) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 - 6) Or approved equal
-
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 6. Toggle Bolts: All-steel springhead type.
 7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 1. Secure raceways and cables to these supports with single-bolt conduit clamps using spring friction action for retention in support channel.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
 - 6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Where applicable, comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base.
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 26 05 29

SECTION 260533 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

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 raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. ENT: Electrical nonmetallic tubing.
- C. EPDM: Ethylene-propylene-diene terpolymer rubber.
- D. FMC: Flexible metal conduit.
- E. IMC: Intermediate metal conduit.
- F. LFMC: Liquidtight flexible metal conduit.
- G. LFNC: Liquidtight flexible nonmetallic conduit.
- H. NBR: Acrylonitrile-butadiene rubber.
- I. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Custom enclosures and cabinets.
 - 2. For handholes and boxes for underground wiring, including the following:

- a. Duct entry provisions, including locations and duct sizes.
 - b. Frame and cover design.
 - c. Grounding details.
 - d. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
 - e. Joint details.
- C. Coordination Drawings: Conduit routing 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. Structural members in the paths of conduit groups with common supports.
 - 2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.
- D. Source quality-control test reports.

1.5 QUALITY ASSURANCE

- A. 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.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- 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. AFC Cable Systems, Inc.
 - 2. Allied Tube & Conduit; a Tyco International Ltd. Co.
 - 3. Anamet Electrical, Inc.; Anaconda Metal Hose.
 - 4. Electri-Flex Co.
 - 5. O-Z Gedney; a unit of General Signal.
 - 6. Wheatland Tube Company.
 - 7. Or approved equal
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Aluminum Rigid Conduit: ANSI C80.5.
- D. IMC: ANSI C80.6.
- E. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.

1. Comply with NEMA RN 1.
 2. Coating Thickness: 0.040 inch, minimum.
- F. EMT: ANSI C80.3.
- G. FMC: Zinc-coated steel or aluminum.
- H. LFMC: Flexible steel conduit with PVC jacket.
- I. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
 2. Fittings for EMT: Steel or die-cast, compression type.
 3. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch, with overlapping sleeves protecting threaded joints.
- J. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.2 NONMETALLIC CONDUIT AND TUBING

- 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. AFC Cable Systems, Inc.
 2. Anamet Electrical, Inc.; Anaconda Metal Hose.
 3. Electri-Flex Co.
 4. Lamson & Sessions; Carlon Electrical Products.
 5. RACO; a Hubbell Company.
 6. Thomas & Betts Corporation.
 7. Or approved equal
- B. ENT: NEMA TC 13.
- C. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.
- D. LFNC: UL 1660.
- E. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.
- F. Fittings for LFNC: UL 514B.

2.3 METAL WIREWAYS

- 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. Cooper B-Line, Inc.
 - 2. Hoffman.
 - 3. Square D; Schneider Electric.
 - 4. Or approved equal
- B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type for indoor applications and Type 3R for outdoor applications, unless otherwise indicated.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Wireway Covers: Screw-cover type or flanged-and-gasketed type as indicated for the application.
- E. Finish: Manufacturer's standard enamel finish.

2.4 SURFACE RACEWAYS

- A. Surface Metal Raceways: Galvanized steel with snap-on covers.
 - 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. Hubbell Incorporated; Wiring Device-Kellems Division.
 - b. Wiremold Company (The); Electrical Sales Division.
 - c. MonoSystems
 - d. Or approved equal

2.5 BOXES, ENCLOSURES, AND CABINETS

- 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. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
 - 2. Hoffman.
 - 3. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
 - 4. O-Z/Gedney; a unit of General Signal.
 - 5. RACO; a Hubbell Company.
 - 6. Thomas & Betts Corporation.
 - 7. Walker Systems, Inc.; Wiremold Company (The).

8. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
 9. Or approved equal
- B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy or aluminum, with gasketed cover.
- D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- E. Metal Floor Boxes: Cast or sheet metal, fully adjustable, rectangular.
- F. Nonmetallic Floor Boxes: Nonadjustable, round.
- G. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- H. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.
- I. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.
- J. Cabinets:
1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 2. Hinged door in front cover with flush latch and concealed hinge.
 3. Key latch to match panelboards.
 4. Metal barriers to separate wiring of different systems and voltage.
 5. Accessory feet where required for freestanding equipment.
- 2.6 SLEEVES FOR RACEWAYS
- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.
- D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.7 SLEEVE SEALS

- 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. Advance Products & Systems, Inc.
 2. Calpico, Inc.
 3. Metraflex Co.
 4. Pipeline Seal and Insulator, Inc.
 5. Or approved equal
- B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.
1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 2. Pressure Plates: Stainless steel. Include two for each sealing element.
 3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
1. Exposed Conduit: Rigid steel conduit.
 2. Concealed Conduit, Aboveground: Rigid steel conduit.
 3. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.
 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
- B. Comply with the following indoor applications, unless otherwise indicated:
1. Exposed, Not Subject to Physical Damage: EMT or RNC identified for such use.
 2. Exposed and Subject to Severe Physical Damage: Rigid steel conduit or IMC. Includes raceways in the following locations:
 - a. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - b. Mechanical rooms.
 3. Concealed in Ceilings and Interior Walls and Partitions: EMT or RNC, Type EPC-40-PVC.
 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 5. Damp or Wet Locations: Rigid steel conduit or IMC.

6. Raceways for Optical Fiber or Communications Cable in Spaces Used for Environmental Air: Plenum-type, optical fiber/communications cable raceway or EMT.
 7. Raceways for Optical Fiber or Communications Cable Risers in Vertical Shafts: Riser-type, optical fiber/communications cable raceway or EMT.
 8. Raceways for Concealed General Purpose Distribution of Optical Fiber or Communications Cable: General-use, optical fiber/communications cable raceway or EMT.
 9. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel or nonmetallic in damp or wet locations.
- C. Minimum Raceway Size: 3/4-inch trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.
- E. Do not install aluminum conduits in contact with concrete.

3.2 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."
- E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- F. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
- G. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- H. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
- I. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

- J. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where otherwise required by NFPA 70.
- K. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F, and that has straight-run length that exceeds 25 feet.
 - 1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:
 - a. Indoor Spaces: Connected with the Outdoors without Physical Separation: 125 deg F temperature change.
 - b. Attics: 135 deg F temperature change.
 - 2. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.
- L. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
 - 1. Use LFMC in damp or wet locations subject to severe physical damage.
 - 2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

3.3 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Rectangular Sleeve Minimum Metal Thickness:
 - 1. For sleeve cross-section rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.052 inch.
 - 2. For sleeve cross-section rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches, thickness shall be 0.138 inch.
- E. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

- F. Cut sleeves to length for mounting flush with both surfaces of walls.
- G. Extend sleeves installed in floors 2 inches above finished floor level.
- H. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway unless sleeve seal is to be installed.
- I. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.
- K. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway penetrations. Install sleeves and seal with firestop materials. Comply with Division 07 Section "Penetration Firestopping."
- L. Roof-Penetration Sleeves: Seal penetration of individual raceways with flexible, boot-type flashing units applied in coordination with roofing work.
- M. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- N. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between raceway and sleeve for installing mechanical sleeve seals.

3.4 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground, exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway material and size. Position raceway in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.5 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

3.6 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 26 05 33

SECTION 260553 IDENTIFICATION FOR ELECTRICAL SYSTEMS

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. Identification for raceway and metal-clad cable.
 - 2. Identification for conductors and communication and control cable.
 - 3. Underground-line warning tape.
 - 4. Warning labels and signs.
 - 5. Instruction signs.
 - 6. Equipment identification labels.
 - 7. Miscellaneous identification products.

1.3 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.4 QUALITY ASSURANCE

- A. Comply with ANSI A13.1 and ANSI C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.145.

1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- B. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.2 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
- C. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 7 by 10 inches.
- D. Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 10 by 14 inches.
- E. Warning label and sign shall include, but are not limited to, the following legends:
 - 1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
 - 2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.3 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. in. and 1/8 inch thick for larger sizes.
 - 1. Engraved legend with black letters on white face.
 - 2. Punched or drilled for mechanical fasteners.

3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.4 EQUIPMENT IDENTIFICATION LABELS

- A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

2.5 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties.
 1. Minimum Width: 3/16 inch.
 2. Tensile Strength: 50 lb, minimum.
 3. Temperature Range: Minus 40 to plus 185 deg F.
 4. Color: Black, except where used for color-coding.
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Raceways More Than 600 V Concealed within Buildings: 4-inch- wide black stripes on 10-inch centers over orange background that extends full length of raceway or duct and is 12 inches wide. Stencil legend "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch- high black letters on 20-inch centers. Stop stripes at legends. Apply to the following finished surfaces:
 1. Wall surfaces directly external to raceways concealed within wall.
 2. Accessible surfaces of concrete envelope around raceways in vertical shafts, exposed in the building, or concealed above suspended ceilings.
- B. Accessible Raceways and Metal-Clad Cables More Than 600 V: Identify with "DANGER-HIGH VOLTAGE" in black letters at least 2 inches high, with self-adhesive vinyl labels. Repeat legend at 10-foot maximum intervals.
- C. Power-Circuit Conductor Identification: For primary and secondary conductors No. 1/0 AWG and larger in pull and junction boxes use color-coding conductor tape and write-on tags. Identify source and circuit number of each multi-conductor cable. For single conductor cables, identify phase with color coded tapes in addition to the circuit information on tags .
- D. Branch-Circuit Conductor Identification: Where there are conductors for more than three branch circuits in same junction or pull box, use write-on tags. Identify each ungrounded conductor according to source and circuit number.

- E. Conductors to Be Extended in the Future: Attach write-on tags or marker tape to conductors and list source and circuit number.
- F. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, signal, sound, intercommunications, voice, and data connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
 - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
 - 3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and Operation and Maintenance Manual.
- G. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply self-adhesive warning labels. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
 - 1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
 - a. Power transfer switches.
 - b. Controls with external control power connections.
 - 2. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.
- H. Instruction Signs:
 - 1. Operating Instructions: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
 - 2. Emergency Operating Instructions: Install instruction signs with white legend on a red background with minimum 3/8-inch- high letters for emergency instructions at equipment used for power transfer or load shedding or other emergency operations.
- I. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
 - 1. Labeling Instructions:
 - a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where 2 lines of text are required, use labels 2 inches.

- b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
 - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
2. Equipment to Be Labeled:
- a. Panelboards, electrical cabinets, and enclosures.
 - b. Access doors and panels for concealed electrical items.
 - c. Electrical switchgear and switchboards.
 - d. Transformers.
 - e. Emergency system boxes and enclosures.
 - f. Motor-control centers.
 - g. Disconnect switches.
 - h. Enclosed circuit breakers.
 - i. Motor starters.

3.2 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach nonadhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.
- F. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
 - 1. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - 2. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
 - 3. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made.

Apply last two turns of tape with no tension to prevent possible unwinding. Locate tapes to avoid obscuring factory cable markings.

- G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.

END OF SECTION 26 05 53

SECTION 262726 WIRING DEVICES

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. Receptacles, receptacles with integral GFCI, and associated device plates.
 - 2. Snap switches

1.3 DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- D. RFI: Radio-frequency interference.
- E. TVSS: Transient voltage surge suppressor.
- F. UTP: Unshielded twisted pair.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.
- 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. Comply with NFPA 70.

1.6 COORDINATION

- A. Receptacles for Owner-Furnished Equipment: Match plug configurations.
 - 1. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
 - 2. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
 - 3. Leviton Mfg. Company Inc. (Leviton).
 - 4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).
 - 5. STRAIGHT BLADE RECEPTACLES
 - 6. Or approved equal
- B. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 5351 (single), 5352 (duplex).
 - b. Hubbell; HBL5351 (single), CR5352 (duplex).
 - c. Leviton; 5891 (single), 5352 (duplex).
 - d. Pass & Seymour; 5381 (single), 5352 (duplex).
 - e. Or approved equal
- C. Hospital-Grade, Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498 Supplement SD.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 8300 (duplex).
 - b. Hubbell; HBL8310 (single), HBL8300H (duplex).
 - c. Leviton; 8310 (single), 8300 (duplex).
 - d. Pass & Seymour; 9301-HG (single), 9300-HG (duplex).
 - e. Or approved equal

2.2 GFCI RECEPTACLES

- A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; GF20.
 - b. Pass & Seymour; 2084.
 - c. Or approved equal
- C. Hospital-Grade, Duplex GFCI Convenience Receptacles, 125 V, 20 A: Comply with UL 498 Supplement SD.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; HGF20.
 - b. Hubbell; HGF8300.
 - c. Leviton; 6898-HG.
 - d. Pass & Seymour; 2091-SHG.
 - e. Or approved equal
- D. Hospital-Grade, Duplex Convenience Receptacles: Comply with UL 498 Supplement SD.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 8300BLS.
 - b. Hubbell; HBL8362SA.
 - c. Leviton; 8380.
 - d. Or approved equal
 2. Description: Straight blade, 125 V, 20 A; NEMA WD 6 configuration 5-20R.

2.3 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
 - 1. Plate-Securing Screws: Metal with head color to match plate finish.
 - 2. Material for Finished Spaces: satin-finished stainless steel 0.04-inch-thick.
 - 3. Material for Unfinished Spaces: Galvanized steel.
 - 4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

2.4 FINISHES

- A. Color: Wiring device catalog numbers in Section Text do not designate device color.
 - 1. Wiring Devices Connected to Normal Power System: White or As selected by Owner, unless otherwise indicated or required by NFPA 70 or device listing.
 - 2. Wiring Devices Connected to Emergency Power System: Red.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
 - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
 - 2. 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.
 - 3. 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.
 - 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
 - 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.

3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the left.
2. Install hospital-grade receptacles in patient-care areas with the ground pin or neutral blade at the top.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

- A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on inside face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. In healthcare facilities, prepare reports that comply with recommendations in NFPA 99.
2. Test Instruments: Use instruments that comply with UL 1436.
3. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

END OF SECTION 26 27 26

SECTION 262813 FUSES

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. Cartridge fuses rated 600 V and less for use in switches, panelboards, switchboards, controllers, and motor-control centers.

1.3 SUBMITTALS

- A. Product Data: Include the following for each fuse type indicated:
 - 1. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
 - 2. Let-through current curves for fuses with current-limiting characteristics.
 - 3. Time-current curves, coordination charts and tables, and related data.
 - 4. Fuse size for elevator feeders and elevator disconnect switches.
- B. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals.
 - 1. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - a. Let-through current curves for fuses with current-limiting characteristics.
 - b. Time-current curves, coordination charts and tables, and related data.
 - c. Ambient temperature adjustment information.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fuses from a single manufacturer.
- 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. Comply with NEMA FU 1.
- D. Comply with NFPA 70.

1.5 PROJECT CONDITIONS

- A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F (5 deg C) or more than 100 deg F (38 deg C), apply manufacturer's ambient temperature adjustment factors to fuse ratings.

1.6 COORDINATION

- A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size.

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. Fuses: Quantity equal to 10 percent of each fuse type and size, but no fewer than 3 of each type and size.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- 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. Cooper Bussman, Inc.
 - 2. Eagle Electric Mfg. Co., Inc.; Cooper Industries, Inc.
 - 3. Ferraz Shawmut, Inc.
 - 4. Tracor, Inc.; Littelfuse, Inc. Subsidiary.
 - 5. Or approved equal

2.2 CARTRIDGE FUSES

- A. Characteristics: NEMA FU 1, nonrenewable cartridge fuse; class and current rating indicated; voltage rating consistent with circuit voltage.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.
- B. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS

- A. Service Entrance: Class L, fast acting or T, fast acting.
- B. Feeders: Class RK1, fast acting.
- C. Motor Branch Circuits: Class RK1, time delay.
- D. Other Branch Circuits: Class J, fast acting.

3.3 INSTALLATION

- A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.
- B. Install spare-fuse cabinet(s).

3.4 IDENTIFICATION

- A. Install labels indicating fuse replacement information on inside door of each fused switch.

END OF SECTION 26 28 13

SECTION 262816 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

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. This Section includes the following individually mounted, enclosed switches and circuit breakers:
 - 1. Fusible switches.
 - 2. Nonfusible switches.
 - 3. Molded-case circuit breakers.
 - 4. Molded-case switches.
 - 5. Enclosures.

1.3 DEFINITIONS

- A. GD: General duty.
- B. GFCI: Ground-fault circuit interrupter.
- C. HD: Heavy duty.
- D. RMS: Root mean square.
- E. SPDT: Single pole, double throw.

1.4 SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
 - 1. Enclosure types and details for types other than NEMA 250, Type 1.
 - 2. Current and voltage ratings.
 - 3. Short-circuit current rating.
 - 4. UL listing for series rating of installed devices.
 - 5. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Manufacturer Seismic Qualification Certification: When applicable, submit certification that enclosed switches and circuit breakers, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems" Include the following:
 - 1. Basis of Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. 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."
 - 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.
- D. Field quality-control test reports including the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- E. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
 - 2. Time-current curves, including selectable ranges for each type of circuit breaker.

1.5 QUALITY ASSURANCE

- A. 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.
- B. Comply with NFPA 70.
- C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:
 - 1. Ambient Temperature: Not less than minus 22 deg F (minus 30 deg C) and not exceeding 104 deg F (40 deg C).
 - 2. Altitude: Not exceeding 6600 feet.

1.7 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

1.8 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. Spares: For the following:
 - a. Fuses and Fusible Devices for Fused Circuit Breakers: 3
 - b. Fuses for Fusible Switches: 3
 - 2. Spare Indicating Lights: Six of each type installed.

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. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 FUSIBLE AND NONFUSIBLE SWITCHES

- A. Manufacturers:
 - 1. Eaton Corporation; Cutler-Hammer Products.
 - 2. General Electric Co.; Electrical Distribution & Control Division.
 - 3. Siemens Energy & Automation, Inc.

4. Square D/Group Schneider.
 5. Or approved equal
- B. Fusible Switch, 1200A and Smaller: NEMA KS 1, Type HD, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
- C. Nonfusible Switch, 1200A and Smaller: NEMA KS 1, TypeHD, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
- D. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
 2. Neutral Kit: Internally mounted; insulated, capable of being grounded, and bonded; and labeled for copper and aluminum neutral conductors.
 3. Auxiliary Contact Kit: Auxiliary set of contacts arranged to open before switch blades open.

2.3 MOLDED-CASE CIRCUIT BREAKERS AND SWITCHES

- A. Manufacturers:
1. Eaton Corporation; Cutler-Hammer Products.
 2. General Electric Co.; Electrical Distribution & Control Division.
 3. Siemens Energy & Automation, Inc.
 4. Square D/Group Schneider.
 5. Or approved equal
- B. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents.
1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
 3. Electronic Trip-Unit Circuit Breakers: RMS sensing; field-replaceable rating plug; with the following field-adjustable settings:
 - a. Instantaneous trip.
 - b. Long- and short-time pickup levels.
 - c. Long- and short-time time adjustments.
 - d. Ground-fault pickup level, time delay, and I^2t response.
 4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller and let-through ratings less than NEMA FU 1, RK-5.

5. Integrally Fused Circuit Breakers: Thermal-magnetic trip element with integral limiter-style fuse listed for use with circuit breaker and trip activation on fuse opening or on opening of fuse compartment door.
 6. GFCI Circuit Breakers: Single- and two-pole configurations with 30-mA trip sensitivity.
 7. Circuit breaker interrupting ratings: minimum 65kAIC.
- C. Molded-Case Circuit-Breaker Features and Accessories: Refer to Drawings for applicability and requirements.
1. Standard frame sizes, trip ratings, and number of poles.
 2. Lugs: Mechanical style suitable for number, size, trip ratings, and conductor material.
 3. Application Listing: Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
 4. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 5. Communication Capability: Circuit-breaker-mounted communication module with functions and features compatible with power monitoring and control system specified in Division 26 Section "Electrical Power Monitoring and Control."
 6. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage.
 7. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
 8. Auxiliary Switch: One SPDT switch with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
 9. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.
 10. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.
- D. Molded-Case Switches: Molded-case circuit breaker with fixed, high-set instantaneous trip only, and short-circuit withstand rating equal to equivalent breaker frame size interrupting rating.
- E. Molded-Case Switch Accessories: Refer to Drawings for applicability and requirements.
1. Lugs: Mechanical style suitable for number, size, trip ratings, and material of conductors.
 2. Application Listing: Type HACR for heating, air-conditioning, and refrigerating equipment.
 3. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage. Provide "dummy" trip unit where required for proper operation.
 4. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay. Provide "dummy" trip unit where required for proper operation.
 5. Auxiliary Switch: One SPDT switch with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
 6. Key Interlock Kit: Externally mounted to prohibit operation; key shall be removable only when switch is in off position.

2.4 ENCLOSURES

- A. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.
 - 1. Outdoor Locations: NEMA 250, Type 3R.
 - 2. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
 - 3. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
 - 4. Hazardous Areas Indicated on Drawings: NEMA 250, Type 7C.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CONCRETE BASES

- A. Coordinate size and location of concrete bases. Verify structural requirements with structural engineer.

3.3 INSTALLATION

- A. Comply with applicable portions of NECA 1, NEMA PB 1.1, and NEMA PB 2.1 for installation of enclosed switches and circuit breakers.
- B. Mount individual wall-mounting switches and circuit breakers with tops at uniform height, unless otherwise indicated. Anchor floor-mounting switches to concrete base.
- C. Comply as applicable with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- D. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

3.4 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 26 Section "Identification for Electrical Systems."
- B. Enclosure Nameplates: Label each enclosure with engraved metal or laminated-plastic nameplate as specified in Division 26 Section "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

- A. Prepare for acceptance testing as follows:
1. Inspect mechanical and electrical connections.
 2. Verify switch and relay type and labeling verification.
 3. Verify rating of installed fuses.
 4. Inspect proper installation of type, size, quantity, and arrangement of mounting or anchorage devices complying with manufacturer's certification.
- B. Perform the following field tests and inspections and prepare test reports:
1. As applicable, test mounting and anchorage devices according to requirements in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
 2. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
 3. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
 4. Infrared Scanning:
 - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each enclosed switch and circuit breaker. Open or remove doors or panels so connections are accessible to portable scanner.
 - b. Follow-Up Infrared Scanning: Perform an additional follow-up infrared scan of each unit 11 months after date of Substantial Completion.
 - c. Instruments, Equipment and Reports:
 - 1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - 2) Prepare a certified report that identifies enclosed switches and circuit breakers included and describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.6 ADJUSTING

- A. Set field-adjustable switches and circuit-breaker trip ranges in accordance with setting obtained from the Engineer.

3.7 CLEANING

- A. On completion of installation, vacuum dirt and debris from interiors; do not use compressed air to assist in cleaning.

- B. Inspect exposed surfaces and repair damaged finishes.

END OF SECTION 26 28 16

RJB PROJECT #2023033-02

October 10, 2023



TECHNICAL SPECIFICATIONS
FOR ENVIRONMENTAL REMEDIATION

UNION COUNTY COURT HOUSE PARKING DECK
CORNER OF CALDWELL PLACE AND ELIZABETHTOWN PLAZA
ELIZABETH, NJ

PREPARED FOR:

USA ARCHITECTS

20 NORTH DOUGHTY AVENUE, SOMERVILLE, NJ 08876

PROJECT DESIGNER: Richard J. Beach
EPA Certification #ACC-0423-10-006

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SECTION 1 - ASBESTOS ABATEMENT

PART 1 - GENERAL CONDITIONS

1.1 GENERAL REQUIREMENTS

- A. **RELATED DOCUMENTS:** Project Specifications and Plans, associated reports, and general requirements of the Contract apply to this work. The Contractor is bound by all referenced Contract Documents. The written Contract for the work specified is with the Building Owner, lessee, or Owner's Agent and shall be executed prior to commencement of the work.
- B. **SITE INSPECTION:** Before submitting a proposal or bid, the Contractor shall perform a verification inspection of site conditions. Material quantities provided are estimates only, the Contractor in submission of its bid, shall base its bid on site verification of material quantities and conditions. The Contractor shall be held responsible for having examined the premises to be familiar with the existing site conditions under which the work shall have to be executed. The Contractor will not be granted a change order or allowed to withdraw its bid for failing to conduct this site verification.
- C. **OTHER DOCUMENTS:** The Contractor shall review the written Specification in conjunction with the Project's Plans and any other related documents, such as an assessment report. The Contractor should pose any questions in writing prior to submission of its bid/proposal, to ascertain the intended Scope of Work. Supplementary General Conditions, Specification sections, addenda, and modifications to the contract documents issued after the published date of these Plans and Specifications shall be acknowledged on the bid/proposal form.
- D. **SUBCONTRACTORS:** If allowed by written contract, sub-contracting portions of the work shall be performed such that prevailing wage rates are maintained, if applicable, and that work schedules not be changed that result in delays, claims, and losses in the performance of the work. All sub-contractors shall be approved in advance and maintain insurances as required by the Contract documents.
- E. **INSURANCES:** The County of Union, USA Architects, Mast Construction and RJB Environmental, Inc., shall be named additionally insured. The Contractor and each Sub-Contractor shall procure and maintain the **minimum** insurances outlined below, and additional insurances as may be required by Contract from commencement until completion and final acceptance of the work.

Insurance Type	Required Minimum
Workers' Compensation (Statutory Limits) And Employer's Liability Insurance	\$500,000
Comprehensive General Liability and Specific Asbestos Abatement Liability*	\$2,000,000 combined single limit.
Bodily injury and personal injury, property damage	\$1,000,000 combined single limit. \$1,000,000 excess liability coverage
Comprehensive Automobile Liability Insurance	\$1,000,000 combined single limit
Pollution Liability	\$1,000,000 per occurrence
Umbrella Coverage	\$1,000,000 per occurrence
*(including premises/operations, products/completed operations, independent contractors, personal injury, broad form property damage and contractual liability coverage)	

The Contractor shall procure and maintain for the duration of the contract, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work herein, and the results of that work by the Contractor, its agents, representatives, employees, or sub-contractors. Insurance policy coverages shall be in the form of an occurrence policy, to allow for claims after the completion of the Contract.

The Contractor is responsible to protect themselves against hazards not covered by the Owner's property insurance. Such hazards may include coverage for materials and equipment on-site, water damage, theft, building collapse and against loss of equipment, tools, materials, and any other property owned and/or rented by the Contractor.

1.2 SUMMARY OF WORK

- A. **SCOPE OF WORK:** The Contractor is responsible for the removal of Asbestos-Containing Materials (ACM's) and Universal Waste (UW) materials, inclusive of preparation activities and demolition as needed to access the materials. At all times a remediation supervisor and an Owner's Representative shall be on-site and available while work is being performed. All remediation shall be completed in strict accordance with the Project Plans and Specifications and all applicable local, state and federal regulations. The Contractor shall field verify all materials, quantities, locations, and field conditions prior to submitting their bid proposal. Compliance with all applicable federal, state, and local procedures, and methods for preparation, execution, cleanup, disposal, and safety are absolutely required and said compliance is the sole responsibility of the Contractor.
- B. **PROJECT SUMMARY:** The intent of this environmental remediation project is to remove all identified ACM's and UW as depicted in the attached Project Plans and discussed in the Specifications prior to the demolition of Union County's Courthouse Parking Deck. The Contractor is responsible for the removal of asbestos-containing materials outlined in the following tables and as discussed in the attached assessment report. Additionally, the quantities and specific locations are outlined in the tables and depicted in the Plans located in the Appendices of these Specifications. The work shall be completed in two (2) phases. Phase 1 involves the removal of the ACM associated with the Sky Bridge prior to its demolition. Phase 2 is the abatement of the Parking Garage. Where necessary, the Contractor is responsible for the

demolition of materials to access ACMs and perform “Wrap and Cut” non-friable removal of asbestos containing pipe/fitting insulation on some mechanical systems. All mechanical systems where “Wrap and Cut” is to be performed shall be isolated and systems drained in advance. The County and the Contractor shall maintain electric and water service for the lighting and negative air pressure for the work areas as well as wetting of ACM and use in the shower of the decontamination unit through completion of remedial activities, after which electric and water service is to be shut off by others. It is the Contractor’s responsibility to coordinate their schedule with the Demolition Contractor, Owner’s Architect/Construction Management firm and RJB Environmental, Inc.

C. BASE BID – UNION COUNTY COURTHOUSE PARKING DECK

Summary of Asbestos Containing Materials

The summary of estimated quantities of ACM are listed in Table 1 below. A detail of the material quantities and locations of most ACM within the facility are provided in the Assessment Report and illustrated in the associated ACM Plans provided in the Appendices.

Table 1: Estimated Quantities of Regulated Asbestos Containing Material - Skyway		
LOCATION	MATERIAL DESCRIPTION	ESTIMATED QUANTITY* (square/linear feet)
7 th Floor Deck Skyway	Ceiling Texture/Stucco (Beneath Skyway)	175 SF
	Window Caulk	84 LF

Table 2: Estimated Quantities of Regulated Asbestos Containing Material – Parking Deck		
LOCATION	MATERIAL DESCRIPTION	ESTIMATED QUANTITY* (square/linear feet)
Roof MER	Fitting	Approx. 2 Each
Deck #1 Security Control Booth	Fitting	Approx. 2 Each
Basement Deck Sprinkler Room	Fitting	Approx. 3 Each
Basement Deck Elevator Room	Fitting	Approx. 4 Each
7 th Floor Cell Chase	SOFP (Concealed)	Throughout (Approx. 2,300 SF)
6 th Floor Deck	Ceiling Texture/Stucco	Approx. 14,000 SF
5 th Floor Deck	Ceiling Texture/Stucco	Approx. 14,000 SF

Table 2: Estimated Quantities of Regulated Asbestos Containing Material – Parking Deck (Continued...)		
LOCATION	MATERIAL DESCRIPTION	ESTIMATED QUANTITY* (square/linear feet)
4 th Floor Deck	Ceiling Texture/Stucco	Approx. 14,000 SF
3 rd Floor Deck	Ceiling Texture/Stucco	Approx. 14,000 SF
2 nd Floor Deck	Ceiling Texture/Stucco	Approx. 14,000 SF
1 st Floor Deck	Ceiling Texture/Stucco	Approx. 14,000 SF
Basement Deck	Ceiling & Wall Texture/Stucco	Approx. 14,500 SF
Main Roof	Vent Flashing Bot om Layer	Approx. 300 SF (5 Vents)
Main Roof	Door Caulking A&B	Approx. 2 Doors (36"x80")
7 th Floor Exterior	Perimeter Window Caulking	420 LF
7 th Floor (Exterior)	Brick Expansion Joint	Unquantified (N/A)
6 th Floor Deck	Brick Expansion Joint	Approx. 32 LF
5 th Floor Deck	Brick Expansion Joint	Approx. 32 LF
4 th Floor Deck	Brick Expansion Joint	Approx. 32 LF
3 rd Floor Deck	Brick Expansion Joint	Approx. 32 LF
2 nd Floor Deck	Brick Expansion Joint	Approx. 32 LF
1 st Floor Deck	Brick Expansion Joint	Approx. 32 LF
7 th Floor	Ceiling Texture/Stucco on Roof Deck Interior	Approx. 14,000 SF
Stairwells (Exterior)	Window Caulk	208 LF

Asbestos Abatement

Phase 1 - Skyway

1. Phase 1 of the abatement work shall be completed within a negatively pressured full containment as stated in Section 3.3 and 3.17 of these Specifications. As the acoustical ceiling stucco on the underside of the skyway is approximately fifty-five feet (55') above the ground, the Contractor is required to erect scaffolding to establish a temporary floor no more than ten feet (10') from the ceiling. The scaffolding shall be erected in accordance with 29 CFR, Part 1910.27(a) *Scaffolds*. Additionally, scaffolds used in general industry must meet the

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requirements in 29 CFR, Part 1926, subpart L (Scaffolds). This may merit the employment of a scaffolding sub-contractor familiar and equipped to install safe and compliant scaffolding within the space.

Phase 2 – Garage Parking Decks

1. Phase 2 of the abatement work shall not commence until such time as Phase 1 abatement work has been completed and the skyway has been demolished and the Garage is physically separated from the Courthouse. The removal of the acoustical ceiling stucco and the Sprayed-on Fire Proofing (SOFP) shall be completed within negatively pressured full containments as stated in Section 3.3 and 3.16 of these Specifications. For the Acoustical Stucco, each of the parking structure's decks shall be isolated one (1) at a time, sealing the upward and downward ramps from the other decks and isolating the center curb portions as well. Critical barriers between levels shall be attached using spray glue, duct tape and staples into 1" x 2" furring strips or other existing building components that will render the critical barrier resistant to wind and weather elements. Critical barriers shall be placed around the perimeter of each parking deck to isolate each level of the parking deck from the curtain to the knee walls prior to the erection of single layer wall polyethylene sheeting. At least the one (1) outer polyethylene sheet of the critical barriers from the curtain wall to the knee wall shall be of re-enforced polyethylene. Critical barriers shall be attached using spray glue, duct tape and staples into 1" x 2" furring strips or other existing building components that will render the critical barrier resistant to wind and precipitation. All abatement shall be completed through wet methods and under negative pressure to a minimum of 0.02 inches of water column (i.w.c.). A 2"x4" studded and plywood structure shall be constructed at the entry point to the stairwell to allow for storage and entry space to the work area. The elevator shafts of the non-operational elevator shall also be isolated through the erection of critical barriers on each level of the parking deck.
2. The Abatement Contractor shall be responsible for the removal/demolition of the suspended ceiling system within the upper and lower portions of the sixth (6th) level and the suspended and security ceilings and soffits on the seventh (7th) floor in their entirety to expose the complete concrete decks and metal support beam system above. Additionally, the Abatement Contractor shall be responsible for the demolition of all wet walls (i.e., walls containing water supply or waste piping) within the seventh (7th) level to reveal all piping that will require Wrap and cut" abatement activities.
3. The Contractor shall establish temporary lighting within all work areas, in a sufficient amount to provide the required foot candles of light in accordance with 29 CFR, Part 1926.56.
4. Locations of remote personnel decontamination units and waste chambers shall be identified on the work plan submitted by the Contractor in advance of a pre-construction meeting. However, for any full containment work areas, the Decontamination and/or Waste Units shall be attached to the work area containment as illustrated in the appended plans. Remote decontamination units shall only serve areas of non-friable asbestos abatement.

5. ACM expansion joint caulk shall be abated through the employment of non-friable abatement methodology within general isolation (i.e., single layer tent enclosures) which shall be negatively pressured to a level of 0.02 inches of water column (i.w.c.).
6. The ACM thermal system fitting insulation shall be abated through the employment of “Wrap and Cut” methodology. The thermal system insulation is pre-wet with amended water. The fiberglass insulation is to be cut on either side of each fitting at a distance of approximately six (6) inches. The ACM fitting insulation is then wrapped with two (2) layers of six (6) mil polyethylene sheeting and sealed with spray glue and duct tape to the substrate pipe that is exposed. The Contractor shall then cut the non-ACM insulated pipe on either side of the duct tape then the fitting shall be placed in to double six (6) mil polyethylene bags or gasket sealed fiber drums which are then affixed with OSHA warning and EPA generator labels and disposed of as asbestos waste. Where “Wrap and Cut” removal is specified for ACM insulated pipelines, the Contractor is responsible for verifying that the water supply system has been shut off and drained. The Contractor shall abate ACM pipe insulation at the cut points through the employment of industry standard glove bag methodology as outlined in Section 3.15 of these specifications. The ACM pipe insulation between the cut points is then wrapped with two (2) layers of six (6) mil polyethylene sheeting and sealed with spray glue and duct tape to the substrate pipe that is exposed. The Contractor shall then cut the non-ACM insulated pipe on either side of the duct tape then the pipe shall be affixed with OSHA warning and EPA generator labels and disposed of as asbestos waste.
1. Window caulk Shall be abated through the employment of non-friable abatement methodology as outlined in Section 3.18 of these Specifications.
2. All asbestos abatement areas shall be maintained under negative pressure until final visual inspections and acceptable air clearance testing levels are achieved through the performance of PCM/TEM analysis as required.
3. Refer to the Asbestos Abatement Plans for approximate locations of materials to be removed.

Universal Wastes

1. **Universal Wastes** - The Contractor shall remove and dispose of mercury-containing fluorescent bulbs, associated PCB oil ballasts where present, and high intensity discharge (HID) lamps; dry transformers, thermostat switches, circuit boards and other universal waste items throughout the building, interior and exterior. The Contractor shall field verify all materials, quantities, locations, and field conditions prior to submitting their bid proposal. Compliance with all applicable federal, state, and local procedures, and methods for preparation, execution, cleanup, transport and disposal is the sole responsibility of the Contractor. The Contractor is responsible for the removal, transport and disposal/recycling of all Universal Wastes (UW) identified in the following table and shall provide certifications for their proper recycling or disposal. A majority of the Universal Waste removal shall be performed prior to asbestos abatement, as following the completion of asbestos abatement, the building cannot be reoccupied by other trades.

Table 3 – Universal Wastes		
Material Type	Materials	Estimated Quantity of Material
Mercury	Fluorescent light bulbs/ Ballasts	1,100 bulbs/550 ballasts
	Thermostats, timers, misc.	2 magnehelic gauges in basement pump room. No suspect mercury thermostats noted.
	High-Intensity Floodlights	200 bulbs
Chemical Storage	Drums or significant chemical storage.	- Nine 55-gallon drums of antifreeze- - Nine pallets of ice melter.
	Misc. paints, solvents, adhesives, small misc. fluids	Minimum quantities.
	Refrigerant Systems	Freon/Refrigerant, Capacitors, Circuit Boards, Oils associated Rooftop HVAC units

1.3 CONTRACTOR’S SCHEDULE

Contractor shall complete the work utilizing one (1), eight (8) hour shift per day between the hours of 7:00 a.m. and 4 p.m., Monday - Friday as required to meet the abatement schedule of eight (8) work shifts (not including scaffold set-up) for the Phase 1 Skyway and 120 work shifts for the Phase 2 Parking Garage.

LIQUIDATED DAMAGES: Language concerning liquidated damages is outlined in the Owner’s and the Architects Contract and Bidding Documents. In addition, should final clearance air or surface samples fail for all or any of the work, the Contractor shall re-clean the work area at no additional cost to the Owner or his/her representatives. Additional costs incurred for all re-sampling of the work area shall be back charged to the Contractor, causing no additional cost to the Owner or his/her representatives.

SEQUENCE OF WORK: The Contractor shall follow the general sequence of events as described below, as follows:

Universal Wastes

1. Removal and Packaging of all listed Universal Waste items for disposal/recycling
2. Recovery of all Freon from air conditioning systems.

Asbestos Abatement

1. Construction of Exterior Decontamination Unit
2. Construction of Interior Decontamination Unit

3. Removal and packaging of Universal Wastes
4. Preparation of the Work Areas.
5. Demolition as needed to access ACM.
6. Removal and packaging of interior ACM and exterior PCB's.
7. Removal and packaging of windows (to include glazing) ACM
8. Removal of environmental and environmental contaminated waste from the work area.
9. Encapsulation of the asbestos work area.
10. Removal of containment systems following acceptable final clearance air or wipe testing.
11. Transport and Disposal or recycling of the environmental waste materials.

1.4 DESCRIPTION

- A. Furnish all labor, materials, services, insurance, and equipment in accordance with the most stringent requirements of the New Jersey Department of Health and Senior Services (NJ DHSS), New Jersey Department of Labor and Workforce Development (NJ DOLWD), United States Environmental Protection Agency (US EPA) and Occupational Safety and Health Administration (OSHA), as applicable, and all other applicable local, state, and federal regulatory agencies, to complete the removal of asbestos-containing materials, polychlorinated bi-phenols and universal wastes as described in the Summary of Work.

1.5 SUBMITTAL REQUIREMENTS

A. Pre-work Submittals

1. **NOTIFICATIONS:** Submit Notifications to the appropriate agencies as required by State and Federal Regulations at least ten (10) days in advance of the project, and provide copies to RJB Environmental, Inc.
2. **PERMITS:** Submit copies of Construction permits, when required by State and Local regulations.
3. **LICENSES:** Submit copies of valid and current NJ Asbestos Abatement licenses and permits necessary to carry out the work including but not limited to the Contractor's license, supervisor licenses, and worker licenses.
4. **HEALTH AND SAFETY PLAN:** Submit Contractor Health and Safety Program with project specific Emergency Plans and Contacts to be posted at the jobsite.
5. **RESPIRATORY PROTECTION PROGRAM:** Submit Contractor Respiratory Protection Program.

6. **WORKER TRAINING:** The Contractor shall submit a list of the persons who will be employed and any subcontractors involved in the removal work. Present evidence that personnel have received proper training required by regulations and the medical examinations required by OSHA 29 CFR 1926.1101. Submit fit-testing records for these workers/personnel. Additional Hazardous Waste Operations and Emergency Response (HAZWOPER) training certifications shall be presented for those personnel performing the PCB remediation work.
7. **SAFETY DATA SHEET:** Submit a Safety Data Sheet, or equivalent for each material proposed for use on the work in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200).
8. **DISPOSAL:** Paperwork certifying the waste hauler for the PCB generated waste in accordance with the New Jersey Department of Transportation (DOT) and US EPA regulations.

B. CLOSE-OUT SUBMITTALS

1. Submit copies of the fully completed Waste Shipment Records (WSR) as documentation of compliance with NESHAP 61.150 (d) (3) and (4) and 40 CFR Part 761.61 as well as any bills of lading and receipts for all recycled materials.
2. Submit OSHA compliance air monitoring records conducted during the work.
3. Submit copies of the daily progress logs.
4. Submit copies of Visitors' Logs.

1.6 TERMINOLOGY

ABATEMENT: Procedures including the removal, repair, encapsulation or enclosure of ACM/ACBM or PCB's.

ACBM OR ACM: Asbestos-containing building materials or asbestos-containing materials.

AIR LOCK: A serial arrangement of rooms whose polyethylene flapped doors are spaced a minimum of four (4) feet apart to permit ingress or egress through one (1) room without interfering with the next and constructed in such a manner as to prevent or restrict the free flow of air in either direction.

AIR PRESSURE DIFFERENTIAL: When air pressure is lower than the surrounding area, generally caused by exhausting air from a sealed space (work area). A minimum of 0.03 inches of water column (i.w.c.) of pressure differential for unoccupied building and 0.05 i.w.c. for occupied buildings is required for N.J.A.C.5:23-8 regulated projects.

AIR MONITORING: The process of measuring the fiber content of a specific volume of air in a stated time period. This shall include Phase Contrast Microscopy (PCM) by NIOSH Method 7400 and 582 as well as Transmission Electron Microscopy (TEM) via 40 CFR, Part 763. When "aggressive" air sampling is specified,

leaf blowers are used to disperse settled fibers into the air during sampling, box fans are employed to replicate building occupancy.

AMENDED WATER: Water to which a surfactant has been added to reduce water surface tension and thereby provide a more rapid penetration.

ASBESTOS HAZARD ABATEMENT PROJECT: The removal, enclosure or encapsulation of more than 25 square feet of asbestos-containing material used on any equipment or surface area such as wall or ceiling area; or the removal of more than 10 linear feet of asbestos-containing material on covered piping.

ASBESTOS SAFETY CONTROL MONITOR (ASCM): A business entity authorized, pursuant to N.J.A.C. 5:23-8, to ensure compliance with the Asbestos Hazard Abatement Sub-code.

ASBESTOS SAFETY TECHNICIAN (AST): A person certified by the New Jersey Department of Community Affairs (NJCA), hired by the ASCM firm who continuously monitors and inspects the asbestos abatement work pursuant to N.J.A.C. 5:23-8. This person shall be required to be on the job site during the time asbestos abatement work is taking place, inclusive of preparation and final breakdown, and perform all duties and responsibilities established by these regulations.

AUTHORIZED PERSONNEL: The Building Owner, the Building Owner's representative, the Asbestos Abatement Contractor, Asbestos Safety Control Monitor personnel, emergency personnel, or a representative of any Federal, State, or Local regulatory agency or other personnel under contract for or having jurisdiction over the project.

BARRIER: Any surface that inhibits air and fiber movement from the work area to non-work areas. Can be comprised of one or a combination of several materials, including but not limited to plywood, polyethylene sheeting, duct tape, and spray-poly.

BUILDING OWNER: The Owner or his authorized representative.

CERTIFICATE OF COMPLETION: The certificate issued by the ASCM firm signifying that the asbestos hazard abatement work has been completed in conformance with N.J.A.C. 5:23-8.

CLEANING/WIPING: The process of eliminating contamination from building and containment surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as asbestos contaminated waste.

CONSTRUCTION PERMIT FOR ASBESTOS ABATEMENT: Required Official approval to commence any asbestos hazard abatement project. This permit is issued by the enforcing agency or local code official.

CONTRACTOR: The Asbestos Removal Contractor licensed by the State of New Jersey's Department of Labor and Workforce Development (NJDOLWD).

CONTROL AREA: An area surrounding the removal of an environmental hazard, such as PCB's, that is isolated through the erection of caution tape and warning signs as well as the installation of polyethylene sheeting to isolate the space from unwanted occupants during the environmental remediation.

CRITICAL BARRIER: Two (2) layers of nominal six (6) mil polyethylene sheeting that completely seals off the work area to prevent the distribution of fibers to the surrounding area, such as the opening between

the top of a wall and the underside of ceiling construction, electrical outlets, non-removable lights, HVAC systems, windows, doorways, entranceways, ducts, grilles, grates, wall clocks, speaker grilles, floor drains, sink drains, etc.

DECONTAMINATION UNIT: A series of three (3) connected rooms, with air locks between any two (2) adjacent rooms, for the decontamination of workers and/or materials and equipment, constructed or moved onto site.

Equipment Room: A contaminated area or room in the decontamination unit with provisions for storage of contaminated clothing and equipment.

Shower Room: A room between the equipment and clean room in the decontamination unit with hot and cold running water, controllable at the tap, suitably arranged for complete showering during decontamination.

Clean Room: An uncontaminated area or room that is part of the decontamination unit at its entrance with provisions for storage of workers' street clothes and protective equipment.

ENCAPSULATION: The treatment of asbestos containing materials with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers, as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant). It is also a liquid material which is applied to surfaces from which asbestos-containing materials have been removed to control the possible release of residual asbestos fibers.

ENCLOSURE: The construction of a permanent barrier around ACM that is air-tight and impermeable, and controls the release of asbestos fibers into the air.

FLAME-RESISTANT POLYETHYLENE SHEET: A single layer polyethylene film in the largest sheet size possible to minimize seams, nominal six (6) mil thick, conforming to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films.

FULL CONTAINMENT AREA: An asbestos removal area that is sealed and fully contained in polyethylene with one (1) layer wall and two (2) layer floor. Workers enter the containment area through a three-stage decontamination unit.

FIXED OBJECT: A unit of equipment or furniture in the work area that cannot be removed from the work area without dismantling.

GLOVE BAG: A polyethylene bag or other techniques or work practices approved by the Department of Community Affairs especially designed to enclose sections of equipment for the purpose of removing asbestos-containing material without releasing fibers.

HEPA FILTER: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.

HEPA VACUUM EQUIPMENT: High efficiency particulate air (HEPA) filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers greater than 0.3 microns in length.

LIMITED CONTAINMENT AREA: An asbestos removal area built for the express purpose of containing an area or space where glove bag removal shall be completed. This shall include the erection of a single layer of nominal six (6) mil polyethylene sheeting as a tent enclosure to isolate a single or series of glove bags or the erection of critical barriers to isolate a room. All areas shall be maintained under negative pressure.

NEGATIVE AIR PRESSURE EQUIPMENT OR AIR FILTRATION DEVICE: A high efficiency particulate air (HEPA) equipped local filtration and exhaust system, capable of maintaining constant, low velocity airflow through the Decontamination Unit and into the Work Area from adjacent uncontaminated areas and exhausting that air outside the building through HEPA filters.

NIOSH: National Institute for Occupational Safety and Health.

OCCUPIED BUILDING: A building or structure where occupancy is permitted in certain areas outside of the required containment during an asbestos hazard abatement project.

ON-SITE REPRESENTATIVE: Owner's full-time representative responsible for air monitoring and site observation. The On-site Representative refers to the Asbestos Safety Technician (AST), Air Monitoring Technician (AMT) or Industrial Hygiene Technician (IHT).

PCB: Polychlorinated Bi-phenol. A material which may be in the form of a di-electric fluid contained within a transformer or light ballast or may have been added to a caulk or glazing for the sealing of windows or doors.

PLASTICIZING: Procedures necessary using a minimum of six (6) mil thick polyethylene sheeting, adhesives, and/or taping to seal an area airtight.

REPAIR: Application of materials, such as bridging encapsulants, wettable cloth wrap or other materials to return damaged ACM to an intact and undamaged condition that prevents/minimizes the release of asbestos fibers.

SEPARATION BARRIER: A wall constructed to isolate the clean area from the work area and to support the polyethylene sheets. Must be caulk sealed and covered with two (2) layers of polyethylene sheeting on the inside and outside of the barrier.

SURFACTANT: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

UNIVERSAL WASTE (UW): A listing of hazardous wastes contained in the US EPA's 40 CFR, Part 273 which have been further augmented by States as a part of their individual implementation programs with the purpose of reducing the amount of these wastes that were being disposed at landfills in lieu of being recycled.

1.7 CODES AND REGULATIONS

- A. **GENERAL APPLICABILITY OF CODES, REGULATIONS, AND STANDARDS:** Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards shall be considered as part of a contractual obligation and are made a part of the contract documents by reference.

- B. FEDERAL REGULATIONS:** Those which govern asbestos abatement work or transport and disposal of asbestos waste and PCB waste materials include, but are not limited to the following:
1. US Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:
 - a. Asbestos Regulations - Title 29, Part 1910, Section 1001 of the Code of Federal Regulations
 - b. Respiratory Protection - Title 29, Part 1910, Section 134 of the Code of Federal Regulations
 - c. Construction Industry - Title 29, Part 1926, Section 1101 of the Code of Federal Regulations
 - d. Access to Employee Exposure & Medical Records - Title 29, Part 1910, Section 20 of the Code of Federal Regulations
 - e. Hazard Communication - Title 29, Part 1910, Section 1200 of the Code of Federal Regulations
 - f. Specifications for Accident Prevention Signs and Tags - Title 29, Part 1910, Section 145 of the Code of Federal Regulations
 2. US Environmental Protection Agency (EPA), including but not limited to:
 - a. Worker Protection Rule - 40 CFR Part 763, Subpart G, CPTS 62044, FLR 28439, Federal Register, Vol. 50, No. 134, 7/12/85 - P28530-28540
 - b. Regulation for Asbestos - Title 40, Part 61, Subpart A of the Code of Federal Regulations
 - c. Toxic Substance Control Act – Title 40 CFR, Part 761 of the Code of Federal Regulations
 - c. National Emission Standard for Asbestos - Title 40, Part 61, Subpart M of the Code of Federal Regulations including Asbestos NESHAP Revision; Final Rule, Federal Register; Tuesday, November 20, 1990.
 - d. Asbestos Hazard Emergency Response Act (AHERA) - 40 CFR Part 763
 3. US Department of Transportation (DOT) including but not limited to:
 - a. Hazardous Substances: Final Rule - Regulation 49 CFR, Parts 171 and 172
- C. STATE REGULATIONS:** Abide by all state regulations which govern asbestos abatement work or hauling and disposal of asbestos waste materials, including but not limited to:

1. New Jersey Department of Labor and Workforce Development
Asbestos Control and Licensing
225 East State Street
P.O. Box 392
Trenton, NJ 08625-08392
 - a. Asbestos Licenses and Permits, as per N.J.A.C. 8:60 and 12:120

 2. New Jersey Department of Environmental Protection
Division of Solid and Hazardous Waste
120 South Stockton Street
Trenton, NJ 08625-0410
 - a. Disposal Regulations, as per N.J.A.C. 7:26

 3. New Jersey Department of Health and Senior Services
Asbestos Control Program
CN 360
Trenton, NJ 08625-0360
 - a. Asbestos Training Courses, as per N.J.A.C. 8:60 AND 12:120

 4. New Jersey Department of Community Affairs

Bureau of Code Services
Asbestos Control Unit
CN 816
Trenton, NJ 08625-0816
 - a. Asbestos Hazard Abatement Sub-code, as per N.J.A.C. 5:23-8
- D. **STANDARDS:** The American National Standards Institute (ANSI) and the American Society for Testing and Materials (ASTM) have standards that include engineering controls, respiratory protection and the transport and disposal of asbestos waste materials associated with asbestos abatement. The Contractor shall utilize these as standards in conjunction with existing regulations.
1. American National Standards Institute (ANSI) and the American Society of Safety Professionals (ASSP)
 - a. Fundamentals Governing the Design and Operation of Local Exhaust Systems, Publication ANSI/ASSP Z9.2-2018.
 - b. Practices for Respiratory Protection, Publication ANSI/ASSP Z88.2-2015

 2. American Society for Testing and Materials (ASTM)
 - a. Safety and Health Requirements relating to Occupational Exposure to Asbestos
E 849-82

- E. **GUIDANCE DOCUMENTS:** Industry organizations or governmental agencies documents that provide guidance or standards of care for asbestos abatement work, PCB remediation, or hauling and disposal of asbestos and /or PCB waste materials are listed below.
1. Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) EPA560/5-85-024.
 2. Asbestos Waste Management Guidance EPA 530-SW-85-007.
 3. CONTRACTORS: Handling PCBs in Caulk During Renovation EPA-747-F-09-004
 4. Recommended Work Practices for Removal of Resilient Floor Coverings (October 2011), Resilient Floor Covering Institute (RFCI).
 5. Removing Vinyl Asbestos Tile in New Jersey, A Contractor's Guide for the Non-friable Removal of Vinyl Asbestos Floor Tiles, NJ DOH.

1.8 REMEDIAL PHASING

- A. Environmental remediation work shall be scheduled and coordinated with the Building Owner, the Architect (if applicable), the Construction Manager (if applicable), the General Contractor (if applicable), the Asbestos Safety Control Monitor (if applicable) and the Environmental Consultant. The Abatement/Environmental Remediation Contractor is responsible for coordinating with the Asbestos Safety Control Monitor a minimum of 48 hours in advance of site mobilization with required project notifications submitted ten (10) days in advance of the start date. No abatement work shall commence on this project unless the On-site Representative is present and permits are obtained, if applicable.

PART 2 - EQUIPMENT AND MATERIALS

2.1 PERSONNEL PROTECTION REQUIREMENTS

- A. Prior to the commencement of work, the workers shall be instructed and shall be knowledgeable of the hazards associated with asbestos exposure and other environmental hazards (i.e., PCB's in Caulk and Ballasts, Mercury in Light Bulbs, Switches and Thermostats), use and fitting of respirators, protective clothing, decontamination procedures, and all aspects of asbestos and environmental remediation work procedures; workers shall have medical examinations.
- B. The Contractor acknowledges that they alone are responsible for enforcing personnel protection requirements and that these Specifications provide only a minimum acceptable standard for each phase of operation.
- C. Provide workers with personally issued and marked respiratory equipment approved by NIOSH and accepted by OSHA.

- D. Where not in violation of NIOSH and OSHA requirements, the Contractor shall provide, as a minimum, the following respiratory protection for each phase of operation:
1. Pre-cleaning/Wet Wiping of Area: NIOSH approved half-face dual cartridge respirators equipped with HEPA cartridges.
 2. Polyethylene Installation: NIOSH approved half-face dual cartridge respirators equipped with HEPA cartridges.
 3. Environmental Abatement: NIOSH approved half-face dual cartridge respirators equipped with HEPA cartridges for non-friable materials and full-face NIOSH approved powered air purifying respirator (PAPR) for friable materials. If mastic solvents are to be utilized on site, appropriate respiratory protection is required in accordance with the manufacturer's recommendation.
 4. Polyethylene Removal: NIOSH approved half-face dual cartridge respirators equipped with HEPA cartridges.
 5. Loading Waste Material on Truck (outside work area): NIOSH approved half-face dual cartridge respirators equipped with HEPA cartridges.
 6. Unloading Bags or Drums at the Landfill: NIOSH approved half-face dual cartridge respirators equipped with HEPA cartridges.
- E. The above schedule is the minimum respiratory protection acceptable. Should any condition, for any reason, be encountered where the exposure level exceeds the protection factor of the respiratory equipment in use, substitute respiratory equipment with protection factors that reduce worker exposure levels.
- F. No visitors shall be allowed in work areas, except as authorized by State and Federal regulations.
- G. Provide workers with sufficient sets of disposable protective full-body clothing. Such clothing shall consist of Tyvek full-body coveralls, footwear, and headgear, one-piece coveralls or equal. Provide eye protection and hard hats as required by applicable safety regulations. Disposable clothing shall not be allowed to accumulate and shall be disposed of as contaminated waste.
- H. Provide authorized visitors and the Owner's Asbestos Safety Technician with suitable protective clothing, headgear, footwear, and gloves as described above whenever they enter the work area.

2.2 MATERIALS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name. Safety Data Sheets shall be provided for all materials delivered to the jobsite.
1. Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.

2. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
- B. **POLYETHYLENE SHEETING:** A minimum of two (2) 6-mil layers for floors where floor tile/resilient sheet flooring is not being removed and one (1) 6-mil layer for the walls, in sizes to minimize the frequency of joints. Specific floor and wall polyethylene installation requirements are set forth in N.J.A.C 5:23-8. Flame retardant polyethylene sheeting shall be used where applicable to comply with fire code requirements in occupied building conditions.
- C. **TAPE:** Capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water, duct tape, poly prep tapes or approved equal.
- D. **ADHESIVES:** Capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
- E. **CAULKS:** Not Applicable.
- F. **AMENDED WATER:** Shall consist of 50% polyoxyethylene ether and 50% polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one (1) ounce of surfactant to five (5) gallons of water.
- G. **IMPERMEABLE CONTAINERS:** Suitable to receive and retain any asbestos-containing or contaminated materials until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1926.1101 and NESHAP Regulation 40 CFR 61, Subpart M. Containers must be both air and watertight and must be resistant to damage and rupture.
- H. **WARNING LABELS AND SIGNS:** As required by OSHA regulations 29 CFR 1926.1101.
- I. **GLOVE BAGS:** Industry standard glove bags, minimum of 6 mil thickness.
- J. **ENCAPSULANTS:** Tinted encapsulant to lock-down regulated work area substrates and associated polyethylene sheeting, excluding floor surfaces that are to receive new flooring adhesive that may be incompatible with encapsulant.
- K. **MASTIC REMOVER:** Only low odor mastic removers may be used on this project.
- L. **OTHER MATERIALS:** Provide all other materials, such as, but not limited to lumber, plywood, nails, and hardware, which may be required to properly prepare and complete this project.

2.3 TOOLS AND EQUIPMENT

- A. Provide suitable tools for asbestos removal. The contractor must ensure negative pressure is maintained within containments from the time asbestos abatement has started until the containment is cleared by the Asbestos Safety Technician.

1. Water Sprayer: Airless or a low-pressure sprayer for amended water application as applicable.
2. Air Filtration Device (AFD): High Efficiency Particulate Air Filtration Systems (HEPA) shall comply with ANSI Z9.2-79. No air movement system or air equipment should discharge asbestos fibers outside the work area. Thus, the AFD shall be equipped with a three-filter bank with the last being the HEPA filter capable of removing 99.97% of fibers $>0.3\mu$ (microns).
3. Paint/Encapsulant Sprayer: Airless.
4. Scaffolding: As required to accomplish the specified work and meet all applicable safety regulations.
5. Vacuums: High Efficiency Particulate Air (HEPA) vacuums only.
6. Other tools and equipment as necessary.

PART 3 - EXECUTION

3.1 POSTING OF THE ASBESTOS PROJECT

- A. Post caution signs in and around the asbestos work area to comply with OSHA regulation 29 CFR 1926.1101 and in compliance with all other federal, state, and local requirements.
- B. As required by OSHA regulations 29 CFR 1926.1101, warning shall bear the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA

3.2 WORK AREA PREPARATION

- A. Contractor shall utilize power available at the site. Should the facility not be occupied, and have no electric service, establish temporary power to the site with the use of portable power (i.e., Generators) or seek temporary hook-up with local utility. Contractor shall install Ground Fault Circuit Interrupter (GFCI) for all power applications within the work areas through cords or temporary panels.
- B. Contractor shall utilize water service available at the site. Should the facility be vacant and no water service is available, the Contractor shall provide water to the site with the use of portable water tanks or coordinate with the municipality to establish a temporary hook-up to the municipal water system.
- C. Before the work is begun, and unless otherwise specified, the Owner shall remove from work areas, all removable items and equipment not attached to, or located on the asbestos materials.

3.3 ASBESTOS WORK AREAS - WORK BY CONTRACTOR

- A. Pre-clean fixed objects within the work area, first using HEPA vacuum equipment and then wet cleaning methods as appropriate, and completely enclosed with minimum 6-mil thick plastic sheeting sealed with tape.
- B. Clean work areas where debris or visible dust is present and in areas where floor materials are not being removed. Clean the work area first using HEPA vacuum equipment and then wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not use HEPA vacuum equipment

on wet surfaces unless units are specially constructed for wet/dry use. HEPA vacuum or damp sponge with regular water would be appropriate.

- C. Seal off all openings, including but not limited to windows, corridors, doorways, skylights, ducts, grilles, diffusers, and any other penetrations of the work areas, with 6-mil plastic sheeting sealed with tape (Critical Barriers).
- D. Prepare areas undergoing abatement in accordance with the following requirements. Areas undergoing multiple removal operations shall be prepared in accordance with the most stringent requirements as follows:

1. **Ceiling Texture/Stucco, SOFP:** Friable Removal (Full Containment)

Full Containment: The full containment shall consist, at a minimum, of critical barriers over windows, doors, and openings (i.e. HVAC diffusers, returns, exhaust fans, electrical outlets, etc.), two (2) layers of six (6) mil polyethylene on floors inside the work area but not having floor tile to be removed, one (1) layer of six (6) mil polyethylene on wall surfaces, and one (1) layer of six (6) mil polyethylene on ceiling surfaces. Floor tiles are to be removed using friable methods, through the employment of water and hand scrapers or mechanical tile removing machines. All equipment operated inside the building shall be non-combustion (i.e., electric –powered). Mastic adhesives are to be removed using low odor aqueous mastic remover or bead blaster. A three-stage decontamination unit is required. Negative pressure of -0.020 i.w.c and four (4) air changes per hour is to be maintained from commencement of removal through final clearance testing.

2. **Thermal Systems Insulation (TSI):** These materials shall be abated via “Wrap and Cut” methodology which shall be performed within negatively pressured tents enclosures/containments.

Negative Pressure Containment: The negative pressure containment shall consist, at a minimum, of critical barriers over windows, doors, and openings (i.e., HVAC diffusers, returns, exhaust fans, electrical outlets, etc.). All work is to be completed with the RFCI requirements. Floor tiles are to be removed using non-friable methods, through the employment of radiant heat machines. Mastic adhesives are to be removed using low odor aqueous mastic remover. A three-stage decontamination unit is required. Negative pressure of -0.020 i.w.c and four (4) air changes per hour is to be maintained during active removal of floor tiles and mastic adhesives.

3. **Window Caulk:** Window caulk shall be removed using non-friable methods and requires that the Contractor shall use caulk removal products, such as 3M caulk remover. Window caulk removal shall not proceed until the interior ACM removal is completed for each level.

4. **Miscellaneous ACMs:** Several non-friable materials are to be removed using non-friable methods. No mechanical impact to non-friable ACM is allowed that would render it friable.

3.4 DECONTAMINATION UNITS

- A. **GENERAL:** The Contractor shall use portable decontamination units acceptable to the State, EPA and OSHA, connected to the work area with framed-in or accordion tunnels, if necessary, and line the tunnels with plastic, sealed with tape at all joints in the plastic, or shall construct decontamination units on-site. Each space shall be a minimum of four foot by four foot (4'x4') interior dimension with a minimum height of seven feet (7').
- B. **ACCESS:** In all cases, access to contained areas shall be through an air lock constructed on three (3) polyethylene sheeted flaps in a "Z" formation. In all cases, access between any two (2) rooms within the decontamination enclosure system shall be through an air lock.
- C. **WORKER DECONTAMINATION SYSTEM:** Construct a worker decontamination system contiguous to the work area consisting of three (3) totally enclosed chambers as follows:
1. An equipment room with two (2) curtained doorways, one to the work area and one to the shower room, via an air lock.
 2. A shower room with two (2) curtained doorways, one (1) to the equipment room and one (1) to the clean room, via air locks. The shower room shall contain at least one (1) shower for every eight (8) workers with hot and cold controllable at the tap, with individual shut-off valves inside the shower(s). Careful attention shall be paid to the shower enclosure to insure against leakage of any kind. Ensure a supply of soap at all times in the shower room. Drainage from showers shall be disposed of by adding it to the abatement waste, as contaminated water or filtered as specified below.
 3. Wastewater containing asbestos, including drainage from decontamination showers, shall be either disposed of by adding it to the bagged asbestos waste, or as contaminated waste after a jelling agent has been applied or filtered in accordance with the following requirements prior to introduction into the sanitary sewer system.
 - a. Filter water using four (4) in-line filter cartridges with 2" inlets and outlets. The outlet of each filter cartridge shall be connected in series to the inlet of the next cartridge. The first cartridge shall contain 100-micron pre-filters and the second and third cartridge shall contain 25-micron filters and the final cartridge shall contain 5-micron filters. No water shall be disposed of into the public sewage system, unless express written permission has been garnered from the local sewerage authority having jurisdiction.
 - b. Provide a holding tank for contaminated wastewater as required to prevent backup of water into the shower when the amount of water generated exceeds the flow rate of the filters.
 4. A clean room with one (1) curtained doorway into the shower (via an air lock) and one (1) entrance or exit to non-contaminated areas of the building. The clean room shall have sufficient space for storage of the workers' street clothes, towels, and other non-contaminated items.

3.5 MAINTENANCE OF DECONTAMINATION UNITS

- A. At the beginning of each work shift and every four (4) hours thereafter and throughout removal, all seals and curtained doorways shall be inspected and smoke tested, and if not found in proper condition, repaired immediately.
- B. Respiratory equipment shall be cleaned, repaired, and sanitized after each use.
- C. Soap and shampoo shall be in the showers at all times.
- D. Fresh towels shall be available at all times.
- E. All areas shall be kept clean and in order.
- F. Provide a disposal bag for contaminated filters in the shower room.
- G. Provide storage for wet and dry towels.
- H. Ensure that the drainage filtering systems are kept clean and operable at all times.
- I. At the end of each decontamination period, the shower, air locks, and clean room shall be cleaned and dried.
- J. At the end of each work shift: the two air locks and the shower shall be thoroughly disinfected; the filter bag (if applicable) shall be returned to the equipment room for disposal; the equipment room and first air lock shall be thoroughly HEPA vacuumed and wet cleaned.

3.6 SEPARATION OF ASBESTOS WORK AREAS FROM OCCUPIED AREAS

- A. Contractor shall construct barriers, where specified, to separate regulated work areas from occupied building areas or areas that contain active mechanical systems that could potentially cause migration of asbestos to other building locations.
- B. Separation barriers shall include "A" grade fire rated 2'x4' studded construction and plywood, caulk sealed and covered with 6 mil polyethylene sheeting as an airtight barrier between occupied and unoccupied building areas as part of a N.J.A.C 5:23-8 occupied building project.
- C. Separation barriers shall include "A" grade fire rated 2'x4' studded construction and plywood to act as a physical barrier to the regulated work area for buildings that are not regulated by N.J.A.C 5:23-8.

3.7 WORKER PROTECTION

- A. All workers and authorized personnel, to enter the work area, shall:
 - 1. Remove clothing, unless it is to remain in the equipment room for eventual disposal.
 - 2. Don protective clothing (coveralls, gloves, boots, etc.).

3. Don the appropriate respiratory protection, following all training procedures and manufacturer's instructions. Hood shall be worn over respirator straps.
- B. All workers and authorized personnel, to leave the work area, shall:
1. Remove gross (visible) contamination from themselves and their equipment.
 2. Enter the equipment room and, keeping respirator in place, remove all protective clothing, including gloves and boots. Place contaminated clothing in the bag(s) provided. Store gloves and/or boots in their respective areas.
 3. Still wearing the respirator, proceed through the first air lock. Once inside, ensure all curtained doorways behind are properly closed.
 4. Respirator still in place, move into the shower and rinse off thoroughly. If wearing dual cartridge respirators, make sure the cartridges are completely soaked before removing the respirator and disposing of cartridges in the container provided. Pass respirators through the second air lock (between shower and the clean room).
 5. Complete showering, thoroughly soaping, and shampooing.
 6. Proceed to the clean room, dry off, dress, and return respirator to the storage area.
 7. No smoking, eating, or drinking shall be allowed inside decontamination enclosures.

3.8 COMMUNICATIONS

- A. Provide a communications system suitable for inside or outside, to monitor all activities within the work area and to readily transfer messages from one location to another as may be needed, especially for emergency communications.

3.9 FIRE EXITS

- A. Designate and maintain emergency and fire exits from the work area in accordance with local codes and regulations. All exits shall be clearly marked with fluorescent tape or red enamel and shall be clearly visible from any part of the work area.

3.10 SECURITY

- A. The Contractor is responsible for maintaining both the building and property contents security throughout the abatement project, if the Owner has vacated the building. If generators are used to provide power, they must remain on at all times while active abatement is on-going. The Contractor is responsible for the security of their equipment (i.e., generators) and keeping them fueled during work and non-work hours.

3.11 NEGATIVE AIR PRESSURE

- A. Maintain negative pressure systems, Air Filtration Devices (AFD's) in the work areas during all asbestos abatement work for which gross abatement techniques are specified or required.
- B. Backup AFD's shall be maintained at the project site and/or in the work area, in case of primary AFD failures.
- C. Suspend electrical cords off the floor and out of workers' way to protect the cords from damage from traffic, sharp objects, and pinching. Do not fasten cords with staples, and do not hang cords from nails or suspend them with wire.
- D. Provide a sufficient number of AFDs in each work area to provide one (1) air change every 15 minutes in all locations of the work areas.
- E. Locate units so that make-up air enters the work area primarily through the decontamination facility and traverses the work area as much as possible. Based on the size and configuration of the work areas, AFD's may be relocated, within the work area, during the removal process to ensure proper air changes within the immediate work area and to reduce the potential for dead air space.
- F. Provide a minimum number of auxiliary make-up air openings to maintain negative pressure. Where work is being completed in accordance with N.J.A.C. 5:23-8, a negative pressure in excess of 0.03 inches of water column (i.w.c.) differential shall be maintained for unoccupied buildings, while negative pressure in excess of 0.05 inches of water column (i.w.c.) differential shall be maintained for occupied buildings. Otherwise, a minimum level of 0.02 i.w.c. shall be maintained for any negative pressure enclosure erected.
- G. Vent all exhaust units to the outside of the building. Provide flexible or rigid duct as necessary to provide exterior venting and proper location of exhaust units. Ducts shall be completely sealed, in good repair, and protected from possible damage within the work area.
- H. After the work area has been prepared, the decontamination unit set up, and the exhaust units installed, start the units (one at a time if more than one is provided). Conduct AFD exhaust velometer testing to calculate the volumetric flow of each AFD. Adjust the location of exhaust units, or provide additional exhaust units for the work area as needed to reach the differential pressure required.
- I. After removal has begun, maintain operation of the exhaust units continuously to maintain a constant negative pressure until decontamination of the work area is complete and final clearance criteria has been met.
- J. A differential pressure recorder (DPR) or digital manometer with a 24-hour strip chart shall be maintained, at a minimum, adjacent to the decontamination unit. This unit shall be zeroed every four (4) hours during the course of the workday to ensure accuracy.
- K. Change pre-filters in exhaust units when there is obvious dust loading or loss of pressure is noted by the AFD magnehelic gauge.

- L. When a final inspection and the results of the final air monitoring tests indicate an acceptable level of airborne fibers, remove and dispose of pre-filters and shut off the exhaust units. If the exhaust units are to be used in another work area, leave the final filter in place and seal all intake openings to the unit to prevent contamination due to asbestos fibers collected on the final filter. If the exhaust units are not to be used in other work areas, remove the final filter and dispose of as contaminated waste.
- M. If dismantling operations result in visible dust on surfaces, replace filters, restart exhaust units, re-clean surfaces and perform additional area air monitoring (at the Contractor's expense) until the level of airborne fibers is acceptable as specified.
- N. Dispose of all filters as asbestos-contaminated waste material, as specified.

3.12 EQUIPMENT REMOVAL PROCEDURES

- A. Clean external and internal surfaces of all non-fixed equipment and/or objects by thoroughly wet wiping and/or rinsing, before moving such items into the Equipment Decontamination Unit for final cleaning and removal to uncontaminated areas.
- B. Objects and equipment removed shall be stored in areas designated by the Owner.

3.13 VISUAL INSPECTIONS

- A. Upon completion of each phase of work area activities and four (4) hours before the next phase of work activities are to begin, notify the Asbestos Safety Technician that the work area is ready for inspection.
- B. The Contractor shall not begin the next work activities until the Asbestos Safety Technician has inspected the area and any deficiencies have been corrected.
- C. The Asbestos Safety Technician with the Contractor present will perform the following minimum schedule of inspections.
 - 1. Prior to the initiation of any site activities (document condition of existing site).
 - 2. After area pre-cleaning and prior to preparation of work area with plastic sheeting.
 - 3. After work area preparation with plastic sheeting and prior to start of abatement (Pre-commencement).
 - 4. After fine cleaning and before encapsulation (Pre-encapsulation).
 - 5. After Final Clearance (Barrier Breakdown).
 - 6. After the removal of all barriers and cleaning of surfaces (Final Inspection).

3.14 LIMITED CONTAINMENT WORK AREA PREPARATION

- A. Preparation

1. The Contractor shall ensure all HVAC systems within the proposed work area(s) are shut down prior to the Contractor commencing with preparation activities, relative to asbestos abatement.
2. Electric within the work area(s) shall be “locked out and tagged out” by the Facility Electrical Foreman. Connection of ground fault circuit protected electrical power into the work area and temporary lighting incorporated in the work area(s) shall be the responsibility of the Contractor.
3. The Contractor shall ensure that prior to abatement preparation, all moveable items within the work area(s) have been removed from the work area(s). Items that cannot be removed from the work area(s) shall be cleaned and sealed airtight with two (2) layers of six (6) mil polyethylene sheeting. Fiberglass insulation is to be pre-cleaned prior to installing critical barriers to protect. The Contractor shall clean all residual dust and debris from the floor and other horizontal surfaces within the work area using a HEPA filter equipped vacuums, inclusive of cleaning prior to the installation of critical barriers.
4. The Contractor shall restrict access to areas where abatement is to take place. Construct critical barriers and seal all openings to adjacent occupiable areas with a minimum of two (2) layers of six (6) mil polyethylene sheeting. In addition, construct critical barriers and seal all openings (i.e., windows, doors, locations adjacent occupied spaces, etc.) with a minimum of two (2) layers of six (6) mil thick polyethylene sheeting.
5. The work area extents for glove bag removal activities shall be within a negative pressure enclosure, consisting of the following components.
 - a. The Contractor shall seal all openings in floors, walls, ceilings with fire rated expanding foam insulation and/or with critical barriers.
 - b. Critical barriers shall be composed of two (2) independent layers of six (6) mil polyethylene sheeting.
 - c. The critical barriers shall be affixed to the substrate with duct tape, stapled or fastened with spray-on adhesives, glue beads or horizontal wood battens.
 - d. At a minimum, the Contractor shall erect a single layer of six (6) mil polyethylene sheeting as walls and floors to isolate the abatement area from the remainder of the space or facility or may isolate an entire room with critical barriers in lieu of erecting a single layer tent enclosure.
 - e. The Contractor shall install a three-stage decontamination unit at the ingress/egress point to the work area. Entrance flaps for each chamber are to be weighted and

installed so that the flaps will close if airflow into the work area is stopped for any reason.

6. Each chamber for the decontamination unit shall be 4'x4' and a minimum of 7-feet in height. The decontamination unit shall be framed with fire-rated 2"x4" studs, and each chamber enclosed with two (2) layers of six mil polyethylene sheeting. Six (6) mil polyethylene flaps shall overlap at the entrance/exit to each chamber, the work area(s) and at the entrance into the decontamination unit to the work area(s). Flaps shall be weighted as a mechanism to return flaps to their point of origin after each disturbance.
7. The chambers shall consist of a clean room, upon entering, a shower room, and an equipment room leading into the work area(s). The shower room shall have soap and hot/cold water.
8. Contact the ASCM Firm for inspection and approval of the abatement work area prior to commencement of the abatement of asbestos containing materials.

3.15 GLOVE BAGS

1. The following procedures shall be followed for the use of glove bags or other techniques or work practices approved by the Department of Community Affairs which similarly contain asbestos fibers. The glove bag work area enclosure shall be either a limited enclosure, built out of polyethylene sheeting around the glove bag work, or the entire room if no enclosure is built with the erection of critical as warranted to isolate the space.
2. The preparation of the work area for glove bag removal shall include the following:
 - a. A minimum of two people shall perform a glove bag removal project. A third person may be required to conduct air monitoring or assist with supplies.
 - b. The work area where the technique is to be utilized shall be roped off and appropriate caution and/or danger signs posted on the perimeter to prevent unauthorized personnel from entering the work area.
 - c. All necessary materials and supplies shall be brought into the work area before any removal begins.
 - d. One (1) air change every 15 minutes shall be provided in a glove bag work area enclosure.
 - e. If no mini enclosure is established, then the contractor shall arrange for shutting down and sealing off all electrical, heating, cooling, and ventilating or other air handling systems.
 - i. If approved by the Asbestos Safety Control Monitor, the lighting and receptacles in the work area may be used if these are properly protected by Ground Fault Circuit Interrupters (GFCIs) and can be adequately cleaned following abatement.

3. The following is a list of equipment and tools for the removal of asbestos by the glove bag technique:
 - a. Glove bag(s) in suitable number, size and configuration for the specific abatement project. The glove bag is an air-tight, tear-resistant enclosure, designed to enclose an object from which asbestos containing material is to be removed, constructed of a minimum of six mil polyethylene or other suitable material with inward projecting long sleeve gloves, a tool pouch or other place where tools can be placed, and facilities for water application and a HEPA equipped vacuum attachment.
 - b. A pump-up sprayer (garden type) with a two- or three-gallon capacity;
 - c. Wetting agent: Amended water (water with a surfactant) or a removal encapsulant;
 - d. Six-mil polyethylene disposal bags or leak-proof containers with the proper markings for asbestos waste;
 - e. A HEPA filtered vacuum with a capillary tube for insertion into the glove bag;
 - f. Tools such as a small vinyl scrub brush, a utility knife for cutting the insulation, a stapler, wire cutters, smoke tubes with an aspirator bulb, a bone saw or other appropriate tool, tin snips, duct tape and wettable cloths;
 - g. A roll of six mil polyethylene; and
 - h. An encapsulant (tinted).

4. Removal procedures shall be conducted as follows:
 - a. A visual inspection of the pipe where the work will be performed shall be made to determine if any damaged pipe covering (such as broken or hanging lagging) exists. If there is damage, then the affected portion of the pipe shall be wrapped in polyethylene and fully secured with duct tape. This procedure will prevent excessive airborne fiber concentrations from occurring during the glove bag work caused by pipe lagging hanging several feet or even several yards away which may be jarred loose by the activity. All dust and debris on the floor and other surfaces which has accumulated due to the abatement project and which contains asbestos shall be cleaned up, as necessary. If the pipe is undamaged, one layer of duct tape shall be placed around the pipe at each end where the glove bag will be attached. This permits a good surface to which to seal the ends of the glove bag, and it minimizes the chance of releasing fibers when the tape at the ends of the glove bag is peeled off at the completion of the project.
 - b. Slit the top of the glove bag open (if necessary) and cut down the sides to accommodate the size of the pipe (about two inches longer than the pipe diameter).
 - c. Place the necessary tools into the pouch located inside the glove bag. This will usually include the bone saw, utility knife, rags, scrub brush, wire cutters, tin snips and pre-cut wettable cloth. Cut out a donut shape in the cloth with the inner diameter one-half-inch smaller than the diameter of the pipe beneath the insulation. The outer diameter of the donut should be three inches (3") longer than the diameter of the pipe insulation being

removed. Finally, cut a slit in each of the two (2) donuts so they can be slipped around the pipe. A piece of cloth that can be easily bent around the surface to be cleaned may be used instead of the donut-shaped cloth.

- d. One (1) strip of duct tape shall be placed along the edge of the open top slit of the glove bag for reinforcement.
- e. Place the glove bag around the section of pipe to be worked on and staple the top together through the reinforcing duct tape. Staple at intervals of approximately one inch (1"). Next, fold the stapled top flap back and tape it down with a strip of duct tape. This should provide an adequate seal along the top. Next, duct tape the ends of the glove bag to the pipe itself, previously covered with polyethylene or duct tape (see (d)1 above). The bottom seam of the glove bag shall be sealed with high quality duct tape or equivalent to prevent any leakage from the bag that may result from a defect in the bottom seam.
- f. Before the commencement of the abatement work, but after the glove bag is attached, the Contractor shall smoke test each glove bag to ensure that it does not leak. The Asbestos Safety Technician shall personally witness the smoke testing of each of these glove bags. Using the smoke tube and aspirator bulb or other approved smoke generating device, place the tube into the wetting agent sleeve (two-inch opening to glove bag). Fill the bag with visible smoke. Remove the smoke tube and twist the wetting agent sleeve to close it. While holding the wetting agent sleeve tightly, gently squeeze the glove bag and look for smoke leaking out, especially at the top and ends of the glove bag. If leaks are found, they shall be taped closed using duct tape and the bag shall be re-tested.
 - i. Exception: If negative pressure is established and maintained at .02 inches w.c., smoke testing of glove bags is not required.
- g. Insert the wand from the wetting agent sprayer through the wetting agent sleeve. Using duct tape, tape the wetting agent sleeve tightly around the wand to prevent leakage.
- h. One (1) person places his hands into the long-sleeved gloves while the second directs the wetting agent spray at the work.
- i. If the section of pipe is covered with a protective jacket, this is removed first, using the wire cutters to cut any bands and the tin snips to remove the jacket. It is important to fold the sharp edges in to prevent cutting the bag when it is placed in the bottom. A box may be put in the bottom of the bag when the tools are placed in, and the metal placed in the box to further protect the bag from being cut.
- j. With the insulation exposed, using the bone saw, cut the insulation at each end of the section to be removed. A bone saw is a serrated heavy-gauge wire with ring-type handles

at each end. Throughout this process, wetting agent is sprayed on the cutting area to keep dust to a minimum.

- k. Once the ends are cut, the section of insulation should be split from end to end using the utility knife. The cut should be made along the bottom of the pipe and the wetting agent continuously supplied. Again, care should be taken when using the knife not to puncture the bag. Some insulation may have wire to be clipped as well. Again, a box may be used as in (4)i above to protect the bag from puncture.
- l. Rinse all tools with wetting agent inside the bag and place back into pouch.
- m. The insulation can now be lifted off the pipe and gently placed in the bottom of the bag, while the side of the insulation adjacent to the pipe is being thoroughly wetted.
- n. Using the scrub brush, rags and water, scrub and wipe down the exposed pipe.
- o. Wet the donut-shaped pieces of wettable cloth over the exposed ends of insulation remaining on the pipe.
- p. Remove the wetting agent wand from the wetting agent sleeve and attach the small nozzle from the HEPA-filtered vacuum. Turn on the vacuum only briefly to collapse the bag.
- q. Remove the vacuum nozzle and twist the wetting agent sleeve closed and seal with duct tape.
- r. Remove all the tools and draw them out into one of the arm sleeves, twist the sleeve tightly, and seal with tape, and cut the sleeve away from the bag, cutting through the tape. In this manner, the contaminated tools may be placed directly into the next glove bag without being cleaned. Alternatively, the sleeve with the tools in it can be placed in a bucket of water, opened underwater and dried without releasing asbestos into the air. This water shall be handled as asbestos-contaminated waste. Rags and scrub brushes cannot be cleaned in this manner and should be discarded with the asbestos contaminated waste. No more than one use of a glove bag shall be permitted.
- s. With removed insulation in the bottom of the bag, twist the bag several times and tape it to keep the material in the bottom during removal of the glove bag from the pipe.
- t. Slip a six-mil disposal bag over the glove bag (still attached to the pipe). Remove the tape and open the top of the glove bag and fold it down into the disposal bag.
- u. All surfaces in the work area should be cleaned using disposable cloths wetted with wetting agent. These cloths shall be disposed of or rinsed thoroughly to eliminate visible

accumulation of debris. Then, when these surfaces have been allowed to dry, all surfaces shall be cleaned again using a HEPA filtered vacuum. If no mini enclosure was built, then the entire room shall be cleaned.

- v. Place any contaminated articles or debris into the bag with the waste.
- w. Twist the top of the bag closed, fold this over, and seal with duct tape. Label the bag with labels prescribed by 40 CFR Part 61, Subpart M of the USEPA, 29 CFR 1926 of OSHA and 49 CFR-Parts 100-199 of the US DOT Hazardous Waste Hauling regulations.
- x. Asbestos-containing waste material shall be disposed of as specified in N.J.A.C. 5:23-8.22.
- y. Air sampling shall be conducted after completion of glove bag removal pursuant to N.J.A.C. 5:23-8.21 to determine if undetected leakage occurred. Once the area has been found to be safe for re-occupancy by unprotected personnel, the barriers may be removed.
- z. If extended run glove bags are used, the entire glove bag system shall be installed and smoke tested in advance. After each section of the glove bag is completed, the tools are passed to the next section, the completed section secured to the pipe and the glove bag section's air evacuated with a HEPA vacuum before being removed and lowered into waste bags.

3.16 GROSS REMOVAL OPERATIONS – FRIABLE ACM

Full Containment – Unoccupied Building Condition – Parking Deck

- A. No asbestos hazard abatement work including preparation shall be performed or continued without having a certified AST or AMT at the work site.
- B. Protective clothing, equipment, and general procedures for asbestos abatement shall be subject to the following requirements:
 - 1. Only authorized personnel shall be permitted in the work area. The Contractor shall provide the required respirators and protective clothing to all who may inspect or visit the work area;
 - 2. The protective clothing and equipment requirements, as set forth in this section, shall be used to prevent the contamination by workers engaged in asbestos abatement projects of areas or buildings accessible to or used by the public;
 - 3. All persons entering the work area shall wear protective clothing. All clothing worn during removal operations shall be disposed of as contaminated waste. The requirement that clothing be disposed of as contaminated waste shall not include rubber boots, respirators, eye protection, hard hats, and other protective clothing, which can be easily cleaned.

4. Polyethylene bags shall be six mil thick and of sufficient size for their intended use;
5. All tape, spray-on adhesives, glove bags, glue, and other materials used in the abatement process shall be of sufficiently high quality to serve their intended purpose;
6. The Contractor shall have available a sufficient inventory of protective clothing, respirators, filter cartridges, polyethylene sheeting, duct tape, spray-on adhesives, and air filters. Sufficient personal protective equipment shall be available for usage by authorized personnel;
7. The Contractor shall have available shower stall(s) and sufficient plumbing for these showers including hot and cold running water, controllable at the tap, and sufficient hose length and drain systems or an acceptable alternate such as a portable decontamination trailer with showers. Waste shower water shall be added to asbestos-contaminated waste material before disposal in a permitted asbestos waste landfill or it shall be solidified using an approved polymer to prevent leaks or accidental spills within a facility or during transport for disposal to a permitted asbestos waste landfill. Alternatively, it shall be filtered using a five-micron (5 μ) filter and disposed of in the sanitary drain, if allowed by local treatment works by regulation or as allowed by permit;
8. The Contractor shall have available adequate ladders and/or scaffolds and sufficient temporary lighting equipped with ground fault circuit interrupters for the AST and all others who may inspect the work;
9. The Contractor shall have available HEPA filter equipped air filtering equipment capable of filtering asbestos fibers to 0.3 μ at 99.97 percent efficiency and of sufficient quantity and capacity to cause a complete air change or total air filtration within the work area at least once every 15 minutes. Nothing in these Specifications shall be construed to limit the maximum exhaust capacity from the work area. If the situation warrants, additional air changes per hour may be required to meet the negative pressure requirements. The exhaust capacity from the work area shall be sufficient to establish a pressure differential between the work area and all adjacent spaces greater than or equal to 0.02 i.w.c. for the parking deck building only.
 - a. Pressure differential shall be monitored by digital manometers with continuous printout or other approved low-pressure monitoring devices. The AST shall zero and level the gauges each time a reading is taken.
 - b. One or more separate pressure monitoring systems shall be installed by the ASCM firm near the entrance(s) to the work area and between the work area and any interior spaces from which make-up air is drawn.
 - c. **In unoccupied buildings, if the pressure differential drops below 0.01 inches w.c., the AST and the Contractor supervisor shall investigate and evaluate the engineering controls to determine the source of the pressure loss and the Contractor shall institute corrective action as indicated.**
 - d. In occupied buildings, the procedures set forth in N.J.A.C. 5:23-8.19 shall be followed.

10. Air shall flow into the work area through all openings, including the decontamination chamber and waste exit ports, any areas in the work area where air leakage may occur, and other controlled makeup air inlets. Air shall exhaust through the air pressure differential filtration unit by means of flexible or solid duct leading outside the building. The air-filtering equipment should be positioned at a maximum distance from the decontamination chamber to maximize filtration of airborne fibers. Sufficient air shall be exhausted by an approved HEPA equipped vacuum truck or HEPA equipped air filtration units, when necessary, to provide air pressure differential. Air filtration units shall be in operation at all times;
 11. Asbestos-containing material shall be disposed of as specified in N.J.A.C. 5:23-8.22.
- C. Decontamination procedures are as follows:
1. The Contractor shall provide an adequate decontamination unit consisting of a serial arrangement of rooms or spaces adjoining the work area or a decontamination trailer. Each airlock shall be clearly identified and separated from the other by polyethylene crossover sheet doors designed to minimize fiber and air transfer as people pass between areas. A minimum of two layers of polyethylene sheeting shall be required for floors, walls, and the ceiling for on-site constructed decontamination units. Polyethylene crossover sheet doors shall have at least three (3) layers of polyethylene sheeting and be weighted to fall into place when people pass through the area. Decontamination chamber doors shall be of sufficient height and width to enable replacement of equipment that may fail and to safely stretch or carry an injured worker from the site without destruction of the chamber or unnecessary risk to the integrity of the work area. Such doors must be at least four (4) feet wide, and the distance between sets of doors must be at least four (4) feet.
 - a. As an alternative to the use of polyethylene crossover sheet doors, any other suitable method to accomplish this end shall be acceptable, if it is approved by the ASCM. Alternative doors shall provide for adequate exiting in accordance with the building sub-code of the Uniform Construction Code.
 2. The decontamination areas shall consist of the following:
 - a. Clean room: In this room people remove and leave all street clothes and put on clean disposable coveralls. Appropriate NIOSH approved respiratory protection equipment is also picked up in this area. No asbestos contaminated items are permitted in this room.
 - b. Shower room: This is a separate room used for transit by cleanly dressed people entering the work area from the clean room and for showering by them after they have undressed in the equipment room. This is a contaminated area.
 - c. Equipment room: Work equipment, footwear, and all other contaminated work clothing shall be stored here. This is also a change and transit room for people. All areas between the shower room and work area shall be considered part of the equipment room. This is a contaminated area.

3. In order to prevent contamination of the environment, the Contractor shall be responsible for controlling access to the work area and shall maintain a daily log of personnel entering the work area. A list of names of workers shall be posted with their start and stop times for each day. In addition, the Contractor shall ensure that all persons who enter the work area shall observe the following work area entry and exit procedures:
 - a. Person enters clean room and removes street clothing, puts on protective clothing and a respirator, and passes through shower room into equipment room.
 - b. Any additional required clothing and equipment previously deposited in the equipment room is put on.
 - c. Person proceeds to work area.
 - d. Before leaving the work area, the person shall remove all gross contamination and debris from the coveralls using a vacuum with a High Efficiency Particulate Air (HEPA) filter. In practice, this is usually carried out by one person assisting another.
 - e. The person then proceeds to the equipment room and removes all clothing except approved respirators. Extra clothing may be stored in the contaminated end of the unit. Disposable coveralls are placed in a bag for disposal with other material.
 - f. The person then proceeds directly into the shower room. Respirators shall be taken off last to prevent inhalation of fibers during removal of contaminated clothing and shall not be removed until they have been washed free of dust.
 - g. After showering, the person moves to the clean room and dresses in street clothing prior to exiting.
 - h. Respirators are picked up, washed thoroughly, and disinfected as required, wrapped and stored in the clean room.
 4. The Contractor shall ensure that filters in cartridge type respirators used during the preparation and abatement phase of the project are removed, wetted, and discarded as contaminated waste. All new filters shall be in place in the respirator prior to reuse. For powered air purifying respirators or supplied air respirators, the manufacturer's instructions shall be followed about the proper decontamination sequence.
 5. There shall be no smoking, eating, or drinking in any contaminated areas (shower room, equipment room, and work area). Respirators shall be worn in all contaminated areas.
 6. Non-disposable footwear shall remain inside the contaminated area until completion of the activity and shall be thoroughly cleaned at that time.
- D. Preliminary preparations in the work area shall be conducted as follows:
1. The Contractor shall provide and post in clearly visible locations, appropriate caution and/or danger signs indicating that asbestos work is being conducted and that unprotected persons should not enter;

2. Employees of the Contractor permitted pursuant to N.J.A.C. 8:60 and N.J.A.C. 12:120 or persons employed by the building owner who have successfully completed a maintenance/custodial or worker training course approved by the New Jersey Department of Health shall clean with wet cloths and/or with HEPA vacuums as appropriate all objects that can be removed from the work area without disrupting the asbestos-containing material. Objects shall include, but not be limited to, furniture, equipment, drapes, and curtains. The cloths used for cleaning shall be disposed of as asbestos contaminated waste. If the room and objects within it are shown to be uncontaminated by asbestos, then other employees of the building owner or Contractor may remove such objects;
 3. The Contractor shall install or build a decontamination facility in accordance with this section;
 4. The Contractor shall arrange for shutting down and sealing off all electrical, heating, cooling, and ventilating or other air handling systems. However, if approved by the ASCM, the lighting and the receptacles in the work area may be used if these are properly protected by ground fault circuit interrupters and can be adequately cleaned following abatement;
 5. The Contractor shall establish written emergency procedures to be posted within each work area. These procedures shall include plans for medical emergencies, fire evacuation, temporary loss of electrical power or water and procedures for repair and clean-up following temporary breach of containment barriers.
- E. Isolation and barrier construction in the work area shall be conducted as follows:
1. Before removing any asbestos from the work area, the Contractor shall ensure that the outer perimeters of the work area have been securely sealed off from the rest of the building;
 2. All vertical and horizontal surfaces except those of asbestos containing materials shall be sealed with watertight polyethylene sheeting except as provided in (e)3 below;
 3. The only permissible exception to total enclosure shall be:
 - a. An entrance airlock with showers and a decontamination chamber;
 - b. A debris removal airlock to permit cleaning and removing asbestos waste;
 - c. Staircases; and
 - d. Controlled makeup air inlets into the work area.
 4. Polyethylene sheeting shall be used to isolate contaminated from uncontaminated areas. This polyethylene sheeting shall be replaced or repaired immediately if torn or damaged. One layer of polyethylene sheeting shall be required for walls and two layers of polyethylene sheeting shall be used to seal open space between work areas and non-contaminated areas and for all floors. In buildings required by the Uniform Construction Code to be of noncombustible construction, all materials used to construct separation

barriers must meet the Uniform Construction Code, building sub-code requirements for that building and all plastics used must be flame resistant.

F. Initial activity in the work area shall be conducted in the following order:

1. Remove filters from all heating, ventilating, and air conditioning systems. Wet the filters and place them in polyethylene bags, double bagged with visible labels, for disposal as asbestos-containing waste. Squeeze all excess air out of the bag before sealing to prevent puncture during disposal. Secure bags by twisting, taping, folding over, and sealing them with duct tape.
2. The Contractor shall wet clean and/or HEPA vacuum all non-removable non-asbestos items such as radiators and suspended light fixtures in the work area, including built-in equipment; and shall cover with two layers of polyethylene sheeting taped securely in place;
3. The Contractor shall detach and wet clean removable electrical, heating, and ventilating equipment and other items which may be connected to the asbestos surfaces. These items shall be removed from the work area and returned and reattached to their proper place when the work area has been decontaminated and final air testing has provided satisfactory results;
4. The Contractor shall seal all floor, wall, and ceiling penetrations with suitable material such as expanding foam insulation before covering the surfaces with polyethylene sheeting. The Contractor then shall seal all openings between the work area and uncontaminated areas including, but not limited to, windows, doorways, elevator openings, skylights, corridor entrances, floor and sink drains, air ducts, grills, grates and diffusers with critical barriers consisting of two layers of polyethylene sheeting taped securely in place or stapled or fastened by spray-on adhesives, glue beads, or horizontal wood battens or the equivalent. Floor drains shall be sealed individually and then covered as all other floor surfaces with two layers of polyethylene sheeting. Separation barriers may be constructed to support the critical barriers. Separation barriers shall not block any required means of egress;
5. For floor covering two layers of polyethylene sheeting shall be used. The first layer of floor sheeting shall extend up the wall at least 12 inches. The second layer shall be extended up walls at least 24 inches. Sheeting shall be sized to minimize the number of seams necessary. No seams shall be located at the joints between walls and floors;
6. Wall and ceiling sheeting shall consist of one (1) layer of polyethylene sheeting. Wall sheeting shall be installed to minimize joints and shall overlap floor sheeting by at least 18 inches. No seams shall be located at the corners. Wall coverings shall be taped first to the upper most edge of the wall and shall hang straight down;
7. When a strippable coating is used in place of polyethylene sheeting, it must be manufactured for the specific application required for walls, floors, or windows.

- a. When dry, the strippable coating must have a class A rating as a building material and must meet the following requirements when tested in accordance with ASTM E-84: flame spread no greater than 20, fuel contributed 0, and smoke developed no more than 110.
 - b. The strippable coating shall be applied uniformly in such a manner as to achieve a minimum uniform final thickness of six mil for each layer required pursuant to this subchapter.
 - c. Manufacturer's specifications shall be followed for the method of application and for the protection of the applicators and building occupants.
 - d. Use of the product shall be authorized in advance by the ASCM firm. The material shall be delivered to the project site in unopened, factory-labeled containers.
 8. As all existing ventilating systems in the work area are to be sealed throughout the removal operation, an alternative system shall be utilized. Install approved HEPA equipped air filtration units with filters in place. HEPA equipped air filtration units shall be of sufficient number and capacity to ensure that the total air volume is exchanged at least once every 15 minutes and an acceptable pressure differential is established and maintained. These units shall be rated by the manufacturer as to their actual working air capacity and field tested pursuant to N.J.A.C. 5:23-8.10(d)4.
- G. Sequence of asbestos removal activities shall be as follows:
1. The asbestos-containing material shall be sprayed with water containing an additive or surfactant to enhance penetration (amended water) or removal encapsulant. All wetting agents shall be tested on a small area before use to ensure effectiveness. A fine low-pressure spray of this solution shall be applied to prevent fiber disturbance preceding removal. The removal encapsulant or amended water shall be sprayed on as many times and as often as necessary to ensure that the asbestos material is adequately wetted throughout (especially that asbestos nearest the substrate) to prevent dust emission.
 2. As a method of organizing the asbestos removal work, workers shall begin working on the areas nearest to the decontamination unit and work towards the HEPA equipped air filtration units. If this is not feasible, the ASCM firm shall approve an alternative to this requirement.
 3. The wet material from each section shall be packed and sealed into labeled six mil polyethylene bags and double bagged with visible labels or placed in labeled, leak-proof containers, prior to starting the next section. Water-soaked fallen material shall be picked up while wet.
 4. Contaminated material containing sharp edged items shall be cut to a manageable size while being adequately wet, and then placed in suitable leak-tight and puncture-proof containers or wrapped individually in two separate polyethylene sheets and double bagged.

5. Bags and drums shall be marked with the label prescribed by 40 CFR Part 61, Subpart M of the US EPA, 29 CFR 1926 of OSHA, and 49 CFR-Parts 100-199 of the US DOT Hazardous Waste Hauling regulations. The outside of all containers shall be wet-cleaned or HEPA vacuumed before leaving the work area.
 6. After completion of this removal phase (stripping), all surfaces from which asbestos has been removed shall be scrubbed using nylon or bristle brushes and wet sponged or cleaned by an equivalent method to remove visible asbestos-containing material. During this work, the surfaces being cleaned shall be kept wet using amended water or a removal encapsulant. All disposable equipment shall be packaged for disposal. Containers shall be washed with amended water or a removal encapsulant and shall have all exterior particulate matter removed prior to the removal from the contaminated area.
 7. All accessory equipment shall be moved to the equipment room and decontaminated for removal.
 8. All free water (in contaminated areas) shall be retrieved and added to asbestos-contaminated waste and/or placed in plastic lined leak-tight drums and/or solidified with an acceptable polymer or it shall be filtered using a five-micron (5 μ) filter and disposed of in the sanitary drain, if allowed by local treatment works by regulation or as allowed by permit. All shower wastewater shall be containerized inside the work area until it is added to the waste, gelled or filtered.
 9. Final clean-up of the work area may commence.
- H. Final clean-up of the work area shall be conducted as follows:
1. The Contractor shall first clean all surfaces in the work area using a fine spray or mist of amended water or removal encapsulant applied to all surfaces followed by the wet-wiping procedure using disposable cloths. These cloths shall be disposed of or rinsed thoroughly on a frequency sufficient to eliminate visible accumulation of debris. The Contractor shall allow all surfaces to dry before re-entering the work area and proceeding to (h)2 below.
 - a. The Contractor shall notify the AST in writing that a pre-sealant inspection is requested.
 2. After completion of cleaning all surfaces in the work area and upon receiving a satisfactory pre-sealant inspection, the Contractor shall spray coat all dried exposed surfaces with a sealant. The color of this coat shall be separate and distinct from the underlying substrate. The surfaces to be coated shall include surfaces from which asbestos-containing materials have been removed (such as ceilings) and polyethylene which has been used to cover walls, floors and non-removable fixtures and equipment.
 3. The polyethylene sheeting used to protect floors, walls, ceilings, fixtures and equipment shall be carefully removed and rolled up, with the contaminated portion on the inside, and packaged for disposal. Tape and any other debris shall also be disposed of in sealed polyethylene bags labeled as asbestos-contaminated waste.

4. Wet clean with amended water or a removal encapsulant all walls, floors, woodwork, ceilings, electric light fixtures and other surfaces. Allow all surfaces to dry and repeat procedure. Cloths or sponges used in the cleaning operation shall be disposed of as contaminated waste.
5. The polyethylene sheeting used to maintain critical barriers between work areas and clean areas such as those in doorways, windows and air vents shall be sprayed with encapsulant, but not removed until air monitoring is completed and satisfactory results have been obtained.
6. After completion of the cleaning operations the Contractor shall:
 - a. Notify the AST that a clean-up inspection can be performed to ensure all visible asbestos has been removed and the area is dust free;
 - b. Request final air clearance monitoring of the work area by the AST.
7. After the work area is found to be following the acceptance criteria, the following tasks shall be performed by the Contractor:
 - a. All critical barriers shall be removed and bagged in polyethylene bags for disposal;
 - b. The inside of windows shall be washed;
 - c. Any walls, floors, trim, doors, furniture or other items damaged during the work shall be repaired and refinished to match existing material;
8. Notice for a final inspection shall be made by the Owner or Contractor to the AST.
9. Upon receiving a satisfactory final inspection, application for a Certificate of Completion may be made, to be issued by the AST and the ASCM firm.
- 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 approved by the ASCM monitor firm and, where necessary, variations to the Subchapter shall be requested from the Department.

3.17 GROSS REMOVAL OPERATIONS – FRIABLE ACM

5:23-8.19 Full Containment – Occupied Building Condition (NOT APPLICABLE)

- A. The requirements of this Section are intended to prevent contamination and exposure of building occupants to asbestos fibers.

- B. The Building Owner shall notify building occupants in writing twenty (20) business days prior to the commencement of the asbestos abatement project. The Building Owner shall outline in writing any procedures and/or precautions that are deemed necessary in order to protect the health, safety and welfare of the occupants. This notification shall include, but not be limited to relocation plans, if any; entrances and exits that may temporarily be blocked and alternate routes to be used; the name and telephone number of the Owner's representative for the occupant to call in case of an emergency or to answer any questions with regard to the project. This notification shall accompany the application for a construction permit for asbestos abatement and shall be filed with the enforcing agency.
1. This notification shall be posted seven days prior to the preparation of the work area, in visible locations, for the benefit of the affected occupants of the workplace, and in areas immediately adjacent to the asbestos abatement project. It shall be the owner's responsibility to ensure that these postings are maintained throughout the project.
 2. When circumstances require immediate removal of asbestos-containing material, notification shall be provided to the building occupants as soon as possible.
 3. Nothing in this section shall be interpreted as prohibiting the building owner from providing additional notification
 4. The ASCM firm shall notify the Department in writing 10 days prior to the commencement of an abatement project in an occupied building.
- C. A building or structure or part thereof may be occupied during an asbestos abatement project when all of the following conditions are met:
1. Isolation conditions include a requirement that the work area be physically separated from occupied areas by separation barriers of rigid construction consisting of nominal two-inch (2") by four-inch (4") studs spaced sixteen inches (16") on center and covered with a minimum of half inch (½") plywood or comparable metal framing and half inch (½") gypsum board covering. All seams shall be caulked to render the barrier airtight before two layers of polyethylene sheeting are applied on both sides. The polyethylene sheeting shall overlap at the seams. All penetrations around conduits, pipes, ducts or other openings between the work area and adjacent spaces shall be sealed, using materials determined to be suitable in accordance with the applicable sub-code. In buildings required by the Uniform Construction Code (UCC) to be of noncombustible construction, all materials used to construct separation barriers shall meet the UCC, building sub-code requirements for that building and all plastics used shall be flame resistant. A separate means of egress for abatement personnel, materials and equipment shall be maintained. Adequate fire evacuation routes shall always exist for all building occupants.
 - a. Whenever the building in which this work area is located exceeds four (4) stories in height and when stair, elevator or similar shafts lie within or adjacent to the separation barriers or the work area, then special seals shall be installed. Such seals shall be constructed in the same manner as the separation barriers and shall create a space not less than three inches in depth in front of the entire access area which space is sealed on both sides and positively pressurized with HEPA filtered air so that the

pressure in the sealed space is .05 inches w.c. greater than that in the work area or the shaft.

- b. All HVAC systems located in the work area shall be shut down. If HVAC equipment is in the work area and must be operated to service other areas of the building, then the HVAC equipment shall be isolated from the remainder of the work area by an enclosure constructed in a manner similar to the separation barriers and the space between the equipment and the seal shall be positively pressurized with HEPA filtered air to at least .05 inches w.c. greater than the work area.
- c. Where return air ductwork which must be kept operating is located within the work area, then it shall be isolated from the work area by an enclosure forming an annular space around the duct which is positively pressurized with HEPA filtered air to at least .02 inches w.c. greater than the work area. The enclosure shall be constructed in a manner like that required for separation barriers.
- d. All electrical systems in the work area shall be shut down. Their use may be approved by the asbestos safety control monitor if they are properly protected by ground fault circuit interrupters, they are cleanable, and provided that such other precautions as may be necessary are taken to ensure the safety of all who are in the work area.

2. Engineering controls shall be implemented as follows:

- a. The AST shall verify exhaust capacity through appropriate field measurement and record these results in writing. The verification of exhaust flow rate via use of devices for monitoring pressure drop across filters on air filtration devices shall not be a substitute for appropriate field measurement. All exhaust from the work area shall be directed to the exterior of the building. If exhaust to the exterior of the building is not feasible, exhaust from the work area shall be directed into a second set of in-line air filtration devices, which, then, shall be permitted to be discharged into designated spaces approved by the ASCM firm.
 - b. The Contractor shall install enough HEPA filter equipped air filtration units to cause a complete air change or total air filtration within the work area at least once every 15 minutes. (Nothing in this subchapter shall be construed to limit the maximum exhaust capacity from the work area or to prohibit additional air changes per hour.) The exhaust capacity from the work area shall be sufficient to establish a pressure differential between the work area and all adjacent spaces greater than or equal to 0.05 inches w.c. (Nothing in this subchapter shall be construed to limit the maximum pressure differential established between the work area and occupied spaces.)
- 1) Make up air shall not be drawn through openings in the separation barriers in buildings greater than four stories in height, unless those openings are equipped with systems or devices which will not permit air flow except

toward the work area and the air filtration and exhaust units located in the work area.

3. Work area protection shall be assured as follows:

- a. The plywood floor of the work area shall be covered with EPDM barrier material installed to provide a watertight barrier system on top of the scaffolding.
- b. The EPDM shall be covered with two layers of polyethylene sheeting which shall overlap at the seams and which shall be applied to the floor, individually sealed. The first layer shall extend up the wall at least 12 inches. The second-floor layer shall be installed and extend up sidewalls at least 24 inches.
- c. Walls shall be covered with one (1) layer of polyethylene sheeting individually sealed to the wall. The layer shall hang straight down overlapping the second layer of floor sheeting on the wall by at least 18 inches.
- d. Sheeting shall be sized to minimize the number of seams. No seams shall be located at the joints between walls and floors. As a minimum, no seam shall stop within 12 inches of a corner and sheeting shall overlap at least 12 inches between seams of adjacent layers.
- e. When a strippable coating is used in place of polyethylene sheeting, it shall be used in accordance with *N.J.A.C. 5:23-8.15(f)7* and the product shall be applied during periods of minimal occupancy as determined by the owner and included in the approved plan.

4. Monitoring shall be conducted as follows:

- a. Air sampling shall be done as follows:
 - 1) At a minimum, one (1) sample at the beginning of each work shift, one every four (4) hours thereafter, and one at the end of the contractor's workday for every 10,000 square feet of occupied space adjacent to the work area shall be collected and analyzed. Air samples shall be taken in areas where the greatest potential for fiber migration exists. In addition to the requirements noted above, air samples shall be taken at the entrance(s) to the work area and any other interior spaces from which make-up air is drawn. Additional samples shall be taken for all areas such as stairwells, communicating shafts, elevators, plenums, ducts which pass through the work area and which are in service, and unusual room and building configurations. If air levels exceed the permitted fiber count, the applicable requirements of the contingency plan in Section 2, Part 1, Item 1.3 and C. 5 below shall be followed.
 - a) At least one (1) air sample shall be collected and analyzed during the work shift inside the work area. The results of this test will not, however, trigger the requirements of the contingency plan.

- 2) A secure chain of custody for air samples shall be established in writing as part of the approved plan by the ASCM firm. The final disposition of samples (whether they should be retained or disposed of after analysis and if retained, who keeps them) shall be determined prior to the commencement of asbestos abatement.
 - 3) The services of a testing laboratory, as delineated in *N.J.A.C. 5:23-8.21(a)1* and 2, shall include a microscope and laboratory technician at the project site or the capacity to obtain results within four hours from start of sample. The laboratory technician shall be listed in the Asbestos Analyst Registry (AAR) of the American Industrial Hygiene Association (AIHA) for PCM analysis or qualified by other programs recognized by the Department as equivalent. If the laboratory technician is on site, the Owner shall provide a safe and clean space for the analysis of samples separate and distinct from the work area. Air samples are to be analyzed via NIOSH 7400 and verbal results made available for a determination regarding continued occupancy. A written record of test results shall be kept at the job site and included in the final report.
 - 4) Ten percent (10%) of all abatement samples shall be re-analyzed within 24 hours at a laboratory for quality control purposes.
 - 5) Daily occupancy shall be allowed when the results of all the air samples are less than or equal to 0.010 fibers/cc by Phase Contrast Microscopy. If air levels exceed 0.010 fibers/cc, the contingency plan during abatement, outlined in C. 5 below shall be followed.
 - 6) In the case of re-occupancy and final clearance, all air samples used to determine reentry shall be analyzed by an accredited laboratory.
- b. Pressure monitoring shall be carried out as follows:
- 1) Pressure differential shall be monitored by digital manometers with continuous printout or other approved low-pressure monitoring devices. Sensor tubes used for monitoring shall be placed so that the air filtration devices shall not cause false readings. The AST shall zero and level the gauges each time a reading is taken.
 - 2) One or more separate pressure monitoring systems shall be installed by the ASCM firm near the entrance(s) to the work area and between the work area and any interior spaces from which make-up air is drawn.
 - 3) Written documentation of pressure differential shall be provided by the AST by continuous printout devices. The AST and the Contractor Supervisor will ensure, prior to the completion of the work shift, the integrity of the containment site before workers depart.

- 4) The pressure differential shall be greater than or equal to 0.05 inches w.c. at the pre-commencement inspection (at the time of approval immediately prior to the start of abatement work).
 - a) In addition to providing a pressure differential greater than or equal to 0.05 inches w.c. for the pre-commencement inspection, a smoke test shall be conducted to demonstrate that the work area has been isolated properly and that the pressure differentials have been established to prevent fiber migration from the work area.
- 5) Daily Occupancy shall be allowed when the pressure differential is equal to or exceeds 0.05 inches w.c. If the air pressure differential drops below 0.05 inches w.c., the contingency plan during abatement, outlined in (c) 5 below, shall be followed.
5. The Contingency plan during abatement shall be implemented as described in Section 2, Part 1, Item 1.3 of these Specifications. These are the minimum requirements which shall be enforced by the ASCM firm and their AST.
6. Security shall be required as follows:
 - a. In high-risk areas, the Owner shall provide a 24-hour security guard to ensure protection against damage or vandalism to separation barriers, engineering systems, monitoring devices, or other equipment.
 - b. The Owner shall provide continuous unlimited access for the Asbestos Safety Technician in all occupied spaces for installation, maintenance, and data collection from monitoring systems.
 - c. The ASCM firm shall include provisions in the plan and the AST shall ensure that filters are changed as necessary and that pressure differential is maintained around the clock until the project is completed.
7. Waste removal shall be accomplished as follows:
 - a. The waste removal route of travel is to be designated on the abatement plans and shall be separate and distinct from the normal route of travel used by building occupants. Waste removal shall occur during the time of least amount of building occupancy. If the route of travel is to be used the following day by building occupants, air monitoring must be performed, and if the results of air levels exceed 0.010 f/cc, then the waste removal route is to be wet wiped using amended water, HEPA vacuumed and retested until an acceptable air level is achieved prior to allowing occupancy of the area.
 - b. The waste removal process shall be closely monitored visually and through air sampling by the AST.

- c. No dumpster shall remain on the premises overnight unless the dumpster is locked and labeled to indicate that it contains asbestos-contaminated waste.
8. A written statement shall be signed by the ASCM firm denoting that an asbestos abatement will occur during building occupancy and verifying that the above requirements will be maintained. This written statement shall accompany the application for a construction permit for asbestos abatement and shall be filed with the enforcing agency. This statement shall include the areas to be occupied during the abatement and the number of occupants.

3.18 ACM IN EXTERIOR WINDOW CAULKING

- A. The Contractor shall remove window caulk from the site building that is associated with the windows being replaced as part of the project.

ACM in Exterior Caulking

1. Prior to the commencement of caulk abatement activities at each stairway and 7th floor exterior perimeter work locations, a containment system shall be constructed by the Contractor to capture and contain all materials removed during the abatement. All workers shall don personnel protective equipment, including disposable Tyvek coveralls, minimum half-face air-purifying respirator with HEPA cartridges, and disposable work gloves.

2. Containment Systems:

Basement/Ground Level: Two (2) layers of polyethylene sheeting, having a minimum thickness of 6-mil, shall be installed on the interior of each window system where exterior caulk removal is to occur and secured air-tight with tape. One (1) layer of polyethylene sheeting, having a minimum thickness of 6-mil, shall be installed on the exterior side of the building beneath and extending a minimum of five (5) feet beyond each window in each direction. The polyethylene sheeting shall be securely fastened to the outside face of the structure using duct tape and/or spray adhesive. Caution barrier tape shall surround each work area at least 10 feet beyond the work area using looper tubes.

1st-7th Floors: Two (2) layers of polyethylene sheeting, having a minimum thickness of 6-mil, shall be installed on the interior of each window system where exterior caulk removal is to occur and secured air-tight with tape. A high-reach lift with telescoping boom shall have a caged working platform at least six (6) feet wide. The cage shall have polyethylene installed on three (3) sides. An industrial grade HEPA vacuum with a minimum rating of 100 cfm shall be utilized, located on the working platform, for work of residual caulk removal and clean-up. One (1) layer of polyethylene sheeting, having a minimum thickness of 6-mil, shall be installed on the ground beneath and extending a minimum of ten (10) feet beyond each window in each direction. The polyethylene sheeting shall be securely fastened to the outside face of the structure using duct tape and/or spray adhesive. Caution barrier tape shall surround each work area at least 10 feet beyond the work area using looper tubes.

3. Work shall not be performed if wind speeds are in excess of 20 miles per hour.

4. Once the containment systems have been constructed and engineering controls set up per Item 5 below, the existing caulk seals and caulk residue shall be removed from the exterior of each window and collected for off-site disposal. At no time shall caulk or related debris be allowed to be distributed beyond the area covered by the containment systems.
5. Tools that are utilized to remove the caulk shall not result in the dispersion of dust and debris beyond the area of the containment system or the creation of airborne dust. Manual utility knives can be used or an electrical joint cutter with oscillating blade. As ACM, all caulking shall be wet prior to removal. The adjacent surfaces shall be free of caulk upon visual inspection at the completion of the removal.
6. At the completion of the removal, the containment system shall be removed and can be re-used as work progresses. All waste generated as a result of this abatement shall be disposed of in accordance with applicable state and federal standards.

3.19 ROOFING MATERIAL

A. Preparation of Work Area

1. Contractor shall install a fall protection system surrounding the perimeter of the roof, as per OSHA's 29 CFR, Part 1926.501 - Fall Protection requirements.
2. The Contractor shall place a single layer of six (6) mil polyethylene sheeting, around the perimeter of the building, extending at least five (5) feet from the walls as work progresses around the building. The Contractor shall secure the polyethylene sheeting to the ground.

B. Removal Procedures

1. The roofing material shall be removed intact using wet methods. Where cutting machines are used, roofing shall be wet during use. Power tools used to cut ACM roofing shall have High Efficiency Particulate Air (HEPA) filter equipped vacuum attachments.
 - a. The Contractor shall continue the application of amended water to the materials during the removal portion and during the placement of removed materials into waste bags.
 - b. No visible emissions shall occur during the removal of asbestos containing roofing materials, in accordance with USEPA, NESHAPS.
 - c. Workers shall don Personal Protective Equipment, to include, but not be limited to a respirator, disposable coveralls, hardhat, safety glasses, gloves, and safety boots.
 - d. All substrate surfaces which were in contact with the roof materials shall have all residual material completely removed as a part of this abatement.

C. Waste Handling Procedures

- a. If un-containerized, material shall be transferred to a dumpster using a closed chute system to minimize the dispersion of dust, with the dumpster area misted during waste transfer. Otherwise place waste materials in double, six (6) mil disposal bags, or in a single six (6) mil disposal bag to be placed in fiberboard drums prior to removal from the roof level. All of the appropriate OSHA and EPA labels shall be attached to waste disposal bags, lockable fiberboard drums and/or the outer layer of polyethylene sheeting, whichever method employed to contain the waste applies.
- b. ACM waste shall be stored in a covered, locked dumpster or registered waste transfer vehicle. The Contractor shall prepare the waste for transport in accordance with specific requirements of the waste facility and all applicable local, state and federal regulations, and these Technical Specifications.
- c. Disposal shall be in accordance with federal, state and local regulations.

3.20 ASBESTOS GROSS CLEANUP

- A. Remove all visible accumulations of asbestos-containing materials and debris by HEPA vacuums, sponging, etc. Wet clean all surfaces within the work area.
- B. The entire work area shall be totally and visibly clean and free of residual dust or debris. The Contractor shall notify the Owner's Asbestos Safety Technician of the time the work area will be subject for visual inspection.

3.21 DISPOSAL OF ASBESTOS-CONTAINING MATERIAL

- A. As the work progresses, at the end of each work shift, bags of removed ACM within the work area shall be transferred to the Waste Dumpster. A minimum of three (3) workers shall perform the operation. Single bags shall be taped and passed from the work area, rinsed and placed in a second bag within the shower room and passed to the clean room of the Decontamination Unit. At no time shall a removal worker pass the curtained doorway between the work area.
 1. LABEL REQUIREMENTS: Provide labels affixed to all asbestos waste containers:
 - a. Warning labels as required by OSHA regulation 40 CFR; Part 1926.1101 as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO THE LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST
AND

ASBESTOS, NA 2212, RQ

AND

CLASS 9 LABEL

- b. Informational labels shall be affixed to the waste bags as required by NESHAP regulation 40 CFR, Part 61, Sub-part M with the name of the waste generator and the location at which the waste was generated. If handwritten, use, at a minimum, indelible ink to legibly record the required information.
- B. Vehicles used for transporting asbestos-containing materials to disposal sites shall have a completely enclosed, lockable storage compartment. Storage compartments shall be plasticized and sealed with a minimum of two (2) layers of 6-mil polyethylene. All plastic sheeting, tape, cleaning material, including mops and sponges, clothing, filters, and all other contaminated disposable materials shall be packaged, labeled, and disposed of as asbestos-containing waste.
 - 1. **TRANSPORT SIGN REQUIREMENTS:** Provide signs during waste transport and disposal as follows:
 - a. As required by the US Department of Transportation, 49 CFR, Parts 171 and 172, warning signs shall display the following:

**RQ HAZARDOUS
SUBSTANCE
SOLID, NOS
ORM-E, NA 9188
(ASBESTOS)**
 - b. As required by NESHAP, 40 CFR, Part 61, Sub-part M and OSHA, mark vehicle used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible as follows:

**DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY**
- C. Dispose of materials at an authorized disposal site in accordance with the requirements of Federal, State, and Local disposal authorities.
- D. Workers unloading waste material at the disposal site shall be dressed in full-body protective clothing and half-face negative pressure dual cartridge respirators.

3.21 DISPOSAL OF PCB CONTAINING WASTE

- A. All storage of waste shall be performed at the direction of the Owner and/or the Owner's On-site representative. All storage of waste PCBs shall be in accordance with 40 CFR, Part 761.65. The handling and storage of PCB waste will be modified if state or local requirements are more stringent.
- B. All PCB containing waste shall be properly labeled, dated and disposed of in accordance with NJDEP regulations (N.J.A.C. 7:26G). No waste shall remain on site for more than 90 days. The Contractor shall comply with all provisions of 40 CFR, Part 761, as applicable.
- C. Storage Containers: The collection of PCBs shall be in United States Department of Transportation (USDOT) approved containers.
- D. Waste Containers shall be labeled with the following:
1. "Solid (or Liquid) Waste Polychlorinated Biphenyls."
 2. PCB Caution Label:

CAUTION
Contains PCBs
(Polychlorinated Biphenyls)
 3. The date the item was placed in storage and the name of the building.

3.22 POST-REMOVAL ENCAPSULATION OF ASBESTOS AFFECTED AREAS

- A. The work area shall have passed visual inspection prior to post-removal encapsulation.
1. Upon completion of encapsulation of surfaces from which asbestos has been removed, the Contractor shall inform the on-site representative that the area is ready for clearance testing.
 2. The Contractor shall then remove all interior polyethylene sheeting except for the critical barriers and the decontamination unit and then clean all vertical and horizontal surfaces within the work area through the employment of wet wiping and HEPA vacuuming until such time as no visible dust or debris is visible in the work area.
 3. Upon completion of the final cleaning, the Contractor shall inform the AST/AMT who after successful inspection shall perform final air testing.

4. Upon receipt of proper final clearance test results, the Contractor shall break down the remainder of all plastic and decontamination units and remove all tape and adhesive residue to the satisfaction of the AST.

END OF SECTION 1

SECTION 2 - ASBESTOS AIR MONITORING/TESTING

PART 1 - GENERAL

4.1 TESTING/AIR MONITORING

- A. Throughout the entire asbestos removal and cleaning operations, air monitoring will be conducted by an On-site Representative to ensure Contractor compliance with State, EPA and OSHA regulations, excluding personnel samples required by OSHA. Air monitoring results gathered by the Owner's On-site Representative will not be used by the Contractor to verify OSHA compliance. Air monitoring for OSHA compliance by the Contractor shall be conducted in accordance with the method prescribed by 29 CFR, Part 1926.1101, Appendix A or applicable state or local regulations.
- B. The Abatement Contractor shall be responsible for providing personal monitoring of his employees as per OSHA's 29 CFR, Part 1926.1101.
- E. Monitoring During Asbestos Removal: The On-site Representative will provide environmental and work area monitoring, for the Owner, during exposure to airborne concentrations of asbestos.
1. If monitoring outside the asbestos work area shows airborne concentrations exceeding 0.01 f/cc and is due to the Contractor's work practices or breach in the containment, the Contractor shall stop all work, notify the Owner immediately, identify and correct the condition(s) causing the increase.
- F. Monitoring Results During Asbestos Abatement: PCM fiber counting shall be completed and results reviewed by the On-site Representative within 24 hours after conducting sampling. Where the building is occupied, the samples shall be collected every four (4) hours from the start of each shift. The On-site Representative shall notify the Contractor and the Owner immediately of any exposures to asbestos fibers greater than or equal to 0.01 fibers/cc.
1. The services of an onsite analyst will be employed by the Owner to perform laboratory analysis of the air samples. A microscope and technician will be set up at the job site, or samples will be sent daily to a laboratory, so that written reports on air samples can be obtained within 24 hours of conducting sampling. Where the building is occupied during Sub-chapter 8 abatement, the services of an Asbestos Analyst Registry accredited analyst shall be utilized.
- G. Final Air Monitoring: Final air monitoring shall be conducted in accordance with the Environmental Protection Agency's (EPA), the Department of Community Affairs and the Department of Labor and Workforce Development regulations as well as these Specifications. Analysis of samples taken after final cleanup shall be by Transmission Electron Microscopy (TEM) if the materials are being abated within a full containment or the amount to be abated is greater than 160 square feet or 260 linear feet. Exterior removal of non-friable materials removed intact will not require an air clearance to be conducted. However, a final visual inspection by the

Owner's On-site Representative will be required. The Owner's On-site Representative will conduct final air clearance monitoring. Sampling shall start after the following:









1. HEPA vacuuming and wet cleaning of all surfaces of the work area must have been conducted.
2. All visible accumulations of asbestos-containing waste material must have been removed from the work area, as determined by the Owner's Certified Industrial Hygienist/Asbestos Safety Technician.
3. First the polyethylene layer must have been removed from walls and floors.
4. Completion of a satisfactory visual inspection by the On-site Representative.
5. The area completely covered by a spray encapsulant.
6. All surfaces within the regulated area shall be completely dry, spray applied encapsulant shall be completely dry.
7. If asbestos-containing materials being removed within the work area are less than 160 square feet, 260 linear feet, or 35 cubic feet, and not within a full containment, then five (5) samples may be collected and analyzed by PCM in accordance with NIOSH 7400 and 582 requirements.
 - b. Clearance Criteria: All samples will have a concentration of airborne fibers at or below 70 structures per millimeter squared (S/mm^2) for TEM finals and less than 0.01 fibers/cc for Phase Contrast Microscopy (PCM) finals. If the final clearance samples do not meet the minimum clearance requirements, re-cleaning and re-sampling must be completed. The Contractor shall be back charged for the additional cost of re-sampling and re-analysis. The method of sampling and analysis will be the same as that used for the first set of samples.

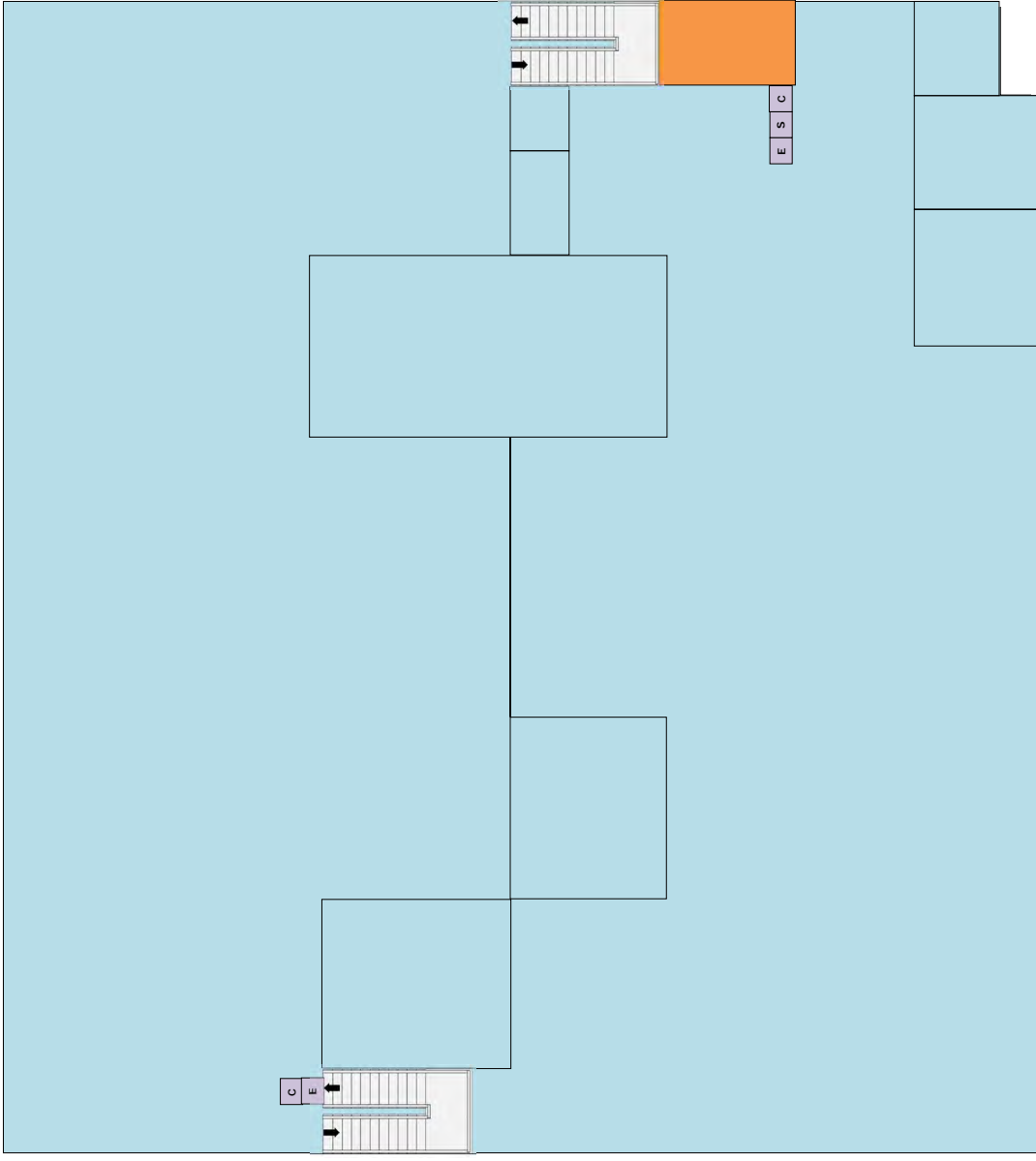
END OF SECTION 2

APPENDIX A









ASBESTOS ABATEMENT PLANS

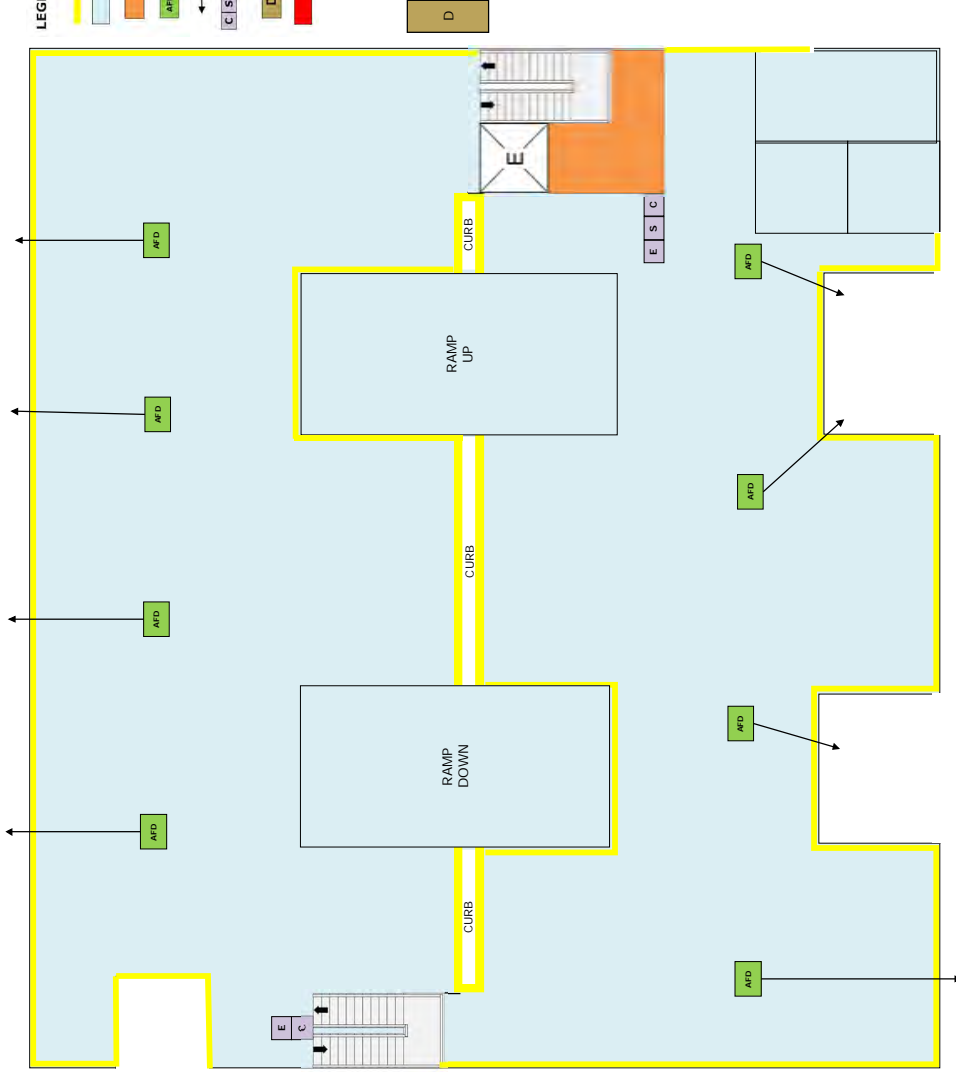
LEGEND / SYMBOLS

-  CRITICAL BARRIER
-  FULL CONTAINMENT
-  PLYWOOD BOXED AREA
-  HIGH EFFICIENCY PARTICULATE AIR (HEPA) EQUIPPED AIR FILTRATION DEVICE (AFD)
-  AFD EXHAUST POINT
-  THREE-STAGE PERSONAL DECONTAMINATION UNIT, CONSTRUCTED AS REQUIRED IN NJAC 5:23-8
-  DUMPSTER
-  BEAM INSULATION











<p>USA Architects 10 Doughty Avenue Somerville, NJ 08876</p>	<p>ASB-1 Basement</p>	<p>UNION COUNTY COURTHOUSE PARKING DECK ELIZABETHTOWN PLAZA AND CALDWELL PLACE, ELIZABETH, NEW JERSEY</p> <p>RJB ENVIRONMENTAL, INC. P.O. BOX 869, LEVITTOWN, PA 19058</p> <p>SCALE : NONE</p> <p>DRAWN BY: DBR</p> <p>PROJECT #: 2023033-02</p>
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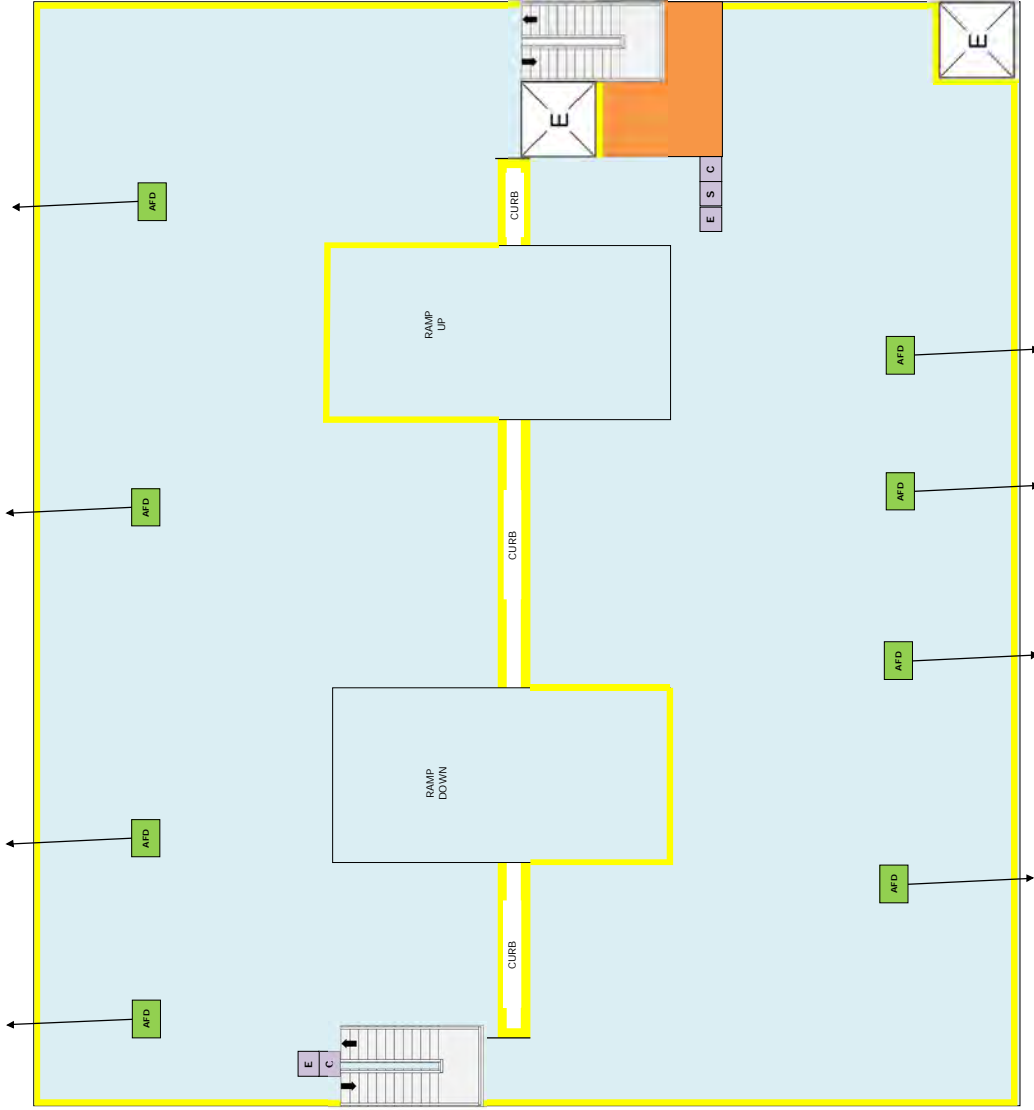
- LEGEND/SYMBOLS**
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 -  FULL CONTAINMENT
 -  PLYWOOD BOXED AREA
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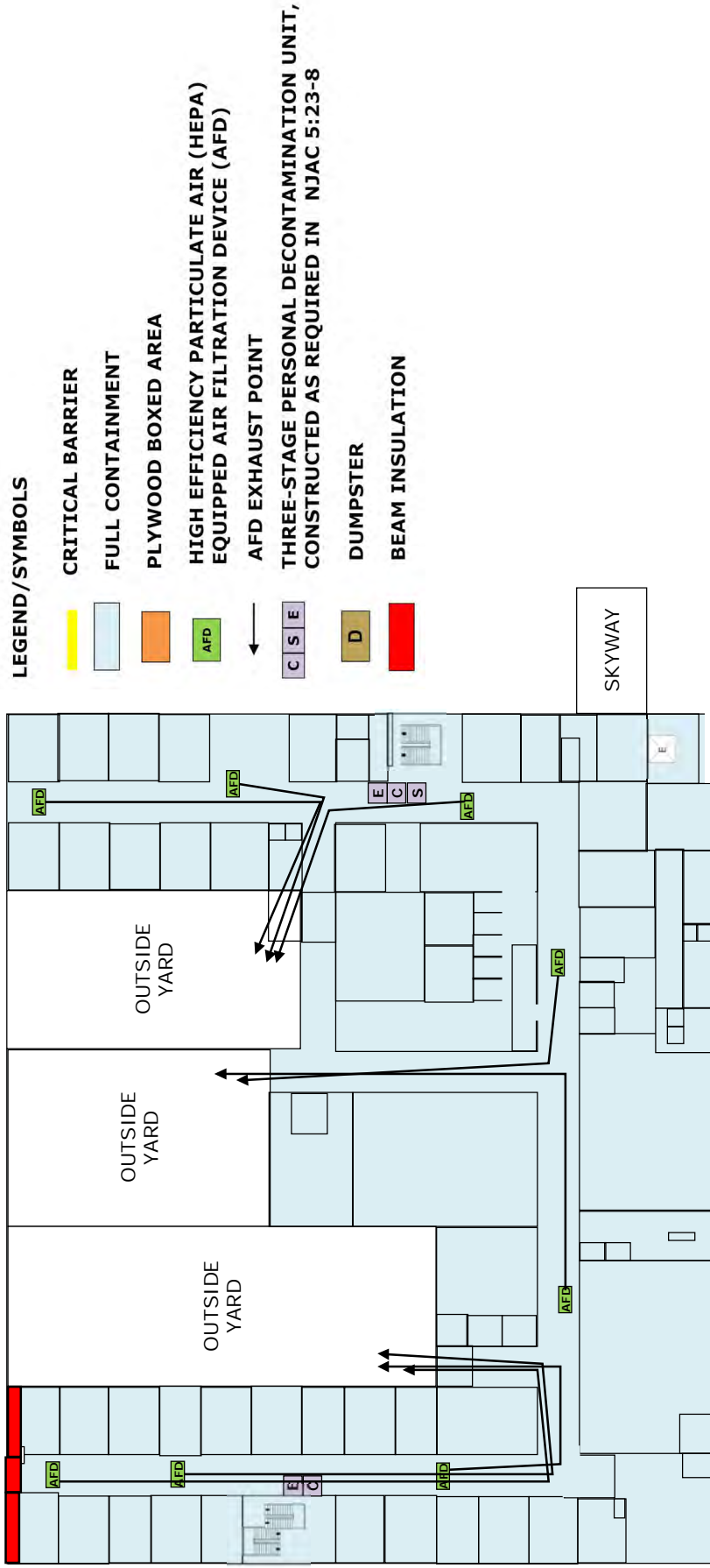
USA Architects 10 Doughty Avenue Somerville, NJ 08876	ASB-2 1 st Floor	UNION COUNTY COURTHOUSE PARKING DECK ELIZABETHTOWN PLAZA AND CALDWELL PLACE, ELIZABETH, NEW JERSEY
		RJB RJB ENVIRONMENTAL, INC. P.O. BOX 869, LEVITTOWN, PA 19058
SCALE : NONE		DRAWN BY: DBR
PROJECT #: 2023033-02		

LEGEND/SYMBOLS









-  CRITICAL BARRIER
-  FULL CONTAINMENT
-  PLYWOOD BOXED AREA
-  HIGH EFFICIENCY PARTICULATE AIR (HEPA) EQUIPPED AIR FILTRATION DEVICE (AFD)
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-  THREE-STAGE PERSONAL DECONTAMINATION UNIT, CONSTRUCTED AS REQUIRED IN NJAC 5:23-8
-  DUMPSTER
-  BEAM INSULATION



<p>USA Architects 10 Doughty Avenue Somerville, NJ 08876</p>	<p>ASB-3 2nd thru 6th</p>	<p>UNION COUNTY COURTHOUSE PARKING DECK ELIZABETHTOWN PLAZA AND CALDWELL PLACE, ELIZABETH, NEW JERSEY</p> <p>RJB ENVIRONMENTAL, INC. P.O. BOX 869, LEVITTOWN, PA 19058</p> <p>SCALE :NONE</p> <p>DRAWN BY: DBR</p> <p>PROJECT #: 2023033-02</p>
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LEGEND/SYMBOLS

-  CRITICAL BARRIER
-  FULL CONTAINMENT
-  PLYWOOD BOXED AREA
-  HIGH EFFICIENCY PARTICULATE AIR (HEPA) EQUIPPED AIR FILTRATION DEVICE (AFD)
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-  THREE-STAGE PERSONAL DECONTAMINATION UNIT, CONSTRUCTED AS REQUIRED IN NJAC 5:23-8
-  DUMPSTER
-  BEAM INSULATION

<p>USA Architects 10 Doughty Avenue Somerville, NJ 08876</p>	<p>ASB-4 7th Floor</p>	<p>UNION COUNTY COURTHOUSE PARKING DECK ELIZABETHTOWN PLAZA AND CALDWELL PLACE, ELIZABETH, NEW JERSEY</p> <p>RJB ENVIRONMENTAL, INC. P.O. BOX 869, LEVITTOWN, PA 19058</p> <p>SCALE : NONE</p> <p>DRAWN BY: DBR</p> <p>PROJECT #: 2023033-02</p>
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APPENDIX B

Assessment Reports

Service with experience, integrity and value

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Website: www.rjbenv.com | Phone: 267-991-9212



PRE-DEMOLITION ENVIRONMENTAL ASSESSMENT REPORT

INVESTIGATION FOR: John Bolan
Paulus, Sokolowski & Sartor, LLC
67B Mountain Boulevard Extension
Warren, NJ 07059

SITE INVESTIGATED: Union County Caldwell &
Elizabethtown Parking Deck
Elizabeth Plaza & Caldwell Place
Elizabeth, NJ

ASSESSMENT BY: Omega Environmental Services, Inc.
280 Huyler Street
South Hackensack, NJ 07606

INVESTIGATION
CONDUCTED: October 1, 2020

DATE OF REPORT: October 20, 2020

REPORT PREPARED BY: Ana Knezevic

REPORT REVIEWED BY: Veronica Kero, CIH, PE

(Omega Project # 20-1205)

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C. LBP	C1.	XRF Laboratory Analytical Reports

EXECUTIVE SUMMARY:

Omega Environmental Services was retained by Paulus, Sokolowski & Sartor (PS&S), LLC to conduct a hazardous/regulated material investigation of the parking deck building located at Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201.

At the time of the investigation, the building was partially occupied.

The inspection included a visual assessment, and representative sampling/analysis of suspect Asbestos Containing Materials (ACM), Lead Based Paint (LBP), and PCBs (in caulking). This inspection also included a visual inspection for other possible suspect PCB containing materials, mercury-containing materials, hazardous material storage, and other areas of concern.

A few items of concern were noted, as summarized below, and delineated further in this report.

Due to the extensive asbestos abatement scope delineated, preparation of an asbestos bid specification is highly recommended.

Site Description:

The 1960's structure consists of split level parking spaces from level 1 through 6. The 7th floor is occupied by the Newark Department of Corrections. The space includes meeting/office spaces, holding cells, exercise areas, and other related support spaces. The building is being prepared for demolition.

Previous Survey and Decontamination Work:

No documentation of any previous survey work performed in the subject area was provided.

Summary of Findings:

The following summarizes the hazardous or regulated materials identified:

Elizabeth Plaza & Caldwell Place, NJ Pre-Renovation Hazardous Material Summary For Eastern and Western Garage Structures			
Parameter Investigated	Suspected Positive Materials	Estimated Total Quantity of Material	Recommended Action
Asbestos (ACM)	Roof MER - Fitting	Approx. 2 Each	-Abate/remove by licensed asbestos Contractor. -Selective demolition required to expose all materials
	Deck #1 Security Control Bath – Fitting	Approx. 2 Each	
	Basement Deck Sprinkler Room – Fitting	Approx. 3 Each	
	Basement Deck Elevator Room – Fitting	Approx. 4 Each	
	7 th Floor Cell Chase – SOFP (Concealed)	Throughout (Estimate - Approx. 2,300 SF)	
	6 th Floor Deck – Ceiling Texture/Stucco	Approx. 14,000 SF	
	5 th Floor Deck – Ceiling Texture/Stucco	Approx. 14,000 SF	
	4 th Floor Deck – Ceiling Texture/Stucco	Approx. 14,000 SF	
	3 rd Floor Deck – Ceiling Texture/Stucco	Approx. 14,000 SF	
	2 nd Floor Deck – Ceiling Texture/Stucco	Approx. 14,000 SF	
	1 st Floor Deck – Ceiling Texture/Stucco	Approx. 14,000 SF	
	Basement Deck – Ceiling & Wall Texture/Stucco	Approx. 14,500 SF	
	Main Roof – Vent Flashing Bottom Layer	Approx. 300 SF (5 Vents)	
	Main Roof – Door Caulking A&B	Approx. 2 Doors (36"x80")	
	7 th Floor (Exterior) – Brick Expansion Joint	Unquantified (N/A)	
	6 th Floor Deck – Brick Expansion Joint	Approx. 32 LF	
	5 th Floor Deck – Brick Expansion Joint	Approx. 32 LF	
	4 th Floor Deck – Brick Expansion Joint	Approx. 32 LF	
	3 rd Floor Deck – Brick Expansion Joint	Approx. 32 LF	
	2 nd Floor Deck – Brick Expansion Joint	Approx. 32 LF	
1 st Floor Deck – Brick Expansion Joint	Approx. 32 LF		
7 th Floor – Roofs (Interior)	Unquantified		

**Elizabeth Plaza & Caldwell Place, NJ Pre-Renovation Hazardous Material Summary
For Eastern and Western Garage Structures**

Parameter Investigated	Suspected Positive Materials	Estimated Total Quantity of Material	Recommended Action
Lead Based Paint (LBP)	Exterior – Roof Entrance by Caldwell Pl – Ladder (Metal)	Two (2)	Conduct demolition activities in accordance with OSHA <i>Lead in Construction Standard</i>
	Exterior – Roof Entrance by Caldwell Pl – Pipe (Metal)	One (1)	
	Exterior – Roof Entrance – Pipe (Metal)	One (1)	
	Exterior – Roof Entrance – Ladder (Metal)	One (1)	
	Staircase 7 th Floor – Stair Railing (Metal)	Two (2)	
	Staircase 6 th Floor – Stair Underside (Metal)	Two (2)	
	Staircase 6 th Floor – Stair Railing (Metal)	Two (2)	
	Staircase 4 th Floor – Stair Underside (Metal)	One (1)	
	Staircase by Caldwell Place 1st Floor – Stair Underside (Metal)	One (1)	
	Staircase by Caldwell Place 6th Floor – Vertical Pipe (Metal)	One (1)	
	7th Floor Training Center Private Hallway – Wall (Concrete)	One (1)	
	9th Floor Training Center Private Hallway – Wall (Concrete)	One (1)	
	10th Floor Training Center Private Hallway – Wall (Concrete)	One (1)	
Upper Basement OSY Valves Pump Room – Fire Pipe (Metal)	Two (2)		
PCBs	Fluorescent light ballasts	170 Ballasts	Remove from fixture and dispose of as PCB Bulk product segregated waste during renovation.
	Transformers	No suspect PCB transformers noted.	None
	Caulking	Trace levels (< 50 ppm) in 4 types sampled. 5 other types identified, but not sampled.	Verify that the disposal facility will accept materials with trace levels of PCBs; assume other types of caulk are TSCA PCB Bulk Product Waste unless tested.

Elizabeth Plaza & Caldwell Place, NJ Pre-Renovation Hazardous Material Summary For Eastern and Western Garage Structures			
Parameter Investigated	Suspected Positive Materials	Estimated Total Quantity of Material	Recommended Action
Mercury	Fluorescent light bulbs	1,100 bulbs	Remove and dispose of as mercury-containing universal waste during renovation.
	Thermostats, timers, misc.	2 manehelic gauges in basement pump room. No suspect mercury thermostats noted.	Remove and dispose of as mercury-containing equipment during renovation.
	High-Intensity Floodlights	200 bulbs	Remove and dispose of as Universal Waste prior to demolition.
Chemical Storage/tanks	Drums, tanks or significant chemical storage.	- Nine 55 gallon drums of antifreeze- - Nine pallets of ice melter.	Remove and dispose of prior to demolition
	USTs/ASTs	None identified	None
	Misc. paints, solvents, adhesives, small misc. fluids	De minimus quantities.	Remove and dispose of prior to demolition
	Staining	No significant staining observed other than is typical for a parking garage	None
	Batteries	None observed	None
Biological Concerns (mold, bird feces, sewage)	Water damage/mold growth	None observed	None
Other/Miscellaneous	Boiler Systems	None identified	None
	Refrigerant Systems	Rooftop HVAC units are present.	Extract refrigerant prior to demolition of systems
	Compressor Systems	None identified	None

1 ASBESTOS SURVEY:

1.1 Summary:

Omega Environmental Services, Inc. (Omega) was been retained by Paulus, Sokolowski & Sartor, LLC to conduct an asbestos survey of the Union County Caldwell & Elizabethtown Parking Deck located at Elizabethtown Plaza & Caldwell Place in Elizabeth, NJ 07201 to confirm the presence/absence of accessible asbestos containing materials (ACM).

Notes:

- 7th floor cells had limited access above ceiling; possible concealed TSI/ACM Pipe Insulation inside the walls and ceilings.
- Presumed concealed SOFP/PACM on walls and above ceiling on deck and/or structural components.
- Two (2) interior/covered roofs with no access.
- No drawings available.

1.1.1 ACM identified:

The following materials were classified as regulated ACM (asbestos at concentrations above 1%):

LOCATION	MATERIAL DESCRIPTION	ASSESSED CONDITION	ESTIMATED QUANTITY* (square/linear feet)
Roof MER	Fitting	No Visible Damage	Approx. 2 Each
Deck #1 Security Control Bath	Fitting	No Visible Damage	Approx. 2 Each
Basement Deck Sprinkler Room	Fitting	No Visible Damage	Approx. 3 Each
Basement Deck Elevator Room	Fitting	No Visible Damage	Approx. 4 Each
7 th Floor Cell Chase	SOFP (Concealed)	Unknown	Throughout (Estimate - Approx. 2,300 SF)
6 th Floor Deck	Ceiling Texture/Stucco	Damaged	Approx. 14,000 SF
5 th Floor Deck	Ceiling Texture/Stucco	Damaged	Approx. 14,000 SF
4 th Floor Deck	Ceiling Texture/Stucco	Damaged	Approx. 14,000 SF
3 rd Floor Deck	Ceiling Texture/Stucco	Damaged	Approx. 14,000 SF
2 nd Floor Deck	Ceiling Texture/Stucco	Damaged	Approx. 14,000 SF
1 st Floor Deck	Ceiling Texture/Stucco	Damaged	Approx. 14,000 SF
Basement Deck	Ceiling & Wall Texture/Stucco	Damaged	Approx. 14,500 SF
Main Roof	Vent Flashing Bottom Layer	No Visible Damage	Approx. 300 SF (5 Vents)
Main Roof	Door Caulking A&B	No Visible Damage	Approx. 2 Doors (36"x80")
7 th Floor (Exterior)	Brick Expansion Joint	No Visible Damage	Unquantified (N/A)

6 th Floor Deck	Brick Expansion Joint	No Visible Damage	Approx. 32 LF
5 th Floor Deck	Brick Expansion Joint	No Visible Damage	Approx. 32 LF
4 th Floor Deck	Brick Expansion Joint	No Visible Damage	Approx. 32 LF
3 rd Floor Deck	Brick Expansion Joint	No Visible Damage	Approx. 32 LF
2 nd Floor Deck	Brick Expansion Joint	No Visible Damage	Approx. 32 LF
1 st Floor Deck	Brick Expansion Joint	No Visible Damage	Approx. 32 LF
7 th Floor	Roofs (Interior)	Assumed ACM	Unquantified
*Since asbestos materials potentially continue through adjoining areas and/or layers, final asbestos abatement quantities scope have to be determined in the field when project details are confirmed.			

1.2 Scope of Work:

Omega conducted a pre-demolition asbestos survey of the Union County Caldwell & Elizabethtown Parking Deck located at Elizabethtown Plaza & Caldwell Place in Elizabeth, NJ 07201 which is scheduled for a demolition and or renovation. Purpose of this investigation was that asbestos containing materials (ACM) could be identified and abated prior to the onset of potential renovation activities as per *EPA NESHAPS, OSHA, and NJ DOL* requirements.

1.2.1 Materials Tested:

Considering the age of the building, it was determined that the following **suspect** asbestos-containing materials (ACM) were observed, and were subsequently **tested** for presence/absence of asbestos:

- 12"x12" F.T.
- 2'x2' CT
- 2'x4' Ceiling Tile
- 2nd Layer
- 3rd Layer
- 4th Layer
- 5th Layer
- Air Vent Flashing
- Bottom Layer
- Bottom Unit Flashing Material
- Brick
- Brick Expansion Joint
- Caulking Around Doors
- Caulking Around Material Flashing
- Ceiling Drywall
- Ceiling Texture/Stucco
- CMU Glaze
- Concrete Decking
- Concrete Walls Expansion Joint
- Drywall
- Expansion Joint White
- Fitting
- Flashing
- Flooring Epoxy
- Grout
- Interior Brick
- Interior Mortar
- Joint Compound
- Mastic Under F.T.
- Mastic Under Floor Tile
- Mortar
- Pitch Pocket Material
- Roofing 2nd Layer
- Roofing 3rd Layer
- Roofing Bottom Layer
- Roofing Top Layer
- SOFP Gray
- SOFP Green
- SOFP I Beam/Column
- SOFP White

- Thinset
- Top Layer
- Top Unit Flashing Material
- Unit Flashing Bottom
- Unit Flashing Top
- Vent Flashing Bottom Layer
- Vent Flashing Top Layer
- Wall Texture/Stucco

Positive ACM materials above are highlighted.

1.2.2 Non-ACM:

The following materials were sampled, analyzed and identified to be **non-ACM**, with asbestos either not detected or detected in concentrations of less than one percent (1%):

- 12"x12" F.T.
- 2'x2' CT
- 2'x4' Ceiling Tile
- 2nd Layer
- 3rd Layer
- 4th Layer
- 5th Layer
- Air Vent Flashing
- Bottom Layer
- Bottom Unit Flashing Material
- Brick
- Caulking Around Material Flashing
- Ceiling Drywall
- CMU Glaze
- Concrete Decking
- Concrete Walls Expansion Joint
- Drywall
- Expansion Joint White
- Flashing
- Flooring Epoxy
- Grout
- Interior Brick
- Interior Mortar
- Joint Compound
- Mastic Under F.T.
- Mastic Under Floor Tile
- Mortar
- Pitch Pocket Material
- Roofing 2nd Layer
- Roofing 3rd Layer
- Roofing Bottom Layer
- Roofing Top Layer
- SOFP Gray
- SOFP Green
- SOFP I Beam/Column
- Thinset
- Top Layer
- Top Unit Flashing Material
- Unit Flashing Bottom
- Unit Flashing Top
- Vent Flashing Top Layer

1.3 Sampling Methodology:

The information that is contained in this report is based upon the following:

- Information which was provided by the building representatives interviewed.
- A visual inspection of the designated building areas supported by a representative sampling required to comply with EPA protocol for asbestos building surveys.
- Laboratory analysis of bulk samples of various materials collected from representative building areas that were suspected to contain asbestos. An accredited laboratory using PLM and TEM/NOB analysis methods performed the analysis.

The asbestos survey was conducted on October 1, 2020, by accredited USEPA AHERA Asbestos Inspectors. The bulk samples, which were representative of suspect ACM observed and are required by the USEPA, were collected as necessary. Multiple samples of each homogeneous material were

collected and analyzed by each discernible layer. According to USEPA, a building material with an asbestos concentration greater than one percent (>1%) is considered to be ACM.

Bulk samples were submitted to ELAP accredited Laboratory Testing Services/accreditation # 10955 and Omega Laboratories/accreditation # 10504 utilizing sealed chain-of-custody procedures.

1.4 Unknown Variables/Areas Not Accessible for Sampling:

Inaccessible Areas

- **7th floor above cells was limited access. Additional probe cut required when contractor mobilized.**
- Enclosed wall/ceiling/chase assemblies
- Boiler/mechanical system interiors
- Inaccessible façade/roof layers
- Foundation slab edges and other sub surfaces materials will not be accessible for investigation excavation until equipment is mobilized.

1.5 Review of Previous Asbestos Surveys, Renovations or Abatement Work:

Not available for review.

1.6 Sampling Limitations/Conditions:

The following limitations/exclusions apply:

1. Asbestos bulk sampling report should not be used as sole reference source to determine Contractor scope of work – additional field coordination required in order to generate “Abatement Work Plan”.
2. If scope of renovation changes, and/or walls/ceilings/chases/flooring opened, then additional asbestos bulk sampling may be required at a later date.
3. All sampling is representative in nature and does not reflect every square inch of material.
4. Findings are representative of site conditions on the day of investigation.
5. Subject survey conducted according to published regulations in effect on survey date.

1.7 ACM Conclusions and Recommendations

Conclusions:

1. ACM has been identified in the form of brick expansion joint, caulking around doors, ceiling texture/stucco, fitting, SOFP white, vent flashing bottom layer and wall texture/stucco.
2. This survey was based on visual observations of accessible interior/exterior areas of the subject building. Omega’s inspection team performed limited intrusive/invasive inspections at random locations in order to ascertain presence/absence of ACM that may be concealed within pipe chases, in wall cavities and above ceiling plenums.

3. Asbestos abatement activities must be conducted in accordance with NJ DOL Regulations, and other applicable federal, state and local requirements governing removal and disposal of regulated ACM utilizing licensed workers.

Recommendations:

- **Prepare abatement Design Documents to identify the locations of ACM and work practices to be employed during this project. This work should be performed by the USEPA AHERA accredited Asbestos Project Designer.**
- **Third party asbestos final clearance testing required prior to building demolition or new occupancy. Daily asbestos air sampling during abatement also recommended.**
- **Any building material that is not listed in this report and/or tested must be assumed to be ACM and treated as ACM until confirmed otherwise via laboratory testing.**

2 LEAD BASED PAINT (LBP):

2.1 XRF Testing:

2.1.1 XRF Summary:

On October 1, 2020, Omega Environmental Services Inc. (Omega) conducted a lead-based paint screen survey using XRF (x-ray fluorescence). Representative painted building and site components were classified as having lead-based (LBP) or non-LBP present. The inspection was intended for pre-demolition survey purposes only, and not intended to follow USEPA HUD protocol, and was not designed for certification or occupancy purposes.

The presence of LBP in the buildings indicates that the demolition Contractor should follow OSHA *Lead in Construction Standard* (LCS). LBP on metal components that are to be torch cut in relation to demolition should be abated in the area of the cut points prior to cutting. Other materials that may have LBP do not require special treatment. Intact LBP coated components may be disposed of intact as normal construction debris contingent upon acceptable representative TCLP lead test results.

2.1.2 XRF Sampling Methodology:

Omega performed XRF screening for lead within the subject building using a Niton XLp 300A Analyzer. The inspection was conducted by Darren Slack, an EPA/NJ Lead Inspector/Risk Assessor.

The certified Lead Inspector/Risk Assessor performed a lead based paint (LBP) inspection of representative accessible building areas so that presence/absence of LBP can be verified for the subject building in areas which is expected to be demolished to grade.

2.1.3 XRF Clearance Criteria:

The USEPA defines Lead Based Paint as paint having a lead level equal to or exceeding 1.0 mg/cm².

2.1.4 XRF Results Summary:

The XRF results section of this report provides a listing of all the reading collected during the inspection, organized by building, component, and type of material. The positive readings, if any, are highlighted and include those readings that were at or above the action level 1.0 mg/cm².

The following components were found to be covered with lead containing paint/primer:

Location	Component	Type of Material	Quantity of Positive LBP Readings
Exterior-Roof Entrance by Caldwell Pl	Ladder	Metal	2
	Pipe	Metal	1
Exterior-Roof entrance	Pipe	Metal	1
	Ladder	Metal	1
Staircase 7th Fl	Stair Railing	Metal	2
Staircase 6th Fl	Stair Underside	Metal	2
	Stair Railing	Metal	2
Staircase 4th Fl	Stair Underside	Metal	1
Staircase by Caldwell Place 1st Floor	Stair Underside	Metal	1
Staircase by Caldwell Place 6th Floor	Vertical Pipe	Metal	2
7th Floor Training Center Private Hallway	Wall	Concrete	1
9th Floor Training Center Private Hallway	Wall	Concrete	1
10th Floor Training Center Private Hallway	Wall	Concrete	1
Upper Basement OSY Valves Pump Room	Fire Pipe	Metal	2
**Additional LBP/primer is likely to be identified on steel structures and or concealed components			

LBP **was not** identified on the following components:

Location	Component	Type of Material	Quantity of Non-LBP Results
Exterior-Roof	Door	Metal	1
	Door Buck	Metal	1
	Pipe	Metal	3
Exterior-Roof Entrance by Caldwell Pl	Door	Metal	2
	Door Buck	Metal	1
	Pipe	Metal	1
Roof Penthouse	Ceiling	Concrete	1
	Wall	Wood	1
	Door	Metal	1
Staircase 7th Fl	Stair Treads	Metal	1
	Stair Stringer	Metal	1
	Wall	Concrete	3
	Ceiling	Concrete	1
	Pipe	Metal	1
Staircase 6th Fl	Wall	Concrete	4
	Vertical Pipe	Metal	1
Staircase 5th Fl	Ceiling	Concrete	1
	Stair Underside	Metal	1
Staircase 4th Fl	Stair Underside	Metal	1
	Wall	Concrete	2
Staircase Basement	Door	Metal	1
Staircase by Caldwell Place Basement	Door	Metal	1
	Door Buck	Metal	1
	Wall	Concrete	2
Staircase by Caldwell Place 1st Floor	Wall	Concrete	1
	Window Sill	Concrete	1

Staircase by Caldwell Place 1st Floor	Stair Railing	Metal	2
	Stair Treads	Concrete	1
	Stair Stringer	Metal	1
	Stair Underside	Metal	2
Staircase by Caldwell Place 3rd Floor	Wall	Concrete	2
Staircase by Caldwell Place 6th Floor	Wall	Concrete	2
	Stair Underside	Metal	1
	Stair Newel Post	Metal	1
	Stair Railing	Metal	1
	Vertical Pipe	Metal	4
6th Floor Garage	Wall	Concrete	2
	Column	Concrete	1
	Elevator Door	Metal	1
	Elevator Buck	Metal	1
5th Floor Garage	Column	Concrete	2
	Wall	Concrete	1
12th Floor Garage Ramp	Wall	Concrete	1
	Elevator Door	Metal	1
1st Floor Garage	Door Buck	Metal	1
7th Floor Training Center	Wall	Concrete	1
	Door	Metal	1
	Door Buck	Metal	1
	Radiator	Metal	1
7th Floor Training Center GYM	Wall	Concrete	2
	Door	Metal	1
	Ceiling	Plaster	1
7th Floor Training Center Bathroom	Window Frame	Metal	1
8th Floor Training Center Private Hallway	Wall	Concrete	1
7th Floor Training Center Corner Cell	Ceiling	Metal	1
7th Floor Training Center Cell	Ceiling	Metal	1
Upper Basement OSY Valves Pump Room	Electrical Panel	Metal	1
	Door Buck	Metal	1
	Door	Metal	1
	Fire Pipe	Metal	4
Lower Basement Electrical Room	Wall	Metal	2
Lower Basement Garage	Wall	Concrete	2
Lower Basement Electrical Room	Door Buck	Metal	1
Lower Basement Garage Roadway Ramp	Wall	Concrete	1
Exterior	Wall	Concrete	2
Exterior-Front of Garage	Gas Pipe	Metal	1
	Foundation	Concrete	1
Exterior- Caldwell Side	Fire Pipe	Metal	1

See *Appendix Table C1* for all XRF reading collected and specific location of each.

NOTE: Lead Based Paint (LBP) via XRF testing is defined as paint having lead at or above 1 mg/cm². However, OSHA *Lead in Construction Standard* applies to substrates coated with paint having any detectable amount of lead.

2.2 LBP Findings:

The USEPA defines Lead Based Paint as paint having a lead level equal to or exceeding 1.0 m/cm².

2.3 XRF Recommendations:

- **Remove/impact LBP components in accordance with OSHA Lead in Construction Standard.**

3 PCBs:

3.1 Fluorescent Light Ballasts:

Fluorescent lights fixtures and associated ballasts historically have contained Polychlorinated Biphenyls (PCBs). Normally, light ballasts are assumed to contain PCBs unless specifically labeled as “non-PCB”.

Light fixtures are as follows:

Area	Fixture size	Qty. of fixtures	Bulb Length	#of bulbs/ fixture	Est ballasts /fixture	Est. total qty. of ballasts.	Total qty. of bulbs
7 th floor, 1 st floor security office, misc. spaces	2' x 4'	20	4'	3	2	40	60
	2' x 2'	24	2'	3	2	48	72
	1' x 4'	75	4'	1	1	75	75
		Totals				163	207
Parking garage, stairwells						Flood Lights	240

For estimation purposes assume **170 ballasts**.

Ballasts labeled as no PCBs may be disposed of as normal demolition debris. An inspection of each ballast would be required. Alternately, all ballasts may be assumed to contain PCBs and disposed of as PCB bulk product waste.

3.2 Transformers:

Two dry-type transformers are located in the basement mechanical spaces. Dry transformers do not have PCB cooling fluids.

3.3 Caulking:

Caulking is present in various forms throughout the building. Noted potential PCB caulking includes the following:

Description	Locations	Est Quan.	Comments
Penthouse exterior wall, near roof level, and around doors	Penthouse	120 ft.	Sample 1205-01C
Column to brick, north and south sides	Parking Garage, all levels	50 ft.	Sample 1205-02C
Wall to brick, north and south sides	Parking Garage, all levels	75 ft.	Sample 1205-03C
Deck centerline double columns	Parking Garage, all levels	400 ft.	Sample 1205-04C
Deck centerline expansion joint (east to west)	Parking Garage, all levels	750 ft.	Not sampled
Exterior wall, deck centerline expansion joint	Parking Garage, all levels	30 ft.	Not sampled
Exterior beneath deck seam approx. 8'	Near ground level, exterior	400 ft.	Not sampled

above ground level, N, W, and S sides			
Exterior of bridge	Bridge	80 ft.	Not sampled
Windows (stairwells, 7 th floor exercise spaces, offices, bridge) – includes possible window glazing	Misc.	Approx. 40 windows	Not sampled

Additional PCB containing caulk likely exists on the structure.

As noted above samples were collected of four types of caulking.

Total PCBs in the table below consists of the following:
Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260

Sample #	Location/ Description	Analysis	Result (mg/kg)	Limit ⁽¹⁾
1205-01C	Penthouse exterior wall, near roof level	PCBs	1.360	50 ppm
1205-02C	Column to brick, north and south sides	PCBs	2.820	50 ppm
1205-03C	Wall to brick, north and south sides	PCBs	3.280	50 ppm
1205-04C	Deck centerline double columns	PCBs	1.950	50 ppm

⁽¹⁾ TSCA PCB Bulk Product Waste Limit

All results of caulking sampled are below the limit for TSCA PCB Bulk Product Waste.

Caulking not sampled should be presumed to be PCB Bulk Product Waste unless sampled.

3.4 PCB Conclusions and Recommendations:

1. **Dispose of all light ballasts as PCB containing waste unless specifically labeled as “No PCBs”.**
2. **Verify that the disposal facility will accept materials with trace levels of PCBs.**

4 MERCURY:

4.1 Fluorescent Light Bulbs/High-Intensity Floodlights:

Area	Fixture size	Qty. of fixtures	Bulb Length	#of bulbs/ fixture	Est ballasts /fixture	Est. total qty. of ballasts.	Total qty. of bulbs
7 th floor, 1 st floor security office, misc. spaces	2' x 4'	20	4'	3	2	40	60
	2' x 2'	24	2'	3	2	48	72
	1' x 4'	75	4'	1	1	75	75
		Totals				163	207
Parking garage, stairwells						Flood Lights	240

For estimation purposes, assume 210 florescent light bulbs and 240 floodlights.

Mercury content of florescent bulbs has decreased over recent years. Non-mercury bulbs generally have green tips on the ends. These may contain low levels of mercury but are considered to be non-hazardous.

Although some of the bulbs may contain mercury at levels below disposal regulatory limits, the number of types of bulbs, and the lack of any discernible location pattern of specific types, indicate that further investigation/delineation of possible unregulated bulbs may be cost prohibitive.

Therefore, unless the absence of mercury can be confirmed, all bulbs should be carefully removed, packaged, and disposed of as mercury-containing universal waste.

High-intensity floodlights may contain heavy metal vapors that may be released if the bulb is broken. Any high-intensity bulbs on the site should be carefully removed, packaged to prevent breakage, and disposed of as universal waste. Generally, these exist through the parking garage spaces and stairwells.

4.2 Thermostats, Switches, and Timers:

Thermostats historically contained a mercury bulb that act as a switch for an HVAC system. These bulbs are readily observed when the cover is removed.

Two magnehelic switch gauges are located in the basement pump room. These contain one to two mercury bulbs each.

Thermostats inspected on the 7th floor are electronic (no mercury bulbs).

Any thermostats suspected of having a mercury-containing bulb should be disposed of mercury-containing waste.

Although it may be possible to remove the mercury bulbs from the thermostats, the risk of a potential spill for the small quantity of mercury-containing does warrant attempted separate removal of mercury bulbs from the thermostats.

4.3 Mercury Conclusions and Recommendations:

- **All fluorescent bulbs without green tips and high-intensity floodlights should be carefully removed, packaged, and disposed of as mercury-containing universal waste.**
- **Remove, package, and dispose of all suspect thermostats, timers, and switches as mercury-containing universal waste.**

5 CHEMICAL STORAGE:

5.1 Drums, Tanks, and Chemical Storage:

- Nine (9) 55-gallon drums of Dowtherm Ethylene Glycol anti-freeze are located on the basement level B-L.
- Nine (9) pallets of ice melt product are located on level 2L.

No other significant chemical storage was noted.

5.2 Underground Storage Tanks (USTs) and Above Ground Storage Tanks:

No USTs or AST were identified on the property.

This investigation was limited to visual observation of the surface. It did not include sub-surface evaluations (such as Ground-penetrating Radar) or a record research.

5.3 Paints, Solvents, Adhesives, and Small Misc. Fluids:

Approximately 15 gallons of paint are located on the 7th floor in 1 and 5-gallon containers.

5.4 Batteries:

No batteries of concern were identified on the property.

5.5 Staining:

No significant staining was noted through the building, other than is typical for a parking garage.

5.6 Chemical Storage Conclusions and Recommendations:

- **Remove and dispose of paints, antifreeze, and ice melt product.**
- **Investigate any items not previously identified for proper disposal.**

6 **BIOLOGICAL CONCERNS (other than mold):**

6.1 Sanitary Sewers:

No open sewers, spills, leaks, or sewer odors were noted.

6.2 Bird Feces:

No significant bird feces were observed in the subject area.

6.3 Biological Concerns Conclusions and Recommendations:

- **No further action is recommended in regards to potential Biological Concerns in the subject area.**

7 OTHER/MISCELLANEOUS:

7.1 Mechanical Equipment:

7.1.1 *Boiler Systems:*

Boilers often have anti-corrosion treatment chemicals that would require special disposal procedures.

No boilers were noted within the structure.

7.1.2 *Refrigerant Systems:*

Refrigerants such as Freon require special extraction and disposal procedures.

Several rooftop HVAC units are located on the main roof.

A few household type refrigerators are also present in various spaces (7th floor).

7.1.3 *Compressor Systems:*

Compressors often contain various oils and lubricants that should be extracted and properly disposed of prior to demolition of equipment.

No compressors were identified in the structure.

7.1.4 *Elevators:*

Two cable-driven elevators are present in the building. The pit of the main elevator has minimal signs of grease and water.

7.2 Other/Miscellaneous Conclusions and Recommendations:

- **Extract refrigerant from associated systems prior to demolition.**

8 SUMMARY OF RECOMMENDATIONS:

8.1 ACM Recommendations:

- Prepare abatement design documents to identify the locations of ACM and work practices to be employed during this project. This work should be performed by the USEPA AHERA accredited Asbestos Project Designer.
- Third-party asbestos final clearance testing required prior to building demolition or new occupancy. Daily asbestos air sampling during abatement also recommended.
- Any building material that is not listed in this report and/or tested must be assumed to be ACM and treated as ACM until confirmed otherwise via laboratory testing.

8.2 LBP in Paint Recommendations:

- Remove/impact LBP components in accordance with OSHA Lead in Construction Standard.

8.3 PCB Recommendations:

- Dispose of all light ballasts as PCB containing waste unless specifically labeled as “No PCBs”.
- Verify that disposal facility will accept materials with trace levels of PCBs.

8.4 Mercury Recommendations:

- All fluorescent bulbs *without* green tips and high-intensity floodlights should be carefully removed, packaged, and disposed of as mercury-containing universal waste.
- Remove, package, and dispose of all suspect thermostats, timers, and switches as mercury-containing universal waste.

8.5 Chemical Storage Recommendations:

- Remove and dispose of paints, antifreeze, and ice melt product.
- Investigate any items not previously identified for proper disposal.

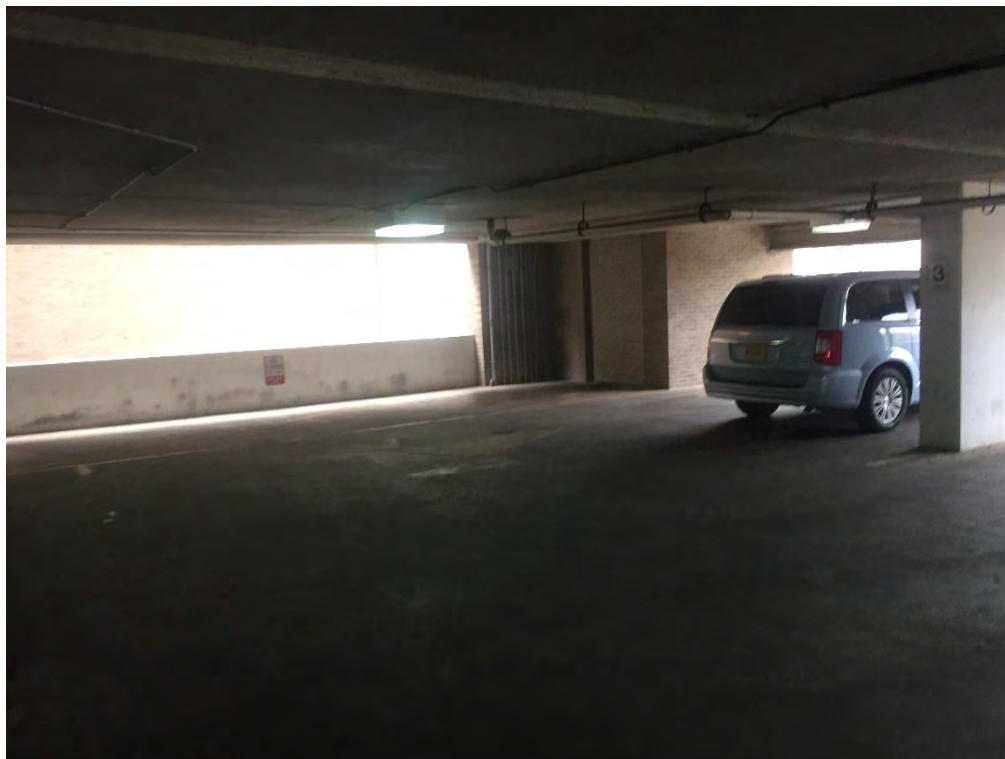
8.6 Biological Concerns Recommendations (excluding mold):

- No further action is recommended in regard to potential Biological Concerns in the subject area.

8.7 Other/Miscellaneous Recommendations:

- Extract refrigerant from associated systems prior to demolition.

9.1 Site Photographs



Ceiling Stucco



Ceiling Stucco



Concrete Decking



Stucco



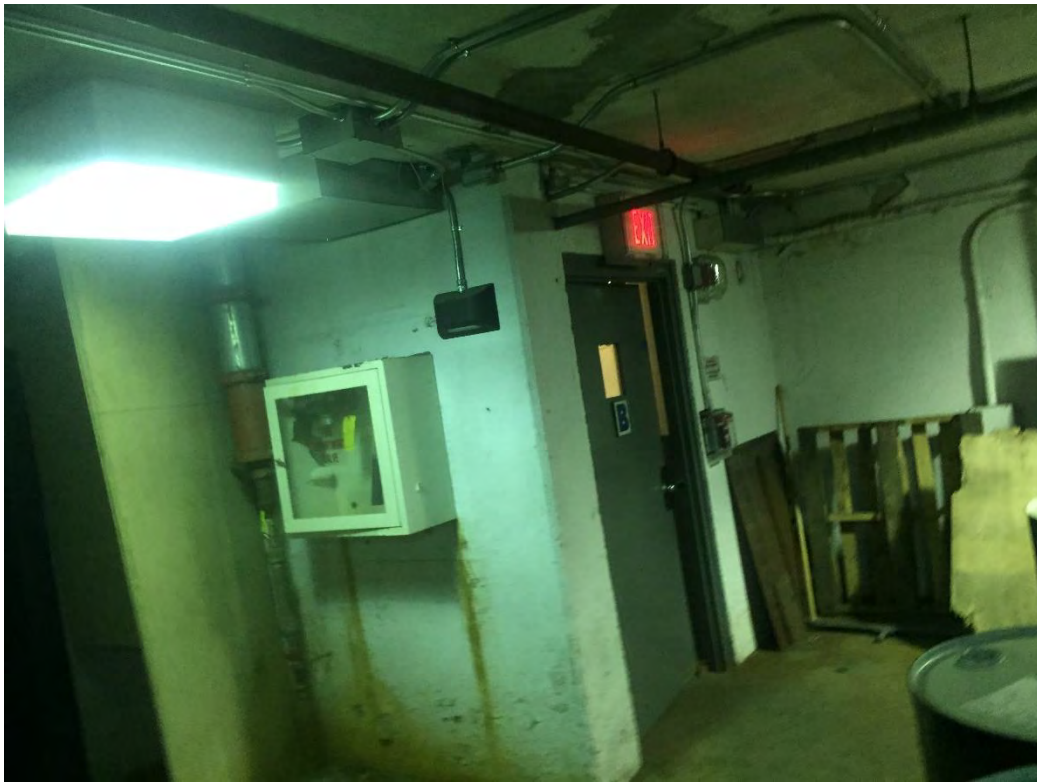
AC Unit Sample



AC Unit



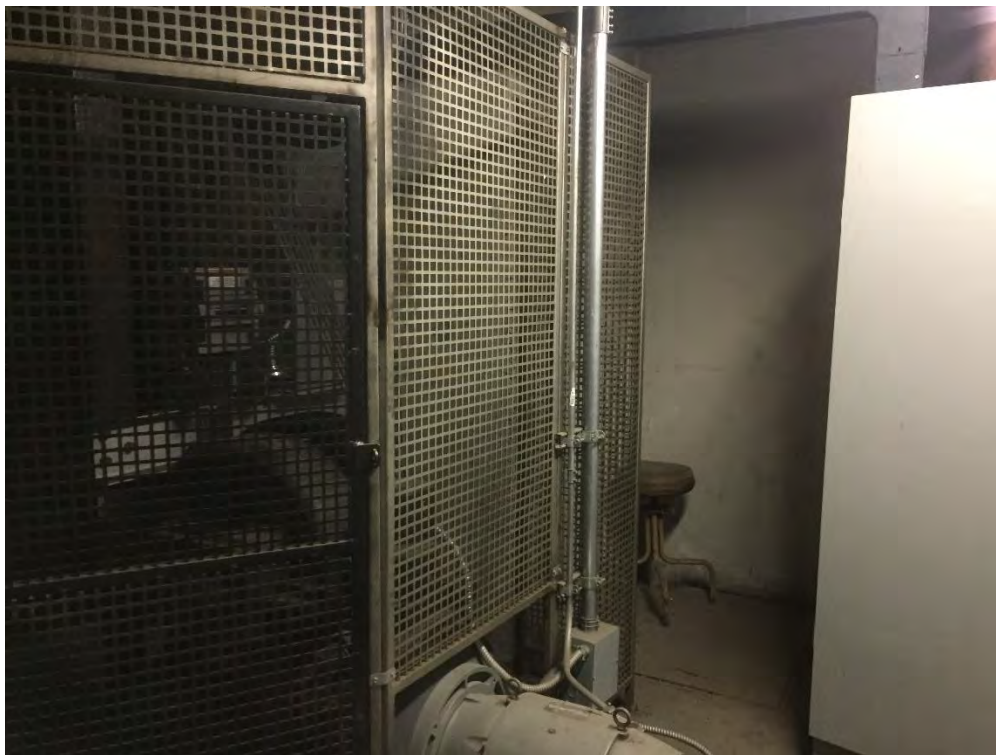
Air Vent



B-Area



Electrical Room



Elevator Room



Not Access



Sprinkler Room Fittings



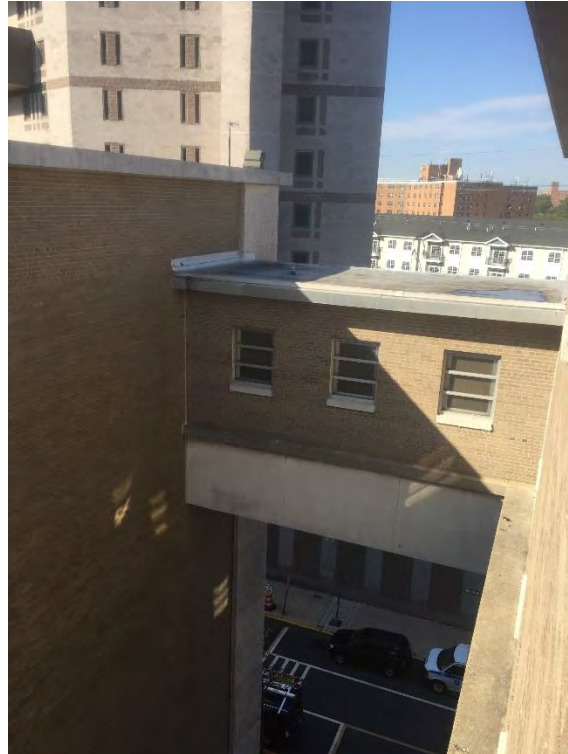
Wall Stucco Ceiling



Back Hallway



Bridge Interior – No Access



Bridge



Ceiling Stucco



Cell Chase Interior



Cell Chase



Concrete Decking SOFP



Deck



Deck



Deck



Deck



Deck Ceiling



Deck



Drain Exhaust Vent



Drain



Exterior



Exterior Brick



Exterior



Fitting Sample



Fittings



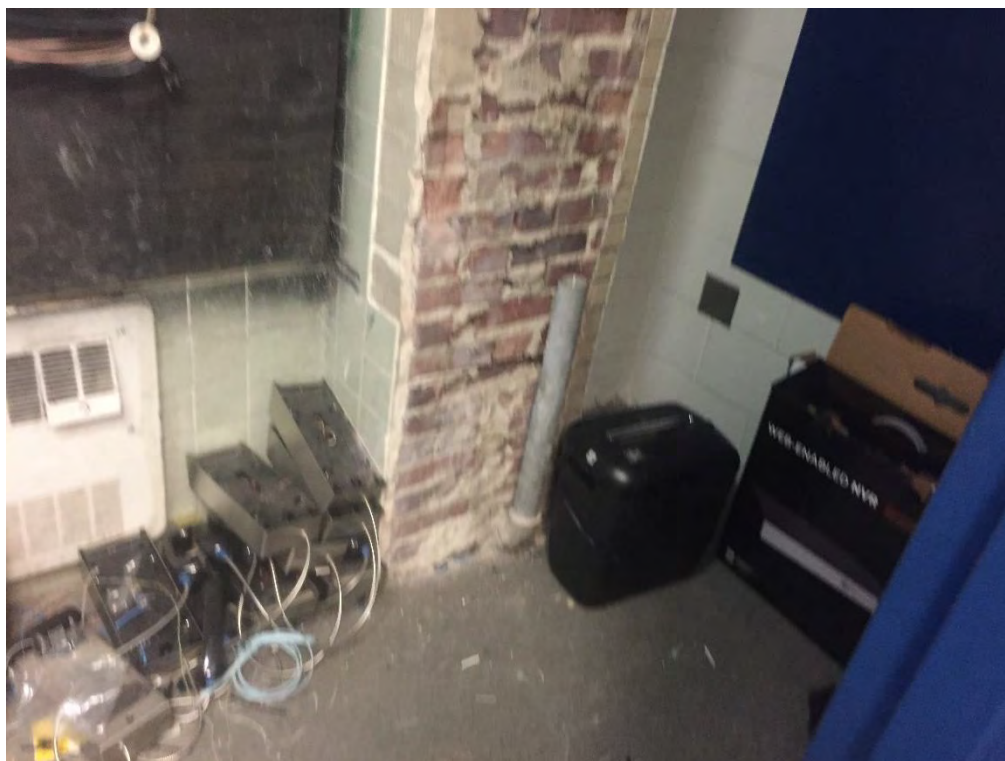
Flashing Sample



Hallway



Interior Roof



IT Room



Main Roof



MER A



Roof Area



Roof Patching



Roof Sample



Roof Sample



SOFP



SOFP



SOFP



SOFP



SOFP Chase



SOFP



Stair 1B



Stair 3A



Stair 6B



Stair 3B



Stair Interior



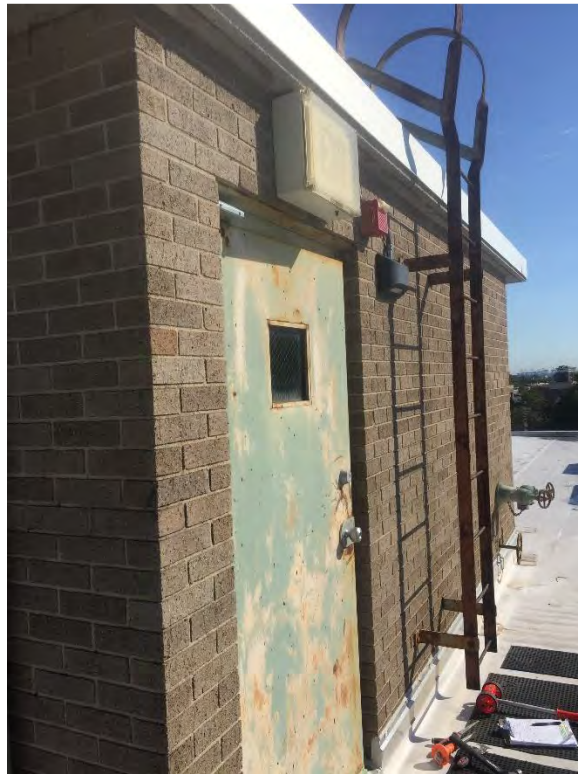
Upper Roof A Access



Upper Roof A Sample



Upper Roof A



Upper Roof B



Vent Sample



Vent



Wall Texture Stucco



7th Fl Hallway Across from GYM Wall D +

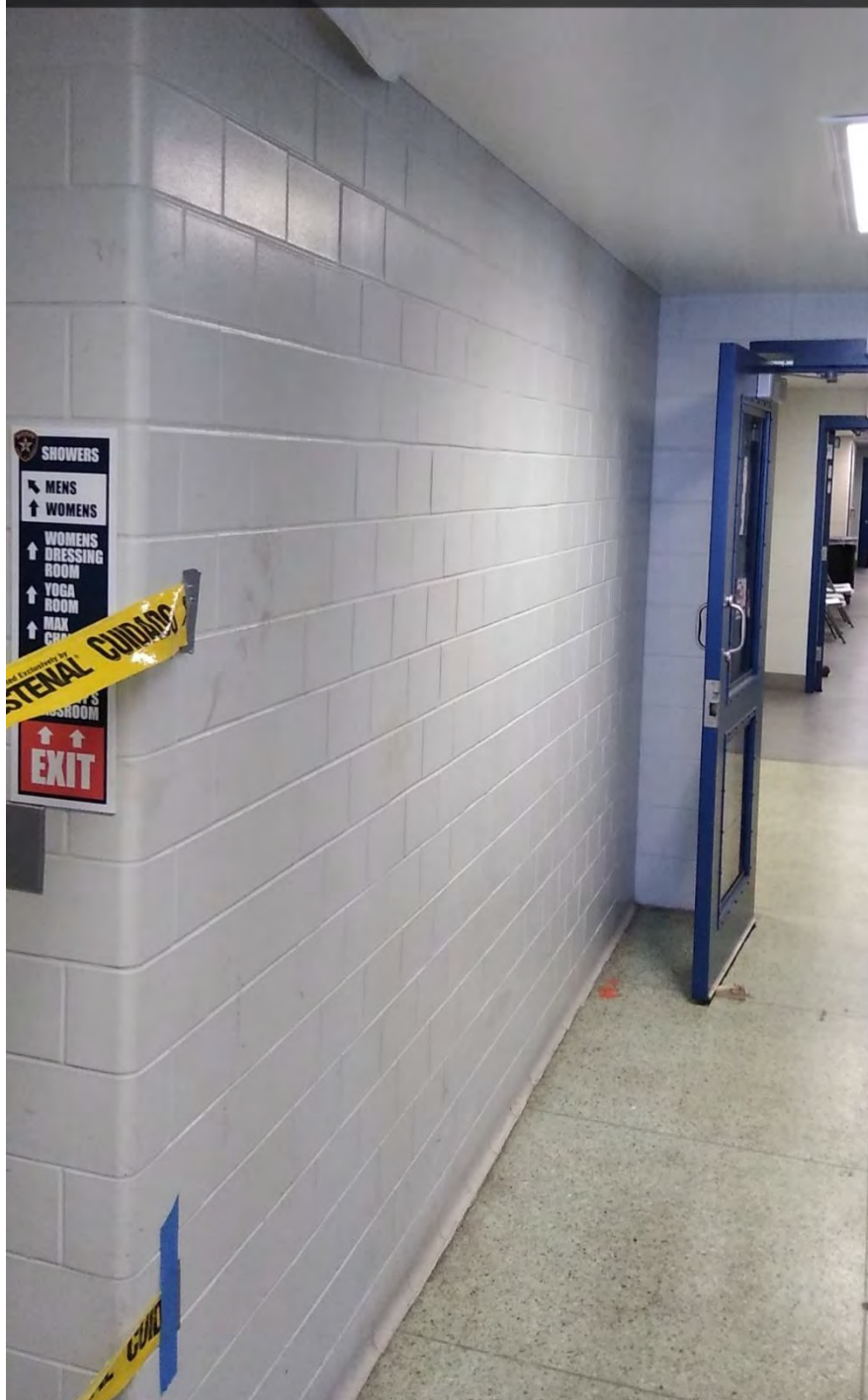


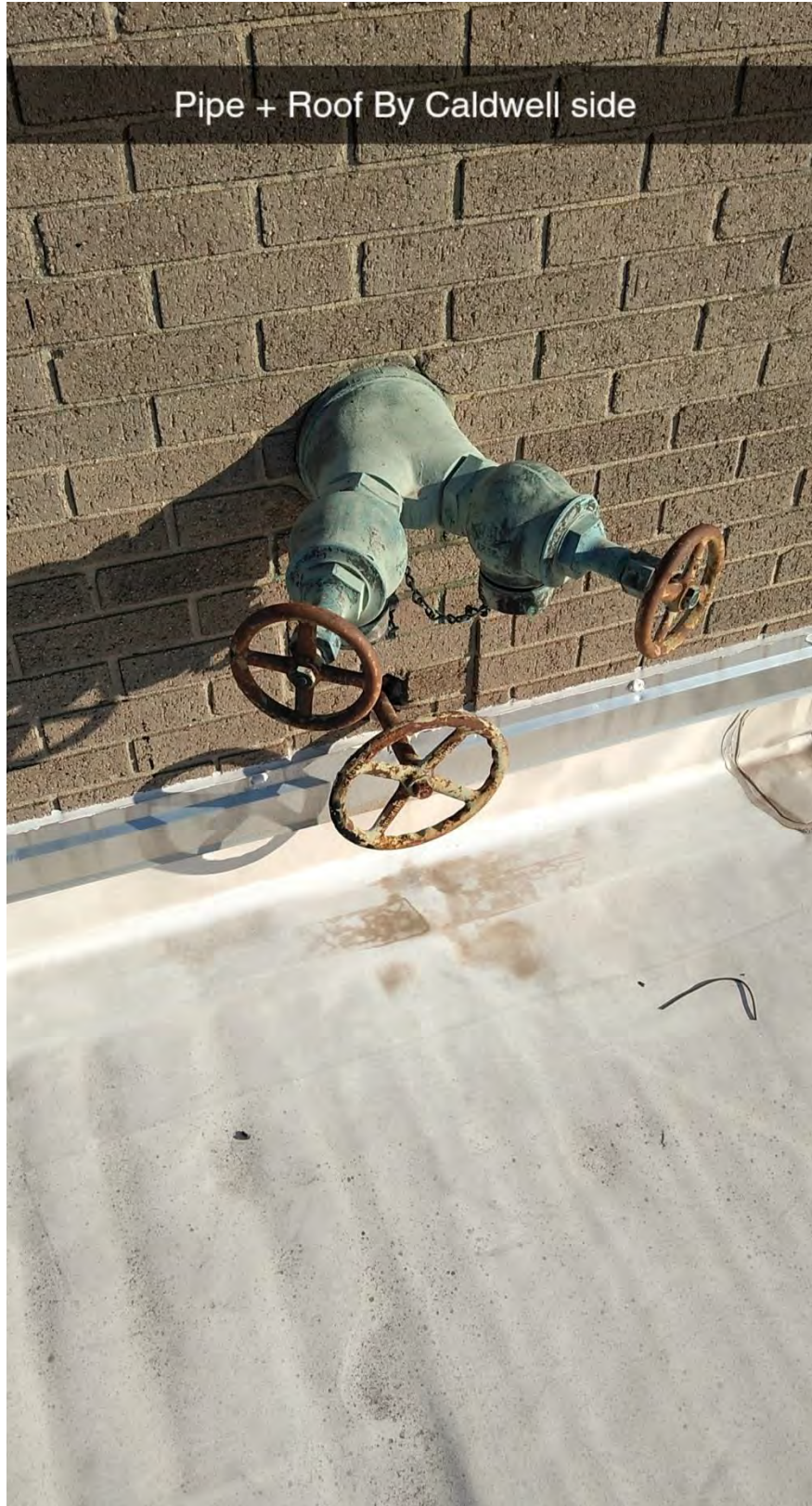




OSY Valves Pump Room Pipe +

7th Fl Hallway Across from GYM Wall D +.
Mostly likely pipes behind wall it's by shower
room











A. Asbestos (ACM)

- A1. Analytical Methodology
- A2. Table of Sample Results
- A3. Asbestos Laboratory Analytical Reports

A1. Analytical Methodology:

Definitions:

ACM: asbestos containing material

RACM: regulated asbestos containing material

VCM: vermiculite containing material

TSI: thermal system insulation (pipe insulation)

SSI: surfacing material (spray-on fireproofing, plaster, etc.)

Miscellaneous finish material: sheetrock, floor tile, roofing, other

NOB: non-organically bound non-friable material (e.g. roofing, floor tile, etc.)

Friable vs. Non-friable:

1. A friable material is one that can be easily crumbled, pulverized, or reduced to powder by hand pressure. This characteristic of a building material is directly linked to the potential of the material to release asbestos fibers into the air.
2. Non-friable are the materials that are organically bound normally fall into this category as long as they are in good condition. Some of the materials, which would be defined as non-friable material, include floor tiles, roofing materials, mastic, etc. Non-friable ACM are categorized into two (2) categories by USEPA: Category I non-friable materials, such as resilient floor tiles, and roofing materials are not expected to become friable when disturbed. Non-friable ACM, such as laboratory table tops and transit siding/paneling, are considered to be a category II non-friable ACM.
- 3.

Criteria for Positive Classification as Regulated Asbestos Containing Material (RACM):

Asbestos containing material (ACM)

The EPA defines ACM as any material having an Asbestos content greater than 1%. If the analytical results for any sample of suspected material indicate that asbestos is present above a level of one percent, the building material is classified as regulated ACM (RACM) which triggers management and/or abatement, if impacted.

Vermiculite (VCM)

Related to cross-contamination in the mining industry, as well as new concerns about Amphibole minerals with crystalline structure similar to Asbestos, bulk samples found to contain greater than or equal to ten percent Vermiculite require further classification *in NYS/NYC*. Vermiculite is not currently regulated in New Jersey.

Representative Nature of All Sampling:

The purpose of bulk sampling is to characterize representative materials, not remove and test every square inch of material. The Inspector/Investigator uses a combination of EPA recommended bulk sampling criteria and professional judgment to select representative sampling locations of each suspect material type. In certain rare cases, building materials may appear to be homogeneous (e.g. plaster, roofing, etc.) but vary section to section due to patching, different installation methods floor-to-floor, and other causes. Additional testing beyond normal survey protocol can be required for these scenarios.

HOMOGENEOUS AREAS: A homogeneous area is a portion of a building/structure with similar/same installed materials such that bulk analysis results from one area can be applied in the next for the purpose of asbestos quantification.

'FIRST POSITIVE STOP': In order to reduce unnecessary survey laboratory analysis costs when samples are collected in groups of three (3) or two (2), as required by EPA sampling criteria, when the first or second sample is reported as positive in a group, then the additional samples are declared positive with no analysis.

SAMPLING FROM SLAB UP: Because older/original bottom layer materials are more likely to contain asbestos versus newer layers, materials such as floor tiles and roofing are sampled from the slab up. If a positive lower or middle layer is identified, all materials in the layered system can be declared ACM if they cannot be separated during the abatement process.

SHEETROCK JOINT COMPOUND TESTING: Since most sheetrock wallboard systems are painted, it is difficult to impossible to assess where one type of material starts and ends. EPA has published memos concerning composite sampling that were not approved by OSHA which requires discrete sampling. This agency does not recognize composite testing of joint compound for the purpose of preventing employee exposure. NYSDOL also requires separate sampling of joint compound. The PLM analysis method has been generally utilized for this material type, where samples in the trace-1% inconclusive range are also run by TEM-NOB for additional accuracy.

Non-friable asbestos samples collected are analyzed using the TEM-NOB method of analysis, as required by regulation.

Upon completion of the sampling, the samples were submitted to an accredited approved laboratory for analysis. The samples were divided into batches and analyzed by EPA Method 600/MA-82-020, Polarized Light Microscopy with dispersion staining. The percentage of each type of asbestos was determined and any remaining materials were identified. The U.S. Environmental Agency defines ACM as having an asbestos content of greater \geq than 1%. If the analytical results for any sample of suspected material indicate that asbestos is present above a level of one percent, the building material is considered to contain asbestos.

1. Stereoscope Examination:

Working under a designated bulk asbestos laboratory hood, a sample is carefully poured onto the stage of the stereoscope for examination to determine if the sample is homogeneous and fibrous.

2. Slide Preparation:

A slide of each component in the sample is prepared using as little matrix material as possible. Samples are mounted on microscope slides in high dispersion refractive index liquids. For asbestos analysis, the sample is initially mounted in liquids with refractive indexes of (η) of 1.550, close to that of chrysotile asbestos. Liquids of higher refractive index may also be required for determining other asbestos forms.

3. PLM Examination:

Each slide is examined under a high quality polarized light microscope (20x-55x objective). A dispersion staining objective is also used.

The samples are first examined under plane polarizing light with the condenser set at zero. The morphology and relief of the fibers and matrix materials are observed. Next the analyzer is inserted for examination under the cross polars. Determinations are made if the fibers are isotropic or opaque with the angle of extinction noted. The condenser plate may also be inserted to produce retardation colors, depending on birefringence of the material. The sign of elongation is also determined at this time.

Refractive index is determined by matching a particular fiber with a refractive index liquid of the closest refractive index. The Becke line test is also used to check the refractive index. Dispersion staining is used to further characterize the components of a sample.

4. Identification of Asbestos:

Chrysotile

Chrysotile, which is the most common asbestos-form, is easily identified in liquid of refractive index 1.550 by its characteristic morphology (fibrous bundles with kinked bends) and dispersion staining colors (blue-magenta).

Amosite

Amosite is identified in 1.688 refractive index liquid by morphology (straight fibers with broomed ends) and dispersion staining colors (blue-yellow).

Crocidolite

The straight or bundled fibers of crocidolite (amphibole) are pleochroic; they appear blue-grey under plane polarized light. The fibers show negative sign of elongation and an index of refraction approaching 1.680.

Other Asbestos-Forms

Other fibrous amphiboles, which differ in refractive index from amosite, are anthophyllite

($\eta = 1.605$), tremolite ($\eta = 1.605$), and actinolite ($\eta = 1.680$).

5. TEM/NOB Analysis:

Due to matrix interference, NJDOL requires all non-friable materials tested (i.e., floor tiles, asphalt roofing, mastics, etc.) undergo TEM (transmission electron microscopy)/NOB EPA 600/R-93/116 (non-organically bound) analysis NY ELAP 198.4 Method. This analysis method, which is conducted by an accredited independent testing laboratory, includes ashing of the sample matrix to reduce binder interference to provide a lower detection limit.

A2. Asbestos Bulk Sampling & Analysis Results of Areas Inspected:

According to EPA definition a material that contains 1% or greater asbestos content is classified as regulated ACM. Representative bulk sampling and analysis was conducted of the following:

SAMPLE ID	HA	SAMPLE LOCATION	MATERIAL DESCRIPTION	FRIABLE/ NON-FRIABLE	LAB RESULTS	
					%Asbestos	%Vermiculite
1	1	Roof – Main Roof	Top Layer	Non-Friable	None Detected	None Detected
2	2	Roof – Main Roof	2 nd Layer	Friable	None Detected	None Detected
3	3	Roof – Main Roof	3 rd Layer	Friable	None Detected	None Detected
4	4	Roof – Main Roof	4 th Layer	Friable	None Detected	None Detected
5	5	Roof – Main Roof	5 th Layer	Friable	None Detected	None Detected
6	6	Roof – Main Roof	Bottom Layer	Non-Friable	None Detected	None Detected
7	1	Roof – Main Roof	Top Layer	Non-Friable	None Detected	None Detected
8	2	Roof – Main Roof	2 nd Layer	Friable	None Detected	None Detected
9	3	Roof – Main Roof	3 rd Layer	Friable	None Detected	None Detected
10	4	Roof – Main Roof	4 th Layer	Friable	None Detected	None Detected
11	5	Roof – Main Roof	5 th Layer	Friable	None Detected	None Detected
12	6	Roof – Main Roof	Bottom Layer	Non-Friable	None Detected	None Detected
13	7	Roof – Main Roof	Top Unit Flashing Material	Non-Friable	None Detected	None Detected
14	8	Roof – Main Roof	Bottom Unit Flashing Material	Friable	None Detected	None Detected
15	7	Roof – Main Roof	Unit Flashing Top	Non-Friable	None Detected	None Detected
16	8	Roof – Main Roof	Unit Flashing Bottom	Friable	None Detected	None Detected
17	9	Roof – Main Roof	Air Vent Flashing	Non-Friable	None Detected	None Detected
18	9	Roof – Main Roof	Air Vent Flashing	Non-Friable	None Detected	None Detected
19	10	Roof – Upper Roof A	Roofing Top Layer	Non-Friable	None Detected	None Detected
20	11	Roof – Upper Roof A	Roofing 2 nd Layer	Friable	None Detected	None Detected
21	12	Roof – Upper Roof A	Roofing 3 rd Layer	Friable	None Detected	None Detected
22	13	Roof – Upper Roof A	Roofing Bottom Layer	Non-Friable	None Detected	None Detected
23	14	Roof – Upper Roof A	Flashing	Non-Friable	None Detected	None Detected

SAMPLE ID	HA	SAMPLE LOCATION	MATERIAL DESCRIPTION	FRIABLE/ NON-FRIABLE	LAB RESULTS	
					%Asbestos	%Vermiculite
24	14	Roof – Upper Roof A	Flashing	Non-Friable	None Detected	None Detected
25	15	Roof – Main Roof	Vent Flashing Top Layer	Non-Friable	None Detected	None Detected
26	16	Roof – Main Roof	Vent Flashing Bottom Layer	Non-Friable	9.10% Chrysotile	None Detected
27	15	Roof – Main Roof	Vent Flashing Top Layer	Non-Friable	None Detected	None Detected
28	16	Roof – Main Roof	Vent Flashing Bottom Layer	Non-Friable	Positive Stop	-
29	17	Roof - Main Roof Door A	Caulking Around Doors	Non-Friable	2.93% Chrysotile	None Detected
30	17	Roof – Main Roof Door B	Caulking Around Doors	Non-Friable	Positive Stop	-
31	18	Roof Upper Roof – Upper Roof A	Pitch Pocket Material	Non-Friable	None Detected	None Detected
32	18	Roof – Upper Roof A	Pitch Pocket Material	Non-Friable	None Detected	None Detected
33	19	Roof – Main Roof A	Caulking Around Material Flashing	Non-Friable	None Detected	None Detected
34	19	Roof – Main Roof B	Caulking Around Material Flashing	Non-Friable	None Detected	None Detected
35	20	Roof – Exterior Wall	Brick	Friable	None Detected	None Detected
36	21	Roof – Exterior Wall	Mortar	Friable	None Detected	None Detected
37	20	Roof – Exterior Wall	Brick	Friable	None Detected	None Detected
38	21	Roof – Exterior Wall	Mortar	Friable	None Detected	None Detected
39	22	Roof – Staircase A	Interior Brick	Friable	None Detected	None Detected
40	23	Roof - Staircase A	Interior Mortar	Friable	None Detected	None Detected
41	22	Roof - Staircase A	Interior Brick	Friable	None Detected	None Detected
42	23	Roof - Staircase A	Interior Mortar	Friable	None Detected	None Detected
43	22	Roof - Staircase B	Interior Brick	Friable	None Detected	None Detected
44	23	Roof - Staircase B	Interior Mortar	Friable	None Detected	None Detected
45	24	7 th Floor – IT Closet	Brick	Friable	None Detected	None Detected
46	25	7 th Floor – IT Closet	Mortar	Friable	None Detected	None Detected
47	24	7 th Floor – IT Closet	Brick	Friable	None Detected	None Detected
48	25	7 th Floor – IT Closet	Mortar	Friable	None Detected	None Detected
49	26	7 th Floor – IT Closet	Thinset	Friable	Trace Chrysotile	None Detected

SAMPLE ID	HA	SAMPLE LOCATION	MATERIAL DESCRIPTION	FRIABLE/ NON-FRIABLE	LAB RESULTS	
					%Asbestos	%Vermiculite
50	27	7 th Floor – IT Closet	Grout	Friable	None Detected	None Detected
51	28	7 th Floor – Room #1	SOFP Green	Friable	None Detected	None Detected
52	28	7 th Floor – Room #1	SOFP Green	Friable	None Detected	None Detected
53	28	7 th Floor – Room IT Closet	SOFP Green	Friable	None Detected	None Detected
54	29	7 th Floor – Room #1	SOFP Gray	Friable	None Detected	None Detected
55	29	7 th Floor – IT Closet	SOFP Gray	Friable	None Detected	None Detected
56	29	7 th Floor – IT Closet	SOFP Gray	Friable	None Detected	None Detected
57	30	Roof – MER Stair A	Fitting	Friable	51.25% Chrysotile	None Detected
58	30	Roof – MER Stair A	Fitting	Friable	Positive Stop	-
59	31	7 th Floor – Hallway	2'x2' CT	Friable	None Detected	None Detected
60	31	7 th Floor - Office	2'x2' CT	Friable	None Detected	None Detected
61	32	7 th Floor – Room #1	Drywall	Friable	None Detected	None Detected
62	33	7 th Floor – Room #1	Joint Compound	Friable	None Detected	None Detected
63	32	7 th Floor – Room #1	Drywall	Friable	None Detected	None Detected
64	33	7 th Floor – Room #1	Joint Compound	Friable	None Detected	None Detected
65	32	7 th Floor – Room #1	Drywall	Friable	None Detected	None Detected
66	33	7 th Floor – Room #1	Joint Compound	Friable	None Detected	None Detected
67	34	7 th Floor – Room #3	Flooring Epoxy	Friable	None Detected	None Detected
68	34	7 th Floor – Hallway	Flooring Epoxy	Friable	None Detected	None Detected
69	34	7 th Floor – Back Hallway	Flooring Epoxy	Friable	None Detected	None Detected
70	26	7 th Floor - Bathroom	Thinset	Friable	None Detected	None Detected
71	27	7 th Floor – Bathroom	Grout	Friable	None Detected	None Detected
72	26	7 th Floor – Bathroom	Thinset	Friable	None Detected	None Detected
73	27	7 th Floor - Bathroom	Grout	Friable	None Detected	None Detected
74	35	7 th Floor – Hallway	CMU Glaze	Friable	None Detected	None Detected
75	36	7 th Floor – Hallway	Mortar	Friable	None Detected	None Detected

SAMPLE ID	HA	SAMPLE LOCATION	MATERIAL DESCRIPTION	FRIABLE/ NON-FRIABLE	LAB RESULTS	
					%Asbestos	%Vermiculite
76	35	7 th Floor – Cell A	CMU Glaze	Friable	None Detected	None Detected
77	36	7 th Floor – Cell A	Mortar	Friable	None Detected	None Detected
78	35	7 th Floor – Cell C	CMU Glaze	Friable	None Detected	None Detected
79	36	7 th Floor – Cell C	Mortar	Friable	None Detected	None Detected
80	35	7 th Floor – Cell #1	CMU Glaze	Friable	None Detected	None Detected
81	36	7 th Floor – Cell #1	Mortar	Friable	None Detected	None Detected
82	35	7 th Floor – Chase K	CMU Glaze	Friable	None Detected	None Detected
83	36	7 th Floor – Chase K	Mortar	Non-Friable	None Detected	None Detected
84	37	7 th Floor - Office	12”x12” F.T.	Non-Friable	None Detected	None Detected
85	38	7 th Floor – Office	Mastic Under Floor Tile	Non-Friable	None Detected	None Detected
86	37	7 th Floor – Office	12”x12” F.T.	Non-Friable	None Detected	None Detected
87	38	7 th Floor – Office	Mastic Under F.T.	Non-Friable	None Detected	None Detected
88	39	7 th Floor – Cell	Ceiling Drywall	Friable	None Detected	None Detected
89	40	7 th Floor – Cell	Joint Compound	Friable	None Detected	None Detected
90	39	7 th Floor – Office	Ceiling Drywall	Friable	None Detected	None Detected
91	40	7 th Floor – Office	Joint Compound	Friable	None Detected	None Detected
92	41	7 th Floor – Cell Chase	SOFP White	Friable	86.00% Chrysotile	None Detected
93	41	7 th Floor – Cell Chase	SOFP White	Friable	Positive Stop	-
94	41	7 th Floor – Cell Chase	SOFP White	Friable	Positive Stop	-
95	42	6 th Floor – Parking Deck	2’x4’ Ceiling Tile	Friable	None Detected	None Detected
96	42	6 th Floor – Parking Deck	2’x4’ Ceiling Tile	Friable	None Detected	None Detected
97	42	6 th Floor – Parking Deck	2’x4’ Ceiling Tile	Friable	None Detected	None Detected
98	43	5 th Floor – Parking Deck	Ceiling Texture/Stucco	Friable	2.75% Chrysotile, Trace Amosite	None Detected
99	44	5 th Floor – Parking Deck	SOFP I Beam/Column	Friable	None Detected	None Detected
100	45	5 th Floor – Parking Deck	Brick Expansion Joint	Non-Friable	1.54% Chrysotile	None Detected

SAMPLE ID	HA	SAMPLE LOCATION	MATERIAL DESCRIPTION	FRIABLE/ NON-FRIABLE	LAB RESULTS	
					%Asbestos	%Vermiculite
101	46	5 th Floor – Parking Deck	Concrete Decking	Friable	None Detected	None Detected
102	47	5 th Floor – Parking Deck	Concrete Walls Expansion Joint	Non-Friable	None Detected	None Detected
103	48	5 th Floor – Parking Deck	Expansion Joint White	Non-Friable	None Detected	None Detected
104	46	4 th Floor – Parking Deck	Concrete Decking	Friable	None Detected	None Detected
105	43	4 th Floor – Parking Deck	Ceiling Texture/Stucco	Friable	Positive Stop	-
106	44	4 th Floor – Parking Deck	SOFP I Beam/Column	Friable	None Detected	None Detected
107	45	4 th Floor – Parking Deck	Brick Expansion Joint	Non-Friable	Positive Stop	-
108	47	4 th Floor – Parking Deck	Concrete Walls Expansion Joint	Non-Friable	None Detected	None Detected
109	48	4 th Floor – Parking Deck	Expansion Joint White	Non-Friable	None Detected	None Detected
110	46	3 rd Floor – Parking Deck	Concrete Decking	Friable	None Detected	None Detected
111	43	3 rd Floor – Parking Deck	Ceiling Texture/Stucco	Friable	Positive Stop	-
112	44	3 rd Floor – Parking Deck	SOFP I Beam/Column	Friable	None Detected	None Detected
113	45	3 rd Floor – Parking Deck	Brick Expansion Joint	Non-Friable	Positive Stop	-
114	46	2 nd Floor – Parking Deck	Concrete Decking	Friable	None Detected	None Detected
115	43	2 nd Floor – Parking Deck	Ceiling Texture/Stucco	Friable	Positive Stop	-
116	44	2 nd Floor – Parking Deck	SOFP I Beam/Column	Friable	None Detected	None Detected
117	45	2 nd Floor – Parking Deck	Brick Expansion Joint	Non-Friable	Positive Stop	-
118	46	1 st Floor – Parking Deck	Concrete Decking	Friable	None Detected	None Detected
119	43	1 st Floor – Parking Deck	Ceiling Texture/Stucco	Friable	Positive Stop	-
120	44	1 st Floor – Parking Deck	SOFP I Beam/Column	Friable	None Detected	None Detected
121	20	1 st Floor – Exterior Building	Brick	Friable	None Detected	None Detected
122	21	1 st Floor – Exterior Building	Mortar	Friable	None Detected	None Detected
123	20	1 st Floor – Exterior Building	Brick	Friable	None Detected	None Detected
124	21	1 st Floor – Exterior Building	Mortar	Friable	None Detected	None Detected
125	20	1 st Floor – Exterior Building	Brick	Friable	None Detected	None Detected
126	21	1 st Floor – Exterior Building	Mortar	Friable	None Detected	None Detected
127	49	Basement – Elevator Room	Fitting	Friable	67.75% Chrysotile	None Detected

SAMPLE ID	HA	SAMPLE LOCATION	MATERIAL DESCRIPTION	FRIABLE/ NON-FRIABLE	LAB RESULTS	
					%Asbestos	%Vermiculite
128	50	Basement – Parking Deck	Wall Texture/Stucco	Friable	2.75% Chrysotile	None Detected
129	50	Basement – Parking Deck	Wall Texture/Stucco	Friable	Positive Stop	-
130	50	Basement – Parking Deck	Wall Texture/Stucco	Friable	Positive Stop	-

A3. Asbestos Laboratory Analytical Reports:

BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DOH ELAP ID# 10504)

CLIENT NAME: PAULUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 678 MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT/AREA: UNION COUNTY CALDWELL & ELIZABETHTOWN PARKING DECK
 ELIZABETHTOWN PLAZA & CALDWELL PLACE
 ELIZABETH, NJ 07201

DATE SAMPLED: 10/1/2020
DATE RECEIVED: 10/2/2020
DATE ANALYZED: 10/2/2020
DATE OF REPORT: 10/7/2020

PROJECT #: 20-1205
ANALYST: TG
TEST REQUESTED: BULK ASBESTOS BY PLM
METHOD #: EPA600/M4/182/020
***ITEM-NUM ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA600/M4/2020)**

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTOR (YS&H)	ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	VERMICULITE DETECTED (YS&H)	*VERMICULITE RETESTED	COMMENTS
10-01-PSS-02	93195	ROOF MAIN ROOF	2ND LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-03	93196	ROOF MAIN ROOF	3RD LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-04	93197	ROOF MAIN ROOF	4TH LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-05	93198	ROOF MAIN ROOF	5TH LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-06	93199	ROOF MAIN ROOF	2ND LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-08	93203	ROOF MAIN ROOF	3RD LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-10	93204	ROOF MAIN ROOF	4TH LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-11	93205	ROOF MAIN ROOF	5TH LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-14	93206	ROOF MAIN ROOF	BOTTOM UNIT FLASHING MAT	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	
10-01-PSS-16	93207	ROOF MAIN ROOF	BOTTOM UNIT FLASHING MAT	HETEROGENEOUS TAN FIBROUS	NO	NO	MA	CELLULOSE-90% OTHER-20%	NO	NO	

NOTES:
 (1.) Uncertainty associated with test method = +/- 0.5% by weight.
 (2.) results relate to items tested only
 (3.) lab reports shall not be reproduced except in full, without written approval of the laboratory

*ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY

ND = None Detected

Report Approved By: 

Laboratory Director or Approved Representative



BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DOH ELAP ID# 105204)

CLIENT NAME:

PAULUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 678 MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT/AREA:

UNION COUNTRY CALDWELL & ELIZABETHTOWN PARKING DECK
 ELIZABETHTOWN PLAZA & CALDWELL PLACE
 ELIZABETH, NJ 07201

DATE SAMPLED:

10/1/2020

DATE RECEIVED:

10/2/2020

DATE ANALYZED:

10/2/2020

DATE OF REPORT:

10/7/2020

PROJECT #:

20-1205

ANALYST:

TG

TEST REQUESTED:

BULK ASBESTOS BY PLM

METHOD #:

EPA600/1M4/82/020

*TEM-MOB ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA-600/1M4/82/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTED (YES/NO)	ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	FIBER/LITE DETECTED (YES/NO)	FIBER/LITE DETECTED	COMMENTS
10-01-PSS-00	93198	ROOF UPPER ROOF A	ROOFING 2ND LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	NA	CELLULOSE-50%, OTHER-30%	NO	NO	
10-01-PSS-21	93199	ROOF UPPER ROOF A	ROOFING 3RD LAYER	HETEROGENEOUS TAN FIBROUS	NO	NO	NA	CELLULOSE-50%, OTHER-30%	NO	NO	
10-01-PSS-35	93200	ROOF EXTERIOR WALL	BRICK	HETEROGENEOUS BROWN NON-FIBROUS	NO	NO	NA	QUARTZ-99%, OTHER-1%	NO	NO	
10-01-PSS-36	93201	ROOF EXTERIOR WALL	MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-50%	NO	NO	
10-01-PSS-37	93202	ROOF EXTERIOR WALL	BRICK	HETEROGENEOUS BROWN NON-FIBROUS	NO	NO	NA	QUARTZ-99%, OTHER-1%	NO	NO	
10-01-PSS-38	93203	ROOF EXTERIOR WALL	MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-50%	NO	NO	
10-01-PSS-39	93204	ROOF STAIRCASE A	INTERIOR BRICK	HETEROGENEOUS RED NON-FIBROUS	NO	NO	NA	QUARTZ-99%, OTHER-1%	NO	NO	
10-01-PSS-40	93205	ROOF STAIRCASE A	INTERIOR MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-50%	NO	NO	
10-01-PSS-41	93206	ROOF STAIRCASE A	EXTERIOR BRICK	HETEROGENEOUS RED NON-FIBROUS	NO	NO	NA	QUARTZ-99%, OTHER-1%	NO	NO	
10-01-PSS-42	93207	ROOF STAIRCASE A	INTERIOR MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-50%	NO	NO	

NOTES:

- (1.) uncertainty associated with lost method = +/- 0.5% by weight
- (2.) results relate to fibers tested only

***ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY**

RD = NOT DETECTED

Report Approved By:



Laboratory Director or Approved Representative



280 Huyler Street, South Hackensack, NJ 07606 Tel: (201) 489 8700

BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DOH ELAP ID# 10564)

CLIENT NAME:

PAULUS, SOKOLOWSKI & SARTOR, LLC
ATTN: JOHN BOLAN
678 MOUNTAIN BOULEVARD EXTENSION
WARREN, NJ 07059

PROJECT/AREA:

UNION COUNTRY CALDWELL & ELIZABETHTOWN PARKING DECK
ELIZABETHTOWN PLAZA & CALDWELL PLACE
ELIZABETH, NJ 07201

DATE SAMPLED:

10/1/2020

DATE RECEIVED:

10/2/2020

DATE ANALYZED:

10/2/2020

DATE OF REPORT:

10/7/2020

PROJECT #:

20-1205

ANALYST:

TG

TEST REQUESTED:

BULK ASBESTOS BY PLM

METHOD #:

EPA600/M4182/020

*FEM-N08 ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA600/M4182/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTED (YES/NO)	ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	VERMICULITE DETECTED (YES/NO)	VERMICULITE DETECTED	COMMENTS
19-01-PSS-43	93206	ROOF STAIRCASE B	W/EXTR BRICK	HETEROGENEOUS RED NON-FIBROUS	NO	NO	NA	QUARTZ-80%, OTHER-1%	NO	NO	
19-01-PSS-44	93208	ROOF STAIRCASE B	W/EXTR MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-50%	NO	NO	
19-01-PSS-45	93210	7TH FLOOR IT CLOSET	BRICK	HETEROGENEOUS RED NON-FIBROUS	NO	NO	NA	QUARTZ-90%, OTHER-1%	NO	NO	
19-01-PSS-46	93211	7TH FLOOR IT CLOSET	MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-50%	NO	NO	
19-01-PSS-47	93212	7TH FLOOR IT CLOSET	BRICK	HETEROGENEOUS RED NON-FIBROUS	NO	NO	NA	QUARTZ-80%, OTHER-1%	NO	NO	
19-01-PSS-48	93213	7TH FLOOR IT CLOSET	MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-50%	NO	NO	
19-01-PSS-49	93214	7TH FLOOR IT CLOSET	THINSET	HETEROGENEOUS GRAY NON-FIBROUS	TRACE	TRACE	CHRY	QUARTZ-80%, OTHER-1%	NO	NO	
19-01-PSS-50	93215	7TH FLOOR IT CLOSET	SHOOT	HETEROGENEOUS WHITE NON-FIBROUS	NO	NO	NA	CARBONATES-90%, OTHER-1%	NO	NO	
19-01-PSS-51	93216	7TH FLOOR ROOM #1	SOFP GREEN	HETEROGENEOUS BLUE FIBROUS	NO	NO	NA	FIBRILAS-5%, CELLULOSE-10%, CARBONATES-85%	NO	NO	
19-01-PSS-52	93217	7TH FLOOR ROOM #1	SOFP GREEN	HETEROGENEOUS BLUE FIBROUS	NO	NO	NA	FIBRILAS-5%, CELLULOSE-10%, CARBONATES-85%	NO	NO	

NOTES:

(1.) uncertainty associated with test method = +/- 0.5% by weight

(2.) results relate to items listed only

(3.) lab reports shall not be reproduced except in full, without written approval of the laboratory

*ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY

ND = None Detected

Page 3 of 10

Report Approved By:



Laboratory Director or Approved Representative



280 Huyler Street, South Hackensack, NJ 07606 Tel: (201) 489 8700

BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DSH ELAP ID# 10504)

CLIENT NAME:

PAULUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 87B MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT/AREA:

UNION COUNTRY CALDWELL & ELIZABETH TOWN PARKING DECK
 ELIZABETH TOWN PLAZA & CALDWELL PLACE
 ELIZABETH, NJ 07201

DATE SAMPLED:

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DATE ANALYZED:

10/2/2020

DATE OF REPORT:

10/7/2020

PROJECT #:

20-1205

ANALYST:

TG

TEST REQUESTED:

BULK ASBESTOS BY PLM

METHOD #:

EPAB00/MA/02/020

*ITEM-NUM ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NYNJ (EPA 600/MA/02/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTED (YES/NO)	%ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	VERMICULITE DETECTED (YES/NO)	%VERMICULITE DETECTED	COMMENTS
10-01-PS2-53	92718	7TH FLOOR IT CLOSET	SOFF GREEN	HETEROGENEOUS BLUE FIBROUS	NO	ND	NA	FIBROGLASS-5%, CELLULOSE-15%, CARBONATES-80%	NO	ND	
10-01-PS2-54	92719	7TH FLOOR ROOM #1	SOFF GRAY	HETEROGENEOUS GRAY FIBROUS	NO	ND	NA	CELLULOSE-20%, CARBONATES-80%	NO	ND	
10-01-PS2-55	92720	7TH FLOOR IT CLOSET	SOFF GRAY	HETEROGENEOUS GRAY FIBROUS	NO	ND	NA	CELLULOSE-20%, CARBONATES-80%	NO	ND	
10-01-PS2-56	92721	7TH FLOOR IT CLOSET	SOFF GRAY	HETEROGENEOUS GRAY FIBROUS	NO	ND	NA	CELLULOSE-20%, CARBONATES-80%	NO	ND	
10-01-PS2-57	92722	ROOF MER STAIR A	ITTING	HETEROGENEOUS WHITE FIBROUS	YES	51.25%	ERRN	CARBONATES-10%, OTHER-37%	NO	ND	
10-01-PS2-58	92723	ROOF MER STAIR A	ITTING	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	
10-01-PS2-59	92724	7TH FLOOR HALLWAY	2 X 2 CT	HETEROGENEOUS WHITE FIBROUS	NO	ND	NA	CELLULOSE-20%, CARBONATES-10%, FIBRE-70%	NO	ND	
10-01-PS2-60	92725	7TH FLOOR OFFICE	2 X 2 CT	HETEROGENEOUS WHITE FIBROUS	NO	ND	NA	CELLULOSE-20%, CARBONATES-10%, FIBRE-70%	NO	ND	
10-01-PS2-61	92726	7TH FLOOR ROOM #1	DRYWALL	HETEROGENEOUS WHITE FIBROUS	NO	ND	NA	CELLULOSE-20%, CARBONATES-10%, FIBRE-70%	NO	ND	
10-01-PS2-62	92727	7TH FLOOR ROOM #1	JOINT COMPOUND	HETEROGENEOUS WHITE FIBROUS	NO	ND	NA	CARBONATES-80%, OTHER-1%	NO	ND	

NOTES: (1) uncertainty associated with test method = +/- 0.5% by weight

(2) results pertain to items tested only

(3) lab reports shall not be reproduced except in full, without written approval of the laboratory

*ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY

NO = None Detected

Page 4 of 10

Report Approved By: 

Laboratory Director or Approved Representative



280 Huyler Street, South Hackensack, N.J. 07605 Tel: (201) 489 8700

BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DOH ELAP ID# 10504)

CLIENT NAME:

PAULUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 67B MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT/AREA:

UNION COUNTRY CALDWELL & ELIZABETHTOWN PARKING DECK
 ELIZABETHTOWN PLAZA & CALDWELL PLACE
 ELIZABETH, NJ 07201

DATE SAMPLED:

10/1/2020

DATE RECEIVED:

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10/2/2020

DATE OF REPORT:

10/7/2020

PROJECT #:

20-1205

ANALYST:

TG

TEST REQUESTED:

BULK ASBESTOS BY PLM

METHOD #:

EPA600/1M4/R2/020

TEST-NUM ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA/600/1M4/R2/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTED (Y/N/A)	%ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	MINERALITE DETECTED (YES/NO)	%MINERALITE DETECTED	COMMENTS
16-01-PSS-03	9328	7TH FLOOR ROOM #1	DRYWALL	HETEROGENEOUS WHITE FIBROUS	NO	ND	NA	CELLULOSE-2%, CARBONATES-10%, PERLITE-7%	NO	ND	
16-01-PSS-04	9329	7TH FLOOR ROOM #1	JOINT COMPOUND	HETEROGENEOUS WHITE FIBROUS	NO	ND	NA	CELLULOSE-20%, CARBONATES-10%, PERLITE-7%	NO	ND	
16-01-PSS-05	9330	7TH FLOOR ROOM #1	DRYWALL	HETEROGENEOUS WHITE FIBROUS	NO	ND	NA	CELLULOSE-20%, CARBONATES-10%, PERLITE-7%	NO	ND	
16-01-PSS-06	9331	7TH FLOOR ROOM #1	JOINT COMPOUND	HETEROGENEOUS WHITE NON-FIBROUS	NO	ND	NA	DIATOMITES-9%	NO	ND	
16-01-PSS-07	9332	7TH FLOOR ROOM #3	FLOORING EPOXY	HETEROGENEOUS GRAY NON-FIBROUS	NO	ND	NA	QUARTZ-40%, OTHER-10%	NO	ND	
16-01-PSS-08	9333	7TH FLOOR HALLWAY	FLOORING EPOXY	HETEROGENEOUS GRAY NON-FIBROUS	NO	ND	NA	QUARTZ-40%, OTHER-10%	NO	ND	
16-01-PSS-09	9334	7TH FLOOR BACK HALLWAY	FLOORING EPOXY	HETEROGENEOUS GRAY NON-FIBROUS	NO	ND	NA	QUARTZ-40%, OTHER-10%	NO	ND	
16-01-PSS-10	9335	7TH FLOOR BATHROOM	THINSET	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	CARBONATES-35%, QUARTZ-20%	NO	ND	
16-01-PSS-11	9336	7TH FLOOR BATHROOM	GROUT	HETEROGENEOUS WHITE NON-FIBROUS	NO	ND	NA	CARBONATES-40%, QUARTZ-3%, OTHER-5%	NO	ND	
16-01-PSS-12	9337	7TH FLOOR BATHROOM	THINSET	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	CARBONATES-35%, QUARTZ-65%	NO	ND	

NOTES: (1) uncertainty associated with test method = +/- 0.5% by weight

(2) results relate to items listed only

*ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY

(3) lab reports shall not be reproduced except in full, without written approval of the laboratory

ND = None Detected

Page 5 of 10

Report Approved By:



Laboratory Director or Approved Representative



280 Huyler Street, South Hackensack, NJ 07606 Tel: (201) 489 8700

BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DOH ELAP ID# 10504)

CLIENT NAME:

PAULUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 67B MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT/AREA:

UNION COUNTRY CALDWELL & ELIZABETHTOWN PARKING DECK
 ELIZABETHTOWN PLAZA & CALDWELL PLACE
 ELIZABETH, NJ 07201

DATE SAMPLED:

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DATE ANALYZED:

10/2/2020

DATE OF REPORT:

10/7/2020

PROJECT #:

20-1205

ANALYST:

TG

TEST REQUESTED:

BULK ASBESTOS BY PLM

METHOD #:

EPAR600/MA/82/020

*TEM-108 ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA/600/MA/02/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTED (YES/NO)	%ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	VEHICULARITY DEFECTED (YES/NO)	%VEHICULARITY DETECTED	COMMENTS
10-01-PSS-73	90238	7TH FLOOR BATHROOM	GROUT	HETEROGENEOUS WHITE NON-FIBROUS	NO	ND	NA	CARBONATES-99%, QUARTZ-0%, OTHER-0%	NO	ND	
10-01-PSS-74	90239	7TH FLOOR HALLWAY	CMU GLAZED	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	QUARTZ-99%, OTHER-0%	NO	ND	
10-01-PSS-75	90240	7TH FLOOR HALLWAY	MORTAR	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	CARBONATES-25%, QUARTZ-75%	NO	ND	
10-01-PSS-76	90241	7TH FLOOR CELL A	CMU GLAZED	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	QUARTZ-99%, OTHER-0%	NO	ND	
10-01-PSS-77	90242	7TH FLOOR CELL A	MORTAR	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	CARBONATES-25%, QUARTZ-75%	NO	ND	
10-01-PSS-78	90243	7TH FLOOR CELL C	CMU GLAZED	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	QUARTZ-99%, OTHER-0%	NO	ND	
10-01-PSS-79	90244	7TH FLOOR CELL C	MORTAR	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	CARBONATES-25%, QUARTZ-75%	NO	ND	
10-01-PSS-80	90245	7TH FLOOR CELL #1	CMU GLAZED	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	QUARTZ-99%, OTHER-0%	NO	ND	
10-01-PSS-81	90246	7TH FLOOR CELL #1	MORTAR	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	CARBONATES-40%, QUARTZ-60%	NO	ND	
10-01-PSS-82	90247	7TH FLOOR CHASE A	CMU GLAZED	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	QUARTZ-99%, OTHER-0%	NO	ND	

NOTES: (1) uncertainty associated with test method = +/- 0.5% by weight.

(2.) results relate to items tested only

*ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY

ND = None Detected

Report Approved By:



Laboratory Director or Approved Representative



280 Huyler Street, South Hackensack, NJ 07606 Tel: (201) 489 8700

BULK ASBESTOS LABORATORY ANALYSIS REPORT

CLIENT NAME: PAULUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 67B MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT/AREA: UNION COUNTRY CALDWELL & ELIZABETHTOWN PARKING DECK
 ELIZABETHTOWN PLAZA & CALDWELL PLACE
 ELIZABETH, NJ 07201

DATE SAMPLED: 10/11/2020
 DATE RECEIVED: 10/21/2020
 DATE ANALYZED: 10/21/2020
 DATE OF REPORT: 10/21/2020

ANALYST: TG
 PROJECT #: 20-1205
 TEST REQUESTED: BULK ASBESTOS BY PLM
 METHOD #: EPA600/M4/82/020
 *ITEM-NUM ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA600/M4/82/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTION (Y/N/ND)	ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	VERMICULITE DETECTED (YES/NO)	SIBERIANITE DETECTED	COMMENTS
10-01-PSS-83	83248	7TH FLOOR CHASE A	MORTAR	HETEROGENEOUS TAN NON-FIBROUS	NO	NO	NA	CARBONATES-10% QUARTZ-60%	NO	NO	
10-01-PSS-88	83249	7TH FLOOR CELL	CEILING DRYWALL	HETEROGENEOUS BROWN FIBROUS	NO	NO	NA	CELLULOSE-80% OTHER-10%	NO	NO	
10-01-PSS-89	83250	7TH FLOOR CELL	JOINT COMPOUND	HETEROGENEOUS WHITE FIBROUS	NO	NO	NA	CELLULOSE-10% CARBONATES-20%	NO	NO	
10-01-PSS-90	83251	7TH FLOOR OFFICE	CEILING DRYWALL	HETEROGENEOUS BROWN FIBROUS	NO	NO	NA	CELLULOSE-80% OTHER-10%	NO	NO	
10-01-PSS-91	83252	7TH FLOOR OFFICE	JOINT COMPOUND	HETEROGENEOUS WHITE FIBROUS	NO	NO	NA	CARBONATES-50% OTHER-1%	NO	NO	
10-01-PSS-92	83253	7TH FLOOR CELL CHASE	SDPP WHITE	HETEROGENEOUS WHITE FIBROUS	YES	86.00%	CHRY	OTHER-1%	NO	NO	
10-01-PSS-93	83254	7TH FLOOR CELL CHASE	SDPP WHITE	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	
10-01-PSS-94	83255	7TH FLOOR CELL CHASE	SDPP WHITE	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	
10-01-PSS-95	83256	8TH FLOOR PARKING DOCK	2' X 4' CEILING TILE	HETEROGENEOUS GRAY FIBROUS	NO	NO	NA	MIN WOOL-90% OTHER-10%	NO	NO	
10-01-PSS-96	83257	8TH FLOOR PARKING DOCK	2' X 4' CEILING TILE	HETEROGENEOUS GRAY FIBROUS	NO	NO	NA	MIN WOOL-90% OTHER-10%	NO	NO	

NOTES: (1) uncertainty associated with test method = +/- 0.5% by weight; (2) results relate to items tested only; (3) lab reports shall not be reproduced except in full without written approval of the laboratory.

*ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY

NO = None Detected

Report Approved By:  Laboratory Director or Approved Representative



280 Huyler Street, South Hackensack, NJ 07606 Tel: (201) 489 8700

BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DOH ELAP ID# 10564)

CLIENT NAME:

PALLUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 678 MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT AREA:

UNION COUNTRY CALDWELL & ELIZABETHTOWN PARKING DECK
 ELIZABETHTOWN PLAZA & CALDWELL PLAZA
 ELIZABETH, NJ 07201

DATE SAMPLED:

10/1/2020

DATE RECEIVED:

10/2/2020

DATE ANALYZED:

10/2/2020

DATE OF REPORT:

10/7/2020

PROJECT #:

20-1205

ANALYST:

TG

TEST REQUESTED:

BULK ASBESTOS BY PLM

METHOD #:

EPA600/MA182/020

*TEM-908 ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA600/MA42/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTED (YES/NO)	%ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	VERMICULITE DETECTED (YES/NO)	HYDROMICULITE DETECTED	COMMENTS
10-01-PSS-07	92249	6TH FLOOR PARKING DECK	2' X 4' CEILING TILE	HETEROGENEOUS GRAY FIBROUS	NO	ND	NA	MIN-400%-90%, OTHER-10%	NO	ND	
10-01-PSS-08	92250	5TH FLOOR PARKING DECK	CEILING TEXTURE / STUCCO	HETEROGENEOUS WHITE NON-FIBROUS	YES	2.75%	AMCS-TRACE CHRY-2.75%	CARBONATES-49%, OTHER-2.75%	NO	ND	
10-01-PSS-09	92240	5TH FLOOR PARKING DECK	SOFF I/BEAM / COLUMN	HETEROGENEOUS TAN FIBROUS	NO	ND	NA	FIBERGLASS-2%, CELLULOSE-15%, CARBONATES-80%, OTHER-3%	NO	ND	
10-01-PSS-10	92241	5TH FLOOR PARKING DECK	CONCRETE DECKING	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	CARBONATES-50%, QUARTZ-50%	NO	ND	
10-01-PSS-104	92262	4TH FLOOR PARKING DECK	CONCRETE WALLS EXPANSION JOINT	HETEROGENEOUS GRAY NON-FIBROUS	NO	ND	NA	CARBONATES-50%, QUARTZ-50%	NO	ND	
10-01-PSS-105	92263	4TH FLOOR PARKING DECK	CEILING TEXTURE / STUCCO	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	
10-01-PSS-106	92264	4TH FLOOR PARKING DECK	SOFF I / BEAM / COLUMN	HETEROGENEOUS TAN FIBROUS	NO	ND	NA	FIBERGLASS-2%, CELLULOSE-15%, CARBONATES-80%, OTHER-3%	NO	ND	
10-01-PSS-110	92265	3RD FLOOR PARKING DECK	CONCRETE DECKING	HETEROGENEOUS TAN NON-FIBROUS	NO	ND	NA	CARBONATES-50%, QUARTZ-50%	NO	ND	
10-01-PSS-111	92266	3RD FLOOR PARKING DECK	CEILING TEXTURE / STUCCO	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	
10-01-PSS-112	92267	3RD FLOOR PARKING DECK	SOFF I / BEAM / COLUMN	HETEROGENEOUS TAN FIBROUS	NO	ND	NA	FIBERGLASS-2%, CELLULOSE-15%, CARBONATES-80%, OTHER-3%	NO	ND	

NOTES:

- (1) Uncertainty associated with test method = +/- 0.5% by weight
- (2) results relate to items tested only
- (3) lab reports shall not be reproduced except in full, without written approval of the laboratory

*ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY

ND = None Detected

Page 8 of 10

Report Approved By:



Laboratory Director or Approved Representative



280 Huyler Street, South Hackensack, NJ 07606 Tel: (201) 489 8700

BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DOH ELAP ID# 10504)

CLIENT NAME:

PAULUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 678 MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT/AREA:

UNION COUNTRY CALDWELL & ELIZABETHTOWN PARKING DECK
 ELIZABETHTOWN PLAZA & CALDWELL PLACE
 ELIZABETH, NJ 07201

DATE SAMPLED:

10/1/2020

DATE RECEIVED:

10/2/2020

DATE ANALYZED:

10/2/2020

DATE OF REPORT:

10/7/2020

PROJECT #:

20-1205

ANALYST:

TG

TEST REQUESTED:

BULK ASBESTOS BY PLM

METHOD #:

EPA600/M4182/020

*FEDERAL ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA/600/M-422/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTED (YES/NO)	NON-ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	VERMICULITE DETECTED (YES/NO)	SAPPHIRE DETECTED	COMMENTS
10-01-PSS-114	92648	2ND FLOOR PARKING DECK	CONCRETE/STUCCO	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-100%, QUARTZ-0%	NO	NO	
10-01-PSS-115	92649	2ND FLOOR PARKING DECK	CEILING TEXTURE / STUCCO	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	
10-01-PSS-116	92670	2ND FLOOR PARKING DECK	SOFFIT BEAM / COLUMN	HETEROGENEOUS TAN FIBROUS	NO	NO	NA	FIBERGLASS-2%, CELLULOSE-18%, CARBONATES-80%, OTHER-1%	NO	NO	
10-01-PSS-118	92671	1ST FLOOR PARKING DECK	CONCRETE DECKING	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-10%	NO	NO	
10-01-PSS-119	92672	1ST FLOOR PARKING DECK	CEILING TEXTURE / STUCCO	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	
10-01-PSS-120	92673	1ST FLOOR PARKING DECK	SOFFIT BEAM / COLUMN	HETEROGENEOUS TAN FIBROUS	NO	NO	NA	FIBERGLASS-5%, CELLULOSE-15%, CARBONATES-80%, OTHER-3%	NO	NO	
10-01-PSS-121	92674	1ST FLOOR EXTERIOR BUILDING	BRICK	HETEROGENEOUS BROWN NON-FIBROUS	NO	NO	NA	QUARTZ-99%, OTHER-1%	NO	NO	
10-01-PSS-122	92675	1ST FLOOR EXTERIOR BUILDING	MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-20%	NO	NO	
10-01-PSS-123	92676	1ST FLOOR EXTERIOR BUILDING	BRICK	HETEROGENEOUS BROWN NON-FIBROUS	NO	NO	NA	QUARTZ-99%, OTHER-1%	NO	NO	
10-01-PSS-124	92677	1ST FLOOR EXTERIOR BUILDING	MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-20%, QUARTZ-80%	NO	NO	

NOTES: (1) Uncertainty associated with test method = +/- 0.5% by weight (2) results relate to items tested only (3) lab reports that not be reproduced except in full without written approval of the laboratory

*ANALYTICAL RESULTS RELATE TO THE SAMPLE(S) AS RECEIVED BY THE LABORATORY NO = None Detected

Report Approved By: 

Laboratory Director or Approved Representative



BULK ASBESTOS LABORATORY ANALYSIS REPORT

(NYS DOH ELAP ID# 10504)

CLIENT NAME:

PAULUS, SOKOLOWSKI & SARTOR, LLC
 ATTN: JOHN BOLAN
 678 MOUNTAIN BOULEVARD EXTENSION
 WARREN, NJ 07059

PROJECT/AREA:

UNION COUNTRY CALDWELL & ELIZABETHTOWN PARKING DECK
 ELIZABETHTOWN PLAZA & CALDWELL PLACE
 ELIZABETH, NJ 07201

DATE SAMPLED:

10/1/2020

PROJECT #:

20-1205

DATE RECEIVED:

10/2/2020

ANALYST:

TG

DATE ANALYZED:

10/2/2020

TEST REQUESTED:

BULK ASBESTOS BY PLM


DATE OF REPORT:

10/7/2020

METHOD #:
 EPA600/M4/82/020
 *TEM-HOB ANALYSIS REQUIRED TO CONFIRM NEGATIVE PLM ANALYSIS IN NY/NJ (EPA/600/M-82/020)

SAMPLE ID NO	LAB ID NO	SAMPLE LOCATION ROOM/AREA	MATERIAL FIELD DESCRIPTION	MATERIAL LAB DESCRIPTION	ASBESTOS DETECTED (YES/NO)	ASBESTOS DETECTED	TYPE OF ASBESTOS DETECTED	PREDOMINANT NON-ASBESTOS COMPONENTS	VERMICULITE DETECTED (YES/NO)	VERMICULITE DETECTED	COMMENTS
10-01-PSS-105	82074	1ST FLOOR EXTERIOR BUILDING	BRICK	HETEROGENEOUS BROWN NON-FIBROUS	NO	NO	NA	QUARTZ-99%, OTHER-1%	NO	NO	
10-01-PSS-106	82079	1ST FLOOR EXTERIOR BUILDING	MORTAR	HETEROGENEOUS GRAY NON-FIBROUS	NO	NO	NA	CARBONATES-50%, QUARTZ-50%	NO	NO	
10-01-PSS-107	82080	BASEMENT ELEVATOR ROOM	FITTING	HETEROGENEOUS WHITE FIBROUS	YES	0.75%	CHRY	OTHER-32.25%	NO	NO	
10-01-PSS-108	82081	BASEMENT PARKING DECK	WALL TEXTURE / STUCCO	HETEROGENEOUS WHITE NON-FIBROUS	YES	2.75%	CHRY	CARBONATES-89%, OTHER-7.25%	NO	NO	
10-01-PSS-109	82082	BASEMENT PARKING DECK	WALL TEXTURE / STUCCO	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	
10-01-PSS-110	82083	BASEMENT PARKING DECK	WALL TEXTURE / STUCCO	POSITIVE STOP	-	-	-	POSITIVE STOP	-	-	

NOTES: (1) Uncertainty associated with test method = +/- 0.5% by weight (3) All reports shall not be reproduced except in full, without written approval of the laboratory
 (2) Results relate to items tested only

Report Approved By: 
 Laboratory Director or Approved Representative



BULK ASBESTOS TEST REPORT

Client/Address: Omega Environmental/280 Huyler St., So. Hackensack, NJ 07606		Project: Elizabethtown Plaza & Caldwell Place, NJ		Project #: 20-1205					
Laboratory ID: 20-10-015		Date of Report: 10/06/20		Date of Analysis: 10/05/20					
Client ID # Lab ID #	Stereomicroscope Analysis				% Friable Results	% All	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos
	A	WH	E						
1 20-10-015-01	B	I	F		35.96		*	NAD	NAD
	C	198.4	G						
	D		H						
6 20-10-015-02	A	BK	E		0.84		*	NAD	NAD
	B	I	F						
	C	198.4	G						
	D		H						
7 20-10-015-03	A	WH	E		34.47		*	NAD	NAD
	B	I	F						
	C	198.4	G						
	D		H						
12 20-10-015-04	A	BK	E		1.04		*	NAD	NAD
	B	I	F						
	C	198.4	G						
	D		H						
13 20-10-015-05	A	WH/BK	E		37.19		*	NAD	NAD
	B	I	F						
	C	198.4	G						
	D		H						
15 20-10-015-06	A	WH/BK	E		19.86		*	NAD	NAD
	B	I	F						
	C	198.4	G						
	D		H						

BULK ASBESTOS TEST REPORT

Client/Address: Omega Environmental/280 Huyler St., So. Hackensack, NJ 07606		Project: Elizabethtown Plaza & Caldwell Place, NJ		Project #: 20-1205					
Laboratory ID: 20-10-015		Date of Report: 10/06/20		Date of Analysis: 10/05/20					
Client ID # Lab ID #	Stereomicroscope Analysis				% Friable Results	% AIJ	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos
	A	B	C	D					
17 20-10-015-07	WH/BK	E					*	NAD	NAD
	I	F				28.90			
	198.4	G							
		H							
18 20-10-015-08	WH/BK	E					*	NAD	NAD
	I	F				34.58			
	198.4	G							
		H							
19 20-10-015-09	WH/BK	E					*	NAD	NAD
	I	F				36.52			
	198.4	G							
		H							
22 20-10-015-10	BK	E					*	NAD	NAD
	I	F				2.46			
	198.4	G							
		H							
23 20-10-015-11	WH/BK	E					*	NAD	NAD
	I	F				37.14			
	198.4	G							
		H							
24 20-10-015-12	WH/BK	E					*	NAD	NAD
	I	F				36.02			
	198.4	G							
		H							

BULK ASBESTOS TEST REPORT

Client/Address: Omega Environmental/280 Huyler St., So. Hackensack, NJ 07606		Project: Elizabethtown Plaza & Caldwell Place, NJ		Project #: 20-1205					
Laboratory ID: 20-10-015		Date of Report: 10/06/20		Date of Analysis: 10/05/20					
Client ID # Lab ID #	Stereomicroscope Analysis				% Friable Results	% AIH	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos
	A	W/H/BK	E						
25 20-10-015-13	B	I	F						NAD
	C	198.4	G		37.86				
	D		H						
	Roof, Main Roof, Vent Flashing Top Layer								
26 20-10-015-14	A	BK	E						9.10
	B	I	F				9.10	CH	
	C	198.4	G		24.93				
	D		H						
Roof, Main Roof, Vent Flashing Bottom Layer									NAD
27 20-10-015-15	A	W/H/BK	E						NAD
	B	I	F						
	C	198.4	G		37.58				
	D		H						
Roof, Main Roof, Vent Flashing Top Layer									NAD
28 20-10-015-16	A		E						SAFP
	B		F						
	C		G						
	D		H						
Roof, Main Roof, Vent Flashing Bottom Layer									NA
29 20-10-015-17	A	GR	E						2.93
	B	I	F					CH	
	C	198.4	G		22.05				
	D		H						
Roof, Main Roof Door A, Caulking Around Doors									2.93
30 20-10-015-18	A	GR	E						NA
	B	I	F						
	C		G		39.93				
	D		H						
Roof, Main Roof Door B, Caulking Around Doors									SAFP

BULK ASBESTOS TEST REPORT

Client/Address: Omega Environmental/280 Huyler St., So. Hackensack, NJ 07606		Project: Elizabethtown Plaza & Caldwell Place, NJ		Project #: 20-1205							
Laboratory ID: 20-10-015		Date of Report: 10/06/20		Date of Analysis: 10/05/20							
Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results	% AII	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos
	A	BK	E	F							
31 20-10-015-19	B	I	F		Roof, Upper Roof A, Pitch Pocket Material			1.69	*	NAD	NAD
	C	198.4	G								
	D		H								
32 20-10-015-20	A	BK	E		Roof, Upper Roof A, Pitch Pocket Material			2.62	*	NAD	NAD
	B	I	F								
	C	198.4	G								
	D		H								
33 20-10-015-21	A	GR	E		Roof, Main Roof A, Caulking Around Metal Flashing			5.42	*	NAD	NAD
	B	I	F								
	C	198.4	G								
	D		H								
34 20-10-015-22	A	GR	E		Roof, Main Roof B, Caulking Around Metal Flashing			5.27	*	NAD	NAD
	B	I	F								
	C	198.4	G								
	D		H								
84 20-10-015-23	A	GR	E		7th Floor, Office, 12"x12" F.T.			43.75	*	NAD	NAD
	B	I	F								
	C	198.4	G								
	D		H								
85 20-10-015-24	A	BK	E		7th Floor, Office, Mastic Under F.T.			12.66	*	NAD	NAD
	B	I	F								
	C	198.4	G								
	D		H								

BULK ASBESTOS TEST REPORT

Client/Address: Omega Environmental/280 Huyler St., So. Hackensack, NJ 07606		Project: Elizabethtown Plaza & Caldwell Place, NJ Project #: 20-1205							
Laboratory ID: 20-10-015		Date of Report: 10/06/20							
Date of Analysis: 10/05/20									
Client ID # Lab ID #	Stereomicroscope Analysis				% Friable Results	% All	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos
	A	GR	E	F					
86 20-10-015- 25	B	I	F		25.41		*	NAD	NAD
	C	198.4	G						
	D		H						
87 20-10-015- 26	A	BK	E		12.40		*	NAD	NAD
	B	I	F						
	C	198.4	G						
	D		H						
100 20-10-015- 27	A	GR	E		8.82		*	1.54	CH
	B	I	F						
	C	198.4	G						
	D		H						
102 20-10-015- 28	A	GR	E		5.79		*	NAD	NAD
	B	I	F						
	C	198.4	G						
	D		H						
103 20-10-015- 29	A	GR	E		17.45		*	NAD	NAD
	B	I	F						
	C	198.4	G						
	D		H						
107 20-10-015- 30	A		E				*	NA	SAFP
	B		F						
	C		G						
	D		H						

BULK ASBESTOS TEST REPORT

Client/Address: Omega Environmental/280 Huyler St., So. Hackensack, NJ 07606		Project: Elizabethtown Plaza & Caldwell Place, NJ		Project #: 20-1205						
Laboratory ID: 20-10-015		Date of Report: 10/06/20		Date of Analysis: 10/05/20						
Client ID # Lab ID #	Stereomicroscope Analysis		Sample Description	% Non-Fibrous Material	% Friable Results	% AIH	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos	
	A	GR								E
108 20-10-015-31	B	I	4th Floor, Parking Deck, Concrete Walls Expansion Joint			6.90		NAD	NAD	
	C	198.4								G
	D									H
109 20-10-015-32	A	GR	4th Floor, Parking Deck, Expansion Joint White			54.10		NAD	NAD	
	B	I								F
	C	198.4								G
	D									H
113 20-10-015-33	A	GR	3rd Floor, Parking Deck, Brick Expansion Joint			12.74		NA	SAFP	
	B	I								F
	C									G
	D									H
117 20-10-015-34	A	GR	2nd Floor, Parking Deck, Brick Expansion Joint			18.40		NA	SAFP	
	B	I								F
	C									G
	D									H

BULK ASBESTOS TEST REPORT

Client/Address: Omega Environmental/280 Huyler St., So. Hackensack, NJ 07606	Project: Elizabethtown Plaza & Caldwell Place, NJ	Project #: 20-1205
Laboratory ID: 20-10-015	Date of Report: 10/06/20	Date of Analysis: 10/05/20



PLM ANALYST

PLM-NOB ANALYST

TEM-NOB ANALYST

LABORATORY DIRECTOR

E. Dimitrakas

E. Loukianova

[Signature]

[Signature]

E. Dimitrakas

LABORATORY ACCREDITATION NUMBERS: NYLAP Lab Code 101958-0, NYSDOH ELAP Lab ID 10955

- Samples will be stored for sixty (60) days. LTS Inc. should be notified within this time frame for a true duplicate analysis.
- Above results relate only to samples submitted and analyzed. This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government. Test reports may not be reproduced except in full and with prior approval of LTS Inc.
- The liability of LTS Inc., with respect to the services charged, shall in no event exceed the amount of the invoice.
- Analytical Methodologies: EPA 600/4-82-020 (Point Count only) and ELAP Methods 19K.1, 19K.4, 19K.6.
- NAD: No Asbestos Detected, NVD: No Vermiculite Detected, SAFF: Stopped at First Positive, CH: Chrysotile, AMOS: Amosite, TRE: Tremolite, ANTH: Anthophyllite, ACT: Actinolite, and CRG: Crocidolite.
- Stereomicroscope Analysis: A: Color, B: Layers, C: Methodology, D: Cellulose, E: Fiberglass, F: Hair, G: Vermiculite, H: OTHER
- Color: BK: Black, BR: Brown, DK:BR: Dark Brown, Lt BR: Light Brown, R BR: Reddish Brown, GR: Gray, Dk GR: Dark Gray, Lt GR: Light Gray, BE: Beige, P: Pink, R: Red, T: Tan, WH: White, OIFWH: Off White, Y: Yellow, BL: Blue, CR: Cream, GN: Green, O: Orange, Multi: Multiple Colors

*** Not analyzed as per client's request. PLM NOB analysis is a method requirement, as indicated in Item 198.4, Section 6.3.2.2 and 4.1.3**



280 Huyler Street South Hackensack, NJ 07606
 T 201.489.8700 F 201.342.5412
 website www.omega-env.com

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES
 email results to: lab@omega-env.com and jaimenv@omega-env.com

Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	10
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201		
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918		
Date Sampled:	10/1/2020		

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested				Notes and Comments	
									PLM	PLM-NOR	TEM-NOR	Other Analysis		
01		Roof	Main Roof	01	Top Layer	NVD	5.0	6						Roof 125x
02				02	2nd Layer			6	✓					
03				03	3rd Layer			6	✓					
04				04	4th Layer			6	✓					
05				05	5th Layer			6	✓					
06				06	Bottom Layer			6		✓				
07				01	Top Layer			6			✓			
08				02	2nd Layer			6			✓			
09				03	3rd Layer			6			✓			
10				04	4th Layer			6			✓			

Relinquished By & Company:	A. Fajardo	Received By Company:	[Signature]
Date & Time:	10/1/2020	Date & Time:	10/2/20 900

Analyzed By: [Signature]
 Date & Time: 10/2/20 945-1530
 10/3/20 4:05-1545



280 Huyler Street South Hackensack, NJ 07606
 T 201.489.8700 F 201.342.5412
 website www.omega-env.com

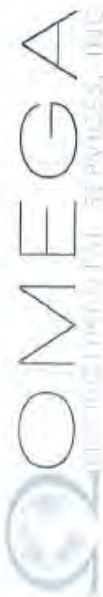
CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES
 email results to: lab@omega-env.com and jaimenv@omega-env.com

Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	20
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
11		Roof	Main Roof	05	5 th Layer	NVD	T.O	6	✓			
12				06	Bottom Layer			6		✓		
13				07	Vent Flashing Mat.			2		✓		
14				08	Bottom Vent Flashing Mat.			2	✓			
15				07	Vent Flashing Top			2		✓		
16				08	Vent Flashing Bottom			2	✓			
17				09	Air Vent Flashing			1		✓		
18				09	Air Vent Flashing			1		✓		
19			Upper Roof A	10	Roofing Top Layer			4		✓		
20				11	Roofing 2 nd Layer			4		✓		

Relinquished By & Company: A. Fajardo
 Date & Time: 10/1/2020
 Received By Company: _____
 Date & Time: _____

Analyzed By: _____
 Date & Time: _____



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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	30
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A.Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
21		Roof	Upper Roof A	12	Roofing 3 rd layer	NDD	1.0	4	✓			
22				13	bottom	↓	↓	4		✓		
23				14	Flashing	↓	↓	1		✓		
24				14		↓	↓	1		✓		
25			Main Roof	15	Joint Flashing Top layer	↓	↓	2		✓		
26				16	Bottom	↓	↓	2		✓		
27				15	Top	↓	↓	2		✓		
28				16	Bottom	↓	↓	2		✓		
29			Main Roof Area A	17	Caulking around Doors	D	↓	1		✓		
30				17	Door B	D	↓	1		✓		

Relinquished By & Company:	A. Fajardo	Received By Company:	[Signature]
Date & Time:		Date & Time:	

Analyzed By:
 Date & Time:



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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	40
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of Layers	Analysis Requested				Notes and Comments
									PLM	PLM-NOB	TEM-NOB	Other Analysis	
31		Roof	Upper Roof A	18	Rich Pocket Material	NVD	1.0	1			✓		
32		Roof	↓	18	↓	↓	↓	1			✓		
33		Roof	Main Roof A	19	smalking around Flashing	↓	↓	1			✓		
34			↓ B	19	↓	↓	↓	1			✓		
35			Staircase Well	20	Brick	↓	↓	1			✓		
36			↓	20	Mortar	↓	↓	1			✓		
37			↓	20	Brick	↓	↓	1			✓		
38			↓	21	Mortar	↓	↓	1			✓		
39			Staircase A	22	Interior Brick	↓	↓	1			✓		
40			↓ B	23	Interior Mortar	↓	↓	1			✓		

Relinquished By & Company:	A. Fajardo	Received By Company:	
Date & Time:	10/1/20	Date & Time:	

Analyzed By:
 Date & Time:



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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	50
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
41		Roof	Stair Case A	22	Interior Brick	NVD	5.0	1	✓			
42			A	23	Interior Mortar			1	✓			
43			B	22	Interior Brick			1	✓			
44			B	23	Interior Mortar			1	✓			
45		7 th	IT closet	24	Brick			1	✓			
46				25	Mortar			1	✓			
47				24	Brick			1	✓			
48				25	Mortar			1	✓			
49				26	Thin set			1	✓			
50				27	Thin set Grout			1	✓			

Relinquished By & Company	A. Fajardo	Received By Company	
Date & Time		Date & Time	

Analyzed By:
 Date & Time:



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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	60
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HAM#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
51		7 th	Room # 1	28	SOFP Green	NVD	r.o.	1	✓			Concluded
52			↓	28	↓			1	✓			
53			I. T closet	28	↓			1	✓			
54			Room # 1	29	SOFP Grey			1	✓			
55			I. T closet	29	↓			1	✓			
56			↓	29	↓			1	✓			
57		Roof	MER Staircase	30	Fitting			1	✓			
58			↓	30	↓			1	✓			
59		7 th	Hallway	31	2'x2'CT			1	✓			
60			Office	31	↓			1	✓			

Relinquished By & Company:	<i>[Signature]</i> A. Fajardo	Received By Company:	<i>[Signature]</i>
Date & Time:	10/1/2020	Date & Time:	

Analyzed By:
 Date & Time:



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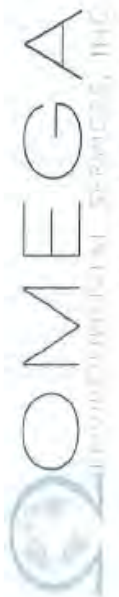
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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	70
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A.Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested				Notes and Comments	
									PLM	PLM-NOB	TEM-NOB	Other Analysis		
61		2 nd	Room #1	32	Drywall	NVD	T.O	1	✓					
62				33	Joint compound			1	✓					
63				32	Drywall			1	✓					
64				33	Joint compound			1	✓					
65				32	Drywall			1	✓					
66				33	Joint compound			1	✓					
67			Room #3	34	flooring epoxy			1	✓					
68			Hallway	34				1	✓					
69			Back Hallway	34				1	✓					
70			Bathroom	26	Thinset			1	✓					

Relinquished By & Company:	A. Fajardo	Received By Company:	
Date & Time:	10/1/2020	Date & Time:	

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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	80
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/ / 2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOR	TEM-NOR	
71		7 th	Bathroom	27	Grout	NUD	T.D	1	✓			
72			↓	26	Tray set			1	✓			
73			↓	27	Grout			1	✓			
74			Hellway	35	CMV Grout			1	✓			
75			↓	36	Mortar			1	✓			
76			Cell A	35	CMV Grout			1	✓			
77			↓	36	Mortar			1	✓			
78			cell C	35	CMV Grout			1	✓			
79			↓	36	Mortar			1	✓			
80			#1	35	CMV Grout			1	✓			

Relinquished By & Company:	A. Fajardo	Received By Company:	
Date & Time:	10/1/2020	Date & Time:	

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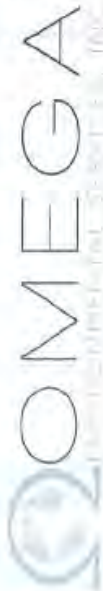
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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	90
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/ /2020	Stop after 1 st positive for each homogeneous area	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
81		7 th Fl	Cell # 1	36	Mortar	NVD	4.0.	1	✓			
82			chase K	35	CMU block			1	✓			
83				36	Mortar			1	✓			
84			Office	37	12" x 12" F.T.			1		✓		
85				38	Mastic vln. In Floor tile			1		✓		
86				37	12" x 12" FT			1		✓		
87				38	Mastic vln. F.T.			1		✓		
88			cell	39	Ceiling Drywall			1	✓			
89				40	Joint compound			1	✓			
90			Office	39	Ceiling Drywall			1	✓			

Relinquished By & Company:	A. Fajardo	Received By Company:	
Date & Time:	10/1/2020	Date & Time:	

Analyzed By: _____
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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	100
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested				Notes and Comments	
									PLM	PLM-NOB	TEM-NOB	Other Analysis		
91		7 th	Office	40	Join compound	NVD	G.O	1	✓					
92			cell chax	41	SOFP white	D		1	✓					
93				41				1	✓					
94				41				1	✓					
95		6 th	Parking Deck	42	2x4' ceiling tile	D		1	✓					
96				42				1	✓					
97				42				1	✓					
98		5 th		43	ceiling texture/stucco	D		1	✓					
99			Parking Deck	44	SOFP I Beam/column			1	✓					
100				45	Brick Expansion joint			1	✓					

Relinquished By & Company:	A. Fajardo	Received By Company:	
Date & Time:	10/1/2020	Date & Time:	

Analyzed By:
 Date & Time:



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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	110
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	Other Analysis	
101		5 th	Parking Deck	46	Concrete Decking	SD	TO	1	✓			
102				47	concrete walls Expansion joint			1		✓		
103				48	Expansion joint white			1		✓		
104		4 th	Parking Deck	46	Concrete Decking			1	✓			
105				43	gilling texture/stucco			1	✓			
106				44	SDFP I Beam/column			1	✓			
107				45	Brick Expansion joint			1		✓		
108				47	concrete with Expansion joint			1		✓		
109				48	Expansion joint white			1		✓		
110		3 rd		46	concrete Decking	SD		1	✓			

Relinquished By & Company:	A. Fajardo	Received By Company:	
Date & Time:	10/1/2020	Date & Time:	

Analyzed By:
 Date & Time:



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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	120
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1 /2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HAM	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of Layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
111		3 rd	Parking Deck	43	Ceiling Texture / Stucco	SD	T.O.	1	✓			
112		↓		44	SOPFI Beam/Column			1	✓			
113		2 nd		45	Brick Expansion Joint			1	✓			
114		↓		46	Concrete Decking			1	✓			
115		↓		43	Ceiling Texture / Stucco			1	✓			
116		↓		44	SOPFI Beam/Column			1	✓			
117		↓		45	Brick Expansion Joint			1	✓			
118		1 st		46	Concrete Decking			1	✓			
119		↓		43	Ceiling Texture / Stucco			1	✓			
120		↓		44	SOPFI Beam/Column			1	✓			

Relinquished By & Company	A. Fajardo	Received By Company	
Date & Time	10/1/2020	Date & Time	

Analyzed By: _____
 Date & Time: _____



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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	130
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
121		1 st	Stair D/dy 20	20	Brick	D	5.0	1	✓			
122				21	Mortar			1	✓			
123				20	Brick			1	✓			
124				21	Mortar			1	✓			
125				20	Brick			1	✓			
126				21	Mortar			1	✓			
127		Basement	Elevator Room	49	Fitting			1	✓			
128			Basement Deck	50	W/old Texture /stucco			1	✓			
129				50				1	✓			
130				50				1	✓			

Relinquished By & Company:	A. Fajardo	Received By Company:	
Date & Time:	10/1/2020	Date & Time:	

Analyzed By: _____
 Date & Time: _____

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES

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Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	10
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jalme Vidal License # 00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NDB	Other Analysis	
01	1	Roof	Main Roof	01	Top Layer	NVD	5.0	6	✓	✓	✓	Raw F 185 X (-) NAD
02				02	2 nd Layer			6	✓			
03				03	3 rd Layer			6	✓			
04				04	4 th Layer			6	✓			
05				05	5 th Layer			6	✓			
06	2			06	Bottom Layer			6	✓	✓	✓	(-) NAD
07	3			01	Top Layer			6	✓	✓	✓	(-) NAD
08				02	2 nd Layer			6	✓			
09				03	3 rd Layer			6	✓			
10				04	4 th Layer			6	✓			

Relinquished By & Company:	A. Fajardo	Received By Company:	Jalme Vidal
Date & Time:	10/1/2020	Date & Time:	10/3/20 12:30

Analyzed By: E. Lachkar
 Date & Time: Sep 10. 5. 20

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES

email results to: lab@omega-env.com and jaimenv@omega-env.com

20-10-15

Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	20
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A.Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1" positive stop	
Date Sampled:	10/1/2020	Stop after 1" positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested				Notes and Comments	
									PLM	PLM-NOB	TEM-NOB	Other Analysis		
11		Roof	Main Roof	05	5" Layer	NVD	T.D	6	✓					
12	4			06	Bottom Layer			6		✓				(-) NAD
13	5			07	Top Flashing Mat.			2		✓				(-) NAD
14				08	Bottom			2		✓				
15	6			07	Wet Flashing Mat.			2		✓				(-) NAD
16				08	Wet Flashing Mat.			2		✓				
17	7			09	Air Vent Flashing			1		✓				(-) NAD
18	8			09	Air Vent Flashing			1		✓				(-) NAD
19	9		Upper Roof A	10	Roofing Top Layer			4		✓				(-) NAD
20				11	2nd			4		✓				(-) NAD

Relinquished By & Company:	A. Fajardo	Received By Company:	Jaime Vidal
Date & Time:	10/1/2020	Date & Time:	10/3/20 12:30

Analyzed By: F. Loukianov
 Date & Time: 10.5.20

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES

email results to: lab@omega-env.com and jaimenv@omega-env.com 20-10-15

Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	30
Site Location:	Elizabethtown Plaza & Calowell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10//2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of Layers	Analysis Requested			Notes and Comments
									PUM	PLM-NOB	TEM-NOB	
21		Roof	Upper Roof A	12	Roofing 3rd layer	NDD	8.0	4	✓			
22	10			13	Bottom			4		✓		(-) NAD
23	11			14	Flashing			1		✓		(-) NAD
24	12			14				1		✓		(-) NAD
25	13		Main Roof	15	Roof Flashing Top layer			2		✓		(-) NAD
26	14			16	Bottom			2		✓		(+) 9.1/CH
27	15			15	Roof			2		✓		(-) NAD
28	16			16	Bottom			2		✓		NA
29	17		Main Roof Room A	17	Sealing around Doors	D		1		✓		(+) 2.93/CH
30	18		Room B	17		D		1		✓		NA

Relinquished By & Company:	A. Fajardo	Received By Company:	Jaime Vidal
Date & Time:		Date & Time:	10/3/20 12:30

Analyzed By: E. Wambiaruk
 Date & Time: Elp 10.5.20

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES
 email results to: lab@omega-env.com and jaimenv@omega-env.com 20-10-15

Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	40
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1" positive stop	
Date Sampled:	10/1/2020	Stop after 1" positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested				Notes and Comments
									PLM	PLM-NOB	TEM-NOB	Other Analysis	
31	19	Roof	Upper Roof A	18	At the Pocket Mortar	N/D	1	1	✓				(-) NAD
32	20	Roof	↓	18	↓		1	1	✓				
33	21	Roof	Main Roof A	19	concrete around Flashing		1	1	✓				(-) NAD
34	22		↓ B	19	↓		1	1	✓				
35			Exterior Wall	20	Brick		1	1	✓				
36			↓	21	Mortar		1	1	✓				
37			↓	22	Brick		1	1	✓				
38			↓	21	Mortar		1	1	✓				
39			Interiors A	22	Interior Bricks		1	1	✓				
40			↓ B	23	Interior Mortar		1	1	✓				

Relinquished By & Company: *[Signature]* Received By Company: *Jaimen Pans*
 Date & Time: 10/3/20 12:30

Analyzed By: *E. Loukianov*
 Date & Time: *10.5.20*

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES

email results to: lab@omega-env.com and jaimenv@omega-env.com 20-10-15

Project Name: PS&S LLC		Turnaround Time Requested: 24 Hours									
Project #: 20-1205		Total # of Samples: 90									
Site Location: Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201		Analyze by each individual layer or as indicated									
Sampled By: A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918		Analyze all samples without 1 st positive stop									
Date Sampled: 10/ / 2020		Stop after 1 st positive for each homogeneous area X									
Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested	Notes and Comments	
81		7 th Fl	cell # 1	36	Asbestos	NVD	4.0.	1	PLM ✓		
82			chase K	35	CMU block			1	PLM ✓		
83				36	Asbestos			1	PLM ✓		
84	23		Office	37	12" x 12" F.T.			1	PLM ✓	(-)NAD	
85	24			38	Mastic on So. Floor tile			1	PLM ✓	(-)NAD	
86	25			37	12" x 12" FT			1	PLM ✓	(-)NAD	
87	26			38	Asstic under FT.			1	PLM ✓	(-)NAD	
88			cell	39	Ceiling Drywall			1	PLM ✓		
89				40	Joint compound			1	PLM ✓		
90			Office	39	Ceiling Drywall			1	PLM ✓		
Relinquished By & Company: A. Fajardo		Received By Company: Javier Pantoja		Date & Time: 10/3/20		Date & Time: 10/3/20		P=30		4	
Date & Time:		Date & Time:		Date & Time:		Date & Time:		Date & Time:		Date & Time:	
										Analyzed By: E. Louckianova	
										Date & Time: Sep 10.5.20	

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES

email results to: lab@omega-env.com and jaimenv@omega-env.com 20-10-15

Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	100
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested				Notes and Comments	
									PLM	PLM-HOB	TEM-HOB	Other Analysis		
91		7 th	Office	40	Join Compound	N/D	5.0	1	✓					
92			Call Chair	41	SOFP white	D		1	✓					
93				41				1	✓					
94				41				1	✓					
95		6 th	Parking Deck	42	2'x4' ceiling tile	D		1	✓					
96				42				1	✓					
97				42				1	✓					
98		5 th		43	Ceiling texture/texture	D		1	✓					
99			Parking Deck	44	SOFP I Beam/keelson			1	✓					
100	27			45	Brick Expansion joint			1	✓					(+) 1.54/04

Relinquished By & Company:	A. Fajardo	Received By Company:	Jairam Pang
Date & Time:	10/1/2020	Date & Time:	10/3/20 12:30

Analyzed By: F. Leckianco
 Date & Time: 10.5.20

600 Huyler Street South Hackensack, NJ 07606
 T 201.489.8700 F 201.342.5412
 website www.omega-env.com

OMEGA
 ENVIRONMENTAL SERVICES, INC.

Page 11 of 13

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES

email results to: lab@omega-env.com and jaimenv@omega-env.com 20-10-15

Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	110
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HA#	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
101		5 th	Parking Deck	46	Concrete Decking	SD	TO	1	✓			
102	28		↓	47	Concrete Walls Expansion Joint			1		✓		(-) NAD
103	29		↓	48	Expansion Joint White			1		✓		(-) NAD
104		4 th	Parking Deck	46	Concrete Decking			1	✓			
105			↓	43	Gully Venturi/Stucco			1	✓			
106			↓	44	SDFP I Beam/Column			1	✓			
107	30		↓	45	Brick Expansion Joint			1		✓		NA
108	31		↓	47	Concrete Wall Expansion Joint			1		✓		(-) NAD
109	37		↓	48	Expansion Joint White			1		✓		↓
110		3 rd	Parking Deck	46	Concrete Decking	SD		1	✓			

Relinquished By & Company:	A. Fajardo	Received By Company:	Jaime Vidal
Date & Time:	10/1/2020	Date & Time:	10/13/20 12:30

Analyzed By: E. Luckinbill
 Date & Time: 10.5.20

CHAIN OF CUSTODY/ANALYSIS REQUEST FOR ASBESTOS BULK SAMPLES
 email results to: lab@omega-env.com and jaimenv@omega-env.com 20-10-15

Project Name:	PS&S LLC	Turnaround Time Requested:	24 Hours
Project #:	20-1205	Total # of Samples:	121
Site Location:	Elizabethtown Plaza & Caldwell Place, Elizabeth, NJ 07201	Analyze by each individual layer or as indicated	
Sampled By:	A. Fajardo License # 02-07292 / Jaime Vidal License #00-06823 / Investigator # 134918	Analyze all samples without 1 st positive stop	
Date Sampled:	10/1/2020	Stop after 1 st positive for each homogeneous area X	

Sample #	Lab ID #	Floor/Level	Location (Room, Area, etc)	HAZ	Description of Homogeneous Material (type, color, size, etc)	General Condition	Quantity	Estimated # of layers	Analysis Requested			Notes and Comments
									PLM	PLM-NOB	TEM-NOB	
111		3 rd	Parking Deck	43	Ceiling Texture / Strucco	SD	T.O.	1	✓			
112		1 st		44	SOFP I Beam / Column			1	✓			
113	33	1 st		45	Brick Expansion Joint			1		✓		NA
114		2 nd		46	Concrete Decking			1	✓			
115		1 st		43	Ceiling Texture / Strucco			1	✓			
116		1 st		44	SOFP I Beam / Column			1	✓			
117	34	1 st		45	Brick Expansion Joint			1		✓		NA
118		1 st		46	Concrete Decking			1	✓			
119		1 st		43	Ceiling Texture / Strucco			1	✓			
120		1 st		44	SOFP I Beam / Column			1	✓			

Relinquished By & Company: *A. Fajardo*
 Date & Time: *10/1/2020*
 Received By Company: *Jaime Vidal*
 Date & Time: *10/13/20 12:30*

Analyzed By: *E. Collier*
 Date & Time: *10.5.20*

B. PCBs

B1. Laboratory Analytical Reports



Accredited Analytical Resources, LLC.

09 October 2020

AAR Work Order: 2001607

David Ekstrand
OMEGA ENVIRONMENTAL SERVICES
280 Huyler Street
South Hackensack, NJ 07606
Project: PS&S Garage 20-1205

Enclosed are the results of analyses for samples received by the laboratory on 10/02/2020 15:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Daniel Miguel
Technical Director



New Jersey Certification Number: 12007
New York Certification Number: 11109

Pennsylvania Certification Number: 68-02799
CT Certification Number: PH-0219

This report shall not be reproduced, except in its entirety, without the written consent of Accredited Analytical Resources, LLC.
The test results included in this report relate only to the samples analyzed.



OMEGA ENVIRONMENTAL SERVICES 280 Huyler Street South Hackensack NJ, 07606	Project: PS&S Garage 20-1205 Project Manager: David Ekstrand	Reported: 10/09/2020 13:03
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Analytical Report for Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
1205-01	2001607-01	Caulk	10/01/2020 00:00	10/02/2020 15:25
1205-02	2001607-02	Caulk	10/01/2020 00:00	10/02/2020 15:25
1205-03	2001607-03	Caulk	10/01/2020 00:00	10/02/2020 15:25
1205-04	2001607-04	Caulk	10/01/2020 00:00	10/02/2020 15:25

Notes and Definitions

- * Values outside of QC limits
- ND - Indicates compound analyzed for but not detected at or above the MDL
- J - Indicates estimated value for TICs and all results when detected below the RL
- B - Indicates compound found in associated blank
- E - Concentration exceeds highest calibration standard
- D - Indicates result is based on a dilution
- P - Greater than 25% diff. between 2 GC columns.
- MDL - Minimum detection limit
- RL - Reporting limit
- NFL - No Free Liquids
- VC - The container(s) provided by the client for soil volatiles do not meet the requirements of EPA SW846-5035A. Results reported below 200 ug/kg may be biased low due to samples not being collected according to EPA SW846 5035A requirements.

Methodology Summary

PCB by EPA Method SW846 8082:
8082A

Wet Chemistry:
Percent Solids by SM 2540 G

Accredited Analytical Resources LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Daniel Miguel, Technical Director



OMEGA ENVIRONMENTAL SERVICES
280 Huyler Street
South Hackensack NJ, 07606

Project: PS&S Garage 20-1205
Project Manager: David Ekstrand

Reported:
10/09/2020 13:03

Condition of Samples on Receipt

Temperature °C	20.00
Chain of Custody Filled Out Properly	Yes
Received with Proper Containers	Yes
Received with Proper Volumes	Yes
Received Within Holding Time	Yes
Samples Received with Correct Preservation	Yes
Samples Received On Ice	No
Sample Received Via Field Services	No
Samples Hand Delivered	Yes

Accredited Analytical Resources LLC

Daniel Miguel, Technical Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Page 3 of 8



OMEGA ENVIRONMENTAL SERVICES
280 Huyler Street
South Hackensack NJ, 07606

Project: PS&S Garage 20-1205
Project Manager: David Ekstrand

Reported:
10/09/2020 13:03

Client ID: 1205-01
Lab ID: 2001607-01 (Caulk)

CAS #	Analyte	Result	MDL	RL	Units	Dilution	Prepared Date	Analyzed Date/By	Method	Notes
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Accredited Analytical Resources LLC

PCB by EPA Method SW846 8082A

Sample Prepared by Method: EPA 3540C

12674-11-2	Aroclor-1016	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
11104-28-2	Aroclor-1221	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
11141-16-5	Aroclor-1232	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
53469-21-9	Aroclor-1242	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
12672-29-6	Aroclor-1248	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
11097-69-1	Aroclor-1254	1360	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
11096-82-5	Aroclor-1260	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
37324-23-5	Aroclor-1262	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
11100-14-4	Aroclor-1268	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
Surrogate: Tetrachloro-m-xylene			97.3 %	27-137			10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
Surrogate: Tetrachloro-m-xylene			92.8 %	39-138			10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
Surrogate: Decachlorobiphenyl			79.1 %	21-150			10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	
Surrogate: Decachlorobiphenyl			90.2 %	24-171			10/06/20 10:42	10/08/20 12:09/JAM	EPA 8082A	

Wet Chemistry

Sample Prepared by Method: Percent Solids

NA	Percent Solids	100	0.100	0.100	%	1	10/02/20 12:15	10/05/20 08:52/NDN	SM 2540 G	
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Accredited Analytical Resources LLC

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Daniel Miguel, Technical Director



OMEGA ENVIRONMENTAL SERVICES 280 Huyler Street South Hackensack NJ, 07606	Project: PS&S Garage 20-1205 Project Manager: David Ekstrand	Reported: 10/09/2020 13:03
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Client ID: 1205-02
Lab ID: 2001607-02 (Caulk)

CAS #	Analyte	Result	MDL	RL	Units	Dilution	Prepared Date	Analyzed Date/By	Method	Notes
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Accredited Analytical Resources LLC

PCB by EPA Method SW846 8082A

Sample Prepared by Method: EPA 3540C

12674-11-2	Aroclor-1016	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
11104-28-2	Aroclor-1221	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
11141-16-5	Aroclor-1232	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
53469-21-9	Aroclor-1242	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
12672-29-6	Aroclor-1248	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
11097-69-1	Aroclor-1254	2820	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
11096-82-5	Aroclor-1260	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
37324-23-5	Aroclor-1262	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
11100-14-4	Aroclor-1268	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
Surrogate: Tetrachloro-m-xylene			75.1 %	27-137			10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
Surrogate: Tetrachloro-m-xylene			50.9 %	39-138			10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
Surrogate: Decachlorobiphenyl			47.0 %	21-150			10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	
Surrogate: Decachlorobiphenyl			65.4 %	24-171			10/06/20 10:42	10/08/20 12:46/TAM	EPA 8082A	

Wet Chemistry

Sample Prepared by Method: Percent Solids

NA	Percent Solids:	100	0.100	0.100	%	1	10/02/20 12:15	10/05/20 08:52/NIN	SM 2140 G	
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Accredited Analytical Resources LLC

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Daniel Miguel, Technical Director



OMEGA ENVIRONMENTAL SERVICES
 280 Huyler Street
 South Hackensack NJ, 07606

Project: PS&S Garage 20-1205
 Project Manager: David Ekstrand

Reported:
 10/09/2020 13:03

Client ID: 1205-03
 Lab ID: 2001607-03 (Caulk)

CAS #	Analyte	Result	MDL	RL	Units	Dilution	Prepared Date	Analyzed Date/By	Method	Notes
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Accredited Analytical Resources, LLC

PCB by EPA Method SW846 8082A

Sample Prepared by Method: EPA 3540C

12674-11-2	Aroclor-1016	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
11104-28-2	Aroclor-1221	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
11141-16-5	Aroclor-1232	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
53469-21-9	Aroclor-1242	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
12672-29-6	Aroclor-1248	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
11097-69-1	Aroclor-1254	3280	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
11096-82-5	Aroclor-1260	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
37324-23-5	Aroclor-1262	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
11100-14-4	Aroclor-1268	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
Surrogate: Tetrachloro-m-xylene				74.3 %	27-137		10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
Surrogate: Tetrachloro-m-xylene				97.7 %	39-138		10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
Surrogate: Decachlorobiphenyl				54.2 %	21-150		10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	
Surrogate: Decachlorobiphenyl				39.3 %	24-171		10/06/20 10:42	10/08/20 14:16/JAM	EPA 8082A	

Wet Chemistry

Sample Prepared by Method: Percent Solids

NA	Percent Solids	100	0.100	0.100	%	1	10/02/20 12:15	10/05/20 08:52/NEN	SM 2540 G	
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Accredited Analytical Resources LLC

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Daniel Miguel, Technical Director



OMEGA ENVIRONMENTAL SERVICES
280 Huyler Street
South Hackensack NJ, 07606

Project: PS&S Garage 20-1205
Project Manager: David Ekstrand

Reported:
10/09/2020 13:03

Client ID: 1205-04

Lab ID: 2001607-04 (Caulk)

CAS #	Analyte	Result	MDL	RL	Units	Dilution	Prepared Date	Analyzed Date By	Method	Notes
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Accredited Analytical Resources LLC

PCB by EPA Method SW846 8082A

Sample Prepared by Method: EPA 3540C

12674-11-2	Aroclor-1016	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
11104-28-2	Aroclor-1221	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
11141-16-5	Aroclor-1232	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
53469-21-9	Aroclor-1242	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
12672-29-6	Aroclor-1248	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
11097-69-1	Aroclor-1254	1950	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
11096-82-5	Aroclor-1260	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
37324-23-5	Aroclor-1262	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
11100-14-4	Aroclor-1268	ND	166	333	ug/kg dry	1	10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
Surrogate: Tetrachloro-m-xylene			86.8 %	27-137			10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
Surrogate: Tetrachloro-m-xylene			104 %	39-138			10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
Surrogate: Decachlorobiphenyl			70.9 %	21-150			10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	
Surrogate: Decachlorobiphenyl			62.8 %	24-171			10/06/20 10:42	10/08/20 14:39/JAM	EPA 8082A	

Wet Chemistry

Sample Prepared by Method: Percent Solids

NA	Percent Solids:	100	0.100	0.100	%	1	10/02/20 12:15	10/05/20 08:52/NEN	SM 2540 G	
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Accredited Analytical Resources LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Daniel Miguel, Technical Director



Accredited Analytical Resources, LLC.

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 Tel: 732-969-6112 FAX 732-541-1383
 WEB: WWW.ACCREDITEDANALYTICAL.COM

CHAIN OF CUSTODY FORM

CLIENT NAME:	Omega Environmental
ADDRESS:	280 Huyler St.
CITY:	S. Hackensack
STATE:	NJ
ZIP:	07606

STATE AGENCY (CIRCLE ONE)	NJ NY PA
PROJECT NAME:	PS&S Garage 20-1205
CONTACT:	David Ekstrand
OFFICE PHONE #:	201-489-8700
OFFICE FAX #:	
INITIAL RESULTS TO:	Lab@omega-env.com/davide@omega-env.com
EMAIL FOR INVOICE:	

AAR QUOTE #		ANALYSIS	
AAR WORK ORDER #	2001607	PRES. CODE --	NX
P.O. #		CONT. CODE --	PL

COLLECTION INFORMATION					AAR SAMPLE #
CUSTOMER SAMPLE # / ID	DATE / TIME SAMPLED	MATRIX CODE	DEPTH	# OF CONTAINERS	
1205-01	10/1/20			G x	-01
1205-02	↓			G x	-02
1205-03				G x	-03
1205-04				G x	-04

MATRIX CODES: S = SOIL A = AQUEOUS GW = GROUND WATER WW = WASTE WATER SW = SURFACE WATER P = POTABLE WATER O = OIL K = SOLID X = OTHER
 CONTAINER TYPE CODES: G = GLASS P = PLASTIC E = ENCORE PRESERVATIVES CODES: 1 = HCl 2 = HNO₃ 3 = H₂SO₄ 4 = NaOH 5 = OTHER
 TURNAROUND TIME: (CIRCLE ONE) STANDARD X 5 DAY 72 HRS. 48 HRS. 24 HRS. OTHER _____
 (IF BLANK STANDARD WILL APPLY)
 REPORT TYPE: RESULTS ONLY X REDUCED _____ FULL _____ EDD _____ EXCEL SPREADSHEET _____

COMMENTS: PCBs in Caulk
 COOLER TEMP: 20°C

PERSON(S) ASSUMING RESPONSIBILITY FOR SAMPLING: PRINT: David Ekstrand SIGN: *[Signature]*

SIGN BELOW WHEN DELIVERING SAMPLES. EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY, CUSTODY MUST BE DOCUMENTED.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Print Name: David Ekstrand	Print Name: <i>[Signature]</i> Kathy Imbro	Print Name:	Print Name:
Signature:	Signature: <i>[Signature]</i> Kilmacio	Signature:	Signature:
Agency: Omega Environmental	Agency: AAR	Agency:	Agency:
Date Received: 10/2/2020	Time: 15:25	Date Received:	Time:
RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Print Name:	Print Name:	Print Name:	Print Name:
Signature:	Signature:	Signature:	Signature:
Agency:	Agency:	Agency:	Agency:
Date Received:	Time:	Date Received:	Time:

C. XRF

C1. Laboratory Analytical Reports

Job ID	Reading #	Date/Time	Inspector	Analytic Mode	LOCATION	Room Equivalent	Wall (side)	Component	Substrate	Color	Paint Condition	Concentration mg/cm ²	Result
20-1205	1	10/01/2020 08:33:42	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Calibration						1.1	Positive
20-1205	2	10/01/2020 08:34:03	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Calibration						1	Positive
20-1205	3	10/01/2020 08:34:23	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Calibration						1	Positive
20-1205	4	10/01/2020 08:34:59	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Calibration						0.1	Negative
20-1205	5	10/01/2020 08:35:10	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Calibration						0	Negative
20-1205	6	10/01/2020 08:35:20	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Calibration						0.1	Negative
20-1205	7	10/01/2020 08:36:05	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof	A	Door	Metal	Green	Deteriorated	0.2	Negative
20-1205	8	10/01/2020 08:36:36	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof	A	Door Buck	Metal	Green	Deteriorated	0.2	Negative
20-1205	9	10/01/2020 08:40:09	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof	Center	Pipe	Metal	Red	Deteriorated	0.1	Negative
20-1205	10	10/01/2020 08:40:37	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof	Center	Pipe	Metal	Red	Deteriorated	0	Negative
20-1205	11	10/01/2020 08:41:35	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof	Center	Pipe	Metal	Yellow	Intact	0.1	Negative
20-1205	12	10/01/2020 08:46:14	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Door	Metal	Green	Deteriorated	0.2	Negative
20-1205	13	10/01/2020 08:48:11	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Door	Metal	Blue	Deteriorated	0.3	Negative
20-1205	14	10/01/2020 08:48:36	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Door Buck	Metal	Blue	Deteriorated	0.5	Negative
20-1205	15	10/01/2020 08:49:43	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Ladder	Metal	Green	Deteriorated	2.7	Positive
20-1205	16	10/01/2020 08:49:57	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Ladder	Metal	Green	Deteriorated	1.3	Positive
20-1205	17	10/01/2020 08:53:25	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Pipe	Metal	Green	Deteriorated	13.3	Positive
20-1205	18	10/01/2020 08:53:55	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Pipe	Metal	Green	Deteriorated	0.2	Negative
20-1205	19	10/01/2020 08:56:38	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Pipe	Metal	Green	Deteriorated	16.1	Positive
20-1205	20	10/01/2020 08:57:16	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Exterior-Roof entrance by Caldwell Pl	A	Ladder	Metal	Green	Deteriorated	1.2	Positive
20-1205	21	10/01/2020 09:01:03	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Roof Penthouse	Ceiling	Ceiling	Concrete	Grey	Deteriorated	0.4	Negative
20-1205	22	10/01/2020 09:03:31	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Roof Penthouse	D	Wall	Wood	Black	Intact	-0.2	Negative
20-1205	23	10/01/2020 09:04:50	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Roof Penthouse	A	Door	Metal	Grey	Deteriorated	0.1	Negative
20-1205	24	10/01/2020 09:08:18	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	A	Stair Railing	Metal	Grey	Deteriorated	1.1	Positive
20-1205	25	10/01/2020 09:08:54	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	Center	Stair Railing	Metal	Grey	Deteriorated	1.8	Positive
20-1205	26	10/01/2020 09:09:36	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	Center	Stair Treads	Metal	Grey	Deteriorated	0.1	Negative
20-1205	27	10/01/2020 09:10:21	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	Center	Stair-Springer	Metal	Grey	Intact	0.8	Negative
20-1205	28	10/01/2020 09:11:36	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	B	Wall	Concrete	Tan	Deteriorated	0.1	Negative
20-1205	29	10/01/2020 09:11:58	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	A	Wall	Concrete	Tan	Deteriorated	0.2	Negative
20-1205	30	10/01/2020 09:12:11	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	A	Wall	Concrete	Blue	Intact	0.5	Negative
20-1205	31	10/01/2020 09:13:47	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	Ceiling	Ceiling	Concrete	Tan	Intact	0.2	Negative
20-1205	32	10/01/2020 09:16:52	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 7th Fl	A	Pipe	Metal	Blue	Intact	0.2	Negative
20-1205	33	10/01/2020 09:18:06	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	D	Wall	Concrete	White	Intact	0	Negative
20-1205	34	10/01/2020 09:18:33	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	B	Wall	Concrete	White	Intact	0.1	Negative
20-1205	35	10/01/2020 09:19:35	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	Center	Stair Understep	Metal	Blue	Deteriorated	1.3	Positive
20-1205	36	10/01/2020 09:20:25	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	Center	Stair Understep	Metal	Blue	Deteriorated	1.1	Positive
20-1205	37	10/01/2020 09:25:15	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	Center	Stair Railing	Metal	Grey	Deteriorated	3.9	Positive
20-1205	38	10/01/2020 09:25:31	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	Center	Stair Railing	Metal	Grey	Deteriorated	1.3	Positive
20-1205	39	10/01/2020 09:26:42	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	D	Vertical Pipe	Metal	Grey	Intact	0.2	Negative
20-1205	40	10/01/2020 09:27:20	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	D	Wall	Concrete	Grey	Intact	0.1	Negative
20-1205	41	10/01/2020 09:27:37	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 6th Fl	C	Wall	Concrete	White	Intact	0	Negative
20-1205	42	10/01/2020 09:28:56	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 5th Fl	Ceiling	Ceiling	Concrete	White	Deteriorated	0.4	Negative
20-1205	43	10/01/2020 09:37:51	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 5th Fl	Center	Stair Understep	Metal	Blue	Deteriorated	0.7	Negative
20-1205	44	10/01/2020 09:39:02	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 4th Fl	Center	Stair Understep	Metal	Blue	Deteriorated	1.1	Positive
20-1205	45	10/01/2020 09:39:25	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 4th Fl	Center	Stair Understep	Metal	Blue	Deteriorated	0.5	Negative
20-1205	46	10/01/2020 09:40:43	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 4th Fl	D	Wall	Concrete	White	Intact	0.2	Negative
20-1205	47	10/01/2020 09:41:16	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase 4th Fl	C	Wall	Concrete	Grey	Intact	0	Negative
20-1205	48	10/01/2020 09:43:20	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase Basement	D	Door	Metal	Grey	Intact	0.1	Negative
20-1205	49	10/01/2020 09:46:10	Keri-Dean Scariett	Lead Paint	Union County Court Garage	Staircase by Caldwell Place Basement	D	Door	Metal	Blue	Intact	0.2	Negative

20-1205	50	10/01/2020 09:46:47	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place Basement	D	Door Buck	Metal	Blue	Intact	0.2	Negative
20-1205	51	10/01/2020 09:47:45	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place Basement	B	Wall	Concrete	Tan	Denigrated	0.3	Negative
20-1205	52	10/01/2020 09:48:20	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place Basement	D	Wall	Concrete	Blue	Denigrated	0.2	Negative
20-1205	53	10/01/2020 09:48:30	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	C	Wall	Concrete	Tan	Denigrated	0.3	Negative
20-1205	54	10/01/2020 09:50:27	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	B	Window Sill	Concrete	Blue	Denigrated	0.1	Negative
20-1205	55	10/01/2020 09:51:26	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	Center	Stair Railing	Metal	Blue	Denigrated	0.1	Negative
20-1205	56	10/01/2020 09:51:39	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	Center	Stair Railing	Metal	Blue	Denigrated	0.4	Negative
20-1205	57	10/01/2020 09:52:21	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	Center	Stair Treads	Concrete	Blue	Denigrated	0.1	Negative
20-1205	58	10/01/2020 09:52:44	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	Center	Stair Spindles	Metal	Blue	Denigrated	0.9	Negative
20-1205	59	10/01/2020 09:53:37	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	Center	Stair Understride	Metal	Blue	Denigrated	1.3	Positive
20-1205	60	10/01/2020 09:54:06	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	Center	Stair Understride	Metal	Blue	Denigrated	0.7	Negative
20-1205	61	10/01/2020 09:54:34	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 1st Floor	Center	Stair Understride	Metal	Blue	Denigrated	0.7	Negative
20-1205	62	10/01/2020 09:57:32	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 3rd Floor	A	Wall	Concrete	Blue	Denigrated	0.1	Negative
20-1205	63	10/01/2020 09:58:20	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 3rd Floor	C	Wall	Concrete	Tan	Denigrated	0.1	Negative
20-1205	64	10/01/2020 10:09:29	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	D	Wall	Concrete	Tan	Denigrated	0.1	Negative
20-1205	65	10/01/2020 10:09:51	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	A	Wall	Concrete	Blue	Denigrated	0.1	Negative
20-1205	66	10/01/2020 10:10:42	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	Center	Stair Understride	Metal	Blue	Denigrated	0.9	Negative
20-1205	67	10/01/2020 10:11:33	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	Center	Stair Newel Post	Metal	Blue	Denigrated	0.7	Negative
20-1205	68	10/01/2020 10:12:08	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	Center	Stair Railing	Metal	Blue	Denigrated	0.2	Negative
20-1205	69	10/01/2020 10:13:27	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	D	Vertical Pipe	Metal	Blue	Denigrated	1.5	Positive
20-1205	70	10/01/2020 10:13:49	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	D	Vertical Pipe	Metal	White	Denigrated	0.3	Negative
20-1205	71	10/01/2020 10:14:17	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	D	Vertical Pipe	Metal	White	Denigrated	0.5	Negative
20-1205	72	10/01/2020 10:14:44	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	D	Vertical Pipe	Metal	Blue	Denigrated	0.7	Negative
20-1205	73	10/01/2020 10:15:03	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	D	Vertical Pipe	Metal	Blue	Denigrated	0.9	Negative
20-1205	74	10/01/2020 10:15:33	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Staircase by Caldwell Place 6th Floor	D	Vertical Pipe	Metal	Blue	Denigrated	2	Positive
20-1205	75	10/01/2020 10:25:18	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	6th Floor Garage	C	Wall	Concrete	White	Denigrated	0.2	Negative
20-1205	76	10/01/2020 10:26:59	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	6th Floor Garage	C	Wall	Concrete	White	Denigrated	0.2	Negative
20-1205	77	10/01/2020 10:27:38	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	6th Floor Garage	Center	Column	Concrete	White	Denigrated	0.3	Negative
20-1205	78	10/01/2020 10:30:04	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	6th Floor Garage	C	Elevator Door	Metal	Blue	Intact	0.1	Negative
20-1205	79	10/01/2020 10:30:27	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	6th Floor Garage	C	Elevator Buck	Metal	Blue	Intact	0.8	Negative
20-1205	80	10/01/2020 10:32:52	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	6th Floor Garage	C	Column	Concrete	White	Intact	0.1	Negative
20-1205	81	10/01/2020 10:33:35	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	6th Floor Garage	C	Column	Concrete	White	Intact	0.1	Negative
20-1205	82	10/01/2020 10:34:04	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	6th Floor Garage	C	Column	Concrete	White	Intact	0.1	Negative
20-1205	83	10/01/2020 10:42:22	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	2nd Floor Garage Ramp	D	Wall	Concrete	Green	Denigrated	0	Negative
20-1205	84	10/01/2020 10:45:05	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	2nd Floor Garage Ramp	C	Elevator Door	Metal	Blue	Denigrated	0.1	Negative
20-1205	85	10/01/2020 10:50:24	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	1st Floor Garage	C	Door Buck	Metal	Grey	Denigrated	0	Negative
20-1205	86	10/01/2020 11:00:33	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center	A	Wall	Concrete	White	Intact	-0.2	Negative
20-1205	87	10/01/2020 11:01:36	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center	A	Door	Metal	Blue	Intact	0.1	Negative
20-1205	88	10/01/2020 11:02:04	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center	A	Door Buck	Metal	Blue	Intact	0.1	Negative
20-1205	89	10/01/2020 11:05:05	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center	C	Radiator	Metal	Blue	Intact	0.2	Negative
20-1205	90	10/01/2020 11:10:24	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center GYM	A	Wall	Concrete	White	Intact	0.1	Negative
20-1205	91	10/01/2020 11:10:44	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center GYM	B	Wall	Concrete	White	Intact	0.1	Negative
20-1205	92	10/01/2020 11:11:27	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center GYM	A	Door	Metal	Blue	Intact	0.1	Negative
20-1205	93	10/01/2020 11:12:30	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center GYM	Ceiling	Ceiling	Plaster	White	Intact	0.1	Negative
20-1205	94	10/01/2020 11:14:55	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center Bathroom	C	Window Frame	Metal	Silver	Intact	0.3	Negative
20-1205	95	10/01/2020 11:16:55	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center Private Hallway	D	Wall	Concrete	Tan	Intact	6	Positive
20-1205	96	10/01/2020 11:17:50	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	8th Floor Training Center Private Hallway	B	Wall	Concrete	Tan	Intact	0.3	Negative
20-1205	97	10/01/2020 11:17:50	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	8th Floor Training Center Private Hallway	D	Wall	Concrete	Tan	Intact	4.2	Positive
20-1205	98	10/01/2020 11:18:04	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	10th Floor Training Center Private Hallway	D	Wall	Concrete	Tan	Intact	4.8	Positive
20-1205	99	10/01/2020 11:22:36	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center Center Cell	Ceiling	Ceiling	Metal	Pink	Intact	0.3	Negative
20-1205	100	10/01/2020 11:24:56	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	7th Floor Training Center Cell	Ceiling	Ceiling	Metal	White	Intact	0.4	Negative
20-1205	101	10/01/2020 11:42:36	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Upper Basement OSY Valves Pump Room	A	Electrical Panel	Metal	Grey	Denigrated	0.2	Negative
20-1205	102	10/01/2020 11:43:29	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Upper Basement OSY Valves Pump Room	A	Door Buck	Metal	Grey	Denigrated	0.5	Negative
20-1205	103	10/01/2020 11:43:53	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Upper Basement OSY Valves Pump Room	A	Door	Metal	Grey	Intact	0.2	Negative
20-1205	104	10/01/2020 11:44:52	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Upper Basement OSY Valves Pump Room	D	Fire Pipe	Metal	Red	Intact	1.9	Positive
20-1205	105	10/01/2020 11:45:14	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Upper Basement OSY Valves Pump Room	D	Fire Pipe	Metal	Red	Intact	0.4	Negative
20-1205	106	10/01/2020 11:45:52	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Union County Court Garage	Upper Basement OSY Valves Pump Room	B	Fire Pipe	Metal	Red	Intact	0	Negative

20-1205	107	10/01/2020 11:46:25	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Upper Basement OSY Valves	Pump Room	D	Fire Pipe	Metal	Red	Intact	0.1	Negative
20-1205	108	10/01/2020 11:46:46	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Upper Basement OSY Valves	Pump Room	D	Fire Pipe	Metal	Red	Intact	1.3	Positive
20-1205	109	10/01/2020 11:47:06	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Upper Basement OSY Valves	Pump Room	D	Fire Pipe	Metal	Red	Intact	0.1	Negative
20-1205	110	10/01/2020 12:00:32	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							1	positive
20-1205	111	10/01/2020 12:00:52	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							1.1	positive
20-1205	112	10/01/2020 12:01:12	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							0.1	Negative
20-1205	113	10/01/2020 12:01:33	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							0.1	Negative
20-1205	114	10/01/2020 12:01:42	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							0.1	Negative
20-1205	115	10/01/2020 12:01:52	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							-0.2	Negative
20-1205	116	10/01/2020 12:06:38	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Lower Basement Electrical Room		A	Wall	Metal	White	Denormalized	0	Negative
20-1205	117	10/01/2020 12:07:00	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Lower Basement Electrical Room		C	Wall	Metal	White	Intact	0.1	Negative
20-1205	118	10/01/2020 12:09:42	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Lower Basement Garage		D	Wall	Concrete	White	Denormalized	0.3	Negative
20-1205	119	10/01/2020 12:10:28	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Lower Basement Garage		C	Wall	Concrete	White	Denormalized	0	Negative
20-1205	120	10/01/2020 12:11:34	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Lower Basement Electrical Room		A	Door Buck	Metal	White	Denormalized	0.2	Negative
20-1205	121	10/01/2020 12:13:46	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Lower Basement Garage Roadway Ramp		B	Wall	Concrete	Yellow	Denormalized	0.3	Negative
20-1205	122	10/01/2020 12:16:04	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Exterior		D	Wall	Concrete	White	Intact	0	Negative
20-1205	123	10/01/2020 12:16:30	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Exterior		D	Wall	Concrete	White	Intact	0.3	Negative
20-1205	124	10/01/2020 12:19:01	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Exterior-Front of Garage		A	Gas Pipe	Metal	Grey	Denormalized	0	Negative
20-1205	125	10/01/2020 12:20:07	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Exterior-Front of Garage		A	Foundation	Concrete	Yellow	Denormalized	0.2	Negative
20-1205	126	10/01/2020 12:22:46	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Exterior-Caldwell Side		B	Foundation	Concrete	Yellow	Denormalized	0.7	Negative
20-1205	127	10/01/2020 12:27:22	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration		B	Fire Pipe	Metal	Red	Denormalized	1	Positive
20-1205	128	10/01/2020 12:27:51	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							1	Positive
20-1205	129	10/01/2020 12:28:10	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							1.1	Positive
20-1205	130	10/01/2020 12:28:29	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							0	Negative
20-1205	131	10/01/2020 12:28:54	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							0	Negative
20-1205	132	10/01/2020 12:29:03	Keri-Dean Scarlett	Lead Paint	Union County Court Garage	Calibration							0	Negative
20-1205	133												0	Negative

New York State – Department of Labor

Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

Omega Laboratories, Inc.
280 Huyler Street
S. Hackensack, NJ 07606

FILE NUMBER: 99-0200
LICENSE NUMBER: 29673
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 02/27/2020
EXPIRATION DATE: 02/28/2021

Duly Authorized Representative – Gary Mellor:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.



Eileen M. Franko, Director
For the Commissioner of Labor

SH 432 (8/12)

United States Environmental Protection Agency

This is to certify that

Omega Environmental Services, Inc.

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires November 16, 2022

LBP-10722-2

Certification #

May 16, 2019

Issued On



Michelle Price

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch



September 29, 2023

Mr. Andrew P. Adornato
Principal
USA Architects
20 North Doughty Avenue
Somerville, NJ 08876

Re: Limited Asbestos and PCB Bulk Sampling and Analysis Report
Union County Courthouse Parking Deck
Elizabeth, New Jersey

RJB Project #: 2023033-01

Dear Mr. Adornato:

RJB Environmental, Inc., (RJB) was contracted by USA Architects to perform limited bulk sampling assessment work within the referenced facility. The assessment was limited to those suspect materials which were not identified or sampled in the report prepared by Omega. The asbestos bulk sampling was performed over the period of two (2) separate days (i.e., August 17, 2023, and September 25, 2023). The assessment included the sampling and analysis of suspect Asbestos Containing Building Materials (ACBM). The sampling was performed by accredited AHERA Building Inspectors, Richard Beach and Lydia Ramos-Negron. In addition, RJB collected a composite sample of the window caulk for analysis for Polychlorinated Biphenyls (PCBs).

RJB's Building Inspectors inspected the 7th Floor as well as the 5th and 6th floors and the Skyway which connects the 7th floor of the Parking deck to the Courthouse. RJB collected two (2) samples of Window Caulk, five (5) samples of sprayed-on beam fire proofing from the 5th and 6th floors, three (3) samples finish and brown coat plaster and 2 samples of 12"x12" Off-white Floor tile with Blue and Grey Chips and Associated Mastic from the Skyway. All samples were collected in accordance with the United States Environmental Protection Agency's (USEPA'S) Asbestos Hazard Emergency Response Act (AHERA) regulation, 40 CFR, Part 763. These sample results are reflected in Table 1 below.

RJB conducted its bulk sampling of non-friable floor tile and associated mastic that were not previously sampled and assumed to be ACM within the Management Plan.

Table 1: Bulk Sample Results				
Sample #	Material	Location	Result	
			PLM	TEM
01RB081723	Window Caulk	7 th Floor Basketball Yard	ND	ND
02RB081723	Window Caulk	6 th Floor Stairwell	4% Chrysotile	N/A

ND – None Detected; N/A – Not Applicable; SP – Stop First Positive; IM – Insufficient Material

Service with experience, integrity and value

P.O. Box 869 Levittown, PA, 19058

Website: www.rjbenv.com | Phone: 267-991-9212 | Fax: 267-799-4443

Table 1: Bulk Sample Results (Continued...)				
Sample #	Material	Location	Result	
			PLM	TEM
03RB081723	Fireproofing - SOFP	6 th Floor Garage Beam	ND	NA
04RB081723	Fireproofing - SOFP	6 th Floor Garage Beam	ND	NA
05RB081723	Fireproofing - SOFP	5 th Floor Garage Beam	ND	NA
06RB081723	Fireproofing - SOFP	5 th Floor Garage Beam	ND	NA
07RB081723	Fireproofing - SOFP	6 th Floor Garage Beam	ND	NA
01RB092523	Finish & Brown Coat Plaster	7 th Floor Skyway	ND	NA
02RB092523	Finish & Brown Coat Plaster	7 th Floor Skyway	ND	NA
03RB092523	Finish & Brown Coat Plaster	7 th Floor Skyway	ND	NA
04RB092523	12"x12" Off-white Floor Tile/Mastic	7 th Floor Skyway	ND	ND
05RB092523	12"x12" Off-white Floor Tile/Mastic	7 th Floor Skyway	ND	NA
ND – None Detected; N/A – Not Applicable; SP – Stop First Positive; IM – Insufficient Material				

The samples collected were submitted to EMSL Analytical, Inc., located in Cinnaminson and Piscataway, New Jersey, for Polarized Light Microscopy (PLM) analysis. Where negative results were reported by PLM or results of less than one percent (<1%) by weight and if a non-friable organically bound (NOB) material, the materials were further analyzed using Transmission Electron Microscopy for NOB materials (TEM/NOB). EMSL participates in the National Voluntary Laboratory Accreditation Program (NVLAP) and is accredited by the American Industrial Hygiene Association (AIHA) for the analysis performed. According to the United States Environmental Protection Agency (USEPA), materials that are greater than one percent (>1%) asbestos by weight are classified as a Regulated Asbestos Containing Material (RACM).

RJB recommends that the window caulk material be removed as ACM by a State of New Jersey, Department of Labor and Workforce Development (NJDOLEWD) licensed asbestos abatement Contractor. Inspections and air monitoring during and at the completion of removal should be performed by a licensed Asbestos Safety Control Monitoring (ASCM) firm.

PCB'S IN WINDOW CAULK

The United States Environmental Protection Agency (USEPA) regulates disposal of caulking/glazing that contains greater than 50 parts per million, which is equivalent to 50 milligrams per Kilogram (mg/Kg) under 40 CFR, Part 761, the Toxic Substances Control Act (TSCA).

RJB collected one (1) composite sample of representative exterior window caulk from the Basketball Yard as well as the 6th floor Stairwell. Sub-samples for each caulk composite sample were extracted from at least three (3) metal window and door locations. The sample was submitted to EMSL Analytical, Inc., for analysis in accordance with USEPA SW-846 Method 8082 using Gas Chromatography.

The following table outlines the results of the composite sample collected:

Table 9: PCB Results	
Material	Analytical Results (mg/Kg)
03AB090123 Exterior Windows, Basketball Yard and 6 th Floor Stairwell	Aroclor-1016 – ND
	Aroclor-1221 – ND
	Aroclor-1232 – ND
	Aroclor-1242 – ND
	Aroclor-1248 – ND
	Aroclor-1254 – 43
	Aroclor-1260 – ND
	Aroclor-1262 – ND
	Aroclor 1268 – ND
ND= Not Detected Detection Limit = 0.22-0.34 mg/kg (ppm)	

The composite sample collected from the exterior window caulks had 43 mg/kg PCBs detected and is below the regulated concentration of 50 mg/Kg.

Sampling Chains of Custody and associated analytical data are appended to this report. Should you have any questions or require additional information, please contact the undersigned at your earliest convenience.

Respectfully,
 RJB ENVIRONMENTAL, INC.



Richard J. Beach
 President

Company:\Projects\Learning Community Charter School\2023020-01\060123fpr01

Appendix I

Asbestos and PCB Analysis Reports And Associated Chains of Custody

Service with experience, integrity and value

P.O. Box 869 Levittown, PA, 19058

Website: www.rjbenv.com | Phone: 267-991-9212 | Fax: 267-799-4443



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order ID: 042320314
Customer ID: RJBE42
Customer PO:
Project ID:

Attn: Rick Beach Phone: (609) 203-3115
RJB Environmental Fax:
PO Box 869 Collected: 8/16/2023
Levittown, PA 19055 Received: 8/16/2023
Analyzed: 8/18/2023

Proj: 2023033-01 / USA Architects / Limited Environmental Assessment / Elizabethtown Parking Deck

Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 01-RB081623 **Lab Sample ID:** 042320314-0001

Sample Description: Basketball Yard/01 - Tan Caulk in Yards

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	8/17/2023	Tan	0.0%	100.0%	None Detected	
TEM Grav. Reduction	8/18/2023	Tan	0.0%	100.0%	None Detected	

Client Sample ID: 02-RB081623 **Lab Sample ID:** 042320314-0002

Sample Description: Window off 6th Floor Stairwell/02 - White Caulk at Stairwell

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	8/17/2023	Gray/White	0.0%	96.0%	4% Chrysotile	

Client Sample ID: 03-RB081623 **Lab Sample ID:** 042320314-0003

Sample Description: 6th Floor Garage Beams/03 - Fireproofing - SOFP

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	8/17/2023	Gray	40.0%	60.0%	None Detected	

Client Sample ID: 04-RB081623 **Lab Sample ID:** 042320314-0004

Sample Description: 6th Floor Garage Beams/03 - SOFP

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	8/17/2023	Gray	40.0%	60.0%	None Detected	

Client Sample ID: 05-RB081623 **Lab Sample ID:** 042320314-0005

Sample Description: 5th Floor Garage Beams/03 - SOFP

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	8/17/2023	Gray	50.0%	50.0%	None Detected	

Client Sample ID: 06-RB081623 **Lab Sample ID:** 042320314-0006

Sample Description: 5th Floor Garage Beams/03 - SOFP

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	8/17/2023	Gray	50.0%	50.0%	None Detected	

Client Sample ID: 07-RB081623 **Lab Sample ID:** 042320314-0007

Sample Description: 6th Floor Garage Beams/03 - SOFP

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	8/17/2023	Gray	50.0%	50.0%	None Detected	



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order ID: 042320314
Customer ID: RJBE42
Customer PO:
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material

Analyst(s):

Cory Caragiulo PLM (2)
Gregory Barry TEM Grav. Reduction (1)
Michelle Quach PLM (5)

Reviewed and approved by:

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This is a summary report; official reports are available on LabConnect or upon request and relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA LAP, LLC-IHLAP Lab 100194, NJ DEP 03036, PA ID# 68-00367, LA #04127

Initial report from: 08/17/2023 14:06:09

042320314

Bulk Sample Collection Form

Client: USA Architects
 Project #: 2023033-01
 Project Name: Limited Environmental Assessment
 Building/Location: Elizabethtown Parking Deck

Released By: *[Signature]*
 Received By: *[Signature]*
 Analyzed By:

Date: 08/16/2023
 Date: 8/16/23 1735p
 Date:

Turn Around Time: 6 hr 12Hr 24 Hr 48 Hr

Sample #	Location	Material Type/ID	Amount SF/LF	Type of Analysis	
				PLM	TEM/NOB
01A3081623	Basketball Yard	01- Tan Caulk in Yards		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
02A3081623	Window off 6th floor Stairwell	02- White Caulk @ Stairwell		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
03A3081623	6th floor garage beams	03- Fireproofing (SOFP)		<input checked="" type="checkbox"/>	<input type="checkbox"/>
04A3081623	6th floor garage beams	03 - SOFP		<input checked="" type="checkbox"/>	<input type="checkbox"/>
05A3081623	5th floor garage beams	03 - SOFP		<input checked="" type="checkbox"/>	<input type="checkbox"/>
06A3081623	5th floor garage beams	03 - SOFP		<input checked="" type="checkbox"/>	<input type="checkbox"/>
07A3081623	6th floor garage beams	03 - SOFP		<input checked="" type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>

RECEIVED
 EMSL
 CINNAMINSON, N.J.
 2023 AUG 16 P 12:36

Stop at 1st Positive for each Homogenous Material ID

RJB ENVIRONMENTAL, INC.
 P.O. Box 869
 Levittown, PA 19055
 Phone: 267-991-9212
 Fax: 267-799-4443



EMSL Analytical, Inc.

1056 Stelton Road Piscataway, NJ 08854
Phone/Fax: (732) 981-0550 / (732) 981-0551
<http://www.EMSL.com> / piscatawaylab@emsl.com

EMSL Order ID: 052304998
Customer ID: RJBE42
Customer PO:
Project ID:

Attn: Rick Beach Phone: (609) 203-3115
RJB Environmental Fax:
PO Box 869 Collected:
Levittown, PA 19055 Received: 9/25/2023
Analyzed: 9/26/2023

Proj: 2023033-01 / USA Architects / Limited Environmental Assessment / Elizabethtown Parking Deck

Summary Test Report for Asbestos Analysis of Bulk Materials in Accordance with N.J.A.C. 8:60 and 12:120

Client Sample ID: 01RB092523-Skim Coat **Lab Sample ID:** 052304998-0001

Sample Description: Skyway-Interior Hallway/Finish/Browncoat Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	White	<1%	100.0%	None Detected	

Client Sample ID: 01RB092523-Plaster **Lab Sample ID:** 052304998-0001A

Sample Description: Skyway-Interior Hallway/Finish/Browncoat Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 02RB092523-Skim Coat **Lab Sample ID:** 052304998-0002

Sample Description: Skyway-Interior Hallway/Finish/Browncoat Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 02RB092523-Plaster **Lab Sample ID:** 052304998-0002A

Sample Description: Skyway-Interior Hallway/Finish/Browncoat Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	Brown	<1%	100.0%	None Detected	

Client Sample ID: 03RB092523-Skim Coat **Lab Sample ID:** 052304998-0003

Sample Description: Skyway-Interior Hallway/Finish/Browncoat Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	White	<1%	100.0%	None Detected	

Client Sample ID: 03RB092523-Plaster **Lab Sample ID:** 052304998-0003A

Sample Description: Skyway-Interior Hallway/Finish/Browncoat Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	Brown	<1%	100.0%	None Detected	

Client Sample ID: 04RB092523-Floor Tile **Lab Sample ID:** 052304998-0004

Sample Description: Skyway-Interior Hallway/12x12 Off-White Floor Tile/Mastic

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	White	0.0%	100.0%	None Detected	
TEM Grav. Reduction	9/26/2023	White	0.0%	100.0%	None Detected	



EMSL Analytical, Inc.

1056 Stelton Road Piscataway, NJ 08854
Phone/Fax: (732) 981-0550 / (732) 981-0551
<http://www.EMSL.com> / piscatawaylab@emsl.com

EMSL Order ID: 052304998
Customer ID: RJBE42
Customer PO:
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials in Accordance with N.J.A.C. 8:60 and 12:120

Client Sample ID: 04RB092523-Mastic **Lab Sample ID:** 052304998-0004A

Sample Description: Skyway-Interior Hallway/12x12 Off-White Floor Tile/Mastic

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	Black	3.0%	97.0%	None Detected	
TEM Grav. Reduction	9/26/2023	Black	0.0%	100.0%	None Detected	

Client Sample ID: 05RB092523-Floor Tile **Lab Sample ID:** 052304998-0005

Sample Description: Skyway-Interior Hallway/12x12 Off-White Floor Tile/Mastic

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	White	<1%	100.0%	None Detected	

Client Sample ID: 05RB092523-Mastic **Lab Sample ID:** 052304998-0005A

Sample Description: Skyway-Interior Hallway/12x12 Off-White Floor Tile/Mastic

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/25/2023	Black	<1%	100.0%	None Detected	

Analyst(s):

Colin Slattery TEM Grav. Reduction (2)
Suzanne Matias PLM (10)

Reviewed and approved by:

C. Michael Slattery, Lab Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This is a summary report; official reports are available on LabConnect or upon request and relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Piscataway, NJ NYS ELAP 11423, NVLAP Lab Code 101048-2, NJ NELAC 12037, Philadelphia 289, CT PH-0266

Initial report from: 09/26/2023 14:00:00

052304998

Bulk Sample Collection Form

Richard B. Berman
 Released By: *Richard Berman*

Client: USA Architects
 Project #: 2023033-01
 Project Name: Limited Environmental Assessment
 Building/Location: Elizabethtown Parking Deck

Date: *09/25/2023*

Received By: _____ Date: _____

Analyzed By: _____ Date: _____

Turn Around Time: 6 hr 12Hr 24 Hr 48 Hr

Sample #	Location	Material Type/ID	Amount SF/LF	Type of Analysis	
				PLM	TEM/NOB
01R002523	<i>Seating - Intermittent</i>	<i>FINISH/BENCHTOP</i>	588	<input checked="" type="checkbox"/>	<input type="checkbox"/>
02R002523	" "	<i>FINISH/BENCHTOP</i>	588	<input checked="" type="checkbox"/>	<input type="checkbox"/>
03R002523	" "	<i>FINISH/BENCHTOP</i>	588	<input checked="" type="checkbox"/>	<input type="checkbox"/>
04R002523	" "	<i>12 X 12 OFF-WHITE FLOOR TILE</i>	175	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
05R002523	" "	<i>12 X 12 OFF-WHITE FLOOR TILE</i>	175	<input checked="" type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>

Stop at 1st Positive for each Homogenous Material ID

RJB ENVIRONMENTAL, INC.
 P.O. Box 869
 Levittown, PA 19055
 Phone: 267-991-9212
 Fax: 267-799-4443

RECEIVED
 SEP 25 2023
 BY *EMSL*
 EMISL PISCATAWAY
Walk-14

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012360548**LIMS Reference ID:** AB60548**EMSL Customer ID:** RJBE42

August 23, 2023

Rick Beach
RJB Environmental [RJBE42]
PO Box 869
Levittown, PA 19055

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 8/16/2023. The results are tabulated on the attached pages for the following client designated project:

Environmental Assessment

The reference number for these samples is EMSL Order #: AB60548 . Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact the lab at 856-858-4800.

Owen McKenna Laboratory Manager or other approved signatory

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**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012360548**LIMS Reference ID:** AB60548**EMSL Customer ID:** RJBE42

Attention: Rick Beach
 RJB Environmental [RJBE42]
 PO Box 869
 Levittown, PA 19055
 (609) 203-3115
 rbeach@rjbenv.com

Project Name: Environmental Assessment**Customer PO:** 2023033-01**EMSL Sales Rep:** Josh Silverman**Received:** 08/16/2023 12:35**Reported:** 08/23/2023 18:08**Sample Condition on Receipt****Cooler ID: Default Cooler****Temperature: 23.5 °C**

Custody Seals	N
Containers Intact	N
COC/Labels Agree	N
Preservation Confirmed	N

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012360548**LIMS Reference ID:** AB60548**EMSL Customer ID:** RJBE42

Attention: Rick Beach
 RJB Environmental [RJBE42]
 PO Box 869
 Levittown, PA 19055
 (609) 203-3115
 rbeach@rjbenv.com

Project Name: Environmental Assessment**Customer PO:** 2023033-01**EMSL Sales Rep:** Josh Silverman**Received:** 08/16/2023 12:35**Reported:** 08/23/2023 18:08**Samples in this Report**

Lab ID	Sample	Matrix	Date Sampled	Date Received
AB60548-01	01PCB081623	Solid	08/16/2023	08/16/2023



EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012360548

LIMS Reference ID: AB60548

EMSL Customer ID: RJBE42

Attention: Rick Beach
 RJB Environmental [RJBE42]
 PO Box 869
 Levittown, PA 19055
 (609) 203-3115
 rbeach@rjbenv.com

Project Name: Environmental Assessment

Customer PO: 2023033-01

EMSL Sales Rep: Josh Silverman

Received: 08/16/2023 12:35

Reported: 08/23/2023 18:08

Positive Hits Summary

Lab ID	Client ID					Sampled
AB60548-01	01PCB081623					08/16/23 00:00
Method	Analyte	Result	Qualifier	Unit	Analyzed	
SW 846-8082A	Aroclor-1254	43	D	mg/kg	08/18/2023 18:07	

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted."

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012360548

LIMS Reference ID: AB60548

EMSL Customer ID: RJBE42

Attention: Rick Beach
 RJB Environmental [RJBE42]
 PO Box 869
 Levittown, PA 19055
 (609) 203-3115
 rbeach@rjbenv.com

Project Name: Environmental Assessment

Customer PO: 2023033-01

EMSL Sales Rep: Josh Silverman

Received: 08/16/2023 12:35

Reported: 08/23/2023 18:08

Sample Results

**Sample: 01PCB081623/Basketball Yard/6th Fir Stairwell Windows
 AB60548-01 (Solid)**

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Aroclor-1221	ND	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Aroclor-1232	ND	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Aroclor-1242	ND	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Aroclor-1248	ND	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Aroclor-1254	43	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Aroclor-1260	ND	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Aroclor-1262	ND	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Aroclor-1268	ND	D	10	2.3	mg/kg	08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
Surrogate(s)	Recovery	Q		Limits						
<i>Surrogate: Tetrachloro-m-xylene</i>	79%			21-123		08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A
<i>Surrogate: Decachlorobiphenyl</i>	94%			17-128		08/17/23 12:53	08/18/23 18:07	RAG/AJC	SW846 3540C	SW 846-8082A


EMSL Analytical, Inc.

 200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012360548

LIMS Reference ID: AB60548

EMSL Customer ID: RJBE42

Attention: Rick Beach
 RJB Environmental [RJBE42]
 PO Box 869
 Levittown, PA 19055
 (609) 203-3115
 rbeach@rjbenv.com

Project Name: Environmental Assessment

Customer PO: 2023033-01
EMSL Sales Rep: Josh Silverman
Received: 08/16/2023 12:35
Reported: 08/23/2023 18:08

Quality Control

GC-SVOA

Analyte	ResultQual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	------------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BBH0367 - SW846 3540C
Blank (BBH0367-BLK1)

Prepared: 8/17/2023 Analyzed: 8/18/2023

Aroclor-1016	ND	0.25	mg/kg						
Aroclor-1221	ND	0.25	mg/kg						
Aroclor-1232	ND	0.25	mg/kg						
Aroclor-1242	ND	0.25	mg/kg						
Aroclor-1248	ND	0.25	mg/kg						
Aroclor-1254	ND	0.25	mg/kg						
Aroclor-1260	ND	0.25	mg/kg						
Aroclor-1262	ND	0.25	mg/kg						
Aroclor-1268	ND	0.25	mg/kg						

Surrogate(s)

Surrogate: Tetrachloro-m-xylene		0.5000			78	21-123			
Surrogate: Decachlorobiphenyl		0.5000			93	17-128			

LCS (BBH0367-BS1)

Prepared: 8/17/2023 Analyzed: 8/18/2023

Aroclor-1016	4.55	0.25	mg/kg	5.000		91	37-120		
Aroclor-1260	4.85	0.25	mg/kg	5.000		97	45-121		

Surrogate(s)

Surrogate: Tetrachloro-m-xylene		0.5000			77	21-123			
Surrogate: Decachlorobiphenyl		0.5000			91	17-128			

Matrix Spike (BBH0367-MS1)
Source: AB60548-01

Prepared: 8/17/2023 Analyzed: 8/18/2023

Aroclor-1016	4.08	0.25	mg/kg	5.000	ND	82	30-133		
Aroclor-1260	14.6 M2, E	0.25	mg/kg	5.000	ND	291	30-134		

Surrogate(s)

Surrogate: Tetrachloro-m-xylene		0.5000			73	21-123			
Surrogate: Decachlorobiphenyl		0.5000			87	17-128			

Matrix Spike Dup (BBH0367-MSD1)
Source: AB60548-01

Prepared: 8/17/2023 Analyzed: 8/18/2023

Aroclor-1016	3.96	0.25	mg/kg	5.000	ND	79	30-133	3	28
Aroclor-1260	4.28 RO	0.25	mg/kg	5.000	ND	86	30-134	109	28

Surrogate(s)

Surrogate: Tetrachloro-m-xylene		0.5000			69	21-123			
Surrogate: Decachlorobiphenyl		0.5000			80	17-128			

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012360548**LIMS Reference ID:** AB60548**EMSL Customer ID:** RJBE42

Attention: Rick Beach
 RJB Environmental [RJBE42]
 PO Box 869
 Levittown, PA 19055
 (609) 203-3115
 rbeach@rjbenv.com

Project Name: Environmental Assessment**Customer PO:** 2023033-01**EMSL Sales Rep:** Josh Silverman**Received:** 08/16/2023 12:35**Reported:** 08/23/2023 18:08**Certified Analyses included in this Report**

Analyte	CAS #	Certifications
SW 846-8082A in Solid		
Aroclor-1016	12674-11-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1221	11104-28-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1232	11141-16-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1242	53469-21-9	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1248	12672-29-6	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1254	11097-69-1	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1260	11096-82-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1262	37324-23-5	NJDEP,NYSDOH,PADEP
Aroclor-1268	11100-14-4	NJDEP,NYSDOH,PADEP

List of Certifications

Code	Description	Number	Expires
MADEP	Massachusetts Department of Environmental Protection	M-NJ337	06/30/2023
California ELAP	California Water Boards	1877	06/30/2024
A2LA	A2LA Environmental Certificate	2845.01	07/31/2024
AIHA LAP	EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC-ELLAP Accredited	100194	01/01/2025
NJDEP	New Jersey Department of Environmental Protection	03036	06/30/2023
PADEP	Pennsylvania Department of Environmental Protection	68-00367	11/30/2023
NYSDOH	New York State Department of Health	10872	04/01/2024
CTDPH	Connecticut Department of Public Health	PH-0270	06/23/2023

Please see the specific Field of Testing (FOT) on www.emsl.com <<http://www.emsl.com>> for a complete listing of parameters for which EMSL is certified.

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012360548**LIMS Reference ID:** AB60548**EMSL Customer ID:** RJBE42

Attention: Rick Beach
 RJB Environmental [RJBE42]
 PO Box 869
 Levittown, PA 19055
 (609) 203-3115
 rbeach@rjbenv.com

Project Name: Environmental Assessment**Customer PO:** 2023033-01**EMSL Sales Rep:** Josh Silverman**Received:** 08/16/2023 12:35**Reported:** 08/23/2023 18:08**Notes and Definitions**

Item	Definition
D	Analyte was reported from a dilution run.
E	Result is beyond calibration range. This value is estimated.
M2	The Matrix Spike was outside of acceptable limits due to matrix bias.
RO	RPD for this compound was outside of the control limits.
(Dig)	For metals analysis, sample was digested.
[2C]	Reported from the second channel in dual column analysis.
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the detection limit.
Q	Qualifier
RL	Reporting Limit
%REC	Percent Recovery
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated

Measurement of uncertainty and any applicable definitions of method modifications are available upon request. Per EPA NLLAP policy, sample results are not blank corrected.

AB60548
PCB Bulk Sampling Form

Client: USA Architects
 Project #: 2023033-01
 Project Name: Environmental Assessment
 Building/Location: Elizabethtown Parking Deck

Sampled By: Richard Beach
 Released To: *Shirley W. Colleen Ballantine*
 Analyzed By:

Date: 08/16/2023
 Date: *8/16/23 12:35*
 Date: *8/16/23 12:35*

Turn Around Time: 24 Hr 48 Hr 1 Week 2 Week

23.5°C

Sample Identification #	Location	Matrix	Analysis Required (Specify Method if Known)	Quantity
<i>①</i> 21PCB281623	<i>Basement Vandal/Graffiti Markers Windows</i>	<i>CAULK</i>	PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	
			PCB's 3540C/8082A	

RJB ENVIRONMENTAL, INC.
 P.O. Box 869
 Levittown, PA 19055
 Phone: 267-991-9212
 Fax: 267-799-4443

Appendix II

Inspector and Laboratory Accreditations

Service with experience, integrity and value

P.O. Box 869 Levittown, PA, 19058

Website: www.rjbenv.com | Phone: 267-991-9212 | Fax: 267-799-4443

Certificate of Completion

awarded to

Richard J. Beach

for successfully completing the prescribed course of study in

Pennsylvania Asbestos Building Inspector Refresher Course

under TSCA Title II, Virtual Teleconference

presented by

ACCESS TRAINING SERVICES, INC.
7921 River Road, Pennsauken, NJ 08110
(856) 665-3449

4/22/22

Course Date

N/A

Exam Date

4/22/23

Expiration Date

Not Provided

Social Security Number

ACC-0422 -6-004

Certificate Number



Mark K. Schlager
Training Director

Certificate of Completion

awarded to

Lydia Ramos-Negron

for successfully completing the prescribed course of study in

Pennsylvania Asbestos Building Inspector Refresher Course

under TSCA Title II, Virtual Teleconference

presented by

ACCESS TRAINING SERVICES, INC.
7921 River Road, Pennsauken, NJ 08110
(856) 665-3449

2/17/23

Course Date

N/A

Exam Date

2/17/24

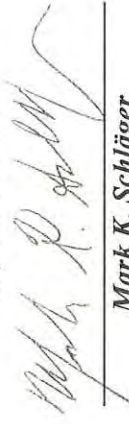
Expiration Date

Not Provided

Social Security Number

ACC-0223-6-035

Certificate Number



Mark K. Schlager
Training Director



AIHA Laboratory Accreditation Programs, LLC

acknowledges that

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Laboratory ID: LAP-100194

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA LAP), LLC accreditation to the ISO/IEC 17025:2017 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

<input checked="" type="checkbox"/>	INDUSTRIAL HYGIENE	Accreditation Expires: January 01, 2025
<input checked="" type="checkbox"/>	ENVIRONMENTAL LEAD	Accreditation Expires: January 01, 2025
<input checked="" type="checkbox"/>	ENVIRONMENTAL MICROBIOLOGY	Accreditation Expires: January 01, 2025
<input type="checkbox"/>	FOOD	Accreditation Expires:
<input type="checkbox"/>	UNIQUE SCOPES	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2017 and AIHA LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Cheryl O Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC



AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Laboratory ID: LAP-100194

Issue Date: 01/01/2023

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Industrial Hygiene Laboratory Accreditation Program (IHLAP)

Initial Accreditation Date: 02/01/1989

IHLAP Scope Category	Field of Testing (FOT)	Technology sub-type/Detector	Published Reference Method/Title of In-house Method	Component, parameter or characteristic tested
Asbestos/Fiber Microscopy Core	Phase Contrast Microscopy (PCM)	-	NIOSH 7400	Asbestos/Fibers
Asbestos/Fiber Microscopy Core	Polarized Light Microscopy (PLM)	-	EPA 600/R-93/116	Asbestos & Other Fibers in Bulk
Asbestos/Fiber Microscopy Core	Transmission Electron Microscopy (TEM)	-	EPA AHERA - 40 CFR Part 763	Asbestos
Asbestos/Fiber Microscopy Core	Transmission Electron Microscopy (TEM)	-	NIOSH 7402	Asbestos/Fibers
Chromatography Core	GC/MS	-	EPA TO-15	Volatile Organic Compounds
Chromatography Core	Gas Chromatography	GC/ECD	NIOSH 5502 Modified	Aldrin & Lindane
Chromatography Core	Gas Chromatography	GC/ECD	NIOSH 5503 Modified	Polychlorinated biphenyls
Chromatography Core	Gas Chromatography	GC/ECD	NIOSH 5510 Modified	Chlordane
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 1003 Modified	Halogenated Hydrocarbons
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 1005 Modified	Methylene Chloride
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 1400 Modified	Alcohols
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 1500 Modified	Hydrocarbons
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 1501 Modified	Aromatic Hydrocarbons
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 1550 Modified	Total Petroleum Hydrocarbons
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 1603 Modified	Acetic Acid
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 2000 Modified	Methyl Alcohol
Chromatography Core	Gas Chromatography (Diffusive Samplers)	-	NIOSH 1501	Aromatic Hydrocarbons

Effective: 06/07/2022

Revision: 9.2

Page 1 of 2



IHLAP Scope Category	Field of Testing (FOT)	Technology sub-type/Detector	Published Reference Method/Title of In-house Method	Component, parameter or characteristic tested
Chromatography Core	Ion Chromatography (IC)	-	NIOSH 6004 Modified	Sulfur Dioxide/Sulfate
Chromatography Core	Ion Chromatography (IC)	-	NIOSH 6011	Chlorine & Bromine
Chromatography Core	Ion Chromatography (IC)	-	NIOSH 7903	Inorganic Acids
Chromatography Core	Ion Chromatography (IC)	-	OSHA ID-214	Ozone
Chromatography Core	Ion Chromatography (IC)	-	OSHA ID-215 (Version 2) Modified	Hexavalent Chromium
Chromatography Core	Liquid Chromatography	HPLC/FL	NIOSH 2016	Formaldehyde
Chromatography Core	Liquid Chromatography	HPLC/UV	NIOSH 5506 Modified	Polynuclear Aromatic Hydrocarbons (PAHs)
Chromatography Core	Liquid Chromatography	LC/MS	NIOSH 9111 Modified	Methamphetamines
Miscellaneous Core	Gravimetric	-	NIOSH 0500	Total Dust
Miscellaneous Core	Gravimetric	-	NIOSH 0600	Respirable Dust
Miscellaneous Core	Gravimetric	-	NIOSH 5524	Metal Working Fluids
Miscellaneous Core	Thermo-optical Analysis (TOA)	-	NIOSH 5040	Elemental Carbon
Spectrometry Core	Atomic Absorption	CVAA	NIOSH 6009 Modified	Mercury
Spectrometry Core	Atomic Absorption	CVAA	OSHA ID-140 Modified	Mercury vapor
Spectrometry Core	Atomic Absorption	CVAA	OSHA ID-145	Mercury particulate
Spectrometry Core	Atomic Absorption	FAA	NIOSH 7082	Lead
Spectrometry Core	Inductively-Coupled Plasma	ICP/AES	NIOSH 7300 Modified	Lead
Spectrometry Core	Inductively-Coupled Plasma	ICP/MS	NIOSH 7300 Modified	Lead
Spectrometry Core	UV/VIS (Colorimetric)	-	NIOSH 6010	Hydrogen Cyanide
Spectrometry Core	X-ray Diffraction (XRD)	-	NIOSH 7500	Silica
Spectrometry Core	X-ray Diffraction (XRD)	-	OSHA ID-142	Silica

A complete listing of currently accredited IHLAP laboratories is available on the AIHA LAP, LLC website at: <http://www.aihaaccreditedlabs.org>

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101048-0

EMSL Analytical, Inc.

Cinnaminson, NJ

is accredited by the *National Voluntary Laboratory Accreditation Program* for specific services,
listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

2023-07-01 through 2024-06-30

Effective Dates



A handwritten signature in blue ink, appearing to read 'Peter S. Lamm'.

For the National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
Ms. Samantha Rundstrom
Phone: 856-303-2577
Email: srundstrom@emsl.com
<http://www.emsl.com>

ASBESTOS FIBER ANALYSIS

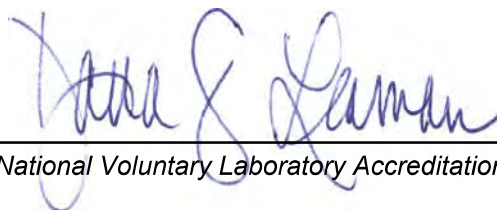
NVLAP LAB CODE 101048-0

Bulk Asbestos Analysis

<u>Code</u>	<u>Description</u>
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

<u>Code</u>	<u>Description</u>
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.



For the National Voluntary Laboratory Accreditation Program

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101048-2

EMSL Analytical, Inc.
Piscataway, NJ

is accredited by the *National Voluntary Laboratory Accreditation Program* for specific services,
listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

2023-07-01 through 2024-06-30
Effective Dates



A handwritten signature in blue ink, which appears to read 'Peter S. Lamm', is written over a horizontal line.

For the National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EMSL Analytical, Inc.
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ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 101048-2

Bulk Asbestos Analysis

Code

Description

18/A01

EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples

18/A03

EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

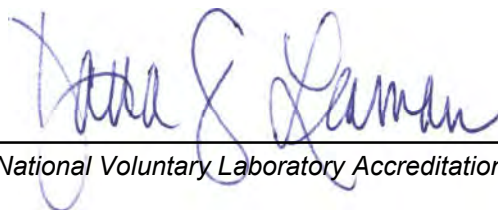
Airborne Asbestos Analysis

Code

Description

18/A02

U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.



For the National Voluntary Laboratory Accreditation Program

CIVIL TECHNICAL SPECIFICATIONS FOR UNION COUNTY JUSTICE COMPLEX PARKING DECK DEMOLITION

The civil/site portion of this project shall be governed by the “New Jersey Department of Transportation, Standard Specifications for Road and Bridge Construction, 2019” using U.S. Customary English Units except as noted in the following specification.

Payment descriptions within the following civil/site specifications shall prevail over the “New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction 2019.”

All unit prices shall be in accordance with the Bidder’s Proposal. Any unit prices not included in the Bidder’s Proposals shall be assumed distributed across all unit prices.

Any references in this specification to a specific product line or proprietary item, it is understood that the specification refers to that product or an approved equal. The lack of the phrase “or approved equal” does not imply that the specified product is the only product that will be allowed. However, it will be the successful bidder’s burden to prove that an alternate product meets the specification called for.

Should there be a conflict between the plans and specifications, the items shall govern in the following order.

- Addendums to the bid to include changes to the plans
- Technical Specifications
- Plans

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SECTION 011813 – UTILITY COORDINATION AND/OR RESETTING

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This work shall consist of the resetting of all existing valve boxes and castings to finished grade during the construction of proposed improvements, as shown on the Contract Drawings, and shall include, but not be limited to, the reconstruction of valve boxes, utility connections, and structures as required, in accordance with all utility provider requirements. The Contractor shall coordinate the resetting of any castings and the reconstruction of any valves and the construction of all utility connections with the respective utility company and the Engineer within the limits of construction in accordance with the Contract Drawings.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Portland cement concrete shall conform to Section 903 – Concrete and Section 909 - Drainage of the 2019 NJDOT Standard Specifications for Road and Bridge Construction.

PART 3 – EXECUTION

3.1 CONSTRUCTION

- A. Castings shall be reset in a manner covered under Division 650 – Utilities and Section 602 – Drainage Structures of the 2019 NJDOT Standard Specifications for Road and Bridge Construction.
- B. Castings will be reset once for this project. They will be set flush with the asphalt base course for the settling period and then again in the final wearing course elevation. The Contractor shall provide new a frame and casting for each utility valve/manhole in accordance with the Contract Drawings and as directed by the Engineer.
- C. Contractor shall be responsible for obtaining appropriate public utility provider contact information and coordinate with the same during construction operations.

END OF SECTION

SECTION 012110 – TESTING & DISPOSAL OF UNSUITABLE SOILS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This work shall consist of excavating, temporary stockpiling, testing, and disposing of all materials excavated, inclusive of any volatile organic compounds, that are unsuitable for backfill as set forth at NJAC 7:14A-2.13 and at the discretion of the engineer and not considered to be solid waste pursuant to NJAC 7:26-1.6.
- a. Stockpile locations will be chosen by the owner for the project within the City of Elizabeth.
- b. The boundary of the stockpile area shall be clearly marked by hay bales, silt fencing or another appropriate method. Where fill is to be stored in excess of 10 days, a suitable means of protecting excavated material from wind and water erosion shall be employed. Erosion control methods may include one or more of the following: mulching, sprinkling, silt fencing, hay bailing and stone covering.
- c. Excess excavated material which is not considered to be solid waste pursuant to NJAC 7:26-1.6 shall be removed from the site and disposed of it at an approved site in accordance with the following:
- i. Disposal sites selected by the contractor shall be approved by the project sponsor prior to their use. The project sponsor, may, at its discretion, conduct periodic inspection of disposal sites to ensure compliance with the requirements of this subsection during the off-site disposal operation.
 - ii. The disposal of excess excavated material in wetlands, vernal habitats, stream corridors and floodplains is strictly prohibited, even if the permission of the property owner is obtained. The contractor shall be responsible to remove any fill improperly placed by the contractor at the contractor's expense and restore the area impacted.
 - iii. If excess excavated material is placed on private property, a hold harmless release in favor of the project sponsor shall be obtained from the property owner, to be obtained by the Contractor.

PART 2 – PRODUCTS – Not Applicable.

PART 3 – EXECUTION - Not Applicable.

All work must be ordered by the Engineer to qualify for payment. This item is intended to be utilized to compensate the contractor for the unknown soil testing, stockpile, storage and disposal not specified, but necessary to complete the work not called for or shown on the plans.

The contractor will be paid from the Bid Contingency Allowance based on a mutually agreeable price between the contractor and the Engineer prior to commencing modifications for those items as ordered by the Engineer in writing.

Demolition of Courthouse Parking Deck
for the County of Union

USA #2023-090

Nothing herein shall constitute a guarantee that the contractor is entitled to payment of the Bid Contingency allowance. If no work is done under this item, the full amount of this allowance shall not be paid by the owner to the Contractor. To qualify for payment, work must be ordered by the Engineer in writing. Contractor shall submit a price for said work for review by engineer prior to proceeding.

END OF SECTION

SECTION 013233 – PRE-CONSTRUCTION PHOTOGRAPHS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The Contractor shall furnish photographs, taken by a professional photographer acceptable to the Engineer, to show the condition of the site prior to construction, as well as to show the progress of the work.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Prints of pre-construction and construction photographs shall be 3 inch by 5-inch size, mounted on cardboard and provided with reinforced 1inch wide flap, punched with 2 holes for binding, spaced 4 ¼ inches apart. The binding flap shall be located along the 8-inch dimension, and at the lower right hand corner on the front. The title shall include the name of the photographer, name of the project, contract number, station or other description, direction of view and date the picture was taken. The photographs shall also be numbered consecutively. Negatives of all photographs shall be furnished to the Engineer.

PART 3 – EXECUTION

3.1 METHODS OF PHOTOGRAPHS

- A. Pre-construction photographs shall be taken where directed by the Engineer to especially note the character of all easements and the condition of any structures, lawns, trees, streets, sidewalks, etc., which might be damaged, and shall average at least one photograph for each 50 feet of street or easement in the contract. The Engineer shall be provided with one matte print of each photograph. A minimum of thirty-six construction photographs shall be taken each month at regular intervals while the work is in progress. Photographs shall be taken at such times and at such locations as may be determined by the Engineer. One matte print of each picture taken during the month shall be submitted to the Engineer at the time of submitting the periodic estimate for progress payment.

END OF SECTION

SECTION 014126 – REGULATORY PERMITS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Neglia Engineering Associates will apply for and obtain approval from the Somerset-Union Soil Conservation District. A copy of said approval will be provided prior to commencement of construction.
- B. The Contractor shall not exceed the approved limits of disturbance shown on the plans. If the Contractor requires additional area in which to construct the proposed improvements, Somerset-Union Soil Conservation District re-approval will be required, the cost of which shall be borne by the Contractor, at no additional expense to the Owner.

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION

3.1 ADDITIONAL REGULATORY PERMITS REQUIRED

- A. If the Contractor requires additional area in which to construct the proposed improvements Somerset-Union Soil Conservation District re-approval will be required. The cost of obtaining any required Somerset-Union Soil Conservation District re-approval shall be borne solely by the Contractor, at no additional expense to the Owner.

END OF SECTION

SECTION 015526 – MAINTENANCE AND PROTECTION OF TRAFFIC

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Under this Contract this item shall mean that the Contractor shall provide for the safe passage of vehicles and pedestrians for safe ingress and egress to properties abutting the right-of-way within the limits of the project, including but not limited to the use of police officer-man hours, flagmen, signs, barriers, barricades, jersey barriers, water barriers, cones, barrels, safety fencing, etc., in any and all areas where contractor deems it necessary. The portion of the project which is opened to traffic shall be kept in such condition that traffic is adequately accommodated. Contractor must provide for emergency vehicle access during construction until project has been completely turned over to the Owner and keep on-site telephone numbers of all local emergency personnel. Access to the DPW shall be provided at all times unless otherwise coordinated with the DPW.
- B. This item shall also include the maintenance and protection of highway traffic and shall include any and all materials necessary to provide for this passage, and that the Contractor shall abide to all of the rules and regulations as set forth in the Traffic Control section of the current New Jersey State Highway Department Standard Specifications. The Contractor shall be responsible for implementing a detour, if not shown on the plans, in accordance with applicable Sections and Subsections for Detours of the 2019 NJDOT Standard Specifications. Any detour plans and/or new routes shall be submitted to the County of Union, and Neglia Engineering Associates for review and approval.
- C. Any damage to construction equipment, materials and vehicles are the sole responsibility of the contractor.
- D. The contractor may utilize outside agencies to maintain traffic. Any outside agencies must be certified with the County of Union.
- E. The contractor is responsible for all maintenance, safety and protection of traffic until the project is complete and turned over to the project owner. The contractor shall hold harmless the County of Union, City of Elizabeth, and Neglia Engineering Associates for any safety incidents during the project construction period.
- F. The contractor is responsible for ensuring uninterrupted access for all Borough personnel to the remaining portion of Borough Hall will be provided, during construction.

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION – Not Applicable

END OF SECTION

SECTION 015527 – TRAFFIC DIRECTORS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Under this Contract, this item shall mean that the Contractor shall provide a safe passage of vehicles and pedestrians for ingress and egress to properties abutting the right-of-way within the limits of the project, when the Contractor is unable to utilize flagmen for traffic control.
- B. Traffic Directors shall be off-duty Police Officers from within the Municipality and/or County Police of where the work is being performed. The Traffic Directors shall be located in a strategic location as determined by the Municipal Traffic Officer and/or Engineer in order to safely and efficiently control traffic during construction hours. The Contractor shall contact the Municipal Police Department and/or County Police in order to obtain the services of Traffic Directors. The name, address and telephone number of the Municipal Traffic Officer is listed below:

Elizabeth Police Department
1 Police Plaza
Elizabeth, NJ 07201
908-558-2000

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION – Not Applicable

END OF SECTION

SECTION 017123 – CONSTRUCTION LAYOUT

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Under this item the Contractor shall provide all work required in connection with the layout for construction of the project, using the control points and data furnished by the project Licensed Surveyor.
- B. All work shall be constructed according to the lines and grades shown and approved. At the site, the Owner's Engineer will lay-out and mark upon the ground a base line and bench mark, from which the Contractor shall be responsible for staking/laying out the construction lines, in accordance with N.J.A.C. 7:14-2.5. For sewers, the Engineer will lay out and mark suitable number of control points and bench marks, averaging about one every 500 feet. The Contractor shall employ the services of a land surveyor, licensed to practice in this state, for laying out the work, including setting of key or principal stakes, markers and levels, and preparation of cut sheets, if required, on a form approved by the Engineer.

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION

3.1 METHOD OF STAKEOUT

- A. The Contractor shall submit all necessary computations to establish the exact position of all the work from the control points furnished by the project Licensed Surveyor, along with construction grade sheets, prepared by a licensed land surveyor hired by the Contractor, to Neglia Engineering Associates for approval prior to the start of construction.
- B. The Contractor shall maintain the line and grade stakes furnished by the project Surveyor for his use in staking out the work. If such control points are damaged, lost, displaced or removed, they shall be reset or replaced at a charge to the Contractor for the actual cost of the work.
- C. The Contractor shall be responsible for maintaining the points he has established. Any error or apparent discrepancies found in the plans or specifications shall be called to the attention of Neglia Engineering Associates in writing for interpretation prior to proceeding with the work.
- D. Should any inconsistencies arise during layout by the Contractor's surveyor, Neglia Engineering Associates must be advised prior to construction. Any downtime costs incurred by the contractor due to inconsistencies will not be absorbed by Neglia Engineering Associates.

END OF SECTION

SECTION 017329 – SAWCUTTING

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Sawcutting shall consist of the cutting of sidewalks, concrete, driveways, curbs and pavements of whatever nature in order to maintain a clean finished look when matching into existing areas of concrete and asphalt where directed by Neglia Engineering Associates.

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION

3.1 MATERIALS – METHODS OF CONSTRUCTION

- A. Concrete or bituminous surfaces shall be cut through the entire pavement thickness in a straight, neat line using diamond-tipped blades with water, as approved by Neglia Engineering Associates.

***PLEASE NOTE THAT JACK-HAMMERED OR BROKEN EDGES WILL NOT BE ACCEPTED UNDER ANY CIRCUMSTANCES.**

END OF SECTION

SECTION 017423 – FINAL CLEANUP / SITE RESTORATION

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Under this item the Contractor shall restore the work site and access area to its original condition including, but not limited to, installation of both temporary and permanent striping, removal of temporary and permanent striping, removal and resetting of plaques and bases, street and road signs, relocate existing monuments and setting them on 6-inch-thick concrete pads, removal and disposal of all lights, signs, bollards, topsoil, seeding, fences, hedges, re-grading, repairing of driveways (both bituminous and concrete), sidewalks, roadways, curbs, cleaning and removal of stockpiles and equipment and all else not specifically covered elsewhere in these specifications. All concrete aprons shall be restored.

PART 2 – PRODUCTS

2.1 MATERIALS

NJDOT 2019 Standard Specifications

- A. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. The site shall be returned to its original condition. Fences shall be reinstalled with posts in concrete footings in accordance with the plans and specifications herein. Hedges shall be reinstalled where possible or replaced in kind and in the same locations as existing. Lawn areas disturbed by Contractor's activities shall be re-graded, seeded and mulched as specified by Neglia Engineering Associates.
- B. All pavement and sidewalks, where construction fence was previously located, shall be repaired. Cleaning shall include hand-brooming of sidewalk and pavement areas. Adjacent structures shall be cleaned, as necessary, by a method approved by Neglia Engineering Associates and/or County Engineers. Sidewalks shall be replaced with concrete walk in evenly-sized slabs, saw-cut where necessary, only to the extent damaged by the construction. Both concrete and bituminous concrete shall be repaired as specified by Neglia Engineering Associates and/or County Engineers, saw-cut where necessary, only to the extent damaged by the construction. All construction equipment and stockpiles shall be removed from the site and disposed of by the Contractor in a suitable and timely manner.

END OF SECTION

SECTION 023219 – TEST PITS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Test pits shall consist of the furnishing all materials, labor, equipment necessary for the performance of all work to properly perform test pits to locate any uncertainties in existing subsurface structures to determine if these structures interfere or affect the proposed construction and to locate / verify the depth of the existing fill material located on site to work in conjunction with the project geotechnical report.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Borrow material required for backfill of test pits shall conform to applicable Sections of the 2019 NJDOT Standard Specifications. The Contractor shall provide Neglia Engineering Associates with certification attesting that said material is free of contaminants and suitable for this application. The soil shall be smooth, soft and free of depressions, clods, mounds, stones, or other debris as approved by Neglia Engineering Associates.
- B. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements

PART 3 – EXECUTION

3.1 METHOD OF CONSTRUCTION

- A. When backfilling the test pit, the soil shall be placed uniformly in layers not to exceed 12 inches loose thickness. Each layer shall be compacted to 95% density in accordance with the NJDOT 2019 Standard Specifications.
- B. The contractor shall make provisions to implement approved dust control measures while performing this work so as not to impact surrounding residences. Should the contractor fail to implement these measures, he will be responsible to power-wash all structures, at no additional cost to the owner.
- C. Excavated areas are to be restored in-kind with existing conditions.

END OF SECTION

SECTION 024113 – SITE CLEARING / DEMOLITION

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Under this item the Contractor shall remove and dispose of all existing building foundation remains, disconnection of existing utilities, fences, gates, electric card readers, guide rails, ramps, guard booth structure, HVAC units, Signage, drainage pipes, drainage structures, sewer pipes, sewer structures, water pipes, utility poles, gas pipes, conduits, valves (all utilities), curbs, walls, sidewalks, asphalt pavement, dirt, stones, concrete pads, all debris, all else indicated on the demolition plan; the removal of which is required to carry out the work of this project, shall be removed and legally disposed of off-site. The contractor shall perform test pits to locate any uncertainties in existing subsurface structures to determine if these structures interfere or affect the proposed construction.
- B. The Contractor shall remove and dispose of pipes, inlets, manholes, reinforced concrete pavement, bituminous pavement, concrete and bituminous sidewalk, curb, and utility boxes. The Contractor shall remove and reset street and road signs, not otherwise paid for; remove and reset any monuments, shrubs and fences; remove and reset to grade manhole and catch basin frames, fire hydrants, guide rail, gas and water valves; and complete all other removals and relocations required for the work and not specifically covered elsewhere for payment.
- C. The Contractor shall remove all trees and existing vegetation as indicated on the demolition plan and located within the existing lot lines where the removal of which is required to carry out the work of this project.
- D. The Contractors are advised to make a site visit, check the existing site conditions, and determine the detail scope of work for the site clearing before the bidding of this project.
- E. This item shall include a temporary 8-foot chain link construction fence around the entire perimeter of the project line, along with access gates, as directed by the engineer or required for safe construction operations..
- F. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. The lights, signs, inlets, sidewalk, pavement, bollards, curb, unclassified excavation material, and all other such material(s) generated by demolition shall be disposed of outside of the limits of the contract at no extra cost to the Owner.
- B. Trees and shrubs removed by the Contractor shall be cut and the roots and stumps, to be removed by grubbing, shall be refilled with suitable material which shall be solidly compacted so as to make

the surface at these points conform to the adjoining grade. No trees shall be cut outside the specified limits without permission of Neglia Engineering Associates.

- C. Street and road signs shall be removed carefully and shall be reset at the exact locations and in the manner required by the public authorities having jurisdiction, thereof. Site signs along with their foundations and any electrical components shall be removed in their entirety and shall be submitted to the owner unless owner requests complete disposal off-site.
- D. Manhole frames, catch basin frames, fire hydrants, guide rail, gas valves, water valves, and other structures shall be removed and carefully reset to match proposed grades, unless otherwise indicated to be removed.
- E. The Contractor shall abide by all of the rules and regulations as set forth in Section 201 – Clearing Site of the 2019 NJDOT State Standard Specifications and the respective amendments.

END OF SECTION

SECTION 101453 – TRAFFIC SIGNS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Traffic Signs shall include furnishing and installing the Traffic Control Signage as shown on the plans and details. These signs shall include pedestrian crossing signs, crosswalk signs, and other on-site signs to be relocated.
- B. Materials and construction operations, not specifically covered in the Plans and Specifications, shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), US Department of Transportation, Federal Highway Administration (FHWA).

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Construction Materials: All traffic signs must conform in face design and construction to specifications found in the Manual on Uniform Traffic Control Devices, USDOT, Federal Highway Administration. Regulatory, warning, informational, and wayfinding signs shall be fabricated of flat aluminum sheets and shall be covered with Diamond Grade Reflective Sheeting, Series 4000 Type XI designation per ASTM.
- B. Posts: Aluminum 3" O.D. Smooth Pole.
- C. Base: Aluminum Base and Breakaway Kit.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. Erect signs in their designated locations, as indicated and in accordance with the approved shop drawings and the applicable requirements of Section 619 of the NJDOT Standard Specifications.
- B. Protect surfaces and finishes from abrasion and other damage during handling and installation.
- C. The placement of signs shall be adjusted if they create interference. Additionally, any damaged or faulty sign shall be replaced.
- D. Final locations of sign placement shall be approved by Neglia Engineering Associates, and conformed in the field during construction.

END OF SECTION

SECTION 310000 – EARTHWORK

PART 1 – GENERAL

1.1 DEFINITIONS

- A. The following terms shall have the meanings ascribed to them in this Article, wherever they appear in this Section.
- B. Excavation, Unclassified: The removal of all surface and subsurface material not classified as rock (as defined below). Shall consist of the excavation, removal, export and disposal of all materials of whatever nature, bituminous concrete, concrete, pavement, regulated waste, brick, stone, concrete masonry, small structures, removal of pipe where directed, removal of any other materials encountered of whatsoever nature, required for the proposed construction, the stockpiling and disposal of all excavated materials unsuitable for fill, the transportation of the excavated material, the construction of embankments with the material excavated when so required, the disposal of unsuitable and surplus materials, and all other work as herein described.
- C. Rock Excavation, Unclassified: Rock excavation, unclassified shall mean removal of all rock, boulders or pieces of concrete, and solid ledge rock and masonry, which in the opinion of Neglia Engineering Associates requires for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. Soft or disintegrated rock which can be removed with a pick or power-operated excavator or shovel, loose, shaken or previously blasted rock, broken stone in rock fill or elsewhere, and rock exterior to the maximum limits allowed, or which may fall in the excavation, shall not be included as rock excavation. Pavements, curbs, gutters, sidewalks and driveways shall not be included as rock excavation.
- D. Subgrade Surface: Surface upon which subbase or topsoil is placed.
- E. Subbase: Select granular material or subbase course Type 2 which is placed immediately beneath pavement or concrete slabs.
- F. Maximum Density: The dry unit weight in pounds per cubic foot of the soil at "Optimum Moisture Content" when determined by ASTM D 1557 (Modified Proctor Test).
- G. Landscaped Areas: Areas not covered by structures, walks, roads, paving, or parking.
- H. Unauthorized Excavation: The removal of material below required elevation indicated on the Drawings or beyond lateral dimensions indicated or specified without specific written direction by Neglia Engineering Associates.
- I. It shall be noted that the earthwork quantities indicated in the Contract Documents and in the Bid Proposal form are the quantities of in-place, compacted soil material (compacted to 95% Modified Proctor density) required to construct the improvements shown on the Contract Documents. For all imported soils, it is the Contractor's responsibility to provide a certification that the imported soil complies with all applicable local, County, State, and Federal regulations with respect to "certified clean" soil. In addition, due to the varying nature of "certified clean" soil materials that may be imported onto the site, it is the Contractor's responsibility to account for soil shrinkage and swell in order to provide the quantities of soil indicated in the Contract Documents.

- J. Site Grading: The grading, excavation, preparing and compacting all material required for construction of the sub-grade of the entire disturbed area and all incidental work necessary to the satisfaction of the Engineer. All excavated soils in excess of what is required to grade the site shall be disposed of off-site in accordance with Local, County, State, and Federal standards. It is the Contractor's responsibility to excavate and dispose of all soils and regrade materials as necessary to install the proposed improvements as per the plans and details.

1.2 SUBMITTALS

A. Product Data:

1. Filter Fabric: Manufacturer's catalog sheets, specifications, and installation instructions.
2. The Contractor shall provide to the Owner and Engineer the name, location, contact information, and permit/licenses numbers of the proposed off-site disposal facility a minimum of five (5) working days in advance of the proposed soil removal operations.
3. Numbers, types, and specifications for compacting equipment to be used.
4. Samples: Submit samples as follows:
 - a. Take the samples in the presence of the Engineer, and complete a Granular Material Sample Information Form for each sample. Forms and field sample designation numbers will be furnished by Neglia Engineering Associates. Samples shall be provided in the following quantities:
 - i. Select Granular Material: 10 lb.
 - ii. Selected Fill: 10 lb.
 - iii. Subbase Course Type 2: 10 lb.

1.3 PROJECT CONDITIONS

A. Cold Weather Requirements:

1. When freezing temperatures are predicted, do not excavate to final required elevations for concrete or backfill work unless concrete or backfill can be placed immediately. Retain enough earth over the bottom elevation of footings to prevent frost penetration. If excavation has progressed to subgrade elevations and concrete or backfill cannot be placed immediately, cover the bottom of the excavations with protective material to adequately insulate the exposed earth surface from frost. Remove protective material immediately before placing concrete or backfill.
2. Do not backfill between November 1 and April 1, except with written permission of Neglia Engineering Associates.

B. Contractors shall assume OSHA Level D modified for Earthwork.

C. A site specific HASP plan is required and should be submitted by the Contractor performing the work prior to the commencement of work.

PART 2 – PRODUCTS

2.1 MATERIALS

EARTHWORK

- A. Select Granular Material: Stockpiled, sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with NJDOT Standard Specifications for subbase course material.

Sieve Size	Percent Passing
2 inch	100%
1/4 inch	30-65%
No. 40	5-40%
No. 200	0-10%

- B. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after 4 test cycles.
- C. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
- D. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than 3 times its least dimension.
- E. Selected Fill: Sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials.

Sieve Size	Percent Passing
4 inch	100%
No. 40	0-70%
No. 200	0-15%

- F. Subbase Course Type 2: Stockpiled, crushed ledge rock or approved blast furnace slag. Comply with NJDOT 2019 Standard Specifications for Subbase Course material.

Sieve Size	Percent Passing
2 inch	100%
1/4 inch	25-60%
No. 40	5-40%
No. 200	0-10%

- G. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after 4 test cycles.
- H. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
- I. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than 3 times its least dimension.
- J. Suitable Material (Fill and Backfill for Landscaped Areas): Material consisting of mineral soil (inorganic), blasted or broken rock and similar materials of natural or man-made origin, including mixtures thereof. Maximum particle size shall not exceed 2/3 of the specified layer thickness prior to

compaction. NOTE: Material containing cinders, industrial waste, sludge, building rubble, land fill, muck, and peat shall be considered unsuitable for fill and backfill, except topsoil and organic silt may be used as suitable material in landscaped areas provided it is placed in the top layer of the subgrade surface.

- K. Filter Fabric (Separation, Drainage, Slope Protection): Amoco CEF 4545, CEF 4551; Exxon Chemical Co. GTF 150 EX; Mirafi Inc. 140N, 140NL; Nicolon Corp. Filterweave 70/06; Phillips Fibers Corp. Supac 4NP, 5NP, 7NP; Wellman Quline Inc. Q60, Q80, Q100 or approved equal.
- L. Filter Fabric (Stabilization): Amoco CEF 2002 & 2006; Exxon Chemical Co. GTF 350; Mirafi Inc. 500X, 600X, 700X; Nicolon Corp. 500; Phillips Fibers Corp. Supac 3WS, 4WS, 5WS, 6WS; Wellman Quline Inc. Q160 or approved equal.
- M. Lightweight Fill and Backfill: Contractor is advised to follow the specifications of lightweight fill and backfill material if proposed under this project. The placement of this and all fill material must meet the requirements of the Project Engineer.
- N. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 3 – EXECUTION

3.1 CLEARING AND GRUBBING

- A. Clear and grub the site of trees, shrubs, brush, other prominent vegetation, debris, and obstructions except for those items indicated to remain. Completely remove stumps and roots protruding through the ground surface.
- B. Any clearing of vegetation in said areas not within the limits indicated on the plans is strictly prohibited.
- C. Fill depressions caused by the clearing and grubbing operations in accordance with the requirements for filling and backfilling, unless further excavation is indicated.

3.2 UNDERGROUND UTILITIES

- A. Locate existing underground utilities and service connections prior to commencing excavation Work. Determine exact utility locations by hand-excavated test pits or other means such as geophysical methods. Support and protect utilities to remain in place.
- B. Remove inactive, abandoned utilities within the limits of the areas to be excavated. Cap or plug open ends of abandoned utilities extending outside the excavation limits.

3.3 EXCAVATION

- A. 2019 NJDOT Standard Specifications, Excavation, Unclassified.
- B. Maintain sides and slopes of excavations in a safe condition until completion of backfilling. The Contractor shall comply with Code of Federal Regulations CFR Title 29 - Labor, Part 1926 (OSHA).

- C. Stockpile excavated materials classified as suitable material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage as approved by Neglia Engineering Associates.
- D. Excavation for Structures: Conform to elevations, lines, and limits indicated on the Construction Documents. Excavate to a vertical tolerance of plus or minus 1 inch. Extend excavation a sufficient lateral distance to provide clearance to execute the work.
- E. Footings and Foundations: Trim bottoms to required lines and elevations. Excavate to final elevations by hand just prior to concrete placement. Leave solid undisturbed base for concrete.
- F. Slabs and Floors: Excavate to the following depths below bottom of concrete for addition of select granular material:
 - 1. Interior Floors: 6 inches unless otherwise indicated.
 - 2. Exterior Slabs and Steps: 12 inches unless otherwise indicated.
- G. Pipe Trenches: Open only enough trench length required to facilitate laying pipe or conduit sections. Unless otherwise indicated on the Drawings, excavate trenches approximately 24 inches wider than the outside pipe diameter, equally divided on each side of pipe centerline. Cut trenches to cross section, elevation, profile, line, and grade indicated. Accurately grade and shape trench bottom for uniform bearing of pipe.
- H. Pavement: Excavate to subgrade surface elevation.
- I. Unauthorized Excavations: Unless otherwise directed, backfill unauthorized excavation under footings, foundation bases, and retaining walls with compacted select granular material without altering the required footing elevation. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavation of the same classification, unless otherwise directed by Neglia Engineering Associates.

3.4 ROCK EXCAVATION

- A. No blasting shall be performed by the Contractor, except upon written permission of Neglia Engineering Associates. Any request by the Contractor for permission to blast must be submitted to Neglia Engineering Associates at least 24 hours prior to start of said proposed blasting.
- B. If blasting permission is granted, the Contractor shall adhere strictly to all required Federal, State and Local safety regulations. In no case shall blasting caps or other exploders be kept at the same place where dynamite or other explosives are stored. A watchman shall be stationed at all times at the place of storage of said explosives.
- C. The prepared blast shall be carefully covered with a heavy woven wire blasting mat, placed so that the area affected by the explosion is positively confined. Should a gas, water or any other conduit intersect the line of trench, the rock must be removed without blasting from a distance of 10 feet on each side of such pipe or conduit.
- D. The contractor shall be responsible for any damage to adjacent structures and property caused by his operations. He shall inspect all structures adjacent to the site of blasting and, when ordered by Neglia

Engineering Associates, he shall take clear, close-up photographs of these structures before and after blasting. Copies of these photographs shall be submitted to Neglia Engineering Associates. Neglia Engineering Associates or their representative must be present at all times during blasting operations.

3.5 DEWATERING

- A. Prevent surface and subsurface water from flowing into excavations and trenches and from flooding the site and surrounding area.

3.6 PLACING FILTER FABRIC

- A. Place and overlap filter fabric in accordance with the manufacturer's installation instructions, unless otherwise shown. Backfill over fabric in accordance with the manufacturer's instructions and in a manner so as to prevent damage to the fabric.

3.7 PLACING FILL AND BACKFILL

- A. Surface Preparation of Fill Areas: Strip topsoil, remaining vegetation, and other deleterious materials prior to placement of fill. Continue to remove existing fill and other soils as required by the project Geotechnical Engineer.
- B. Contractor shall be advised that existing fill and silty sand is unsuitable for reuse as backfill or controlled fill.
- C. Granular portions of the existing fill materials and stockpiled materials on site may be reused as fill or backfill provided its reuse is approved by the project Geotechnical Engineer, larger materials greater than 4 inches or deleterious materials shall be completely removed from the material before reuse, and the material is moisture conditioned to permit adequate compaction to 95 percent of the maximum dry density as determined by the Modified Proctor Test.
- D. The Contractor shall supply the Owner and Engineer with the results and a letter which states: the name of the affiant and relationship to the source of the fill; the location where the fill was obtained, including the street, town, lot and block, county, and state, and a history of the site which is the source of the fill; and a statement (certification) that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to any applicable remediation standards and the steps taken to confirm such. The material must be pre-approved by the Owner, Engineer and the Project Engineer prior to the date of its intended use as backfill at the property.
- E. The Contractor shall provide to the Owner and Engineer the name, location, contact information, and permit/licenses numbers of the proposed source of each material type to be imported to the property, a minimum of ten (10) working days in advance of the proposed material importation.
- F. The Contractor shall provide to the Owner and Consultant/Engineer clean fill documentation as identified in the NJDEP Alternative and Clean Fill Guidance for SRP Sites, latest edition, for each individual material type; a minimum of ten (10) working days in advance of the proposed material importation. Inclusive to this presentation shall be laboratory analytical results (in both hard copy and electronic format (including EDD)).

- G. The Owner and Engineer shall review the clean fill documentation for each individual material type, and provide approval/comment regarding the proposed use of the material(s). The material must be approved by the Owner and the Engineer prior to the date of its intended use as backfill at the property.
- H. The Owner and Engineer have the discretion to deny the proposed material for any reason. Should the material be denied by the Owner and/or Engineer, the Contractor at their own expense, is responsible for identifying another material and/or source, and repeating the submission efforts.
- I. The Owner and/or Engineer reserve the right to sample the proposed fill material and perform laboratory analysis prior to same entering the property.
- J. The contractor is responsible for submitting weigh tickets for all Clean Fill to the project Engineer for review and approval.
- K. Excavations: Backfill as promptly as practicable, but only after approval by Neglia Engineering Associates. Do not backfill with excavated material unless said material meets the requirements of this Section.
- L. Place backfill and fill materials in layers not more than 12 inches thick in loose depth unless otherwise specified. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not place backfill or fill material on surfaces that are muddy, frozen, or covered with ice.
- M. Place fill and backfill against foundation walls, and in confined areas (such as trenches) not easily accessible by larger compaction equipment, in maximum 6-inch-thick (loose depth) layers.
- N. Prevent wedging action of backfill against structures by placing backfill uniformly around structure to approximately same elevation in each layer. Place backfill against walls of structures containing basements or crawl spaces only after the first floor structural members are in place.
- O. Under Exterior Concrete Slabs and Steps:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place 12 inches of select granular material over subgrade surface.
- P. Under Interior Concrete Slabs:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place 6 inches of select granular material over subgrade surface.
- Q. Under Pavements and Walks:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place as indicated.
- R. Landscaped Areas: Place suitable material when required to complete fill or backfill areas up to subgrade surface elevation. Do not use material containing rocks over 4 inches in diameter within the top 12 inches of suitable material.

- S. Plastic Pipe and Cement Water Pipe in Trenches: Place cushion material a minimum of 4 inches deep under pipe, 4 inches on both sides, and 4 inches over top of pipe. Complete balance of backfill as specified.
- T. Copper Tubing and Steel Gas Pipe in Trenches: Place cushion material a minimum of 6 inches deep under pipe, 6 inches on both sides, and 4 inches over top of pipe. Complete balance of backfill as specified.
- U. Rigid Non-Metallic Conduit: Except where concrete encasement is required, place cushion material a minimum of 4 inches deep under conduit, 4 inches on both sides, and 12 inches over top of conduit. Complete balance of backfill as specified.

3.8 COMPACTION

- A. Compact each layer of fill and backfill for the following area classifications, including areas which are to be over excavated, to the percentage of maximum density specified below and at a moisture content suitable to obtain the required densities, but at not less than 3 percent drier or more than 2 percent wetter than the optimum content as determined by 1557. The Compaction testing shall be performed in accordance with ASTM D 6938 (nuclear gauge) or D-1556 (sand cone test)::
 - Structures: 95%
 - Concrete Slabs and Steps: 95%
 - Landscaped Areas: 90%
 - Pavements and Sidewalks: 95%
 - Pipes: 95%

3.9 SITE GRADING AND BACKFILL

- A. The site shall be graded within the limits shown on the Plans or as directed by the Engineer. The Contractor shall grade the sub-grade according to the elevations shown on the Plans, taking into account the thickness of the layers above. The soil shall be placed uniformly in layers not to exceed 12 inches loose thickness. Each layer shall be compacted to 95% of its maximum dry density determined by the Modified Proctor Test.
- B. Rough Grading: Trim and grade area required by this Contract to a level of 4 inches below the finished grades indicated, unless otherwise specified herein, or where greater depths are indicated. Provide smooth uniform transition to adjacent areas.
- C. Finish Grading: Finish surfaces free from irregular surface changes, and as follows:
 - 1. Grassed Areas: Finish areas to receive topsoil to within 1 inch above or below the required subgrade surface elevations.
 - 2. Walks and Pavements: Place and compact subbase material as specified. Shape surface of areas to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.
 - 3. Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified to within 1/4 inch above or below required subbase elevation.

- D. The Contractor shall make provisions to implement approved dust control measures while performing this work as not to impact surrounding residences. Should the Contractor fail to implement these measures, he will be responsible to power wash all structures at no additional cost to the Owner.

3.10 SUBGRADE SURFACE FOR WALKS AND PAVEMENT

A. Shape and grade subgrade surface as follows:

1. Walks: Shape the surface of areas under walks to required line, grade and cross-section, with the finish surface not more than 1 inch above or below the required subgrade surface elevation.
2. Pavements: Shape the surface of areas under pavement to required line, grade and cross-section, with the finish surface not more than 1/2 inch above or below the required subgrade surface elevation.

B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.

C. Thoroughly compact subgrade surface for walks and pavement by mechanical rolling, tamping, or with vibratory equipment as approved to the density specified.

3.11 TESTING AND DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS

- A. Remove from the project site and dispose of excess and unsuitable materials, including materials resulting from clearing and grubbing, stripping of topsoil, and removal of existing improvements.
- B. Transport excess and unsuitable materials, including materials resulting from clearing and grubbing, stripped topsoil, and removal of existing improvements, to spoil areas away from the project site.

3.12 FIELD QUALITY CONTROL

- A. Compaction Testing: Notify Neglia Engineering Associates at least 3 working days in advance of all phases of filling and backfilling operations. Compaction testing will be performed by an independent lab from which the Contractor will select from a list of qualified vendors as provided by the owner and/or their representatives to ascertain the compacted density of the fill and backfill materials. The Contractor shall be responsible to pay the independent lab for which reimbursement for these costs will be paid out of the Bid Contingency Allowance. Compaction testing will be performed on layers of the fill and backfill as determined by the Project Engineer and in general accordance with ASTM-6938 (nuclear gauge) or D-1556 (sand cone). If a compacted layer fails to meet the specified percentage of maximum density, the layer shall be recompacted and will be retested. No additional material may be placed over a compacted layer until the specified density is achieved. If the required density is not achieved, removal and replacement of the material should be performed in accordance with the Owner's Engineer.

3.13 PROTECTION

- A. Protect areas from traffic and erosion, and keep them free of trash and debris.

3.14 SUPPORT OF EXCAVATION (SOE) / TEMPORARY SHORING AND EXCAVATIONS

- A. Dewatering

1. Prior to the commencement of the work, dewatering design plans should be provided to the Project Engineer for review which includes dewatering equipment and methods, layout, treatment and/or disposal means and methods.
2. Contractor shall be responsible for continuous (24/7) dewatering as needed to maintain the levels of the groundwater a minimum of 2 feet below the excavation.
3. Dewatering design and construction shall consider settlement on adjacent structures and be performed in a manner that mitigates settlement, and that any damages on adjacent structures due to dewatering operations will be the responsibility of the Contractor. The dewatering design shall include a Construction Impact Plan which shall consider and provide for dewatering phased lateral and horizontal deflection, providing estimates of impact and stability of all structures with 50 feet of the construction actives.

B. Instrumentation and Monitoring

1. Prior to the start of work, the contractor shall perform and submit to the Project Engineer, a pre-construction survey of any structures (retaining walls, buildings, foundations, utilities) within 50 feet of intrusive activities including SOE/sheeting installation, excavation, dewatering. After the work is complete a post-construction survey of the same shall be completed and submitted to the Engineer for review and comment. This shall include documenting existing conditions by photographing and measuring defects within basements, finished space, structural foundations, and retaining walls to provide a quantifiable baseline prior to construction.
2. Prior to the start of intrusive activities and after the completion of the pre-construction survey, the Contractor shall prepare and submit to the Engineer an Instrumentation & Monitoring Plan detailing vibration, horizontal deflection & settlement, crack, and/or tilt monitoring of any SOE elements, existing retaining walls, homes/buildings, utilities, and any structures within 50 feet of the proposed intrusive work activities. The plan shall identify any structures within a 50 feet radius of the proposed work activities, include description of the instruments, location on a scaled drawing, provide monitoring frequency, monitoring notification and stop work thresholds, and methods of alerting the Engineer and Owner representatives of any exceedances of set thresholds.
3. After the project Engineer reviews and accepts the Instrumentation & Monitoring Plan and prior to intrusive work activities, Contractor shall coordinate access agreements with neighbors and property owners, install tell-tales, crack gages, vibration monitors, and/or survey points at approved locations, and perform the approved monitoring throughout the project duration on regular intervals until the vibration-inducing construction is complete.
4. Vibration monitoring shall be performed continuously during intrusive activities.
5. Optical survey for horizontal deflection and settlement as well as tilt, shall be measured a minimum of once per day (7 days per week) from the start of any below grade work until the permanent below grade structures are installed and dewatering systems are removed.
6. Crack monitoring shall be performed a minimum of twice per week.
7. Results of the monitoring shall be submitted to the Project Engineer within 24 hours of the readings.

END OF SECTION

SECTION 312200 – SITE GRADING

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Site Grading shall include grading, excavation, preparing and compacting all material required for construction of the sub-grade of the entire disturbed area and all incidental work necessary to the satisfaction of the Engineer. All excavated soil in excess of what is required to grade the site shall be disposed of off-site in accordance with local, State and Federal standards. It is the Contractor's responsibility to excavate and dispose of this soil to install the turf, stone and underdrainage system per the plans and details.

PART 2 – PRODUCTS – Not Applicable

2.1 MATERIALS

- A. Borrow material required for site grading shall conform to NJDOT Standard Specifications. The Contractor shall provide the Engineer with certification attesting that the said material is free of contaminants and suitable for this application. The soil shall be smooth, soft and free of depressions, clods, mounds, stones, or other debris as approved by the Engineer.
- B. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements as well as the following documents:

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. The site shall be graded within the limits shown on the Plans or as directed by the Engineer. The Contractor shall grade the sub-grade according to the elevations shown on the Plans, taking into account the thickness of the layers above, and if necessary borrow materials as approved by the Engineer. The soil shall be placed uniformly in layers not to exceed 12 inches loose thickness. Each layer shall be compacted to 95% density in accordance with Section 204 of the NJDOT Standard Specifications.
- B. The Contractor shall make provisions to implement approved dust control measures while performing this work as not to impact surrounding residences. Should the contractor fail to implement these measures, he will be responsible to power wash all structures at no additional cost to the owner.

END OF SECTION

SECTION 312319 – DEWATERING

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The Contractor shall at all times provide ample means and equipment with which to promptly remove and dispose of all water and drainage entering the excavations or other parts of the work, and to keep such excavations dry until the structures to be built therein are completed. In no case will the placing of masonry be permitted with water in the excavation.
- B. Dewatering methods and equipment shall be subject to the approval of Neglia Engineering Associates, and all water removed from the work shall be disposed of in a manner without damage to adjacent properties.
- C. All applicable NJDEP regulations must be maintained with respect to dewatering and discharge. Any applicable construction permits must be obtained prior to construction.
- D. Contractor shall note that dewatering may be necessary for the construction of the proposed improvements and must be anticipated when bidding of the project.

PART 2 – PRODUCTS – Not Applicable.

PART 3 – EXECUTION – Not Applicable.

END OF SECTION

SECTION 312500 – EROSION AND SEDIMENT CONTROL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The work performed under this item shall include construction of all soil erosion structures, improvements, temporary seeding or mulching, temporary matting, and general soil stabilization as shown on the plans.
- B. A soil erosion and sediment control certification will be obtained for the project based on the Soil Erosion and Sediment Control Plan included in the Contract Documents. In the event that the Contractor deviates from the previously-approved plan, it shall be their responsibility to obtain subsequent approval from the Somerset-Union Soil Conservation District, at no cost to the Owner.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Materials shall be in conformance with the Plan and Details, and shall include silt fences, inlet filters, stabilized construction accesses, jute matting, floating turbidity barriers, soil stockpiles, soil membrane, hay bales, and soil stabilization. All materials shall be approved by Neglia Engineering Associates or the Somerset-Union Soil Conservation District.
- B. Temporary matting for construction operations shall be as manufactured by Mabey, or approved equal.
- C. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. State Standard Specifications and Somerset-Union Soil Conservation District Regulations.
- B. Contractor is advised that a 48-hour notice prior to construction activities must be given to the Somerset-Union Soil Conservation District.
- C. All erosion and sedimentation control measures shall be in-place prior to any soil disturbances, grading operations or construction of proposed facilities, and shall be maintained until construction is complete and the construction area is stabilized. After restoration is complete, temporary control measures shall be removed and disposed of properly.
- D. All erosion and sedimentation control measures shall be constructed and maintained in accordance with the "Standards for Soil Erosion and Sediment Control in New Jersey," prepared by the New Jersey State Soil Conservation Committee, current edition.

- E. Disturbed areas that will be exposed in excess of 14 days shall be temporarily seeded and/or mulched until proper weather conditions exists for establishment of a permanent vegetative cover except in areas where final restoration is expected to be completed within seven days after the completion of construction, in which case no temporary protective measures will be required. If final restoration is expected to begin more than seven days and completed more than 30 days after the start of construction, seeding shall be required for temporary protection, except where seasonal conditions are not suitable for growing vegetation. In this case, mulch may be applied until conditions are suitable for establishing vegetative cover or until final restoration is implemented.

END OF SECTION

SECTION 321123 – DENSE GRADED AGGREGATE

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This item shall include the placement of a ¾-inch certified clean dense graded aggregate or quarry process stone, as directed by the Project Engineer, at thicknesses shown within the plans and details, including all necessary excavation and removal of all earth, rock, boulders, brick, stone and concrete masonry, including small structures and other materials encountered. It shall also include all necessary transportation, grading, placement and disposal of material.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. The stone shall be free from pieces coated with clay, caked stone dust and other objectionable materials. It shall not contain more than 5% of weathered and decomposed rock, not more than 5% of stone of types other than the type being used, in accordance with the Specifications, and not more than 7% by weight of flat or elongated pieces. A flat piece shall be one in which the ratio of the width to thickness of its circumscribing rectangular prism is greater than 5:1, and an elongated piece shall be one in which the ratio of the length to width of its circumscribing rectangular prism is greater than 5:1. The percentage of wear shall be determined in accordance with AASHTO Designation T3.
- B. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. Excavation and backfill of the certified clean Dense Graded Aggregate or Quarry Process Stone shall be in accordance with the applicable Sections and/or Subsection for Roadway Excavation of the current NJDOT 2019 Standard Specifications.

END OF SECTION

SECTION 321216 – HOT MIX ASPHALT BASE COURSE 19M64

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Hot Mix Asphalt Base Course shall be 19M64, as shown on the Construction Drawings. This work shall consist of the furnishing and placing of bituminous stabilized base course, at the various thicknesses after compaction as indicated on the plans, on the prescribed surfaces, and locations in accordance with the Plans, Details and Specifications.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. The composition of the Hot Mix Asphalt Base Course shall be coarse aggregate, fine aggregate, mineral filler and asphalt cement. These shall be as shown in the Standard Specifications, except that the materials shall conform to the requirements as shown for "Stone Mix". All reference to gravel mix is deleted.
- B. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 3 – EXECUTION

3.1 CONSTRUCTION

- A. After spreading and strike off, and while hot, each course shall be compacted thoroughly and uniformly by rolling. The rolling shall be done with a three-wheeled, 10-ton roller until the mixture is thoroughly compacted to the satisfaction of Neglia Engineering Associates.
- B. A tack coat shall be applied to any one or more layers of the Hot Mix Asphalt Base Course, if in the opinion of the Engineer such layer or layers become coated with dust, dirt, or other foreign material sufficiently to prevent a good bond between the layers of Base Course or between the completed Base Course and Surface Course.
- C. The construction of all hot mix asphalt shall be in accordance with the 2019 NJDOT Standard Specifications.
- D. The quantity for which payment will be made, will be the actual tonnage delivered and used. In computing the tonnage, proven truck weights shall govern. The net weight mixture delivered in each truckload shall be determined in the following manner. Each truckload of material delivered shall be weighted by a certified weigh master, on certified scales approved by the Division of Weights and Measures, Department of Law and Public Safety. The weigh master shall furnish to the truck driver duplicate weight slips showing the gross, tare and net weight. To each weight slip shall be affixed his signature and official seal or approved commissioned stamp attesting that he is a duly constituted weigh master. One of these delivery slips shall be furnished to the Engineer's Representative on the project.

- E. No material will be accepted unless accompanied by such a delivery slip, which shall be completely legible and clearly indicate the title of the project for which delivery is intended.
- F. The Engineer shall deduct the weight of all material lost, wasted, damaged or rejected, or laid in excess of the Engineer's direction or contrary to the Specifications, in determining the quantity for payment.

END OF SECTION

SECTION 321217 – HOT MIX ASPHALT SURFACE COURSE 9.5M64

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Hot Mix Asphalt Surface Course shall be M9.5M64, as shown on the Construction Drawings. This work shall consist of the furnishing and placing of a bituminous surface course, at the various thicknesses after compaction as indicated on the plans, on the prescribed surfaces, locations, in accordance with the Plans, Details and Specifications.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. The composition of the Hot Mix Asphalt Surface Course shall be coarse aggregate, fine aggregate, mineral filler and asphalt cement. These shall be as shown in the Standard Specifications, except that the materials shall conform to the requirements as shown for "Stone Mix". All reference to gravel mix is deleted.
- B. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 3 – EXECUTION

3.1 CONSTRUCTION

- A. After spreading and strike-off, and while hot, each course shall be compacted thoroughly and uniformly by rolling. The rolling shall be done with a three-wheeled, 10-ton roller until the mixture is thoroughly compacted to the satisfaction of Neglia Engineering Associates.
- B. A tack coat shall be applied to any one or more layers of the Hot Mix Asphalt Surface Course, if in the opinion of the Engineer such layer or layers become coated with dust, dirt, or other foreign material sufficiently to prevent a good bond between the layers of Base Course or between the completed Base Course and Surface Course.
- C. The construction of all hot mix asphalt shall be in accordance with the 2019 NJDOT Standard Specifications.
- D. Each truckload of material delivered shall be weighted by a certified weigh master, on certified scales approved by the Division of Weights and Measures, Department of Law and Public Safety.
- E. The weigh master shall furnish to the truck driver duplicate weight slips showing the gross, tare and net weight. To each weight slip shall be affixed his signature and official seal or approved commissioned stamp attesting that he is a duly constituted weigh master. One of these delivery slips shall be furnished to the Engineer's Representative on the project.

- F. No material will be accepted unless accompanied by such a delivery slip, which shall be completely legible and clearly indicate the title of the project for which delivery is intended.
- G. The Engineer shall deduct the weight of all material lost, wasted, damaged or rejected, or laid in excess of the Engineer's direction or contrary to the Specifications, in determining the quantity for payment.

END OF SECTION

SECTION 321319 – REINFORCED CONCRETE, 6” THICK

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This Reinforced Concrete shall include the construction of Portland Cement Concrete Handicap Ramps (6” thick) and reconstruction of driveway aprons, steel mesh reinforcement, and shall include the excavation and removal of all earth, rock, boulders, brick, sawcutting, stone and concrete masonry, including small structures and other materials encountered of whatever nature, required for the construction of reinforced concrete aprons. It shall also include the transportation and disposal of the excavated materials; the construction of embankments with the materials excavated; the disposal of unsuitable and surplus materials; and other work as shown on the plans or specified herein.
- B. The contractor shall replace any damaged or removed roof leaders with in-kind sizes and materials that daylight into the existing street. The extents of replacement shall be from the backside of the sidewalk, through the green belt, terminating at the front face of curb.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Materials shall be as those specified for Concrete Sidewalk and Driveways, as specified in Section 607, Sidewalks and Driveways of the N. J. Department of Transportation Standard Specifications.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. Methods of construction shall be the same as for Concrete Sidewalk, as specified in Section 607, Sidewalks and Driveways of the N. J. Department of Transportation Standard Specifications.
- B. Excavation shall be in accordance with applicable Sections and/or Subsections of the 2019 NJDOT Standard Specifications.

END OF SECTION

SECTION 321540 – CLEAN CRUSHED STONE

PART 1 GENERAL

1.1 DESCRIPTION

- A. The ¾-inch Clean Crushed Stone shall include the furnishing and placing of stones as indications on the Construction Details.

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION

3.1 MATERIALS – METHODS OF CONSTRUCTION

- A. Clean Crushed Stone shall be uniform in texture and quality and shall conform to the 2019 NJDOT Standard Specifications for Broken Stone and Pipes.
- B. The embankment/erosion control fabric shall be Mirafi 140S, or approved equivalent.
- C. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

END OF SECTION

SECTION 321613 – CONCRETE CURBS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Concrete, Depressed and Barrier Curbs shall include the excavation and removal of all earth, rock, boulders, brick, stone and concrete masonry, including small structures and other materials encountered of whatever nature, required for the construction of concrete curb of whatever reveal is proposed and as shown on the plans and details. It shall also include the transportation and disposal of the excavated materials; the construction of embankments with the materials excavated; the disposal of unsuitable and surplus materials; and other work as shown on the plans or specified herein.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. 2019 NJDOT Standard Specifications.
- B. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. Construction shall be in accordance with the applicable Sections and/or Subsections for Curbs within the 2019 NJDOT Standard Specifications.
- B. On-site and Off-site curb shall be as per the Plans and Details.
- C. Excavation and backfill shall conform to the applicable Sections and/or Subsections for Roadway Excavation of the NJDOT Standard Specifications. The backfill and curb foundation shall be well compacted by means of flat-faced mechanical tampers, or by other means to be approved by Neglia Engineering Associates, and in accordance with the applicable Sections and/or Subsections of the 2019 NJDOT Standard Specifications.
- D. Curbs at handicap ramps shall be depressed so that the top is flush with the adjacent pavement or shoulder surface.
- E. Barrier curbs shall include the required reinforced per the construction details.

END OF SECTION

SECTION 321623 – CONCRETE SIDEWALK / PAD

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This item shall include the construction of Portland Cement Concrete sidewalk, sub-base, and the subgrade therefore, the excavation and removal of all earth, rock, brick, stone and other materials encountered of whatever nature, required for the construction of concrete sidewalk. It shall also include the transportation of excavated materials; the construction of embankments with the materials excavated; the disposal of unsuitable and surplus materials; and other work as herein described. Portland Cement Concrete Sidewalk is hereinafter termed concrete sidewalk. The width of the concrete sidewalks shall be as shown in the site plans.
- B. Concrete Pads / Sidewalks / Aprons, Reinforced, shall include the construction of Portland Cement Concrete landings and slabs (6" to 8" thick) as shown on the plans for the proposed site improvements and shall include the excavation and removal of all earth, rock, boulders, brick, sawcutting, steel reinforcement, stone and concrete masonry, including small structures and other materials encountered of whatever nature, required for the construction of reinforced concrete aprons. Concrete pads shall be constructed as shown on the plans and details. It shall also include the transportation and disposal of the excavated materials; the construction of embankments with the materials excavated; the disposal of unsuitable and surplus materials; and other work as shown on the plans or specified herein.

1.2 SUBMITTALS

- A. Design Mixes: For each type of concrete.
- B. Qualification Data: For firms indicated in "Quality Assurance" Article, including list of completed projects.
- C. Scaled shop drawing of scoring pattern.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall have a minimum of 20-years' experience in manufacture of specified products.
- B. Installer Qualifications: An installer with a minimum of 10 years of experience with a minimum of three jobs of similar scope and quality.
- C. Comply with the requirements of ACI 301.
- D. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.
- E. Notification of manufacturer's authorized representative shall be given at least 1-week before start of Work.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. Methods of construction shall be in accordance with applicable Sections and/or Subsections for Sidewalks and Driveways of the 2019 NJDOT State Standard Specifications.
- B. Excavation shall be in accordance with applicable Sections and/or Subsections of the 2019 NJDOT Standard Specifications.
- C. All concrete sidewalks on-site shall have saw-cut joints, ½-inch-deep, every 5 feet or as indicated on the drawings. **Contractor shall provide a saw-cut joint pattern in the form of a shop drawing submittal.**
- D. All operations pertaining to handling, measuring, and batching materials, and mixing concrete, shall conform to the requirements specified in applicable Sections and/or Subsections for Handling, Measuring, and Batching Materials; and applicable Sections and/or Subsections for Mixing Concrete in the 2019 NJDOT Standard Specifications.
- E. Concrete sidewalks shall be 4 inches thick, to the dimensions specified on the plans.
- F. Concrete curb ramps and sidewalks (either ADA-compliant pedestrian ramps or driveway aprons) shall be 6 inches thick and concrete pads (generator and transformer) shall be 8 inches thick, with reinforcement (per 2019 NJDOT Standard Specifications).

3.2 PROTECTION OF FINISHED WORK

- A. Contractor shall protect the finished work as required to ensure no damage until final inspection and acceptance by Owner.
- B. Prohibit foot or vehicular traffic on the newly poured concrete surface.
- C. Barricade area to protect newly poured concrete.

END OF SECTION

SECTION 321720 – DETECTABLE WARNING SURFACE

PART 1 – GENERAL

1.2 DESCRIPTION

- A. Handicap accessible curb ramps shall consist of installation of detectable warning surfaces in conformance with the details shown on the plans or as directed by the Engineer and set in concrete.

PART 2 – PRODUCTS

2.1 MATERIALS

- 1. DWS Truncated Dome Mats. Color shall be **SAFETY RED**.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. Curb Ramps shall be constructed at the locations shown on the plans or as directed by Neglia Engineering Associates. The sub grade shall be constructed in the same manner as described for sidewalk. Each separate portion of the ramp shall be constructed so as to conform to the slope designated for that specific section, as shown on the plan detail or as directed by Neglia Engineering Associates.
- B. Public Sidewalk Curb Ramp Delineation shall be in accordance with applicable Sections and/or Subsections of the Standard State Specifications.

END OF SECTION

SECTION 321723 – PAVEMENT MARKINGS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. In this item, the Contractor shall be responsible for applying of white, blue and yellow lines, including, but not limited to, line-striping, handicap parking spaces, parking spaces, center lines, parking striping at fire hydrants, directional arrows, stop lines, or crosswalks, the cleaning of surfaces, furnishing and placing of paint, protecting the wet paint against deformation, smear or smudge, maintenance of traffic on the pavement surfaces and in accordance with layout as shown on plans, or as directed by the Engineer. All striping and pavement marking shall be hot-applied, extruded, long-life, thermoplastic, 90 mils thick.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Materials shall conform with applicable Sections and Subsections for, Long-Life Thermoplastic Traffic Markings of the 2019 NJDOT Standard Specifications.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. Pavement Line-striping shall be in accordance with applicable Sections and Subsections for, Long-Life Thermoplastic Traffic Markings of the 2019 NJDOT Standard Specifications.
- B. Immediately prior to striping, all dirt, loose chalky paint, or other foreign matter shall be removed from the pavement surface by method to be approved by Neglia Engineering Associates.
- C. Striping shall not be applied until Neglia Engineering Associates has approved the degree of cleanliness or condition of the pavement surface.
- D. All painted lines laid improperly, whether they have to do with alignment, pattern, or pavement cleanliness shall be removed, to the satisfaction of Neglia Engineering Associates, and properly repainted.
- E. The Contractor shall be responsible for the chalking and/or the layout of lines, in accordance with the Plans, or as directed by Neglia Engineering Associates.
- F. Striping shall not start until 1½ hours has elapsed after sunrise, nor shall it continue after 3:00 p.m., unless otherwise specified by Neglia Engineering Associates or their Representatives.
- G. Striping shall be applied only on a thoroughly dry surface and during period of favorable weather.

END OF SECTION

SECTION 329113 – TOPSOILING, SEED, STRAW MULCH, AND SOD

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide topsoil, seed, straw mulch, and sod as shown and as directed by Neglia Engineering Associates.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Topsoil obtained from stripping within limits of the project, or furnished from outside the project, shall contain no stones, lumps, roots, or similar objects larger than 2 inches in any dimension, and shall have a pH value of not less than 5.8. When the pH value of the topsoil is less than 5.8, it shall be increased by applying ground limestone at a rate necessary to attain a pH value of 6.5.

B. Material stripped from the following sources shall not be considered suitable for use as topsoil.

1. Soils having a pH value less than 4.1
2. Chemically contaminated soils.
3. Areas from which the original surface has been stripped and/or covered over, such as borrow pits, open mines, demolition sites, dumps, and sanitary landfills.
4. Unacceptable wet excavation.

C. Topsoil furnished from sources outside the limits of the project shall have a minimum organic content of not less than 2.75 percent by weight. When the organic content of the topsoil furnished from sources outside the limits of the project is less than 2.75 percent, it shall be increased by adding peat at a rate necessary to attain this minimum organic content. The organic content of soils shall be determined by the Laboratory using the chromic acid titration method, as described in the United States Department of Agriculture's Circular 757.

D. The organic content of all topsoil used for planting shall conform to the requirements specified above.

E. The gradation of the topsoil furnished from sources outside the limits of the project shall be determined by the Laboratory, using the Bouyoucos Hydrometer Analysis conforming to the requirements of current A.A.S.H.O. Designation T88. The gradation of the topsoil shall be within the following ranges:

Sand (1.00 MM to 0.25 MM) 70% to 80%
Silt and Clay (less than .25 MM) 20% to 30%

F. A percolation rate of 1 inch/Hour to 2 inch/Hour is required after root growth by the sod after establishment.

G. The materials to be used for topsoiling shall conform to the appropriate articles as follows:

Fertilizer, 5-10-5 Commercial Designation Sec. 909.02
Ground Limestone..... Sec. 909.03

Mulch, Hay.....	Sec. 909.04
Grain Seed	Sec. 909.06
Topsoil	Sec. 909.10
Grass Seed Mixture	Hydroseed Lesco 3 Rye

I. The materials for Sodding shall conform to the requirements of the appropriate Articles as follows:

Fertilizer.....	Sec. 917.03
Ground Limestone.....	Sec. 917.04
Sod	As specified below.

A. Sod:

Shall be New Jersey certified sod containing approved blends, free from noxious weeds and objectionable grasses. It shall not contain all the dense root system of the grass and shall not be less than 1 1/2 inches thick. Before removing the sod, the grass shall be cut to a height of 2 inches and its surface shall be raked clean of all debris. It shall be cut with suitable tools in uniform strips not less than 12 inches wide.

Sod shall be mineral grown on a sandy loam soil from approved sources in the locality of the work where the soil is of such character that it will not break up or crumble during cutting, transportation or laying.

Sod Blend:

Sod blend shall be one of the following blends selected based on site conditions:

Tall Fescue:

- 85% Rembrandt Tall Fescue
- 15% Bluegrass(mixture of P105 and Midnight II Bluegrass)

Penntrio Bentgrass:

- 33% Pennlinks II
- 33% Penneagle II
- 33% Pureformance

Bluegrass Short-Cut:

- 25% Midnight Star
- 25% Moonlight
- 25% Award
- 25% Liberator

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

A. The topsoil shall be spread over the surface in a uniform layer that will produce the prescribed compacted thickness of at least six (6”) inches. When required, ground limestone which has been protected from moisture and is dry and free flowing, shall be evenly spread over the area to be seeded

at a rate that will produce a pH value of the soil of 6.5. The area shall then be raked, disked or otherwise worked to incorporate the limestone into the upper 3 to 4 inches of soil to remove stones, roots, debris and other unsuitable material and to form an even surface. The soil shall be in a pliable condition at the time of seeding.

- B. Section Removed.
- C. The contractor shall hydro-seed (only when directed by the Engineer) only on a calm day. No seeding shall be performed on frozen ground or when the temperature is 32 degrees Fahrenheit or lower. Schedules for fertilizing and seeding must be submitted to Neglia Engineering Associates for approval prior to the work. Hydroseeding shall be done within ten days following soil preparation.

Fertilizer shall be 5-10-5 and shall be applied at a rate of 325 lbs. per acre.

Virgin wood fiber mulch shall be applied at a rate of 1500 lbs. per acre.

ECT tackifier shall be applied at a rate of 5 lbs. per acre.

Hydroseed mix shall be Lesco 3 Rye.

- D. The Sod shall be placed on a 6-inch-thick bed of topsoil, soon after being cut. Immediately before placing the sod, the topsoil shall be fertilized at the rate of 600 pounds of 5-10-5 fertilizer per acre. The sod shall be laid with staggered joints, and on slopes the placing shall start at the bottom.
- E. The sod pieces shall be pressed closely together, and at the top of a slope the upper edge of the sod strips shall be turned into the soil and covered with earth. On slopes steeper than 4:1, the sod shall be held in place with pegs driven flush with the surface of the sod. The pegs shall be not more than 1 foot apart, and not less than 2 pegs shall be used for each strip of sod. The sod shall be pressed into the underlying soil by thorough tamping and rolling, after which a thin layer of topsoil, and 5-10-5 fertilizer applied at the rate of 600 pounds per acre, shall be spread evenly over all sodded areas shall be thoroughly watered.
- F. The finished surface shall be smooth, even and to the prescribed lines and contour. The sod shall be kept moist until growth is established. Sod showing evidence of dying or other defects before acceptance of the project shall be replaced.
- G. Sod shall be watered by the contractor until established. The watering of the sod may require watering trucks.

END OF SECTION

SECTION 330520 – PIPE AND PIPE FITTINGS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, equipment and materials necessary to install, test and place into satisfactory service, all piping, fittings and accessories required for complete piping works and ready for use as shown on the Contract Drawings and as specified herein.

1.2 Related Work Described Elsewhere

- A. Select Fill and Foundation Material Section 310000 (EARTHWORK)
- B. Excavation, Backfilling and Compaction Section 310000 (EARTHWORK)
- C. Valves Section 333650

1.2 QUALITY ASSURANCE

- A. Comply with ANSI, OSHA, ASTM, AWWA and all applicable Federal, State and Municipal codes, including revisions to date of contract.
- B. In all cases where an item of equipment, or part thereof, is referred to in this Section by a singular number (such as “gasket”), it is intended that such references shall apply to as many parts as are required to complete the installation.

1.3 SUBMITTALS

- A. Submit shop drawings in accordance with Section 013220, SUBMITTALS.
- B. For pipe, pipe fittings and appurtenances, the Contractor shall furnish to the Engineer, at the time of shop drawing submission, certified records of physical, chemical and other pertinent tests and/or certified statements from the manufacturer that the materials have been manufactured and tested in conformity with the specifications. Where such a small quantity of material is required as to make physical testing and chemical analysis impractical, a certified analysis of similar materials which were concurrently produced, may at the discretion of the Engineer, be considered as the basis for acceptance of such materials.

1.4 PRODUCT HANDLING

- A. All pipe units shall be identified as to the following:
 - 1. Pipe class
 - 2. Date of manufacture
 - 3. Manufacturer’s name or logo
 - 4. Inside pipe diameter

5. Pipe material

1.5 DELIVERY AND STORAGE

- A. The Contractor is responsible for storing any equipment the Owner furnishes from the time the Owner delivers it to him.

1.6 PROTECTION

- A. The Contractor shall use all means necessary to protect the materials of this Section, before, during and after installation and to protect installed work and materials of all other trades.

1.7 REPLACEMENT

- A. In the event of damage, the Contractor shall make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

PART 2– PRODUCTS

2.1 DESIGN

- A. The names of manufacturers and specific catalog numbers are given only as an indication of the quality of materials and workmanship to be used. Equal products by other manufacturers approved by the Engineer shall be acceptable in accordance with the General Conditions of the Contract.

2.2 COUPLINGS

- A. Grooved or Shouldered Fittings, Flanges and Coupling
1. All interior piping, including piping in valve vault; shall be furnished and installed with grooved or shouldered fittings and couplings.
 2. The pipe and fitting couplings or flanges shall be the mechanical type, to mechanically engage and lock the grooved or shouldered pipe ends in a positive couple and to allow for some degree of angular deflection and contraction and expansion. Each coupling shall consist of malleable iron housing-clamps in two or more parts, a single C-shaped composition sealing gasket with internal sealing lips projecting diagonally inward so that internal pressure serves to increase the tightness of seal when installed, and two or more trackhead steel bolts as required to assemble the housing-clamps. Where required, rigid couplings shall be furnished. Flanges shall conform to the bolt hole circle and strength requirements of ANSI A21.10 and/or ANSI B16.1.
 3. Grooves shall conform to the coupling manufacturer's standards.
 4. All couplings, flanges and appurtenances for the assembly shall be the models and styles of Victaulic Co. of America, Gruvagrip manufactured by Gustin-Bacon Mfg. Co., Eastern Malleable Iron Co., or equal.

2.3 FLEXIBLE PIPE ASSEMBLY

- A. Flexible pipe assemblies shall be installed in the locations indicated on the Drawings and shall be manufactured of ductile iron conforming to the material properties of ANSI/AWWA C153/A21.53.

Flexible pipe assembly shall be pressure tested against its own restraint to a minimum of 350 psi (250 psi for flexible expansion joints 30 inches and larger).

- B. Each flexible pipe assembly shall consist of an expansion joint designed and cast as an integral part of a ball and socket type flexible joint, having a minimum of 15 degrees deflection per ball and 4 inches minimum expansion. All flexible pipe assemblies shall be double ball, mechanical joint type.
- C. All external surfaces shall be coated with a catalyzed coal tar epoxy conforming to the material requirements of AWWA C210.
- D. All flexible pipe assemblies shall be FLEX-TEND as manufactured by EBAA Iron Inc., Eastland, TX, or equal.

2.4 MISCELLANEOUS PIPING

- A. Flexible couplings for pipe shall be installed where shown, specified or required. Type "A" couplings shall be Dresser Manufacturing Division Style 38 couplings, without pipe stop, or equivalent models of Smith-Blair, Inc., R.H. Baker & Co., Inc. or equal. Type "B" couplings shall be for grooved end pipe. Couplings shall be installed in accordance with the recommendations of the manufacturer.

2.5 EXPANSION IN PIPE LINES

- A. Ample provisions shall be made for flexibility in all pipe lines, to compensate for expansion. Unless other forms of expansion joints are specified, all runs of pipe subject to change in length, shall be fabricated shorter than their theoretical length to the extent of one-half of the expansion and shall be so erected that there may be freedom to expand without increasing the stresses imposed when cold. When the foregoing method of compensation for expansion is not adequate, the Contractor shall furnish and install in the pipe lines, expansion devices that will be adequate to allow the lines to expand and contract freely without injury to any part of the piping system. The devices may in the form of expansion joints, swivel or swing joints, or pipe bends, and shall include such anchors as may be shown, specified or required to make the devices effective.
- B. Expansion joints shall be of the internally guided, packless type. The traverse shall be adequate for the maximum estimated expansion movement. Unless otherwise specified, the expansion joints on all pipe lines, two (2") inches or smaller, shall be all brass with screwed ends, and on all lines two and one-half (2 ½") inches and larger, they shall be of the iron body pattern with flanged ends and covered brass expansion element. They shall be Flexonic, Adscos, Zallea or equal.
- C. Rubber expansion joints shall be the Garlock Packing Co., Style 204, full faced, teflon-lined, rubber expansion joints with control unit for flanged installation, equivalent model of Peabody Dore, or equal.
- D. Expansion devices or appurtenances shall be, at minimum, suitable for 300 lb. pressure.

2.6 DUCTILE IRON PIPE AND FITTINGS

- A. Ductile iron pipe used for buried sewage piping shall be push-on type connection. Ductile iron pipe for exposed interior piping shall be flange type connection.

- B. Ductile iron pipe shall be Pressure Class 350. Ductile iron pipe shall be in conformance with ANSI A.21.51 and AWWA C151 for "Ductile Iron Pipe Centrifugally Cast In Metal or Sand Lined Molds, for Water or Other Liquids". The pipe shall be cast utilizing iron conforming to Grade 60-42-10 as required in the above noted ANSI specification. Pipe shall be furnished in nominal 16 foot to 20 foot lengths.
- C. Ductile iron pipe shall be as manufactured by United States Pipe and Foundry Company or equal.
- D. Ductile iron fittings used for the buried mains shall be push-on type or mechanical joint connection.
- E. Ductile iron fittings used for exposed interior pipe shall be flanged end.
- F. Fittings as required for ductile iron pipe shall be ductile iron or gray iron mechanical joint fittings only conforming to the requirements of ANSI Standard A21.10.
- G. Ductile iron fittings shall be Pressure Class 350. Ductile iron fittings shall be in conformance with ANSI A.21.10-93 and AWWA C110 for "Ductile Iron Fittings For Water Service". The fittings shall be cast utilizing iron conforming to Grade 60-42-10 as required in the above noted ANSI specification.
- H. Ductile iron fittings shall be as manufactured by United States Pipe and Foundry Company or equal.

2.7 RUBBER GASKET JOINTS

- A. Gaskets shall be provided at all pipe and fitting joints. Gaskets shall be field locking type to provide maximum pipe restraint. Gaskets shall be furnished in accordance with ANSI A21.11 and AWWA C111 for rubber gasket joints for ductile iron pipe and fittings.

2.8 LINING

- A. Pipe and fitting lining shall consist of cement-mortar of double thickness (1/8") for the entire length of pipe and shall conform with ANSI A.21.4 and AWWA C104 for cement-mortar lining for ductile iron pipe and fittings for water. The pipe interior shall receive a
- B. Bituminous seal coating. The interior seal coat shall be continuous and shall adhere to the mortar lining at all points. The pipe exterior shall receive a bituminous coating of either coal, tar or asphalt base approximately one (1) mil thick.

2.9 HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

- A. The Contractor shall furnish a High Density Polyethylene Pipe and Fittings conforming to ANSI/AWWA Standard C906-90 and ASTM D3350-02. The pipe shall be PE 4710 high density polyethylene pipe with an SDR of 11 or less as directed by the Owner and be rated for a pressure of 200 psi or more. The carbon black content shall measure 2% to 3% by weight when tested according to ANSI/ASTM D 1603 or ASTM D4211. The pipe shall be provided in ductile iron sizes. The pipe shall be produced by Drescoplex HDPE Performance Pipe, a division of Chevron Phillips Chemical Co., or equal. Pipe shall be "prisma" coated with a green exterior color or the pipe shall have a green stripe impregnated into the wall of the pipe to make it easily identifiable when excavated. The manufacturer shall have an ISO 9001 listing covering the HDPE manufacturing facility, as well as the corporate office. The Owner at

no additional cost may require quality audits. All pipe will be provided in standard straight lengths. No coiled pipe will be accepted for installation on the project.

- B. Solid wall pipe shall be produced with plain end construction for heat-joining (butt fusion) conforming to ASTM D2657. Utilize controlled temperatures and pressures for joining to produce a fused leak-free joint.
- C. Furnish solid wall pipe for sanitary sewer force mains Ductile Iron Pipe Size with minimum working pressure rating indicated in this Section and with inside diameter equal to or greater than nominal pipe size indicated on Drawings. Pipe shall be marked in accordance with ASTM F714. Markings shall indicate the pipe's Pressure Rating (PR) and/or Pressure Class (PC).

2.10 QUALITY AND INSPECTION

- A. All pipe shall be smooth on both the interior and exterior surfaces; be free of noticeable imperfections such as cracks, blisters, or kinks in the pipe. The Owner, if Owner so chooses, shall be able to inspect the pipe at the pipe plant, trench, and other various storage sites. Based on these observations, the Owner will have the right to reject any and all piping not conforming to these stated requirements, independent of laboratory tests. Field repair of any damaged pipe shall not be permitted. The Owner reserves the right to require the removal of fused connections for destructive testing to verify the integrity of fused joints, etc.

2.10 FITTINGS

- A. The fittings shall meet all of the requirements of the pipe to which they are to be fused. They shall be homogeneous throughout and essentially uniform in color, opacity, density and other properties. Fittings should also be free of such defects as cuts, cracks, or holes.
- B. Fabricated fittings will not be allowed where molded or machined fittings are available. All fittings will be manufactured in accordance with AWWA C906 with a minimum pressure class equal to that of the pipe.

2.11 HDPE COUPLINGS

- A. Flange Couplings: Flange assemblies shall consist of a metal back-up flange or ring and a polyethylene flange adapter. The back-up flange shall be slipped over the pipe profile flange adapter and then be fused into the plain end pipe.
- B. Mechanical Joint: Mechanical joints are to be made with stiffeners which are inserted into the HDPE pipe. Stiffener manufacturer's directions shall be followed when installing stiffeners and mechanical joints. Stiffeners shall be Romac Industries 501-H & RC-501-H or equal.
- C. Restrained Mechanical Joints: Restrained mechanical joints shall be made using mechanical joint adapters manufactured by Performance Pipe, or equal.
- D. Electrofusion Couplings: Electrofusion couplings and saddles will not be used on this project without written approval of Owner.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. All pipe shall be installed as shown on the drawings, or required.
- B. After installation and testing have been completed, all lines shall be flushed clean.

3.3 HANDLING OF PIPE

- A. Proper and suitable equipment for the safe and convenient handling and laying of all pipes and fittings shall be used. Care shall be taken to prevent the pipe coating from being damaged, particularly on the inside of pipes and fittings and any damage shall be remedied as directed by the Engineer. No pipe and/or fittings shall be laid which are known to be defective. If any defective pipe is discovered after having been laid, it shall be removed and replaced with sound pipe or fitting in a satisfactory manner by the Contractor at his own expense.
- B. All pipe shall be installed to proper line and grade. Open ends of pipe shall be kept plugged with a bulkhead during construction.

3.4 INSTALLATION OF PIPE

- A. Pipe shall be carefully installed to the lines and grades shown on the Contract Drawings or as ordered by the Engineer.

3.5 CLEANING PIPE

- A. The inside of all pipe and fittings shall be cleaned by brushing and by thoroughly blowing out with air to remove slag, dirt and other sediment, as well as other foreign materials, before being installed. During installation, sufficient care shall be exercised to prevent foreign matter from entering the lines. Use temporary closures during construction to protect open ends of pipe. After installation and testing have been completed, all lines shall be flushed clean.

3.6 LINE AND GRADE

- A. The Contractor shall establish the benchmark and position of control point as shown on the Contract Drawings. The Contractor shall furnish all horizontal and vertical measurement from this control point including inverts and grade.

3.7 CUTTING OF PIPE

- A. Whenever pipe requires cutting, it shall be done with an approved pipe cutter in such a manner as to leave a smooth end at right angles to the axis of the pipe. Cutting by hammer and cold chisel shall not be permitted. When a piece of pipe is cut, no direct compensation will be made for the portion cut off and not used in the line.

3.8 PIPE CAPS AND PLUGS

- A. All caps and plugs shall be thrust, braced, staked, anchored, wired on or otherwise secured to the pipe to prevent leakage under the maximum anticipated thrust from internal abnormal operating conditions or test pressures from water or air.

3.9 INSTALLATION OF HDPE PIPE

A. Joining Method:

1. The pipe and fittings shall be joined by butt or electrofusion, mechanical joint adapters, or by flange connections in accordance with manufacturer's recommendations. All joints shall be fused, not including connections to existing utilities unless otherwise shown on Drawings or requested by the Owner.
 - a. Fusion: The pipe shall be joined by heat fusion of the ends. Prior to the fusion, the pipe shall be clean and the ends shall be cut square. Fusion system operators shall be trained in the use of the equipment by the pipe manufacturer of the fusing machine and be experienced in the operation of the equipment.
 - b. All fuses shall be recorded, the recording of the information must be provided to the Owner, and the recorded information must meet the standard requirements of the pipe manufacturer. All fusions failing to meet these requirements shall be removed and refused.
 - c. Butt fusion shall be recorded by the use of McElroy Datalogger or approved equal.
 - d. Electrofusion are to be recorded by the electrofusion processor and fusion information is to be surrendered upon request of the Engineer or Owner.
 - e. Flange: A flange assembly consists of a metal back-up flange or ring and a polyethylene flange adapter.
 - f. The back-up flange is slipped over the pipe profile and the stub-end, or flange adapter, is then fused into the plain end pipe.
 - g. Connection to Ductile Iron Pipe or Valves: Connections to ductile iron pipe and valves shall be mechanical joints or flanges. All connections to ductile iron pipe, valves or fire hydrants must be restrained.
 1. Restrained Mechanical Joints: Restrained mechanical joints shall be made using mechanical joint adapters and shall incorporate a factory installed stiffener manufactured by Performance Pipe, or equal.
 2. Flange: Flange connections shall be described above in paragraph (2).

3.10 COLD (FIELD) BENDING

- A. Contractor shall not bend the pipe to fit a trench more than that allowed by the pipe manufacturer.

3.11 PROTECTION OF PIPE OPENINGS

- A. During installations, the Contractor will ensure that pipe ends that have not been fused will be protected against dirt, debris, animals, and other foreign materials. Plastic caps held in place with duct tape or other methods as approved by the Owner may be used.

3.12 BLOCKING AND RESTRAINING

- A. Contractor shall fully restrain the pipe through the use of fully restrained joints by means of butt fusion, M-J adapters, or flange adapters. Do not use thrust blocks with HDPE pipe installations.

3.13 CLEANING

- A. Before acceptance of any line, the line must be clean. If the Contractor fails to clean the pipe or debris is found to be in the line, the Contractor shall clean the line by pigging or other suitable means at the Contractor's expense. The Contractor shall be prepared to pig the lines installed within this project in order to remove the HDPE pipe shavings, etc.

3.14 TESTING

- A. Testing of the HDPE and ductile iron pipe installations will include destructive testing, as well as final pressure testing to ensure no leaks are present in the line.
 - 1. At the direction of the Owner, the Contractor will perform destructive strap testing on selected fuses to determine if the fuses meet with manufacturer's requirements. Pipe used in this testing will not be installed in the Project.
 - 2. The testing of the HDPE pipe will be performed in accordance with AWWA C906-90 (as amended) and the manufacturer's recommendations. Contractor will submit a test protocol to the Owner for approval prior to implementing any testing.

3.4 FIELD TESTING

- A. The piping systems of this Specification shall be tested as indicated on the attached piping schedule and in the manner described below. Each test shall be performed in the presence of the Engineer. The Contractor shall provide water, air and all labor, equipment and accessories required to perform the tests and retest at no additional cost to the Owner.
- B. Upon completion of the installation and as a condition of its acceptance, the Contractor shall provide all necessary equipment and personnel to perform all tests and retests, making all adjustments necessary for the equipment to operate as specified.
- C. All noticeable leaks in the completed lines shall be satisfactorily repaired. After installation of the pipe, including the placing of the backfill, but prior to the placing of pavement materials and plantings, the pipelines shall be tested in accordance with the piping schedule. All piping shall be tested.
- D. For sections of pipe which do not pass the test; the pipe shall be repaired and retested at no additional cost to the Owner until the requirements have been satisfied. The Contractor shall be responsible for furnishing all labor, equipment and accessories necessary for testing and retesting and making all adjustments required.

- E. Test appurtenances shall include, but not be limited to, pressure relief devices and certified gauges.
- F. All tests shall be performed in the presence of the Engineer.
- G. The Contractor, at his own expense, with sound material shall replace defective pipes and fittings. All joints examined during the tests and found to be leaking shall be repaired in a satisfactory manner, in the opinion of the Engineer. Tests shall continue until a passing test is achieved.
- H. All test gauges shall be certified for accuracy.
- I. All instruments other than test instruments shall be disconnected during testing to prevent damage.

3.5 HYDROSTATIC TESTING

- A. The system shall be so pressurized to the hold test pressure specified for a given system on the attached piping schedule. In no case shall the internal hydrostatic pressure developed for the test be less than 200 psi or 1.5 times the working pressure, whichever is greater. Test pressure shall not exceed thrust restraint design. Valves shall not be operated during the test. Pressure shall be applied to the piping by means of a hand pump or other approved method, with all air expelled out of the line. The pump, pipe connections, certified gauges; the Contractor shall furnish test bulkheads and all necessary apparatus. Duration of the test shall be at least two (2) hours of sustained pressure unless otherwise permitted in the specific testing procedures of individual pipe sections of these specifications. Test pressure shall not vary by more than ± 5 psi for the duration of the test.
- B. The hydrostatic leakage test shall be performed in strict accordance with AWWA C 600.
- C. If losses in pressure exceed the allowable specified, the system shall be examined and soap tested until the leak is found and corrected. All visible leaks are to be repaired regardless of the amount of leakage. No leakage is allowed for interior piping.

3.5 FINAL ACCEPTANCE

- A. In no case shall final acceptance be given until the Contractor has complied with all requirements set forth and the Engineer has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed and shall operate in accordance with the requirements of the Contract Documents.
- B. All test results shall be submitted to the Engineer and to the Owner.

3.6 PIPING

- A. Sewage Gravity Line
 - 1. 4-inch and larger (SDR-35 PVC)
 - a. Location: Inside & Outside
 - b. Testing Method – Air, 5 PSIG
- B. Stormwater Gravity Line

1. 4-inch and larger (SCH-40 PVC)
 - a. Location: Outside
 2. 12-inch and larger (HDPE)
 - a. Location: Outside
- C. Potable Water
1. 3 inches and smaller Water (Copper)
 - a. Location: Inside
 - b. Testing Method – Water, 150 PSIG
 - c. Thrust Block – Type L
 2. 3 inches and smaller Water (Copper)
 - a. Location: Outside
 - b. Testing Method Water, 150 PSIG
 - c. Thrust Block – Type K
 3. 3 inches and larger Water (Ductile Iron Pipe)
 - a. Location: Outside
 - b. Testing Method – Water, 200 PSIG
 - c. CI 53
- D. Building Services
- A. Seal Water (Galvanized Steel)
 - a. Location: Inside
 - b. Testing Method Water, 100 PSIG
 - c. Sched. 40

END OF SECTION

SECTION 331011 – WET TAPPING

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This item shall consist of the excavation for and the construction/operation of wet tapping and separation valve without shut down of the current water distribution system, as shown on the Contract Plans, or as directed by the Engineer.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Tapping materials shall be Muller H-615 Mechanical Joint Tapping Sleeve OR APPROVED EQUAL, with associated apparatus which is a full range tapping sleeve and crosses to fit most type of pipe. All sleeves shall have outlet flange with dimension and drilling that comply with ANSI B 16.1 Class 125 and with MSS SP-60.
- B. In addition to tapping sleeve, a tapping valve shall be included. Tapping valve shall be Muller tapping valve, a no-raising stem, one end flanged with alignment lip to attach to tapping sleeve for easy connection. The tapping valve shall meet all applicable section of ANSI/AWWA C 500 and C 509 Standards. Tapping valve shall be designed to withstand maximum working pressure of 250 psig.

Note: Stainless tapping sleeve, or repair sleeve are not considered as equal materials for tapping sleeve for this construction, since these type sleeves cannot withstand high axial pressure and prevent relatively axial movement. Unless main pipe is not cutout more than 30%, and the biggest tapping pipe to the main pipe is less than 3", this kind sleeve and wet tapping should not be utilized at this construction.

- C. The Contractor shall furnish and place adjustable cast iron valve boxes and covers with each valve specified. The covers shall have plainly cast on them the letters "WATER".
- D. The Governing Body, upon recommendation of the Engineer, may appoint an Inspector who, under the direction of the Engineer, will inspect the valves at the factory. The Contractor shall have unrestricted access to all parts of the work, as necessary, in the performance of his duties. The cost of inspection of rejected valves shall be borne by the Contractor, and will be deducted from his estimates.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. The valves must be set, as indicated on the Contract Plans, in a truly vertical position, or as directed by the Engineer. All backfilling must be well rammed about them. Valve boxes and covers shall be provided and set to grade, as determined on the Contract Plans or as directed by the Engineer.

END OF SECTION

SECTION 331143 – DUCTILE IRON & CAST IRON FITTINGS, TEES, SPECIALS AND BRANCHES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Ductile and Cast Iron Fittings, Tees, Specials, and Branches shall consist of the excavation and installation of the various sizes of fittings, tees, couplings, reducers, and specials, as shown on the Contract Plans, or as otherwise directed by the Engineer.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Ductile and Cast Iron Fittings, Tees, Couplings, Reducers, Specials, and Branches shall be "Centrifugally Cast," and shall be Class 200 conforming to Specifications ANSI/AWWA C110/A21.10 or ANSI//AWNA C153/A21.53, and ANSI/AWWA C111/A21.11 of latest revision. They shall be subject to a hydrostatic proof test in accordance with said specifications at a pressure of 500 pounds per square inch, and shall have bell and spigot ends.
- B. Cement mortar lining shall be applied to all cast iron fittings, specials, and branches, in the manner set forth and with materials specified in accordance with ANSI/AWWA C104/A21.4 of latest revision. The thickness of lining shall be nowhere less than 1/16-inch for pipes 3 to 12 inches in diameter, and 1/8-inch for pipes 30 to 48 inches in diameter. The linings may be tapered at the ends. The lengths of the taper shall be as short as practicable, and shall not exceed 2 inches, in accordance with specifications ANSI/AWWA C104/A21.4 of latest revision.
- C. The lining shall be cured in such a manner as to produce a properly Hydrated Mortar Lining that is hard and durable. The cure may be effected by the application of a seal coat to the still moist lining. The finished lining shall conform with Section 4 13 of A.S.A. Specifications A21.4 1964 (A.W.W.A. C104 64) of latest revision.
- D. The seal coating shall conform to all the requirements, and have all the characteristics as set forth in Section 14 4 of A.S.A. Specifications A21.4 1964 (A.W.W.A. C104 64) of latest revision.
- E. The Governing Body, upon the recommendation of the Engineer, may appoint an Inspector who, under the direction of the Engineer, will inspect the cast iron fittings, tees, specials, and branches at the factory. He shall have unrestricted access to all parts of the work as necessary in the performance of his duties.
- F. The cost of inspection of rejected materials shall be borne by the Contractor, and will be deducted from his estimates.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. Ductile and Cast Iron Fittings, Tees, Couplings, Reducers, Specials, and Branches shall be constructed in accordance with Division 650 - Utilities, Section 651.03.01 – Water Pipe of the N. J. Department of Transportation Standard Specifications – 2019.

END OF SECTION

SECTION 331153 – DUCTILE IRON WATER PIPE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Ductile Iron Water Pipe shall consist of the installation of the various size water mains and mechanical restraining collars, mega lugs, threaded rods where necessary, and/or thrust blocks where necessary as shown on the Contract Plans, or as otherwise directed by the Engineer or Superintendent of the Water Department. Ductile Iron Water Pipe shall also consist of sawcutting, excavation, testing and disposal of soil, installation of a minimum 6-inch-thick bed of ¾-inch clean crushed stone of DGA below the entire length of pipe, backfilling, borrow excavation (if necessary), compaction, dewatering, installation of thrust blocks, pressure testing and water main disinfection. All elbows, bends, special connections and fittings and water main disinfection shall also be included in the prices bid for the installation of various sizes of the proposed pipe unless otherwise itemized in the bid.
- B. The contractor must dispose any excess soil off-site upon testing, as per local, state and federal standards.
- C. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's specifications including dimensions and coatings.

PART 2 – PRODUCTS

2.1 DUCTILE IRON PIPE

- A. Ductile Iron Pipe shall be "Centrifugally Cast," U.S. Tyton Joint Pipe, or approved equivalent, and shall be Class 52, conforming to Specifications ANSI/AWWA C151/A21.51, F.S. WW-P-421C, 150. They shall be subject to a hydrostatic proof test in accordance with said specifications at a pressure of 500 pounds per square inch, and shall have push-on joints, in accordance with ANSI 4211.11 and cast in lengths of 18 feet. **Restraining collars shall be installed at the joints where necessary and mega lugs or threaded rods shall be installed for additional bracing.**
- B. The outside coating shall be a bituminous coating of either coat-tar or asphalt base, approximately one (1) mil thick and shall be applied in the manner set forth and with materials specified, in accordance with ANSI/AWWA C151/A21.51 of latest revision for pipe and ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53 for fittings of the latest revision.
- C. Cement mortar lining shall be applied to all ductile iron pipe in the manner set forth and with materials specified in accordance with ANSI/AWWA C104/A21.4 of latest revision. The thickness of lining for ductile iron pipe shall be no less than 1/16-inch for water pipe 3 to 12 inches in diameter, and 1/8-inch for water pipe 30 to 48 inches in diameter. The linings may be tapered at the ends. The lengths of the taper shall be as short as practical, and shall not exceed 2 inches, in accordance with specifications ANSI/AWWA C104/A21.4 of latest revision.

- D. The lining shall be cured in such a manner as to produce a properly-hydrated mortar lining that is hard and durable. The cure may be affected by the application of a seal coat to the still moist lining. The finished lining shall conform to Section 4-13 of specifications ANSI/AWWA C104/A21.4 of latest revision.
- E. The seal coating shall conform to all the requirements and have all the characteristics as set forth in Section 14-4 of specifications ANSI/AWWA C104/A21.4 of latest revision.
- F. The Governing Body, upon the recommendation of the Engineer, may appoint an Inspector who, under the direction of the Engineer, will inspect the pipe and special castings at the foundry. He shall have unrestricted access to all parts of the work as necessary in the performance of his duties.
- G. The cost of inspection of rejected pipe shall be borne by the Contractor, and will be deducted from his estimates. If foundry rejections exceed fifteen (15%) percent of the total tonnage inspected, the Engineer may require that the remainder of the pipe required be procured from another manufacturer, and the Contractor shall have no redress for any additional expense thereby resulting to him.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Inspect pipe prior to installation to preclude installation of defective materials.

3.2 METHODS OF CONSTRUCTION

- A. The excavation and disposal for the proposed water main construction shall be in accordance with Section 207 - Subsurface Structure Excavation of the NJDOT Standard Specifications. The water main shall be laid on a 6-inch-thick bed of ¾-inch clean stone or DGA as shown on plans or as directed by the Engineer. Six 6 inches of stone bedding or DGA shall also be laid above the pipe (measured from the highest point of the pipe.)
- B. All pipelines shall be tested before backfilling trenches. Tests shall be made between valves, and, as far as practicable, in sections approximately 1,000 feet long, or as may be directed by the Engineer, and within 12 working days of the completion of such sections of mains. Testing shall be in accordance with ANSI / AWWA Standard C600-05 "Installation of Ductile Iron Water Mains and Their Appurtenances" - Section 5.2 Hydrostatic Testing. It should be noted that the normal operating pressure for water mains within this project's limits are approximately 90 to 100 psi.
- C. The Contractor shall perform the tests under the supervision of the Engineer and Superintendent of the Water Department. Means shall be provided for accurately measuring the water pumped into the pipelines while under test. A careful record of all tests shall be kept by the Contractor in a manner designated by the Engineer, which record shall at all times be available to the Engineer, and shall become the property of the Engineer upon completion of the contract.

- D. Pipe lines shall be flushed clean before testing, and all valves on hydrant branches shall be closed immediately after testing and shall be kept closed; except as permitted or directed. If the leakage is found at a greater rate than specified, the Contractor shall make all necessary repairs at his own expense. After repair, this section of pipe shall be tested again.

END OF SECTION

SECTION 331163 – SERVICE, CORPORATION STOP, CURB STOP & CURB BOX

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Service, Corporation Stop, and Curb Box shall consist of the removal and replacement of existing Service Connections, which shall be complete with new Corporation Stop, Copper Service Line, and Curb Stop and Box, with Curb Box Sleeve, reducer where applicable, and connections to all types of existing service lines. All services larger in size shall be replaced in accordance with existing service line. This item shall include the excavation necessary to install new services and disposal of excess soils.
- B. The contractor must dispose any excess soil off-site upon testing, as per local, state and federal standards.
- C. The contractor is responsible for returning all curb, sidewalk, driveway and grass areas to pre-construction conditions
- D. All soil, stone, and other fill materials either imported onto or exported from the property shall comply with all applicable local, County, State, and Federal regulations and requirements as well as the following documents:
 - 1. New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program (SRP) – Fill Material Guidance for SRP Sites;
 - 2. NJDEP SRP – Historic Fill Material Technical Guidance;
 - 3. NJDEP – Solid and Hazardous Waste Management Program – Guidance for Characterization of Concrete and Clean Material for Recycling; and
 - 4. Site-specific Health and Safety Program (HASP), prepared by the LSRP.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Copper tubing and fittings shall conform to the requirements of A.S.T.M. Designation B88, Type K, for underground service and Type L, for interior applications. Type K tube shall be annealed and used in conjunction with cast bronze flared tube fittings. The tubing and fittings shall be installed in accordance with recommendations of the manufacturer.
- B. All service connections shall be complete with Corporation Stop, Copper Service Lines, and Curb Stop and Box, with Curb Box Sleeve, where applicable.
- C. One inch Corporation Stop shall be Corporation stop Mueller P-25008 and one inch Curb Stop shall be Curb stop Mueller P-25209, or approved equivalent. All curb boxes shall be the ½-inch cast iron curb box – Bingham Taylor #4901-B (new style with flush fit cover). Larger service shall utilize equivalent models for stops and boxes.

- D. Larger size threaded connections shall be made with the use of a double strap pipe saddle. The saddle is to have corporation stop threads with neoprene gaskets, a malleable iron body, a forged steel strap, and cadmium plated threads on straps and nuts. All service lines and connections shall be made to all types of existing service lines. The corporation stop shall be Model H 15025 and the curb stop shall be Model H 10314, and the curb valve shall be Model H-15204 as manufactured by Mueller Company Inc., or approved equivalent.

PART 3 – EXECUTION

3.1 METHODS OF CONSTRUCTION

- A. The Contractor shall construct the water services in accordance with all local ordinances and Division 650 - Utilities, Section 651.03.01 – Water Pipe of the N. J. Department of Transportation Standard Specifications – 2019.
- B. Standard Specifications, with the addition of the following paragraphs.
- C. All work shall be inspected and approved by the local Municipal Water Department.
- D. No work shall be closed or covered up until it has been duly inspected and approved for proper and satisfactory construction and installation, and compliance with Contract Plans and Specifications. Should uncompleted or unapproved work be covered, the Contractor shall, at his own expense, uncover all work so that it can be properly inspected and approved; and, after such inspection and approval, he will properly repair and replace all work found defective, unsatisfactory, and not in accord with the Contract Plans and Specifications. After such repair and replacement, he will bring all work to the completeness and status that it was before it was closed and covered; all at his own expense.
- E. Service connections shall be made with an approved tapping machine in conformance with pipe manufacturer's recommendations, and the municipal rules and regulations, or as directed by the Engineer.

The maximum size tap for various size pipe, without pipe saddles, shall be as follows:

<u>Pipe Diameter</u>	<u>Tap Diameter</u>	<u>Pipe Diameter</u>	<u>Tap Diameter</u>
6 inch	1 inch	16 inch	2 ½ inch
8 inch	1 ¼ inch	18 inch	2 ½ inch
10 inch	1 ½ inch	20 inch	3 inch
12 inch	2 inch	24 inch	4 inch
14 inch	2 inch		

END OF SECTION

SECTION 333650 – VALVES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Under this Section, the Contractor shall provide all labor, equipment and materials necessary to furnish, install and test all valves required to complete the entire piping systems as shown on the Contract Drawings and as specified herein.
- B. Related Work Described Elsewhere
 - 1. Operation and Maintenance Manuals Section 019214
 - 2. Pipe and Pipe Fittings Section 330520

1.2 QUALITY ASSURANCE

- A. Comply with standards specified herein and listed in the General Conditions of the Contract.
- B. Comply with ANSI, ASTM, National Electric and all other applicable Federal, State and Municipal codes including revisions to date of Contract.
- C. In all cases where a device or part of the equipment is referred to in this Section by a singular (such as “valve”), it is intended that such references shall apply to as many such devices as are required to complete the installation.

1.3 QUALIFICATIONS OF MANUFACTURER

- A. Products used in the work of this Section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Engineer.
- B. Supplier shall have been manufacturing valves, gates and gauges for a period of at least ten (10) years and shall, at the request of the Engineer, provide a list of installations involving equipment of similar size and application.

1.4 SUBMITTALS

- A. Submit shop drawings in accordance with Section 013220, SUBMITTALS.
- B. Product data for bid submission and shop drawings approval must consist of:
 - 1. Manufacturer’s specification and other data required to demonstrate compliance with specific requirements. Such submittals shall include certified records of physical, chemical and other pertinent tests and/or certified statements from the manufacturer that the materials have been manufactured and tested in conformity with the specifications.
 - 2. A completed materials list showing all items to be furnished and installed under this Section.
 - 3. Complete Shop Drawings of all work of this Section, showing dimensions and locations of all items.

4. Submit detailed product data and descriptive literature including dimensions, weights, headloss data, pressure rating and materials of construction.
5. Provide Shop Drawings which clearly illustrate the general arrangement of the equipment and cross-sectional view of the components.

1.4 PRODUCT HANDLING

- A. Use all means necessary to protect materials of this Section before, during and after installation and to protect installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

1.5 VALVE AND GATE IDENTIFICATION

- A. Cast markings shall appear on each valve, identifying the following:
 1. Manufacturer's name or mark
 2. Size of valve (pipe size)
 3. Working pressure
 4. Year of valve manufacturer
 5. Flow direction arrow (required for swing check valves, rate of flow valve, plus valves, pressure reducing valves and pressure relief valves only).

PART 2 – PRODUCTS

2.1 GENERAL

- A. Is based on the use of products specified. Where used, the names of manufacturers and specific catalog numbers are given only as an indication of the quality of the materials and workmanship to be used. Equal products by other manufacturers approved by the Engineer will be acceptable in accordance with the General Conditions of the Contract.

2.2 KNIFE GATE VALVE

- A. Shall be as manufactured by Rodney Hunt, or equal.
- B. Each valve shall be provided with a pedestal mounted electric actuator and a handwheel manual gear operator as manufactured by Limatorque, AUMA or equal. The actuator and handwheel shall be designed for the specific operating conditions of the valve.
- C. General Requirements
 1. The construction of Knife gate valve shall be in accordance with AWWA C520 and the specifications mentioned hereunder.
 2. The Knife gate valves shall be capable of performing the isolation duties in water/wastewater treatment plants & pumping stations and shall be suitable for use at suction and delivery side of

pumps, as well as in branch lines in sludge handling application and in slurry handling when specified. These shall be so constructed that there is no undue wear or deterioration during its operative life and so designed that the maintenance is kept to a minimum.

3. The Knife gate valve manufacturer shall be ISO-9001:2008 certified and have record of supplying such valve for more than 5 years and should have installation in over 20 sewerage projects.
4. All the Knife gates shall be shop tested to verify the leakage performance at 150 PSI operating head, hydrostatic tested to verify soundness of casting, torque tested at operating head to verify the suitability of actuating mechanism and all stainless steel material to be PMI tested to verify the correctness of the material used.
5. Knife gate valves having extended spindle for operation from a platform located far above shall be supplied along with all accessories such as Knife gate valve assembly, spindle, spindle couplings, spindle guides, pedestal, manual/electric operating mechanism as required, opening indicating arrangement and anchor bolts and fasteners for stem guides and pedestal as required.
6. The cutting of stainless steel gate material shall be done using heat less water jet cutting and not by plasma cutting to avoid reduction in corrosion resistance of SS material. Suitable proof about in-house availability of such facility shall be furnished prior to start of the work.
7. The valve manufacturer shall conduct welding using the welding process described in AWS D 1.6 and ASME Welding code – Section IX using qualified welding process and welders. Suitable proof about this shall be furnished prior to the start of work.

D. Design and Details

1. The Knife gate valves shall be manufactured as per the latest AWWA C520 standards. Other constructional features and details of components of the required valves include:
 - a. The valves should have ends adapted for connection to the piping having flanges as per ANSI B 16.5 150# with raised face.
 - b. The valve body, as well as bonnet should be of Cast ductile iron construction. Valves up to 600mm size shall have integral bonnet and for higher sizes, the bonnet can be integral or bolt on type.
 - c. Valves up to 24" shall be designed to withstand minimum 150PSI pressure or 250PSI pressure as applicable at the time of its installation. Valves above 24" and up to 96" shall be designed to withstand the actual pressure as applicable at the location of its installation.
 - d. Valves shall be full lug type construction up to 24" size and full flanged construction for higher sizes. Valves of lug type construction should be full lugged so that these could be used in end of line application without the use of additional flange.
 - e. The valves shall have full bore opening which does not restrict the flow in the pipe line.
 - f. The valves shall be designed for sealing in uni-directional flow application. Should any specific valve be subjected to bi-directional pressure, then it should be designed to offer leak tight sealing at the applicable pressure from the bi-directional side.
 - g. The valve shall be provided with gate made of stainless steel of grade as specified or superior and the gate should have beveled knife edge at the bottom to cut through and part the solids settled in the bottom so as to ensure positive shut-off in sewage environment.
 - h. The gate will be designed to withstand full differential pressure across the closed valve gate when against the seat without exceeding a stress level equivalent to lower of either 30% of

the tensile strength or 70% of the yield strength of the material. Calculations justifying this design requirement would be given when asked by client.

- i. The valve shall be provided with replaceable type resilient sealing arrangement to offer drop tight shut off. The seals should be made of EPDM rubber.
- j. The resilient seal shall be placed in grooves within a separate seal retainer ring which is mechanically retained in place on the valve body using screws from the top. Use of separate screwed on retainer ring allows for easy field replacement in event the bore face of the valve wears out due to abrasion/erosion and also enables easy replacement of seal at site without requirement of a skilled person. This sealing arrangement is truly field replaceable without the need for any skilled person. Seal retained in place using a thin stainless steel band will not be acceptable as the stainless steel band is not reusable and is not screwed in place making it difficult to replace at field without use of skilled person.
- k. The valve housing shall have integral as cast tapered lugs provided for pushing the gate towards the flexible rubber seal only at the verge of closure with a view to avoid seal wear and achieve drop tight shut off. The surface of the gate coming in contact with the seal should be polished and buffed.
- l. The valves shall have glandless design with a view to avoid provision of glands and to avoid repeated tightening/replacement of gland packing.
- m. The spindle shall be made of stainless steel material as specified or superior and shall have single/double start threading as required.
- n. The spindle shall be non-rising type as far as possible for compact and safe operation.
- o. The valve will be provided with visual open/close indication arrangement.
- p. The operation of the valves shall be manual and a motorized actuator and support pedestal as specified herein.
- q. The valves shall have operating torque less than 25FT# for ease in manual operation and to ensure that size of motorized operator is smaller and consumes less power.
- r. The valve bevel gear operator assembly with the fabricated yoke shall be fully enclosed in a bonnet.

E. Material of Construction

1. The material of construction for various components of valves shall include the following:
 - a. Body
 1. Ductile Iron ASTM A536 Grade 65-45-12 or Grade 400-15 or superior
 - b. Seal Retainer Ring
 2. Ductile Iron ASTM A536 Grade 65-45-12 or Grade 400-15 or superior
 - c. Inlet Seal / Rubber Seals
 3. EPDM Rubber
 - d. Knife Gate
 4. Stainless Steel ASTM A240 type 316 or superior
 - e. Spindle

5. Stainless Steel ASTM A276 type 316 or superior
 - f. Assembly bolts, nuts and fasteners
 6. Stainless Steel ASTM A276 type 316 or superior
 - g. Spindle Nut
 7. Gunmetal/Phosphor Bronze/Brass
 - h. Bracket/Adapter Plate
 8. Carbon Steel Epoxy Painted
2. Each valve shall be provided with an electric actuator and a handwheel manual gear operator as manufactured by Limatorque, AUMA or equal.

2.3 PAINTING

A. Following painting procedure shall be adopted for the valves:

1. **Surface Preparation:** Blast clean to near white metal finish.
2. **Finish Painting:** Fusion bonded epoxy paint with minimum 250 micron DFT for valves to be provided with suitable coats of epoxy paint to achieve minimum DFT 200 microns inclusive of priming. Primer painting/pre-painting before leakage testing shall be allowed provided manufacturer maintains and furnishes test records of carrying out body test as specified.

2.4 CHECK VALVE – MAIN STORMWATER PUMP

A. Design: Shall be as manufactured by Golden Anderson Figure 220D or equal. The valve shall swing open smoothly at pump start and close quickly upon pump shutdown to prevent flow reversal. When closed, the valve shall seat drop tight.

B. Attributes

1. The valve shall exceed the minimum requirements of AWWA C508 with a heavy duty body of high-strength cast iron conforming to ASTM A126 Class B with integral flanges, faced and drilled per ANSI B16.1 Class 125, suitable for horizontal or vertical installation.
2. The valve body shall be the full waterway type, designed to provide a new flow area not less than the nominal inlet pipe size when swung open no more than 25 degrees. The valve shall have a replaceable stainless steel body seat, a cast iron disc faced with a renewable resilient seat ring of rubber or other suitable material and held in place by stainless steel screws.
3. The disc arm shall be ductile iron or steel, suspended from the keyed to an austenitic stainless steel shaft, which is completely above the waterway and supported at each end by heavy bronze bushings. The shaft shall be sealed where it passes through the body by means of a stuffing box and adjustable packing. Simple O-ring shaft seals are not acceptable.

C. Limit Switch

1. Each check valve shall be furnished with a limit switch and shall indicate the portion of the valve opening. The limit switch shall be coordinated with the electrical instrumentation and control work.

2.4 AIR RELEASE VALVE – MAIN STORMWATER SERVICE

- A. Shall be as manufactured by Golden Andersen, Figure 959 (Short) Sewage Combination Air Release Valve with drain and sample attachment and shutoff valves to permit each valve to be drained and isolated from the piping system, or approved equal. All air release valves shall be two (2") inch by two (2") inch unless otherwise indicated on the Specification or on the Drawings.
- B. The combination air valve shall exhaust large quantities of air during the filling of a pipeline or vessel and automatically close after all the air has been vented. The valve shall continue to release small quantities of air under pressure as often as needed to keep the piping system free of accumulated air. The valve shall automatically open to allow air to re-enter during draining or whenever a negative pressure occurs.

2.5 AIR RELEASE VALVE – SEWAGE SERVICE

- A. An air release valve shall be provided for each sewage pump discharge and at location shown on the Drawings.
- B. The Sewage and Wastewater Service Combination Vacuum Breaking and Air Release Valve shall open to admit large amounts of air when the pressure in the pipeline falls below atmospheric, reclose upon restoration of positive pressure and release accumulated air while pressurized. The Combination of Valve shall consist of two independent valves; a Vacuum Breaking Valve and an Air Release Valve, piped together and tested as a unit.
- C. The Vacuum Relief Valve shall be normally closed and open only when the pressure in the pipeline falls below a predetermined, adjustable vacuum pressure. The body of the valve shall be constructed of cast iron conforming to ASTM A126, Class B. The disc and seat ring shall be made of bronze conforming to ASTM B62. The disc shall be rubber faced designed for tight shut-off. The seat ring shall be bronze. There shall be no internal springs. The air inlet shall be protected by a stainless steel screen and steel hood to prevent the entry of foreign materials.
- D. The Air Release Valve shall be 1" size, Fig. 929L with 5/16" orifice, suitable to release accumulated air at up to the maximum working pressure of the system. It shall have a cast iron body and cover conforming to ASTM A126, Class B, all stainless steel internal trim and float and a rubber seat for tight shut off. A vacuum check shall be included on the Air Release Valve.
- E. The Sewage Service Combination Vacuum Breaking and Air Release Valve shall be as manufactured by GA Industries, Inc. their Figure X933DL.
- F. Accessories
 - 1. Provide flushing attachments to include ½" flushing valve, 1" blow-off valve, 10 feet of rubber hose and quick disconnect couplings for each valve.

2.6 PRESSURE GAUGES

- A. Pressure gauges shall be furnished with each pump installed. A gauge shall be installed on the discharge side of each pump, whether or not shown or specified under the Section, Gauges for the suction end of pumps shall be installed only where shown or specified. Pressure gauges shall be

deemed to include the entire assembly consisting of the shut off valve, blow-off valve, snubber and diaphragm to separate process liquid and gauge fluid.

- B. The pressure gauges shall have all aluminum alloy case with threaded ring face, as manufactured by Ashcroft Pressure and Temperature Instruments, Dresser Industrial Valve and Instrument Division, Dresser Industries, Inc., Manning Maxwell and Moore Inc., or equal. The pressure gauges shall be provided with four and one-half (4-1/2") inches in diameter and one half (1/2" inch NPT bottom connection).
- C. Diaphragms shall be No. 101 threaded female with one-quarter inch (1/4") valved flushing connection. Process connection shall be valved one-half inch (1/2") threaded. The diaphragm shall be Code E, Type 316 stainless steel, with Teflon coating. Bottom housing shall be 316 stainless steel and the unit shall be glycerin filled. Diaphragms and gauges shall be the products of the same manufacturer.
- D. The gauges shall have ranges as shown in the various sections or as required. The pressure gauge shall be capable of providing input/output signals to the instrumentation and SCADA systems.
- E. Miscellaneous pressure gauges shall be as shown on the Drawings or as directed by the Engineer.

2.7 GATE VALVES

- A. The gate valve shall be suitable for wastewater use conforming to the requirements of this Section.
- B. The operating nut shall turn counter-clockwise (to the left) to open the valve and they shall be so marked with an arrow and the word "open".

2.8 GATE VALVES UNDER THREE (3") INCHES

- A. Gate valves under three (3") inches and smaller shall be rated for a working pressure of 200 psi water service. Gate valves shall be manufactured by Jenkins, Kennedy or equal as approved by the Engineer.
- B. Gate valves shall be of bronze construction, solid wedge, inside screw, non-rising stem (for buried service) with a handwheel operator (for interior service). Valves three inches or smaller shall have screwed ends.

2.9 GATE VALVES THREE (3") INCHES AND LARGER

- A. Gate valves three (3") inches and larger shall meet the requirements of AWWA Standard C500, latest edition. All gate valves shall be as manufactured by the Kennedy Co., Mueller Company or equal, as approved by the Engineer.
- B. The Contractor shall supply an affidavit certifying that the gate valve furnished under this Contract complies with all applicable requirements of AWWA 500.
- C. Gate valves to be installed in ferrous metal pipelines shall be iron body, bronze trimmed, double disc gate valves, suitable for 200-pound working pressure in accordance with the latest revision of AWWA Standard C500. Interior valves installed shall be OS&Y, handwheel operated or chain operated when set more than six (6') feet above operating level. Valves larger than three (3") inches shall have flanged ends. Flanges shall be flat faced. Class 125 pound, ANSI Standard or screwed type.

- D. Flanged end gate valves shall be furnished and installed with one piece, full faced, 1/16 inch thick rubber gaskets, approved threaded mild steel, square head bolts with hexagonal nuts.
- E. Unless otherwise shown, buried valves shall be mechanical joint end. Buried valves shall be furnished with extension stems to within six (6") inches of the finished ground surface, two (2") inch square operating nuts and valve boxes and covers.
- F. The gate valve shall include the following materials:
 - 1. Body and bonnet: Shall be of cast of iron construction, ASTM A126, Class B. Body seat rings shall be bronze ASTM B-62.
 - 2. Discs: Shall be cast iron, ASTM A126, Class B with bronze facings. Discs shall have a deep ribs to assure ample strength in resisting distortion. Disc rings shall be bronze and provided with an accurately formed, forked continuous tongue which is forced firmly into a corresponding dovetailed groove in the cast iron disc. Disc ring shall be an integral part of the disc.
 - 3. Stems: The stem and stem nut shall be of manganese bronze ASTM B132, Alloy A construction. The stem nut shall be designed to provide ample stem engagement at any position.
 - 4. Stuffing Box: Shall consist of two (2) Buna N "O"-ring seals and shall form the top thrust bearing for the stem collar. The plate is secured to the valve bonnet with rustproof steel bolts. The "O"-ring packing lies above the collar which permits repacking under pressure.
 - 5. Yoke: The yokes shall be of cast iron construction cast integral with the bonnet and bronze yoke nuts.
 - 6. Operating mechanisms: The disc assembly consists of two (2) parallel discs, a stem nut and two (2) wedge pins. The disc assembly is suspended by the stem nut which has a rectangular flange fitted into the recessed in the back of the discs.

2.8 BALL VALVES

- A. Replacement: An existing valve determined by the Engineer to require replacement, shall be replaced. Generally, valves two (2") inches or smaller shall be replaced with ball valves.
- B. The ball valves shall be suitable for potable water use, Crane Company, Catalog No. 9321 or equal, with solder joint ends, regular parts and blow out proof stem.
- C. The operating nut shall turn counter-clockwise (to the left) to open the valve and they shall be so marked with an arrow and the word "open".
- D. The ball valve shall include the following attributes:
 - 1. Body: Bronze ASTM B584 Alloy 844
 - 2. Ball: Brass ASTM B16 Alloy 360
 - 3. Seat Ring: PTFE
 - 4. Stem: Brass ASTM B16 Alloy 360.
- E. All valves shall have a minimum operating pressure of 400 psi at 150°F.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to proper and timely completion of the work. Do not proceed until all unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. The installation procedures for valves shall conform to install valves and gates in accordance with manufacturer's written instructions and approved submittals. Such procedures are identified in Section 330520, PIPE AND PIPE FITTINGS.
- B. Install valves and gates in accordance with the manufacturer's written instruction and approved submittals.

3.3 CLEANING VALVES

- A. The inside of all valves shall be cleaned by brushing and by thoroughly blowing out with air to remove slag, dirt and other sediment, as well as other foreign materials, before being installed. During installation, sufficient care shall be exercised to prevent foreign matter from entering the valves.

3.4 HANDLING OF VALVES AND GATES

- A. Proper and suitable equipment shall be used for the safe and convenient handling and laying of all valves and gates. Care shall be taken to prevent the valve and gate coating from being damaged, particularly on the inside of the pipes and fittings and any damage shall be remedied as directed. No or gate valve shall be laid which are known to be defective. If any defective valve and gates is discovered after having been laid, it shall be removed and replaced with sound valve in a satisfactory manner by the Contractor at his own expense.
- B. All valves and gates shall be laid to proper alignment. Open ends of valves shall be kept plugged with a bulkhead during construction.

3.5 DISINFECTION

- A. All fresh and domestic water piping and valves from the water main into any building shall be disinfected with chlorine after completion and testing of the system.
- B. The system shall be disinfected in accordance with AWWA C601, latest edition. The Contractor shall open and close all valves in the water lines being disinfected several times during the disinfection period. Disinfection shall include the cost and services for analysis of the samples by a certified laboratory as required by the Engineer.

3.3 FIELD TESTING

- A. Valves and gates shall be field tested as an integral part of the pipeline. Pipelines included valves shall be tested as described in Section 330520, PIPE AND PIPE FITTINGS.

- B. In addition to the above field testing, each valve shall be factory tested by the manufacturer. Factory tests shall consist of shop leakage and performance tests and hydrostatic test as described in AWWA Standard C600, latest date. The manufacturer shall certify in writing to the Engineer that the valve has successfully passed all tests.

3.4 KNIFE GATE VALVE

- A. Shop Test – The following shop tests at manufacturers’ facility shall be conducted.
 - 1. Dimensional Check: Important dimensions shall be checked with reference to approved drawings and report submitted.
 - 2. Material Test Certificates: Material test certificates for all components of valve assembly such as Housing, Gate, and Spindle, etc., to be furnished at the time of inspection and report submitted.
 - 3. Positive Material Identification Test: Positive Material Identification (PMI) test to be conducted for stainless steel components during the inspection to verify that the correct material as specified has been actually used on gate assembly and report submitted.
 - 4. Hydrostatic Body Test: Hydrostatic body test will be conducted at manufacturer’s shop. A hydrostatic pressure equal to 1.5 times the maximum operating head should be applied to the valve body for 5 minutes continuously. No visible leakage from the casting should be observed. Submit report for each valve.
 - 5. Seat Leakage Test: After the Hydrostatic body test, seat leakage test will be conducted at manufacturer’s shop. A hydrostatic pressure equal to the maximum operating head should be applied on the gate for 5 minutes continuously for verifying zero leakage from the seat area in resilient seated valves. Submit report for each valve.
 - 6. Torque Test: After Leakage test, Torque test should be conducted at manufacturer’s shop at full applicable head using offered operating mechanism. In this test any one valve out of a lot of similar sized valve should be opened using a torque wrench at the applicable head and torque measured. The operating torque shall be less than 3kg-m. Submit report for each size of valve.
 - 7. Movement Test: Movement test should be conducted in vertical/horizontal assembled condition using offered operating mechanism with extension spindle and all accessories, if any. In this test any one valve out a lot of similar sized valve shall be selected at random and should be operated once from full close to full open and back to full close condition using offered operating arrangement and checked for interference free movement and correctness of assembly as per approved drawing and report submitted.
 - 8. DFT Measurement: Dry Film Thickness of paint to be measured with paint thickness measurement gauge during the inspection and report submitted.
- B. All test results and reports shall be submitted to the Engineer for review and comment, prior to the shipment of the valve.

END OF SECTION

DEMOLITION OF COURTHOUSE PARKING DECK FOR THE COUNTY OF UNION

CALDWELL PLACE & ELIZABETHTOWN PLAZA
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PROJECT LOCATION:

CALDWELL PLACE &
ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201



1 LOCATION MAP
SCALE: N.T.S.

CSI DIVISION

**DIVISION 00
PROCUREMENT**

00.01 ALL BIDDERS, UPON SUBMITTING BIDS, HEREBY CERTIFY THAT THEY HAVE REVIEWED THE ENTIRE SET OF CONTRACT DOCUMENTS, (CONTRACT DOCUMENTS CONSIST OF A COMPLETE SET OF DRAWINGS AND THE ENTIRE PROJECT MANUAL, INCLUDING ALL DIVISIONS & ANY/ALL ADDENDA) AND ARE AWARE OF, AND AGREE TO MEET THE INTENT OF THE CONTRACT DOCUMENTS WHETHER EXPRESSED OR IMPLIED.

00.02 PRODUCT MANUFACTURERS IN CONJUNCTION WITH SUBCONTRACTORS AND PRIME CONTRACTOR(S) ARE RESPONSIBLE FOR ALL COMPONENTS AND CALCULATIONS AND/OR CERTIFICATIONS OF THEIR PRODUCT AND FOR PROVIDING COMPLETE SYSTEMS/ASSEMBLIES TO MEET THE DESIGN INTENT OF THE PROJECT.

00.03 THE BIDDER/CONTRACTOR IS REQUIRED TO VISIT THE SITE & EXAMINE THE EXISTING CONDITIONS TO HIS COMPLETE SATISFACTION PRIOR TO BIDDING. THE BIDDER/CONTRACTOR SHALL COMPARE THE EXISTING CONDITIONS TO THE DESIGN INTENT OF THE CONTRACT DOCUMENTS & SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY/ALL DISCREPANCIES BEFORE SUBMITTING A BID. FAILURE TO DO SO WILL PLACE THE BURDEN OF RESPONSIBILITY ON THE CONTRACTOR TO PERFORM THE WORK AS INTENDED BY THE CONTRACT DOCUMENTS, AT NO ADDITIONAL COST TO THE OWNER.

**DIVISION 01
AVAILABLE
INFORMATION**

01.01 ANY ADDITIONAL INFORMATION THAT IS NOT PART OF THE CONSTRUCTION DOCUMENTS, SUCH AS, BUT NOT LIMITED TO, SOIL REPORT(S), HAZARDOUS MATERIALS REPORT(S), EXISTING DRAWINGS, ETC., ARE INTENDED FOR REFERENCE ONLY AND ARE TO BE USED BY THE CONTRACTOR(S) AT HIS/HER OWN DISCRETION.

01.02 THE INDICATION OF SUBSTRATE & CONCEALED ITEMS & MATERIALS SHOWN ON THE CONSTRUCTION DOCUMENTS IS FOR GENERAL REFERENCE ONLY. THE CONTRACTOR(S) SHALL NOT BE ENTITLED TO ADDITIONAL COMPENSATION FOR ANY VARIANCE BETWEEN ACTUAL EXISTING CONDITIONS AND THAT REPRESENTED ON THE CONSTRUCTION DOCUMENTS.

01.03 ALL DIMENSIONS INDICATED ON THE CONSTRUCTION DOCUMENTS, OF EXISTING CONDITIONS, ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR(S) PRIOR TO SUBMITTING A BID.

**GENERAL
REQUIREMENTS**

01.04 THE CONTRACTOR(S) SHALL DISCUSS & VERIFY WITH ALL GOVERNING AUTHORITIES ALL CODE REQUIREMENTS INDICATED AND/OR REQUIRED FOR THE COMPLETE EXECUTION OF THE WORK AS INTENDED BY THE CONSTRUCTION DOCUMENTS.

01.05 THE CONTRACTOR(S) SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES HAVING JURISDICTION OVER THE PROJECT. THE CONTRACTOR(S) SHALL OBTAIN PERMITS & GIVE NOTICES TO SUCH AGENCIES IN AMPLE TIME FOR OFFICIALS TO CONDUCT INSPECTIONS AND OBTAIN TIMELY APPROVALS. FAILURE TO COMPLY WILL SOLELY BE THE RESPONSIBILITY OF THE CONTRACTOR(S).

01.06 THE CONTRACTOR(S) SHALL PROVIDE PROTECTION FOR THE PUBLIC, OWNER'S STAFF, AND CONSTRUCTION WORKERS IN AND AROUND THE CONSTRUCTION AREA & ADJACENT PROPERTY. ADEQUATE BARRIERS & SIGNAGE SHALL BE PROVIDED TO EXERCISE CONTROL OF SAFE INGRESS & EGRESS OF PREMISES. FIRE EXITS SHALL NOT BE BLOCKED. PROPER SITE SECURITY DURING WORKING & OFF-HOURS SHALL BE MAINTAINED. BARRICADE ALL UNSAFE OR POTENTIALLY DANGEROUS CONDITIONS. THE CONTRACTOR(S) SHALL FOLLOW O.S.H.A. STANDARDS DURING THE COURSE OF THE PROJECT.

01.07 DO NOT SCALE THE DRAWINGS. USE CALCULATED DIMENSIONS ONLY. NOTE THAT NOT ALL DIMENSIONS ARE GIVEN ON THE CONSTRUCTION DOCUMENTS. SOME DIMENSIONS ARE IMPLIED. IF THE CONTRACTOR IS NOT SURE OF A GIVEN DIMENSION, HE/SHE SHALL SUBMIT A REQUEST FOR INFORMATION (R.F.I.) AND/OR SHALL FIELD VERIFY EXISTING DIMENSIONS.

01.08 ALL INFORMATION FOR ALL TRADES CONTAINED WITHIN THE CONSTRUCTION DOCUMENTS SHALL BE USED TOGETHER & IN CONCERT WITH ONE ANOTHER AS A WHOLE BODY OF INFORMATION FOR THE PROJECT. THE DRAWINGS & PROJECT MANUAL ARE COMPLEMENTARY & WHAT IS REQUIRED BY ONE, SHALL BE REQUIRED BY BOTH. NEITHER THE PRIME CONTRACTOR(S) NOR ANY SUBCONTRACTOR(S) SHALL BE RELIEVED OF THE RESPONSIBILITY TO PROVIDE ALL ITEMS REQUIRED BY THE INFORMATION & DESIGN INTENT INDICATED & IMPLIED. IN THE EVENT OF CONFLICTS BETWEEN DOCUMENTS, THE GREATER QUANTITY OR HIGHER QUALITY OF WORK SHALL PREVAIL AND BE PROVIDED.

01.09 ALL ITEMS LABELED "EXISTING" ARE EXISTING "TO REMAIN" UNLESS OTHERWISE INDICATED. ITEMS NOT LABELED "EXISTING" ARE TO BE PROVIDED. THE TERM "PROVIDE" SHALL MEAN FURNISH & INSTALL AS IT IS USED THROUGHOUT THE CONTRACT DOCUMENTS.

SUMMARY WORK

01.10 THE SCOPE OF THIS SINGLE OVERALL PRIME CONTRACT INCLUDES ALL THE WORK AS INDICATED ON THE DRAWINGS AND IN THE PROJECT MANUAL. THE SINGLE OVERALL PRIME CONTRACTOR BEARS SOLE SOURCE RESPONSIBILITY FOR THE DELIVERY OF THE PROJECT TO 100% COMPLETION.

**PROJECT
COORDINATION**

01.11 THE SINGLE OVERALL PRIME CONTRACTOR BEARS SOLE SOURCE RESPONSIBILITY FOR THE COORDINATION OF THE ACTIVITIES OF ALL SUBCONTRACTORS, SUB-SUBCONTRACTORS, MATERIAL SUPPLIERS, AND ALL PARTIES INVOLVED IN THE EXECUTION OF THE PROJECT.

01.12 ENGINEERING DRAWINGS (STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, COMMUNICATIONS, AND SECURITY SYSTEM DRAWINGS, ETC.) ARE SHOWN DIAGRAMMATICALLY AND ARE NOT TO SCALE, NOR DO THEY SHOW THE EXACT LOCATION OF THEIR COMPONENTS. THE EXACT LOCATION AND CLEARANCES FOR EACH SUCH SYSTEM OF COMPONENTS SHALL BE COORDINATED BY THE CONTRACTOR(S). ALL PRIME CONTRACTORS, PRIOR TO PURCHASE, FABRICATION, OR INSTALLATION OF THESE ITEMS SHALL PREPARE COORDINATION DRAWINGS, SHOWING THE DIFFERENT TRADES BY COLORS AND SHALL CONDUCT A COORDINATION MEETING WITH ALL OTHER CONTRACTOR(S) AFFECTED FOR A TOTAL UNDERSTANDING OF THE DESIGN INTENT. THE ARCHITECTS AND THE ENGINEER(S) SHALL BE INVITED TO ATTEND THIS MEETING AND OFFER INPUT PRIOR TO ANY WORK BEING FABRICATED OR INSTALLED.

**QUALITY
REQUIREMENTS**

01.13 THE CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR, SERVICES, ETC. TO COMPLETE THE ENTIRE WORK IN A MANNER ACCEPTABLE TO THE OWNER AND THE ARCHITECT. IT IS UNDERSTOOD THAT NOT EVERY DETAIL OR DIMENSION IS SHOWN IN THE CONTRACT DOCUMENTS, NOR ARE THEY NECESSARY FOR THE CONTRACTOR(S) TO PROVIDE A QUALITY PRODUCT. THE CONTRACTOR SHALL SUBMIT A REQUEST FOR INFORMATION (R.F.I.) IF NEEDED TO CLARIFY THE INTENT OF ANY DETAIL OR OTHER INFORMATION. HOWEVER, SUCH REQUEST FOR INFORMATION SHALL NOT CONSTITUTE A CHANGE IN THE SCHEDULE, OR IN THE CONTRACT AMOUNT. NO WORK SHOULD BE INSTALLED IF THE CONTRACTOR IS UNSURE OF THE DESIGN INTENT. INSTALLATION OF ANY WORK THAT DOES NOT COMPLY WITH THE DESIGN INTENT, AS DETERMINED BY THE ARCHITECT, SHALL BE SUBJECT TO REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

01.14 ALL CONSTRUCTION, EQUIPMENT, CONTENTS, ETC. SHALL BE PROTECTED BY EACH CONTRACTOR DURING THE ENTIRE PERFORMANCE OF THE WORK. AREAS DISTURBED OR DAMAGED BY THE CONTRACTOR SHALL BE COMPLETELY RESTORED, REPAIRED, OR REPLACED BY THE CONTRACTOR, TO THE OWNER'S COMPLETE SATISFACTION AT NO ADDITIONAL COST.

01.15 ALL UNUSED MATERIAL AND DEBRIS SHALL BE COMPLETELY REMOVED FROM THE SITE AND LEGALLY DISPOSED OF IN A CLEAN AND SAFE MANNER, INCLUDING, BUT NOT LIMITED TO DAILY BROOM CLEANING THROUGHOUT THE DURATION OF THE CONSTRUCTION PROJECT.

**TEMPORARY
FACILITIES &
ACCESS**

01.16 CONSTRUCTION ACCESS ROADS, CURB CUTS, SOIL EROSION CONTROL, & THE LOCATION OF ALL TEMPORARY FACILITIES (INCLUDING POWER, TELEPHONE, WATER, WASTE, ETC.) SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR (UNLESS OTHERWISE NOTED), & SHALL BE COORDINATED WITH UTILITY COMPANIES, MUNICIPAL AUTHORITIES, ETC. AS REQUIRED.

**PRODUCT
REQUIREMENTS**

01.17 ALL MATERIALS AND PRODUCTS SHALL BE PROTECTED AND PROPERLY STORED AS PER MANUFACTURER'S RECOMMENDATION. ALL MATERIALS AND PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S CURRENT PRINTED RECOMMENDATIONS TO MAINTAIN THE PROPER WARRANTIES.

01.18 PRIOR TO THE INSTALLATION OF ALL MAJOR BUILDING COMPONENTS, THE PRIME CONTRACTOR(S) SHALL CONDUCT A PRE-INSTALLATION AND COORDINATION MEETING WITH THE MANUFACTURER'S REPRESENTATIVE. INCLUDED IN THE MEETING SHALL BE ANY SUBCONTRACTOR AND PRODUCT MANUFACTURER AFFECTED BY THE SPECIFIC WORK. FAILURE OF THE PRIME CONTRACTOR(S) TO CONDUCT SUCH A MEETING, AND PROPERLY COORDINATE THE PROCESS, SHALL PLACE THE BURDEN FOR ANY & ALL PROBLEMS, RESULTING FROM SAID INSTALLATION, UPON THE PRIME CONTRACTOR(S) RESPONSIBLE FOR THAT PORTION OF THE WORK.

01.19 LONG LEAD ITEMS SHALL BE IDENTIFIED BY THE CONTRACTOR(S) WITH NOTIFICATION TO THE ARCHITECT IN A TIMELY MANNER. FAILURE BY THE CONTRACTOR(S) TO OBTAIN SUBMITTAL APPROVALS, AND TO ORDER LONG LEAD ITEMS, SO AS NOT TO DELAY THE PROGRESS OF THE WORK, WILL NOT JUSTIFY AN EXTENSION OF THE SCHEDULE FOR COMPLETION, NOR WILL IT CAUSE PRODUCT SUBSTITUTIONS IN ORDER TO MEET THE SCHEDULE.

**EXECUTION
REQUIREMENTS**

01.20 MISCELLANEOUS WOOD, COLD FORMED, OR ROLLED STEEL SHAPES, WHETHER BLOCKING OR SUB-FRAMING WHICH ARE REQUIRED FOR THE INSTALLATION OF OTHER ITEMS NECESSARY FOR A COMPLETE PACKAGE SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY INDICATED ON THE DRAWINGS.

01.21 DIMENSIONS GIVEN FOR MASONRY OPENINGS ARE NOMINAL. GENERAL CONTRACTOR(S) SHALL COORDINATE THE FABRICATION OF DOOR, WINDOW, AND VISION PANEL FRAMES AND OTHER ITEMS TO BE INSTALLED IN MASONRY TO ACCOMMODATE ACTUAL DIMENSIONS VERIFIED IN THE FIELD WITH AND WITHOUT MORTAR JOINTS AS THEY OCCUR.

01.22 EACH PRIME CONTRACTOR SHALL PROVIDE ALL NECESSARY SHORING & BRACING TO SUPPORT EXISTING OR NEW CONSTRUCTION NOT FULLY SET UNTIL PERMANENT SUPPORTS ARE ERECTED. TAKE ALL NECESSARY MEASURES TO PREVENT COLLAPSE OF ANY ELEMENT OF NEW OR EXISTING CONSTRUCTION.

01.23 EACH PRIME CONTRACTOR SHALL FIRE STOP/SMOKE PROOF ANY/ALL PENETRATIONS AS REQUIRED TO MAINTAIN THE DESIGNATED FIRE RATINGS/SMOKE PROOFING OF THE CONSTRUCTION WHETHER EXISTING OR NEW. THE GENERAL CONTRACTOR SHALL ALSO EXTEND RATED CONSTRUCTION TO MAINTAIN CONTINUITY OF SAME THROUGH CONCEALED SPACES (VERTICAL & HORIZONTAL) AS REQUIRED.

01.24 ANY/ALL EQUIPMENT PROVIDED SHALL BE INSTALLED TO BE COMPLETELY FUNCTIONAL. EACH PIECE OF EQUIPMENT PROVIDED BY A PRIME CONTRACTOR, REQUIRING SERVICE CONNECTIONS BY ANOTHER PRIME CONTRACTOR SHALL BE COORDINATED BY THE GENERAL CONTRACTOR. STARTUP & TESTING OF EQUIPMENT SHALL BE PERFORMED & DOCUMENTED BY FACTORY AUTHORIZED PERSONNEL.

01.25 DETAILS & SECTIONS ON THE DRAWINGS ARE SHOWN AT SPECIFIC LOCATIONS & ARE INTENDED TO SHOW GENERAL REQUIREMENTS THROUGHOUT. DETAILS NOTED "TYPICAL" IMPLY ALL "LIKE-CONDITIONS" ARE TO BE TREATED SIMILARLY.

01.26 WORK NOT INDICATED IN PART OF THE DRAWING, BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST.

01.27 MINOR DETAILS OR INCIDENTAL ITEMS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER & COMPLETE EXECUTION OF ANY PART OF THE WORK SHALL BE INCLUDED AS IF THEY WERE SPECIFICALLY INDICATED IN THE CONSTRUCTION DOCUMENTS.

**DIVISION 02
DEMOLITION**

02.01 THE ACTUAL SCOPE OF DEMOLITION SHALL NOT BE LIMITED TO WHAT IS SPECIFICALLY INDICATED ON THE DRAWINGS OR WITHIN THE PROJECT MANUAL, BUT SHALL INCLUDE ANY AND ALL COMPLETE OR SELECTIVE DEMOLITION AS MAY BE NECESSARY TO ACCOMPLISH THE INTENDED CONSTRUCTION. THIS APPLIES TO THE WORK OF ALL TRADES.

DESIGN TEAM

ARCHITECT



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DRAWING LIST

ARCHITECTURAL

- A-0 COVER SHEET + GENERAL NOTES
- A-1 DEMOLITION + FLOOR PLANS + DETAILS (GARAGE)
- A-2 DEMOLITION + FLOOR PLANS + DETAILS (ANNEX)

CIVIL

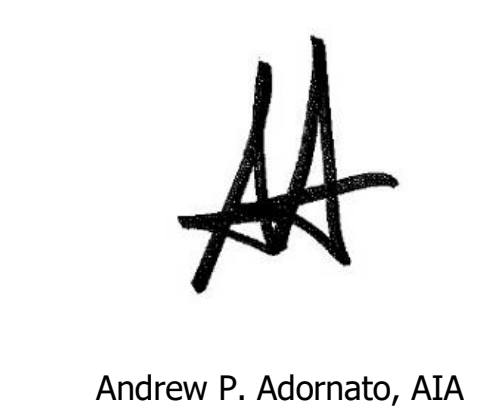
- C-1.00 COVER SHEET, SITE LOCATION MAP & GENERAL NOTES
- C-2.00 EXISTING CONDITIONS PLAN
- C-3.00 DEMOLITION PLAN
- C-4.00 TRAFFIC CONTROL PLAN
- C-5.00 SITE PLAN
- C-6.00 SOIL EROSION AND SEDIMENT CONTROL PLAN
- C-7.00 CONSTRUCTION DETAILS I
- C-7.01 CONSTRUCTION DETAILS II
- C-7.02 CONSTRUCTION DETAILS III
- C-7.03 CONSTRUCTION DETAILS IV

STRUCTURAL

- S0.1 GENERAL NOTES AND TYPICAL DETAILS
- S1.0 DEMOLITION PLAN/DETAILS AND SITE RETAINING WALL DETAIL

PLUMBING

- PA-001 PLUMBING LEAD SHEET
- PA-100 PLUMBING BASEMENTS FLOOR PLAN
- PA-101 PLUMBING FIRST FLOOR PLAN
- PA-102 PLUMBING SECOND THRU FOURTH FLOOR PLAN
- PA-103 PLUMBING FIFTH FLOOR PLAN
- PA-104 PLUMBING PENTHOUSE FLOOR PLAN
- PA-200 PLUMBING RISER DIAGRAM
- PA-300 PLUMBING DETAILS



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**DEMOLITION
OF
COURTHOUSE PARKING DECK
FOR THE
COUNTY OF UNION**
CALDWELL PLACE & ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201

1 10.10.23 ISSUED FOR BID

No. Date Issue or Revision

Drawing Title
**COVER SHEET +
GENERAL NOTES**

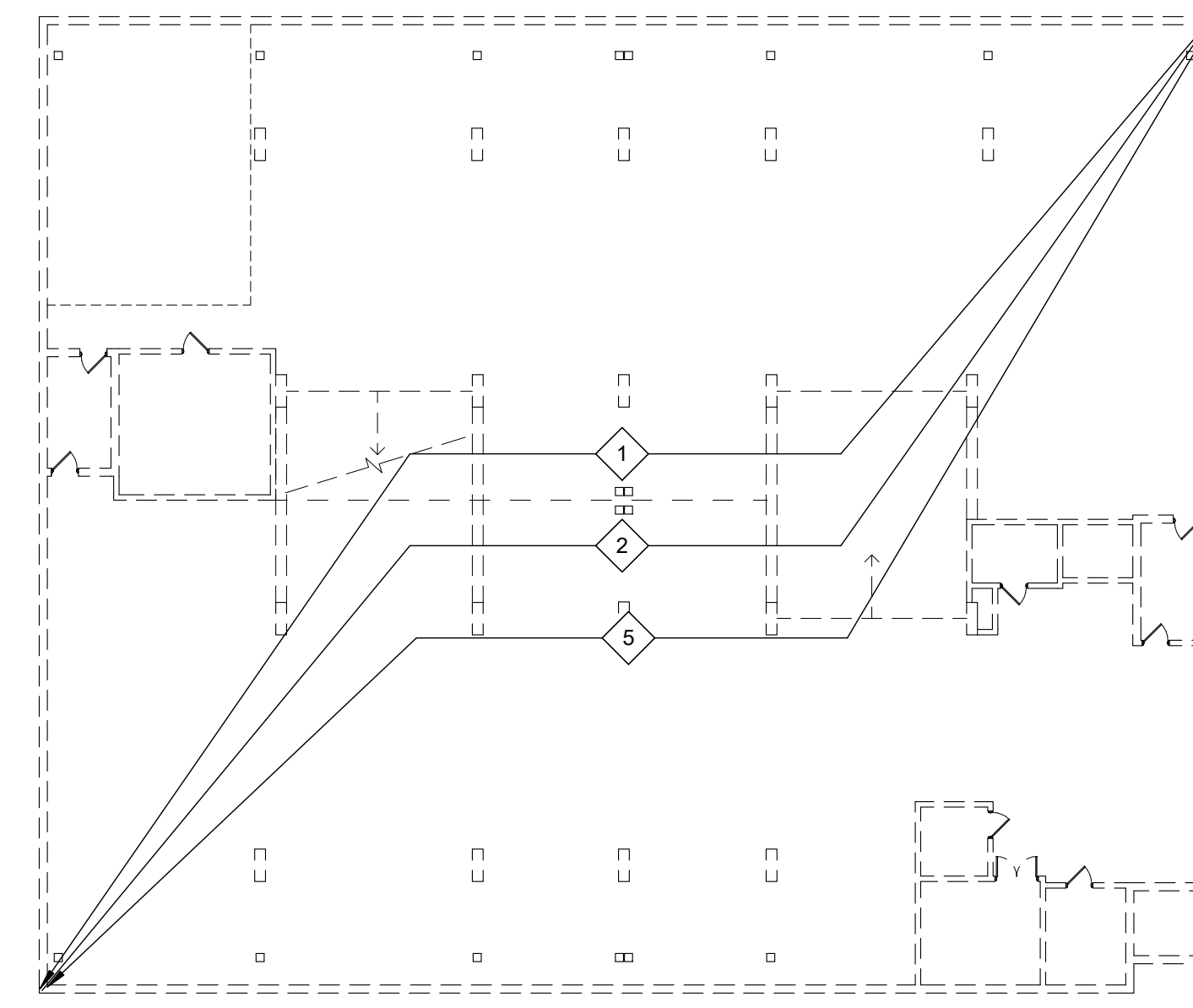
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Drawing Date: 10.10.2023 Drawing No.

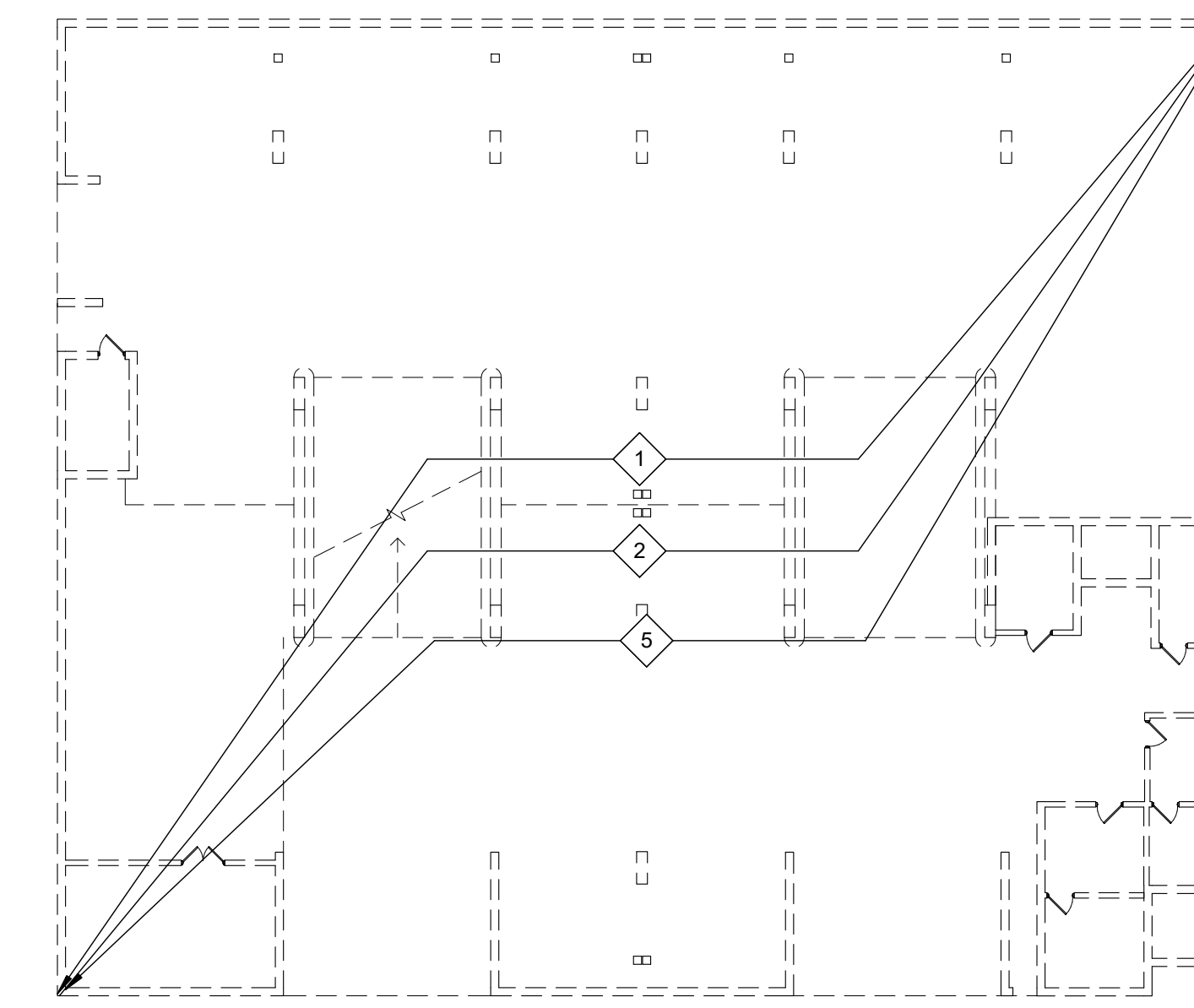
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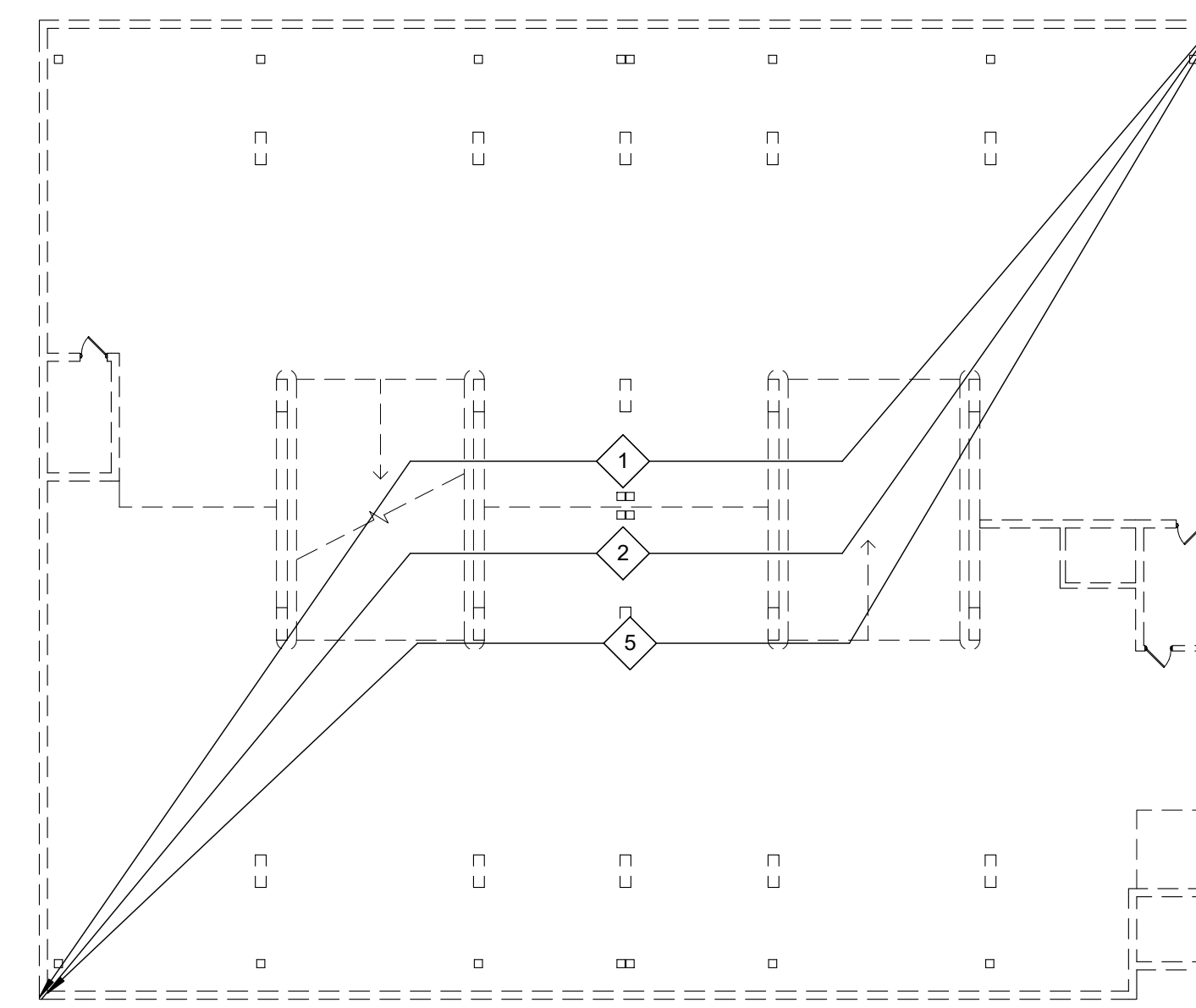
1 SITE DEMOLITION PLAN
SCALE: 1/2" = 1'-0"



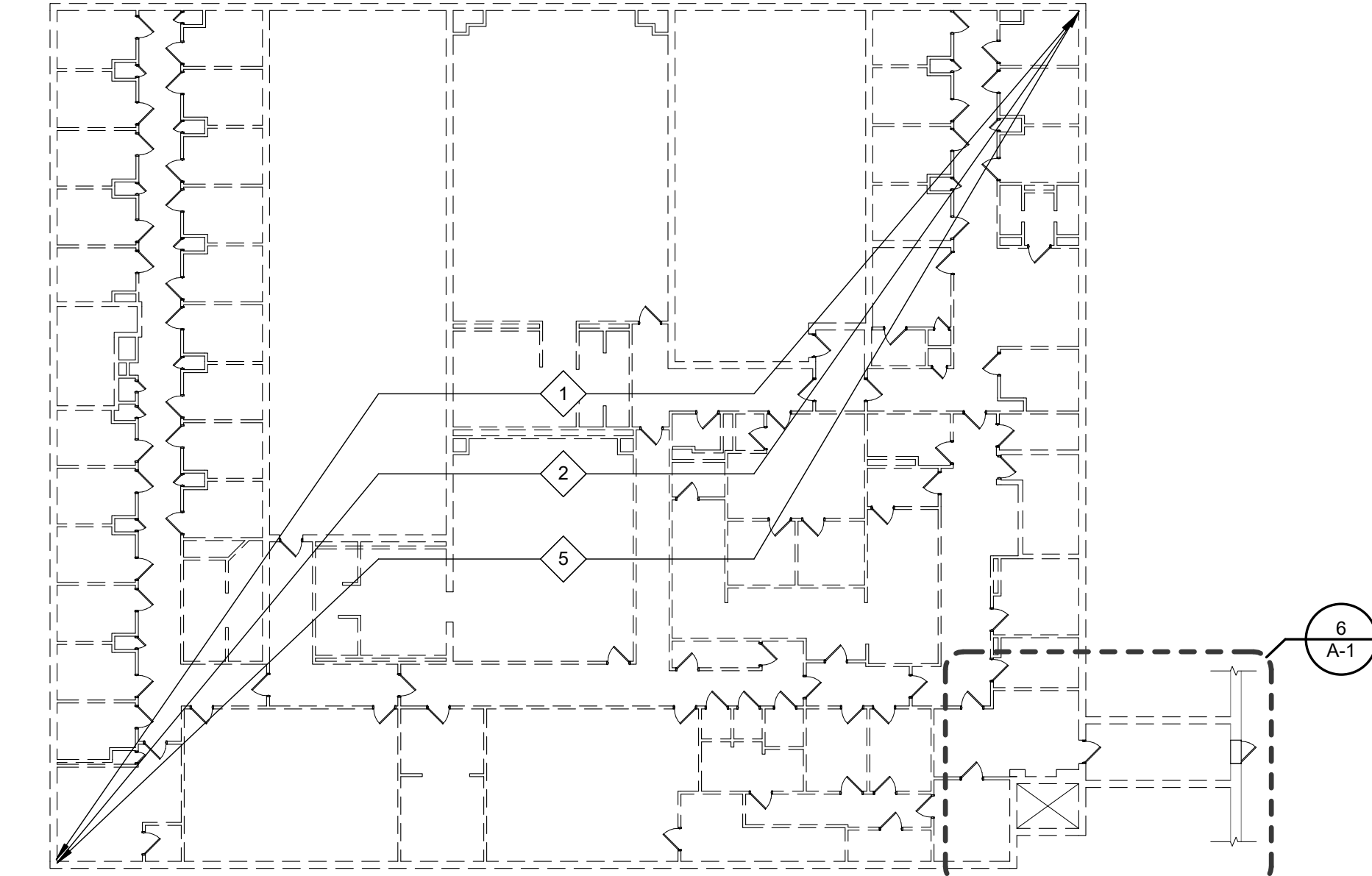
2 BASEMENT LEVEL DEMOLITION PLAN - GARAGE
SCALE: N.T.S.



3 FIRST FLOOR DEMOLITION PLAN - GARAGE
SCALE: N.T.S.



4 SECOND - SIXTH FLOOR DEMOLITION PLAN - GARAGE
SCALE: N.T.S.



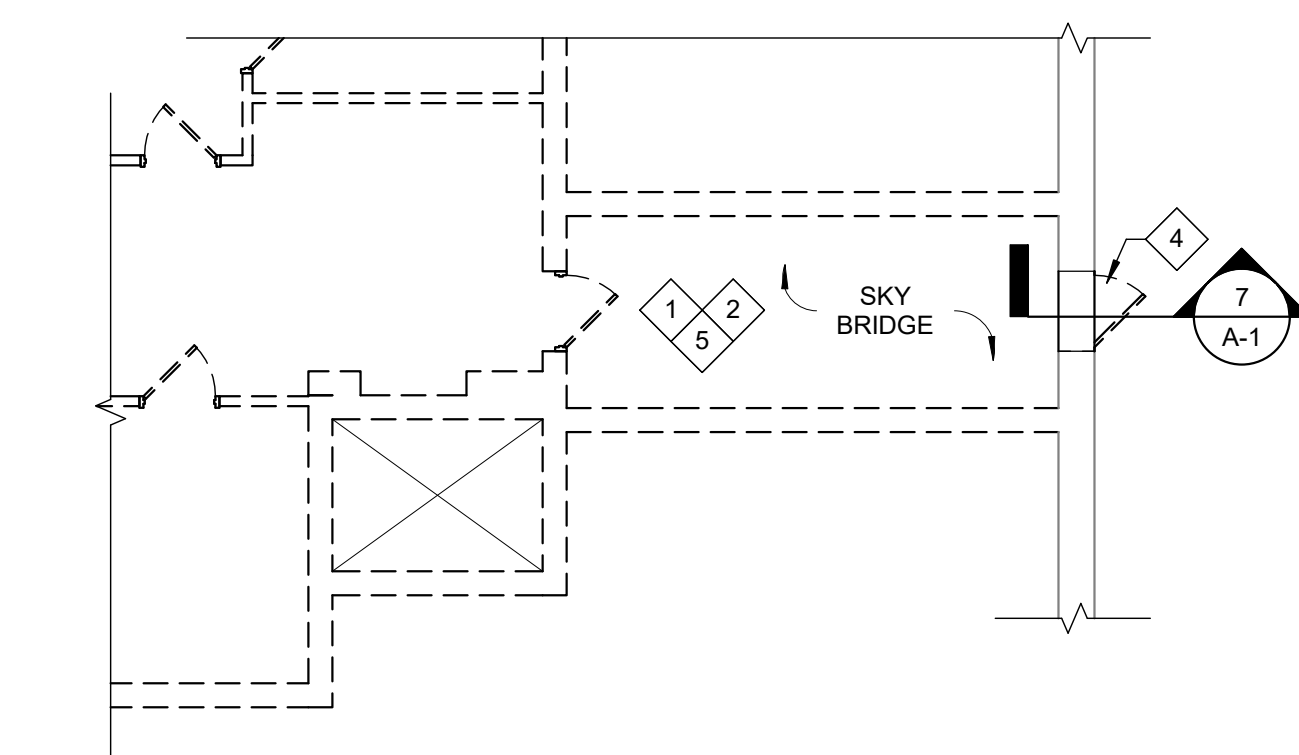
5 SEVENTH FLOOR DEMOLITION PLAN - GARAGE
SCALE: N.T.S.

GENERAL DEMOLITION NOTES:

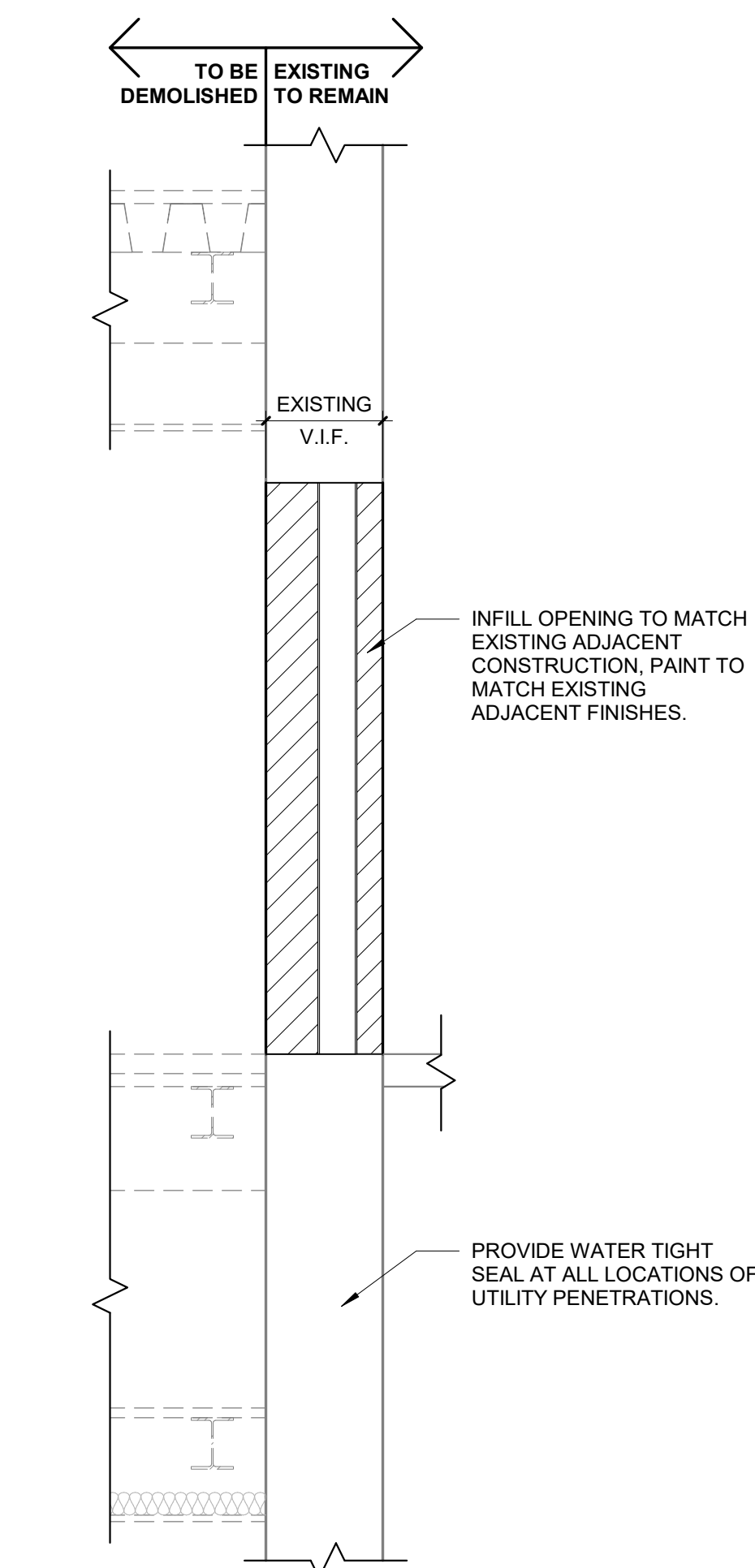
- USE WATERING, TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS, AS NECESSARY TO LIMIT THE AMOUNT OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING DEMOLITION TO PROTECT THE GENERAL PUBLIC. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. RETURN ALL ADJACENT AREAS TO THE CONDITIONS EXISTING PRIOR TO THE START OF WORK.
- DO NOT CONSIDER DEMOLITION NOTES TO BE ALL INCLUSIVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT AND ASSESS EACH AREA AND TO FULFILL THE INTENT OF THE WORK INDICATED BY THE CONTRACT DOCUMENTS. VERIFY ALL DIMENSIONS WITHIN THE CONTRACT LIMITS. BRING DEVIATIONS FROM THE CONTRACT DOCUMENTS TO THE ATTENTION OF THE ARCHITECT. THE EXTENT OF DEMOLITION AND REMOVAL INCLUDES, BUT IS NOT LIMITED TO WORK SHOWN ON THE DRAWINGS.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY CLEANUP OF DEMOLITION DEBRIS.
- BEFORE DEMOLITION BEGINS, CONTRACTOR SHALL COORDINATE SEQUENCE AND SCHEDULES FOR ALL WORK AND RELOCATION OR DISPOSAL OF ALL MATERIALS WITH OWNER.
- DEMOLITION PLANS ARE DIAGRAMMATIC. PRIOR TO SUBMITTING BID, GENERAL CONTRACTORS SHALL FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND BRING ANY AREAS IN QUESTION TO THE ATTENTION OF THE ARCHITECT.
- WORK TO BE IN ACCORDANCE WITH ALL STATE RULES AND REGULATIONS AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
- PROTECT AT ALL TIMES ADJACENT PROPERTIES AND PUBLIC RIGHT-OF-WAYS FROM OCCUPATION, DUST AND DEBRIS. PROVIDE FOR THE SAFETY OF PEDESTRIANS AT ALL TIMES.
- ALL UNDERGROUND PIPING TO BE REMOVED SHALL BE CAPPED AT THE PROPERTY LINE.
- THE USE OF EXPLOSIVES IS PROHIBITED WITHOUT THE REQUIRED LOCAL AND STATE PERMITS.
- THE LOCATION OF ALL UNDERGROUND UTILITIES ARE TO BE FIELD VERIFY PRIOR TO ANY DEMOLITION ACTIVITIES. ANY DISCREPANCIES BETWEEN PLAN AND FIELD INFORMATION ARE TO BE REPORTED IMMEDIATELY TO THE OWNER.
- THE DISRUPTION OF EXISTING UTILITY SERVICES SHALL BE COORDINATED IN ADVANCE WITH THE RESPECTIVE AUTHORITY AND AFFECTED USERS SHALL BE ADEQUATELY NOTIFIED.
- ACCOMPLISH AND PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE UNAUTHORIZED ENTRY OF PERSONS AT ANY TIME.
- ALL DEBRIS, RUBBISH, SALVAGEABLE ITEMS, HAZARDOUS AND COMBUSTIBLE SERVICES TO BE REMOVED FROM THE DESIGNATED SITE, AT THE EARLIEST POSSIBLE TIME ACCORDING WITH LOCAL AND STATE REGULATIONS. REMOVAL OF HAZARDOUS AND COMBUSTIBLE MATERIAL SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE PROCEDURES AS AUTHORIZED BY THE FIRE DEPARTMENT OR OTHER APPROPRIATE REGULATORY AGENCIES AND AUTHORITIES.
- IN ACCORDANCE WITH THE STATE LAW, THE CONTRACTOR SHALL BE REQUIRED TO CALL THE BOARD OF PUBLIC ONE CALL DAMAGE PROTECTION SYSTEM FOR UTILITY MARK OUT IN ADVANCE OF ANY EXCAVATION.
- ALL TRENCHES SHALL BE BACKFILLED WITHOUT DELAY. OPEN TRENCHES ARE TO BE KEPT TO A MINIMUM.
- CONTRACTOR TO COORDINATE WITH THE RELEVANT UTILITY COMPANIES REGARDING A SCHEDULE FOR THE DEMOLITION.
- ALL STORM OUTFALLS AND PIPES WHICH ARE TO REMAIN ON SITE SHALL BE CLEARED OF ANY DEBRIS, POWER WASHED AND MAINTAINED DURING AND AFTER THE CONSTRUCTION OF THE PROJECT.
- EXISTING FIRE ALARM SYSTEM TO BE REMOVED/MODIFIED UNDER SEPARATE CONTRACT BY THE OWNER. CONTRACTOR TO COORDINATE THESE ACTIVITIES WITH THE OWNER AND THE ENTITY PERFORMING THE WORK.
- ALL HAZARDOUS MATERIALS SHALL BE REMOVED IN COMPLIANCE WITH APPLICABLE CODES AND LAWS. COORDINATE WITH THE HAZARDOUS MATERIAL REMOVAL AND ABATEMENT DOCUMENTS.

DEMOLITION LEGEND:

- BUILDING TO BE DEMOLISHED
- DEMOLITION SCOPE OF WORK ITEM TYPICAL THROUGHOUT ENTIRE ROOM / AREA
- DEMOLITION SCOPE OF WORK ITEM AT A SPECIFIC LOCATION
- 1 REMOVE EXISTING PARKING STRUCTURE IN ITS ENTIRETY (BASEMENT THROUGH ROOF, INCLUDING BUILDING SKY BRIDGE), COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS. PREPARE AREA FOR INFILL.
- 2 REMOVE ALL MEP EQUIPMENT AND ACCESSORIES IN THEIR ENTIRETY. CAP ALL UTILITIES AT STREET COORDINATE WITH UTILITY COMPANY. FOR MEP EQUIPMENT AT SKY BRIDGE, CAP IN ANNEX AND PROVIDE SHUT OFF VALVES.
- 3 REMOVE INTERIOR WALL IN ITS ENTIRETY. PATCH AND REPAIR ADJACENT SURFACES TO RECEIVE NEW FINISHES.
- 4 REMOVE DOOR(S), FRAME(S), AND ALL ASSOCIATED HARDWARE, SILLS, ANCHORS, ETC. PATCH AND REPAIR ADJACENT SURFACES.
- DEMOLITION CONTRACTOR SHALL BE AWARE THE BUILDING IS NOT EMPTY. ALL CONTENTS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. THE 7TH FLOOR WAS A FULLY OPERATIONAL CORRECTIONAL FACILITY. THE CONTRACTOR SHALL PERFORM THEIR OWN WALKTHROUGH TO ACCOUNT FOR ALL ITEMS. NO ADDITIONAL MONEY WILL BE PROVIDED TO THE CONTRACTOR FOR ANY ITEMS NOT ACCOUNTED FOR. THE ITEMS THAT WILL BE ENCOUNTERED SHALL BE THE FOLLOWING, BUT MAY NOT BE LIMITED TO: LIGHTING, CEILING SYSTEMS, DOOR SYSTEMS, STOREFRONT SYSTEMS, WINDOW SYSTEMS, CASEWORK/MILLWORK, LOOSE FURNITURE, FLOORING, PLUMBING FIXTURES, TOILET PARTITIONS, ELECTRICAL DEVICES, GYM EQUIPMENT, BED FRAMES, FENCING, METAL LOCKERS, PLASTIC GARBAGE CANS, RAILING SYSTEMS.
- 5 REMOVE PORTION OF RAMP SYSTEM, MASONRY WALL, AND STONE CAP AS REQUIRED. COORDINATE EXTENT OF DEMOLITION WITH THE PROPOSED INCOMING WATER SERVICE. PATCH AND REPAIR TO MATCH EXISTING ADJACENT SURFACES.
- 6 REMOVE PORTION OF PARTITION / CEILING AS REQUIRED FOR ROUTING OF DOMESTIC WATER PIPING. PATCH AND REPAIR TO MATCH EXISTING ADJACENT CONSTRUCTION TIGHT TO PIPE, SEAL PENETRATIONS, MAINTAIN ALL EXISTING FIRE RATINGS WHERE REQUIRED, REFER TO PLUMBING DRAWINGS FOR EXACT PIPE LOCATIONS.
- 7



6 PARTIAL PARKING DECK 7TH FLOOR PLAN
SCALE: 1/8" = 1'-0"



7 PARTIAL WALL SECTION
SCALE: 1/2" = 1'-0"



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DEMOLITION
OF
COURTHOUSE PARKING DECK
FOR THE
COUNTY OF UNION
CALDWELL PLACE & ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201

1 10.10.23 ISSUED FOR BID
No. Date Issue or Revision

Drawn By Title
DEMOLITION +
FLOOR PLANS +
DETAILS
(GARAGE)

Scale AS NOTED USA Project No. 2023-090

Drawing Date 10.10.2023 Drawing No.

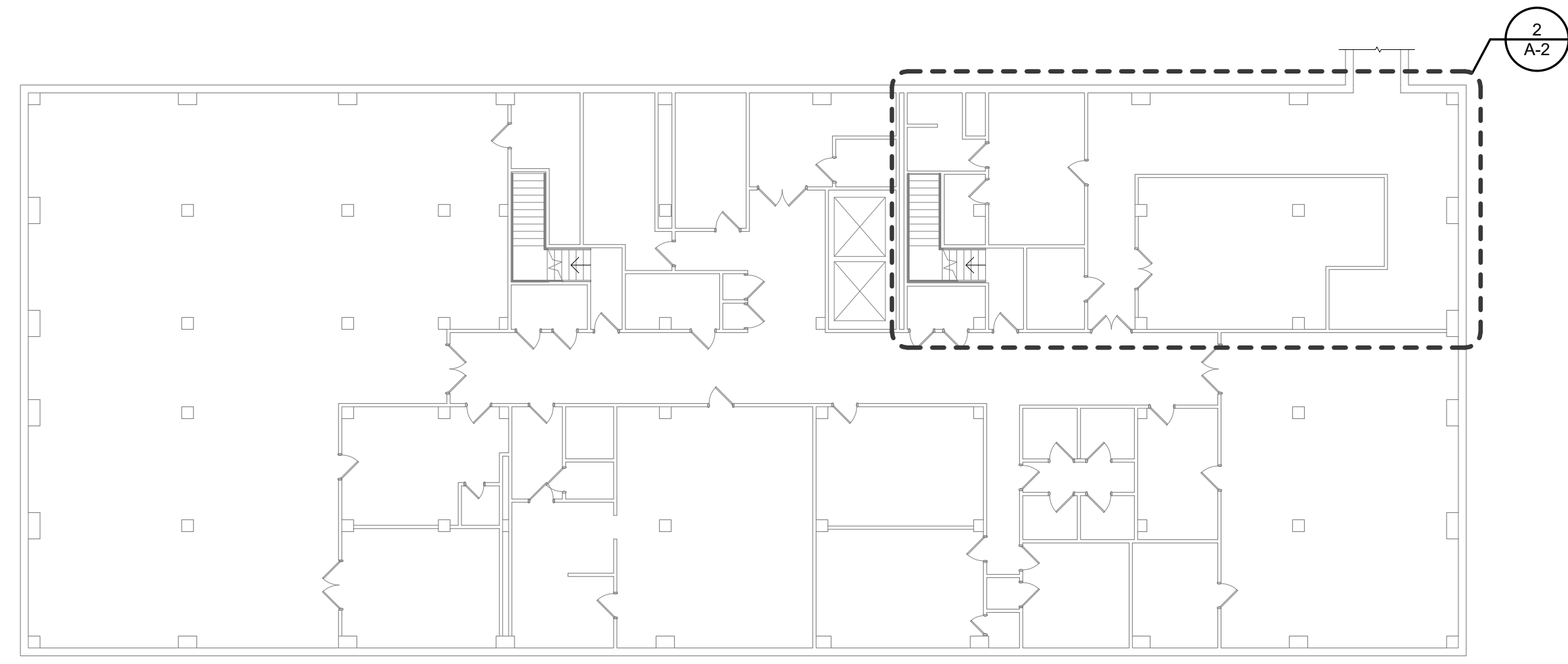
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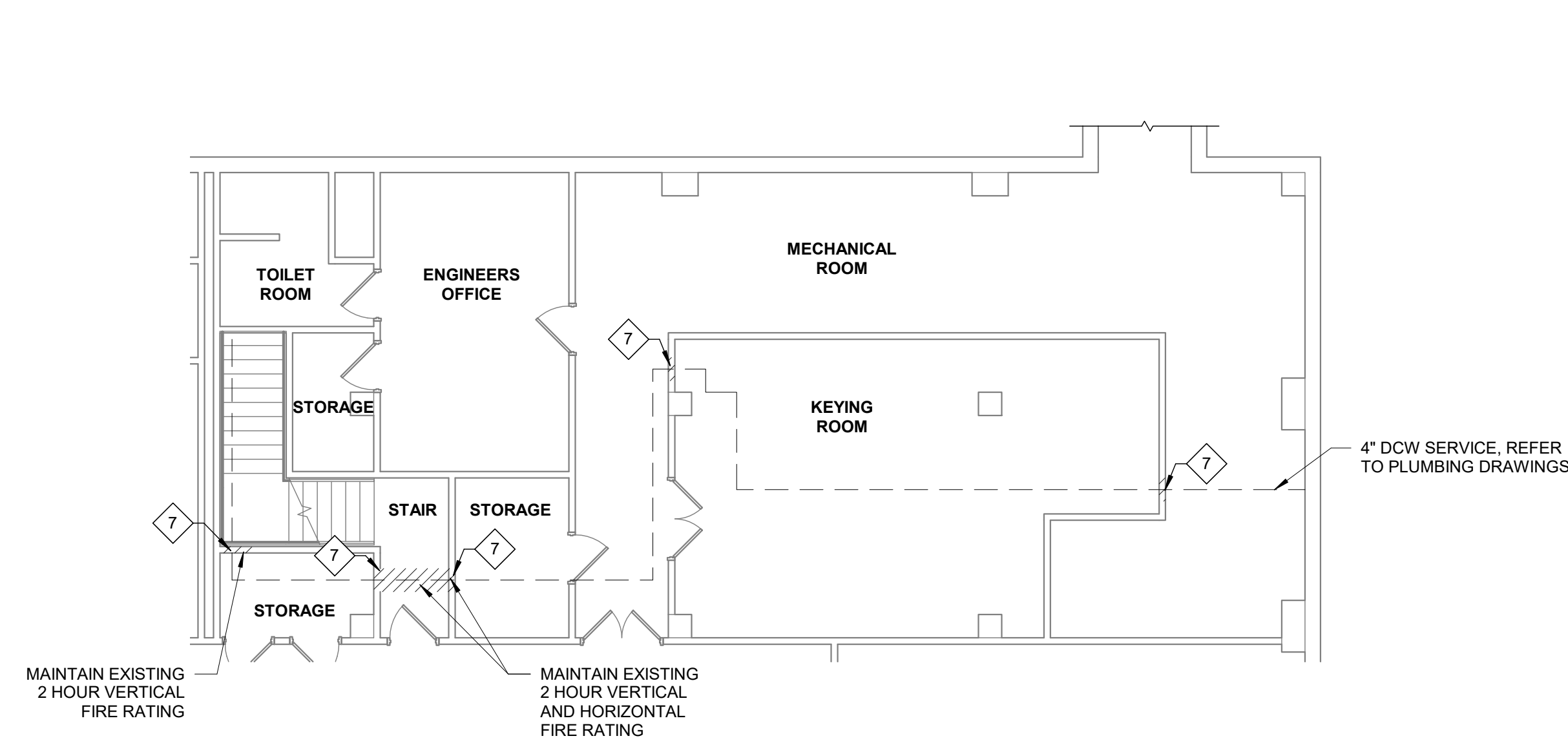
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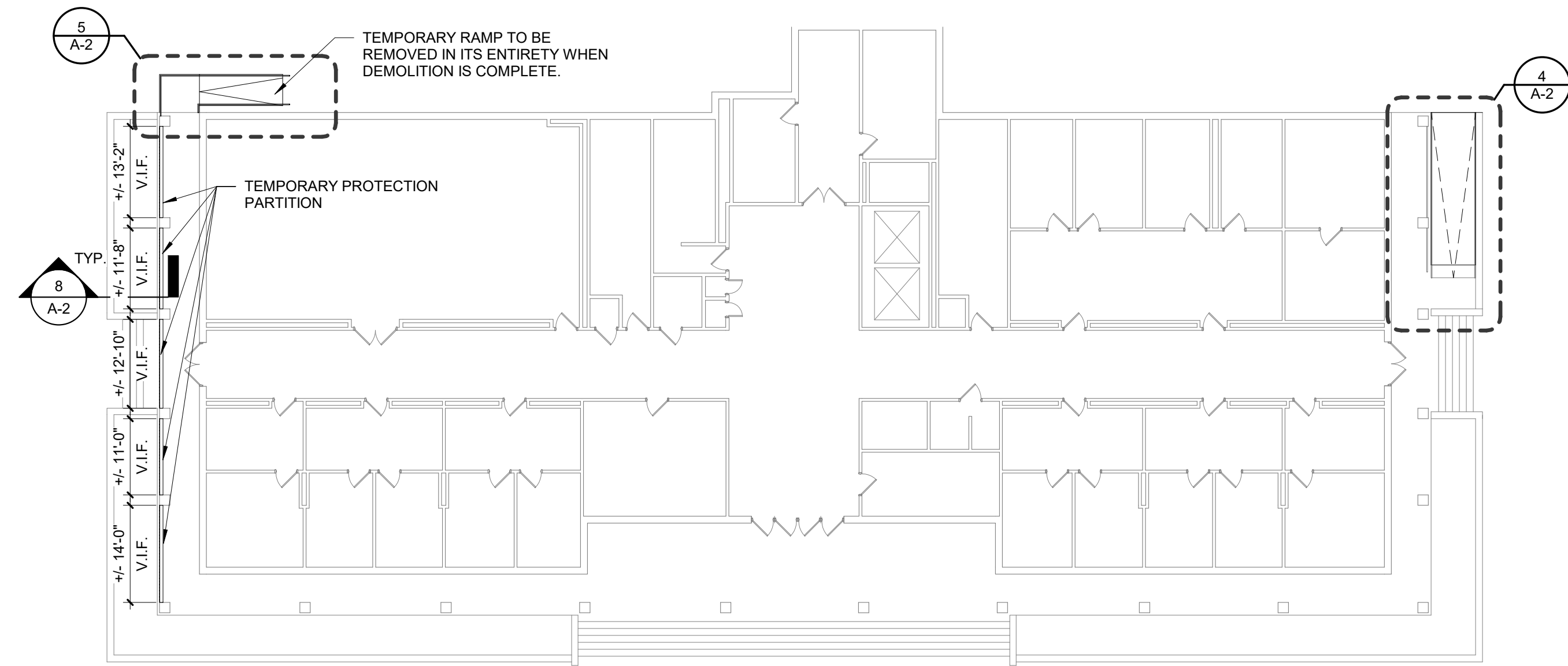
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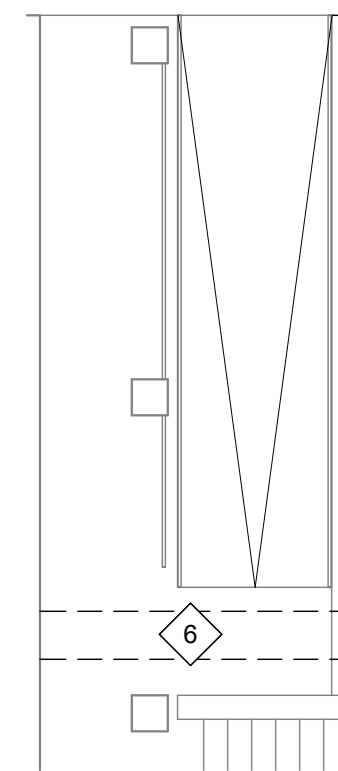
1 ANNEX LOWER LEVEL KEY PLAN
SCALE: N.T.S.



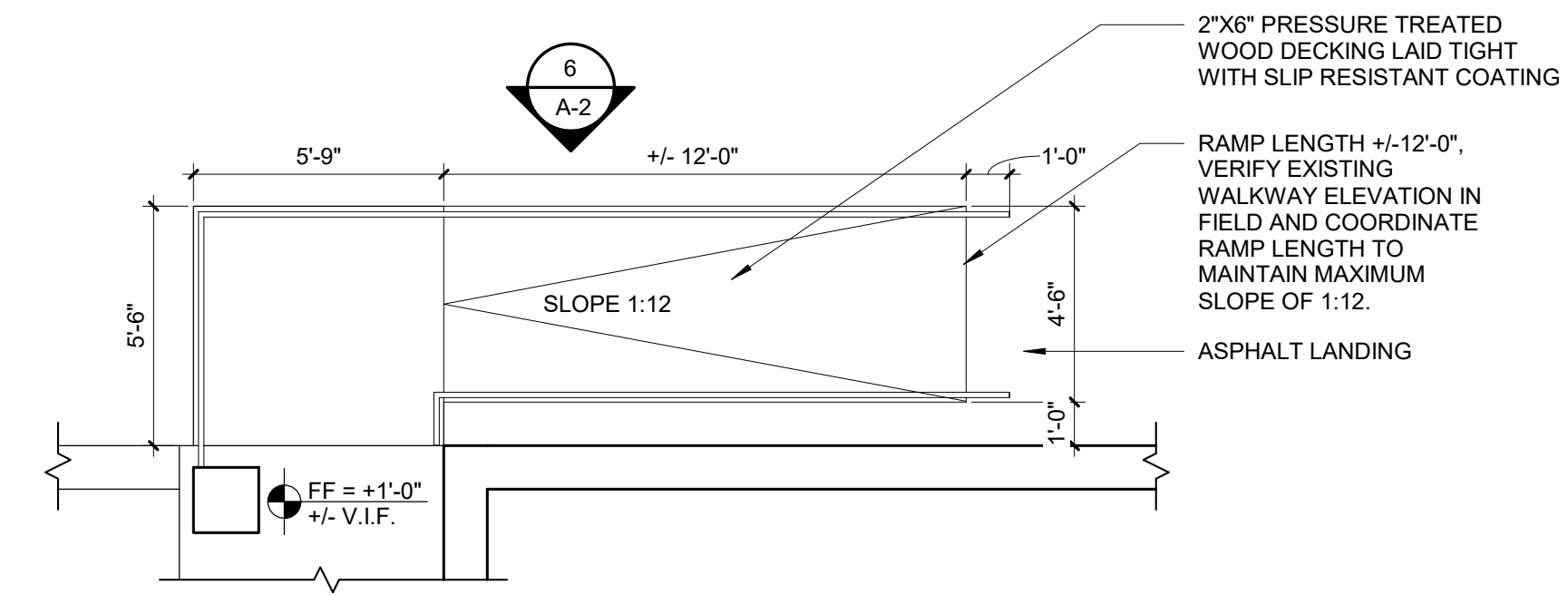
2 PARTIAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



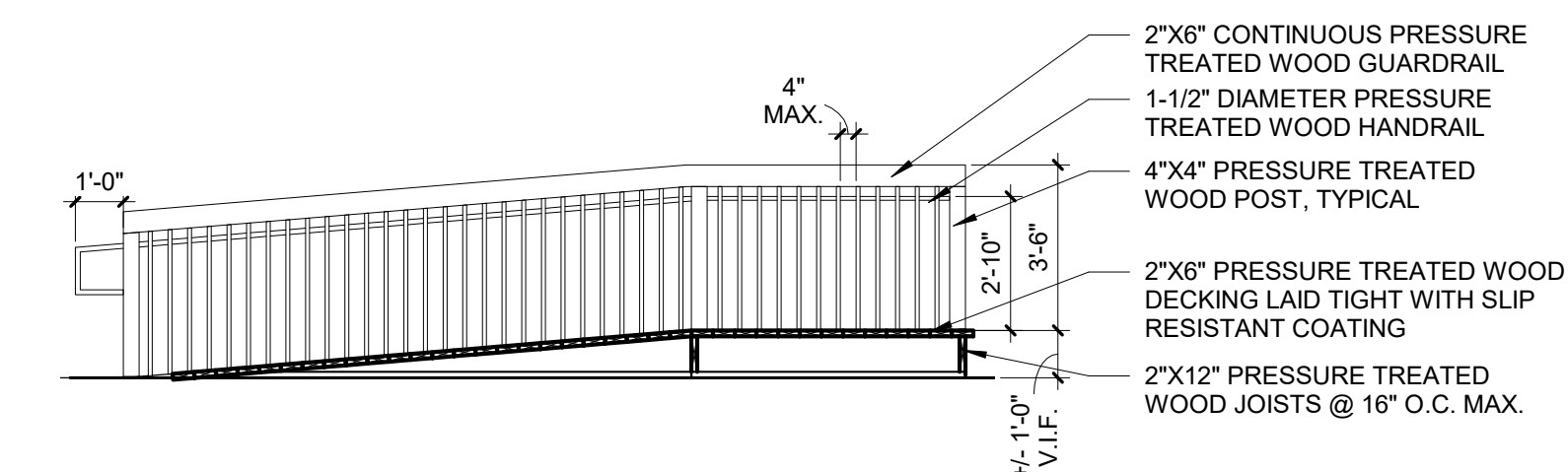
3 ANNEX FIRST FLOOR KEY PLAN
SCALE: 1/16" = 1'-0"



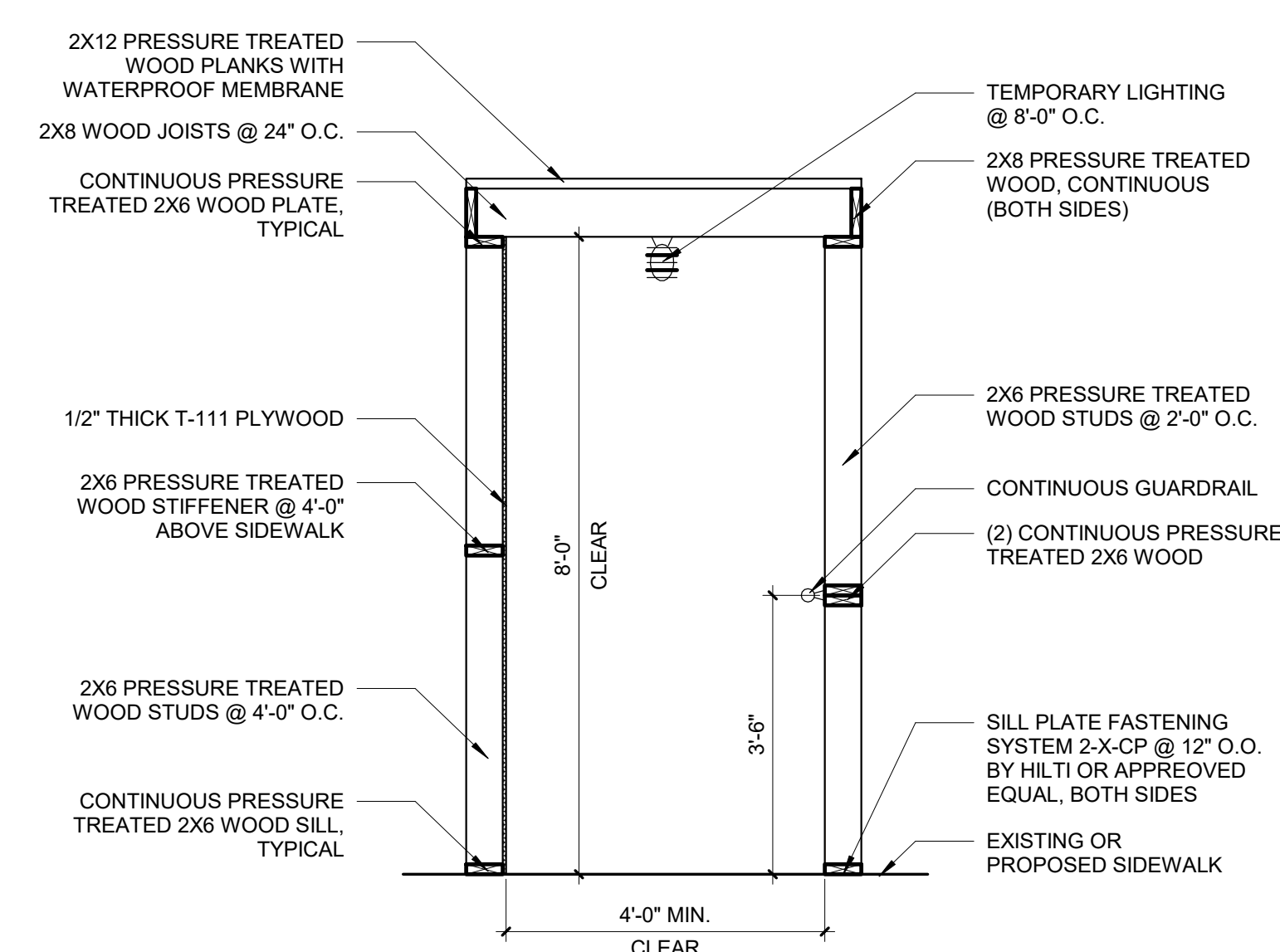
4 PARTIAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



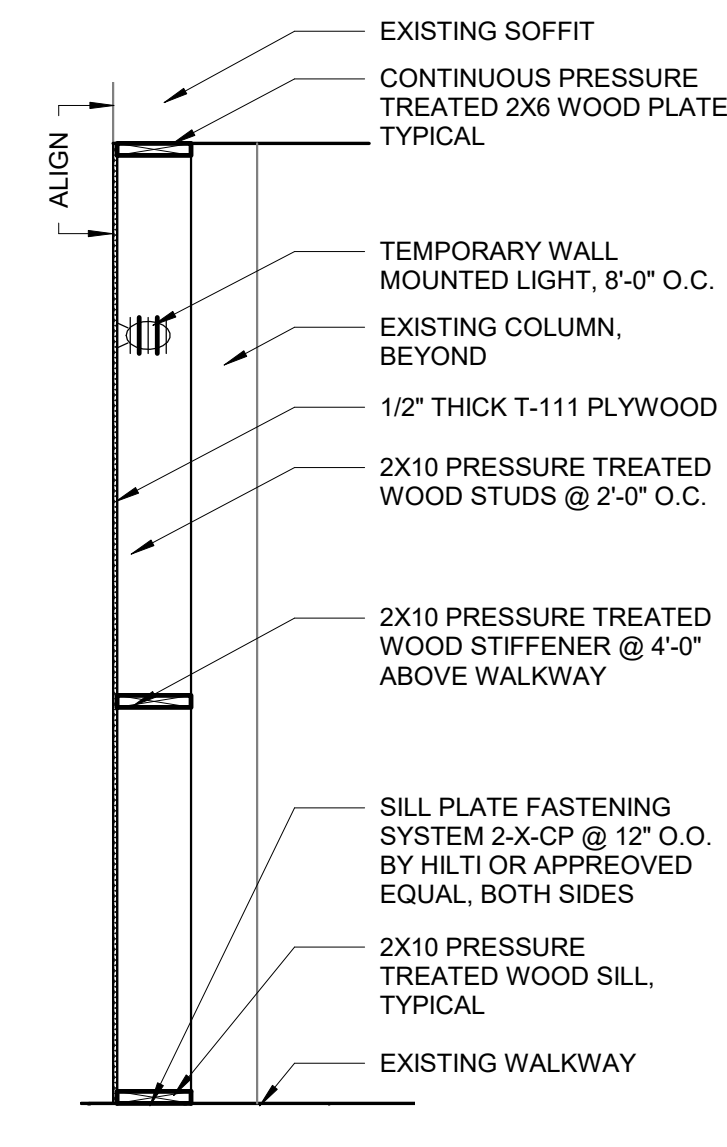
5 PROPOSED TEMPORARY RAMP PLAN
SCALE: 1/4" = 1'-0"



6 PROPOSED TEMPORARY RAMP ELEVATION
SCALE: 1/4" = 1'-0"



7 BARRIER & COVERED WALKWAY SECTION
SCALE: 1/2" = 1'-0"



8 TEMPORARY PROTECTION PARTITION SECTION
SCALE: 1/2" = 1'-0"



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DEMOLITION
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CALDWELL PLACE & ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201

No.	Date	Issue or Revision
1	10.10.23	ISSUED FOR BID

Drawing Title
**DEMOLITION +
FLOOR PLANS +
DETAILS (ANNEX)**

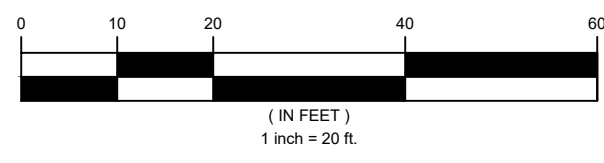
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Drawing Date: 10.10.2023 Drawing No.

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GRAPHIC SCALE



PLAN LEGEND:

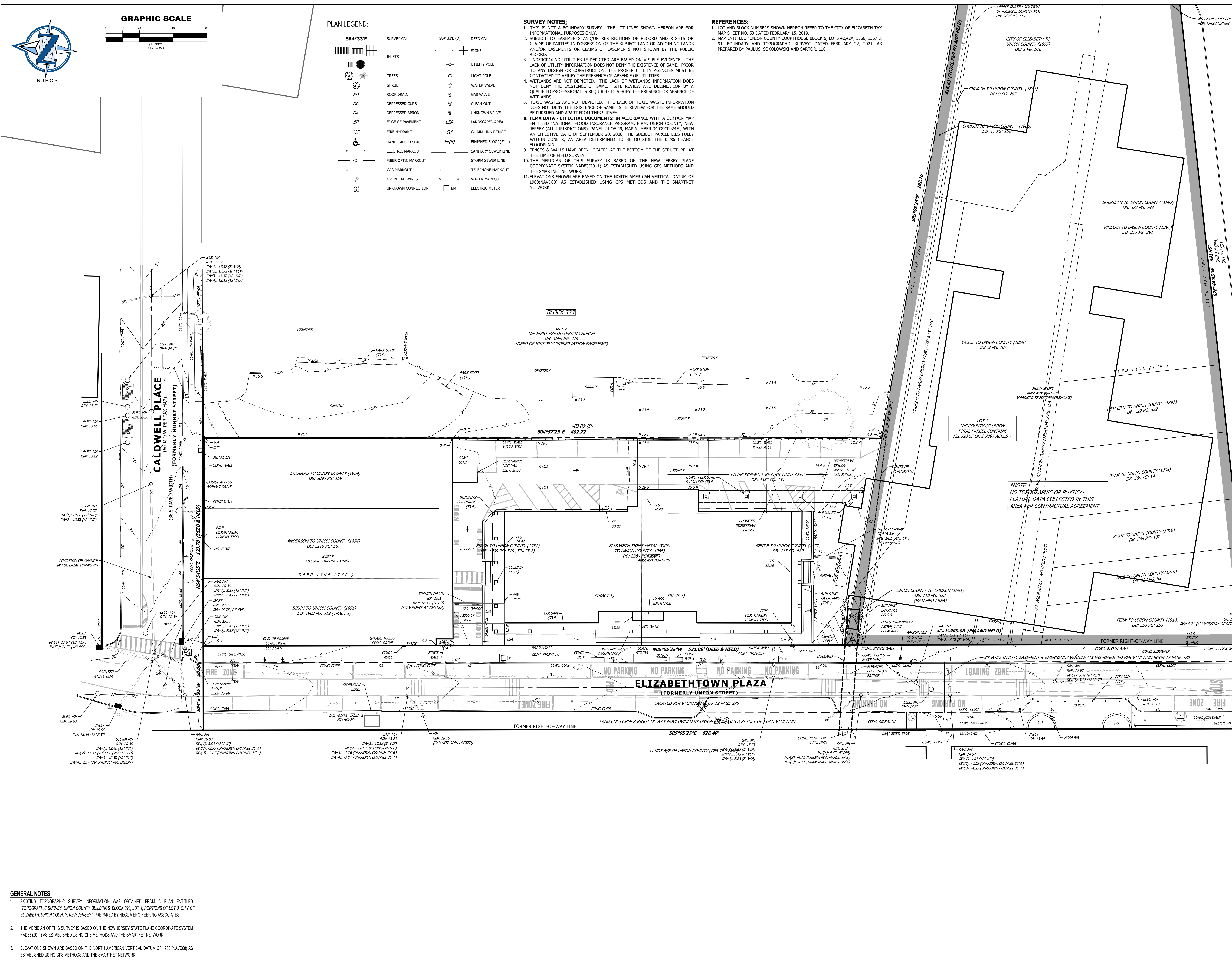
	INLETS		SIGNS
	UTILITY POLE		LIGHT POLE
	TREES		WATER VALVE
	SHRUB		GAS VALVE
	ROOF DRAIN		CLEAN-OUT
	DEPRESSED CURB		UNKNOWN VALVE
	DEPRESSED APRON		LANDSCAPED AREA
	EDGE OF PAVEMENT		CHAIN LINK FENCE
	FIRE HYDRANT		FINISHED FLOOR(SILL)
	HANDICAPPED SPACE		SANITARY SEWER LINE
	ELECTRIC MARKOUT		STORM SEWER LINE
	FIBER OPTIC MARKOUT		TELEPHONE MARKOUT
	GAS MARKOUT		WATER MARKOUT
	OVERHEAD WIRES		ELECTRIC METER
	UNKNOWN CONNECTION		ELECTRIC METER

SURVEY NOTES:

- THIS IS NOT A BOUNDARY SURVEY. THE LOT LINES SHOWN HEREON ARE FOR INFORMATIONAL PURPOSES ONLY.
- SUBJECT TO EASEMENTS AND/OR RESTRICTIONS OF RECORD AND RIGHTS OR CLAIMS OF PARTIES IN POSSESSION OF THE SUBJECT LAND OR ADJOINING LANDS AND/OR EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORD.
- UNDERGROUND UTILITIES IF DEPICTED ARE BASED ON VISIBLE EVIDENCE. THE LACK OF UTILITY INFORMATION DOES NOT DENY THE EXISTENCE OF SAME. PRIOR TO ANY DESIGN OR CONSTRUCTION, THE PROPER UTILITY AGENCIES MUST BE CONTACTED TO VERIFY THE PRESENCE OR ABSENCE OF UTILITIES.
- WETLANDS ARE NOT DEPICTED. THE LACK OF WETLANDS INFORMATION DOES NOT DENY THE EXISTENCE OF SAME. SITE REVIEW AND DELINEATION BY A QUALIFIED PROFESSIONAL IS REQUIRED TO VERIFY THE PRESENCE OR ABSENCE OF WETLANDS.
- TOXIC WASTES ARE NOT DEPICTED. THE LACK OF TOXIC WASTE INFORMATION DOES NOT DENY THE EXISTENCE OF SAME. SITE REVIEW FOR THE SAME SHOULD BE PURSUED AND APART FROM THIS SURVEY.
- FEMA DATA - EFFECTIVE DOCUMENTS:** IN ACCORDANCE WITH A CERTAIN MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, UNION COUNTY, NEW JERSEY (ALL JURISDICTIONS), PANEL 24 OF 49, MAP NUMBER 340330004P", WITH AN EFFECTIVE DATE OF SEPTEMBER 20, 2006, THE SUBJECT PARCEL LIES FULLY WITHIN ZONE X, AN AREA DETERMINED TO BE OUTSIDE THE 0.2% CHANCE FLOODPLAIN.
- FENCES & WALLS HAVE BEEN LOCATED AT THE BOTTOM OF THE STRUCTURE, AT THE TIME OF FIELD SURVEY.
- THE MERIDIAN OF THIS SURVEY IS BASED ON THE NEW JERSEY PLANE COORDINATE SYSTEM NAD83(2011) AS ESTABLISHED USING GPS METHODS AND THE SMARTNET NETWORK.
- ELEVATIONS SHOWN ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AS ESTABLISHED USING GPS METHODS AND THE SMARTNET NETWORK.

REFERENCES:

- LOT AND BLOCK NUMBERS SHOWN HEREON REFER TO THE CITY OF ELIZABETH TAX MAP SHEET NO. 53 DATED FEBRUARY 15, 2019.
- MAP ENTITLED "UNION COUNTY COURTHOUSE BLOCK 6, LOTS 42, 44, 1366, 1367 & 91, BOUNDARY AND TOPOGRAPHIC SURVEY" DATED FEBRUARY 22, 2021, AS PREPARED BY PAULUS, SOKOLOWSKI AND SARTOR, LLC.



GENERAL NOTES:

- EXISTING TOPOGRAPHIC SURVEY INFORMATION WAS OBTAINED FROM A PLAN ENTITLED "TOPOGRAPHIC SURVEY, UNION COUNTY BUILDINGS, BLOCK 323, LOT 1, PORTIONS OF LOT 3, CITY OF ELIZABETH, UNION COUNTY, NEW JERSEY," PREPARED BY NEGLIA ENGINEERING ASSOCIATES.
- THE MERIDIAN OF THIS SURVEY IS BASED ON THE NEW JERSEY STATE PLANE COORDINATE SYSTEM NAD83 (2011) AS ESTABLISHED USING GPS METHODS AND THE SMARTNET NETWORK.
- ELEVATIONS SHOWN ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AS ESTABLISHED USING GPS METHODS AND THE SMARTNET NETWORK.

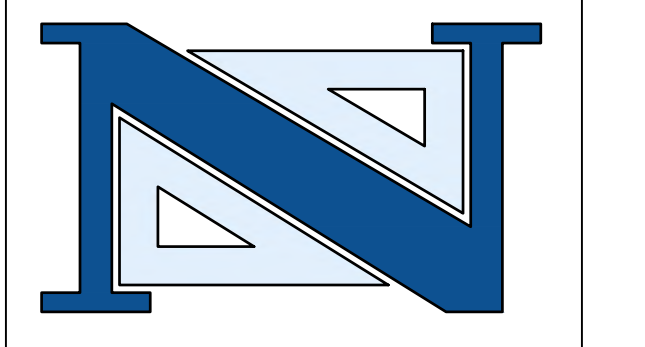


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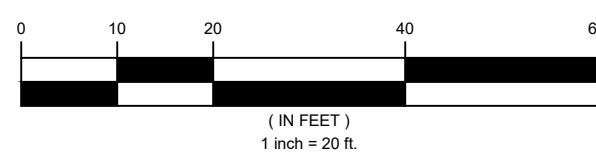
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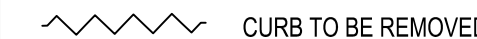


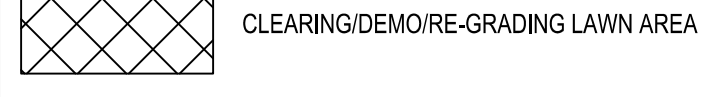
10.10.23 ISSUED FOR BID	
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EXISTING CONDITIONS PLAN	
Scale	USA Project No.
1" = 20'	2023-090
Drawing Date	Drawing No.
10.10.2023	
Drawn By	Checked By
MJG	DRA/NH
	2.00



GRAPHIC SCALE



DEMO PLAN LEGEND

-  CURB TO BE REMOVED
-  STRUCTURE TO BE REMOVED
-  CONCRETE PAVEMENT/SIDEWALK TO BE REMOVED
-  CLEARING/DEMOLITION-GRADING LAWN AREA

DEMOLITION NOTES

- DEMOLITION PLAN NOTES
- BEFORE THE DEMOLITION WORK IS STARTED, CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY FEDERAL, STATE, AND COUNTY JURISDICTIONS FOR ALL PHASES AND OPERATIONS OF THE WORK.
 - BURNING DEBRIS IS PROHIBITED.
 - THE USE OF EXPLOSIVES IS PROHIBITED.
 - PROTECT UTILITIES DURING THE WORK OF THIS SECTION.
 - CONTRACTOR SHALL VERIFY THE LOCATION AND STATUS OF ALL UTILITIES WITHIN AND SURROUNDING THE DEMOLITION LIMITS.
 - REMOVE AND DISPOSE OF CONCRETE AND BITUMINOUS SIDEWALK, WALLS, FENCES, DECKING, TREES, SHRUBS, HEDGES, BRUSH, STUMPS, ROOTS, DIRT, STONE, DEBRIS, SURPLUS MATERIALS AND RUBBISH, AS SHOWN OR OTHERWISE DIRECTED. PAVERS SHALL BE CAREFULLY REMOVED AND STOCKPILED FOR REINSTALLATION.
 - REMOVE CURBS, DECKING, SLABS ON GRADE, AND FENCES AS SHOWN OR DIRECTED OTHERWISE.
 - REPAIR ANY AND ALL DAMAGES OR INJURY TO THE ADJOINING PROPERTIES CAUSED BY THE WORK AND LEAVE THE PROPERTIES IN AS GOOD CONDITION AS BEFORE WORK WAS STARTED. THE CONTRACTOR SHALL RELIEVE THE OWNER OF ALL RESPONSIBILITY FOR ANY CLAIMS DUE TO SUCH INJURY AND SHALL DEFEND ANY ACTION BROUGHT BY REASON THEREOF.
 - IF SO DIRECTED, THE CONTRACTOR SHALL THOROUGHLY WET THE WORK TO PREVENT DUST.
 - PROTECT TREES NOT DESIGNATED FOR REMOVAL AS SHOWN ON THE PLANS. SEE TREE PROTECTION DETAIL FOR IMPLEMENTATION OF PROTECTION MEASURES.
 - REMOVE DEMOLITION DEBRIS AND EXCESS FILL FROM THE PROJECT SITE AS SOON AS PRACTICABLE EVERYDAY.
 - TRANSPORT DEMOLITION DEBRIS AND EXCESS FILL TO DESIGNATED DISPOSAL AREA AS SOON AS PRACTICABLE. GRADE DISPOSAL AREAS TO ADJACENT CONTOURS AND SLOPE TO DRAIN.
 - DO NOT STORE, SELL, OR BURN MATERIALS ON COUNTY PROPERTY.
 - THE REMOVAL AND DISPOSAL OF MATERIALS AND DEBRIS ACCUMULATED BY CLEARING SITE IS REGULATED UNDER THE SOLID WASTE MANAGEMENT ACT (N.J.A.C. 13:1 E-1) AND IS GOVERNED BY NJAC 7:26 ET SEQ. THE CONTRACTOR SHALL DISPOSE OF THE MATERIAL AND DEBRIS ACCORDING TO THE SOLID WASTE MANAGEMENT PLAN DEVELOPED BY THE SOLID WASTE MANAGEMENT DISTRICT OF ORIGIN. PROPER DOCUMENTATION FROM THE DISPOSAL FACILITY SHALL BE SUBMITTED TO THE ENGINEER.
 - ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH COUNTY, STATE AND FEDERAL REGULATIONS.
 - VARIOUS UTILITIES SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE FIELD MEASUREMENTS. THE INFORMATION IS NOT TO BE RELIED ON AS BEING COMPLETE OR EXACT. THE CONTRACTOR MUST CONTACT ALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 48 HOURS BEFORE ANY WORK OR EXCAVATION TO REQUEST A FIELD MARK OUT OF EXISTING UTILITIES. THE CONTRACTOR MUST CALL 1-800-242-1000 BEFORE COMMENCEMENT OF WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL ON SITE UTILITIES PRIOR TO START OF DEMOLITION WORK.
 - CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL BY THE OWNER'S ENGINEER A PLAN DETAILING THE LOCATIONS OF THE TEMPORARY FENCING, GATES, BARRICADES AND OTHER ITEMS REQUIRED TO SECURE THE DEMOLITION WORK AREA AND TO PROTECT THE PUBLIC.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ALL EXISTING UTILITIES WITHIN THE PROPOSED CONSTRUCTION FOOTPRINT WHERE INDICATED HEREIN.
 - THE CONTRACTOR IS ADVISED THAT TREE REMOVALS SHALL INCLUDE THE WORK OF CUTTING, REMOVING AND DISPOSING OF ALL SPECIFICALLY DESIGNATED INDIVIDUAL TREES INCLUDING ALL LIMBS, TRUNKS, STUMPS AND ROOTS, INCLUDING THE RESTORATION OF ALL STRUCTURES INCLUDING, BUT NOT LIMITED TO, CURBS, SIDEWALKS, DRIVEWAY APRONS, UTILITIES, VEGETATION, ASPHALT PAVEMENT SECTIONS OR OTHER PROPERTY WHICH MAY BE DAMAGED AS A RESULT OF THE TREE REMOVAL.
 - THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF THE TREE ROOTS, UPON REMOVAL OF THE SAME, THE CONTRACTOR SHALL BACKFILL THE AREA WITH CLEAN CRUSHED STONE TO AN APPROPRIATE GRADE, AS REQUIRED TO CONSTRUCT FULL PAVEMENT CROSS-SECTIONS WITHIN THE AREAS DISTURBED BY THE TREE REMOVAL. IT IS NOTED HERE FOR CLARITY THAT THE COSTS ASSOCIATED WITH ROOT REMOVAL, BACKFILLING, AND RECONSTRUCTION OF THE PAVEMENT CROSS-SECTIONS BACKFILLING WITH CLEAN MATERIALS TO GRADE IS TO BE INCLUDED IN THE TREE REMOVAL ITEMS.
 - ALL EXISTING UTILITIES ASSOCIATED WITH BUILDINGS TO BE REMOVED SHALL BE REMOVED SHALL BE CAPPED AT THE CURB LINE.
 - THE CONTRACTOR SHALL INSTALL TEMPORARY SITE SECURITY FENCE AND GATES. THE FENCE SHALL REMAIN FOR THE DURATION OF DEMOLITION AND BE REMOVED FOLLOWING COMPLETION OF THE SAME. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AS NECESSARY.
 - THE CONTRACTOR IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH THE DISPOSAL OF CONSTRUCTION WASTE.
 - THE WORK ILLUSTRATED ON THIS DEMOLITION PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE EXISTING SITE AND ITEMS REQUIRED TO BE DEMOLISHED, REMOVED, AND/OR RELOCATED. THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE ENTIRETY OF THE CONTRACT DOCUMENTS, INCLUDING ALL DEMOLITION ACTIVITIES AND INCIDENTAL TASKS NECESSARY TO PERFORM AND COMPLETE THE PROPOSED SITE IMPROVEMENTS.
 - THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE MEANS AND METHODS OF ALL DEMOLITION ACTIVITIES.
 - THE EXISTING BOROUGHS HALL SECTIONS DENOTED AS TO REMAIN IS TO REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION.
 - ALL DEMOLITION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES AND REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL EXISTING UTILITIES ARE DISCONNECTED IN ACCORDANCE WITH THE RESPECTIVE UTILITY AUTHORITY REQUIREMENTS PRIOR TO COMMENCING WITH ANY STRUCTURE DEMOLITION AUTHORITY. ALL EXCAVATION ASSOCIATED WITH DEMOLISHED STRUCTURES OR REMOVED TANKS SHALL BE BACKFILLED AND COMPACTED WITH SUITABLE MATERIALS TO GRADE AND SUPPORT THE PROPOSED SITE AND BUILDING IMPROVEMENT. THE CONTRACTOR SHALL HIRE AN INDEPENDENT GEOTECHNICAL ENGINEER AS A THIRD PARTY TO BE PRESENT DURING BACKFILLING ACTIVITIES TO OBSERVE AND CERTIFY THAT BACKFILL MATERIALS WAS COMPACTED TO A SUITABLE CONDITION.

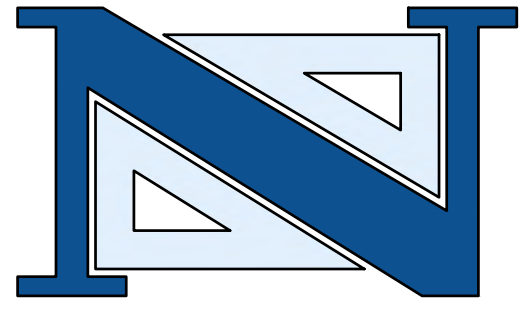


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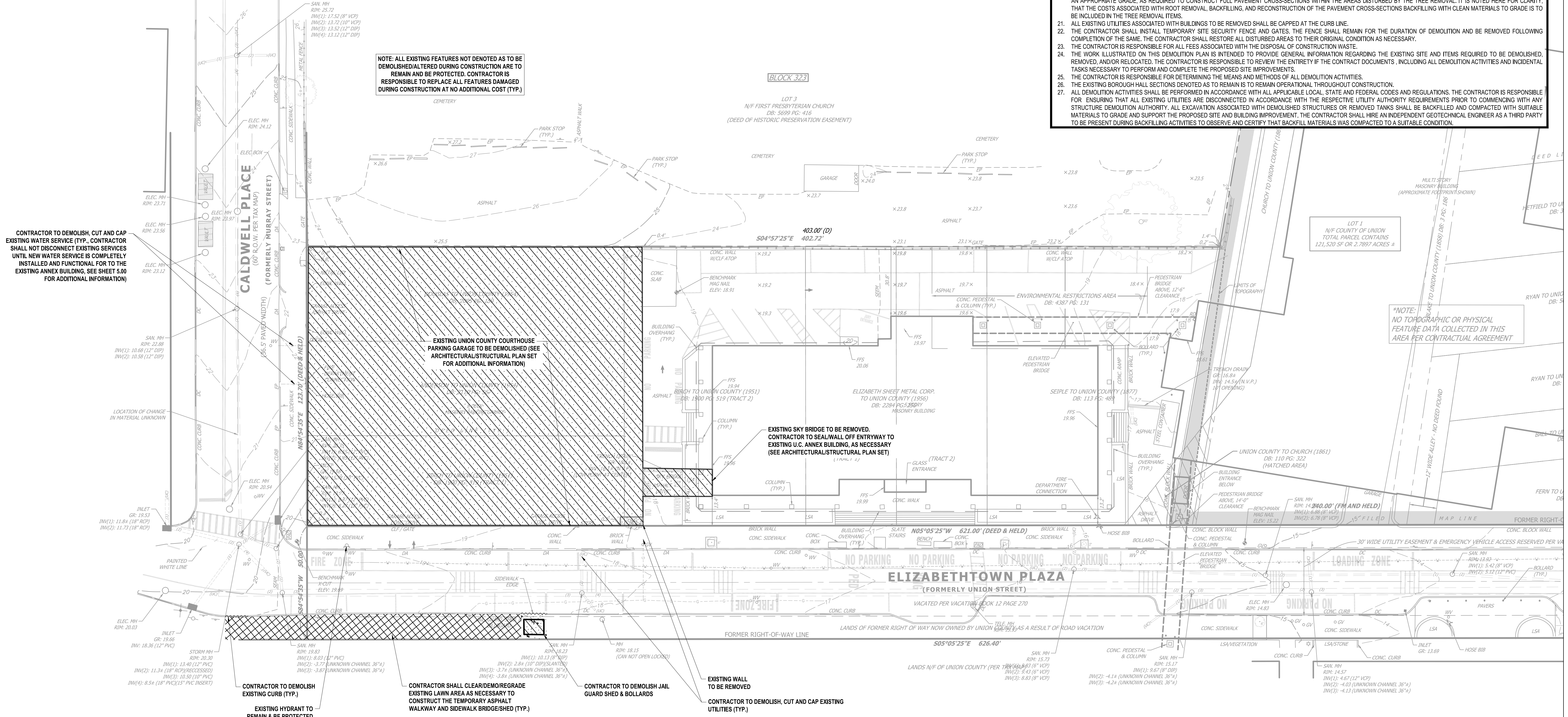
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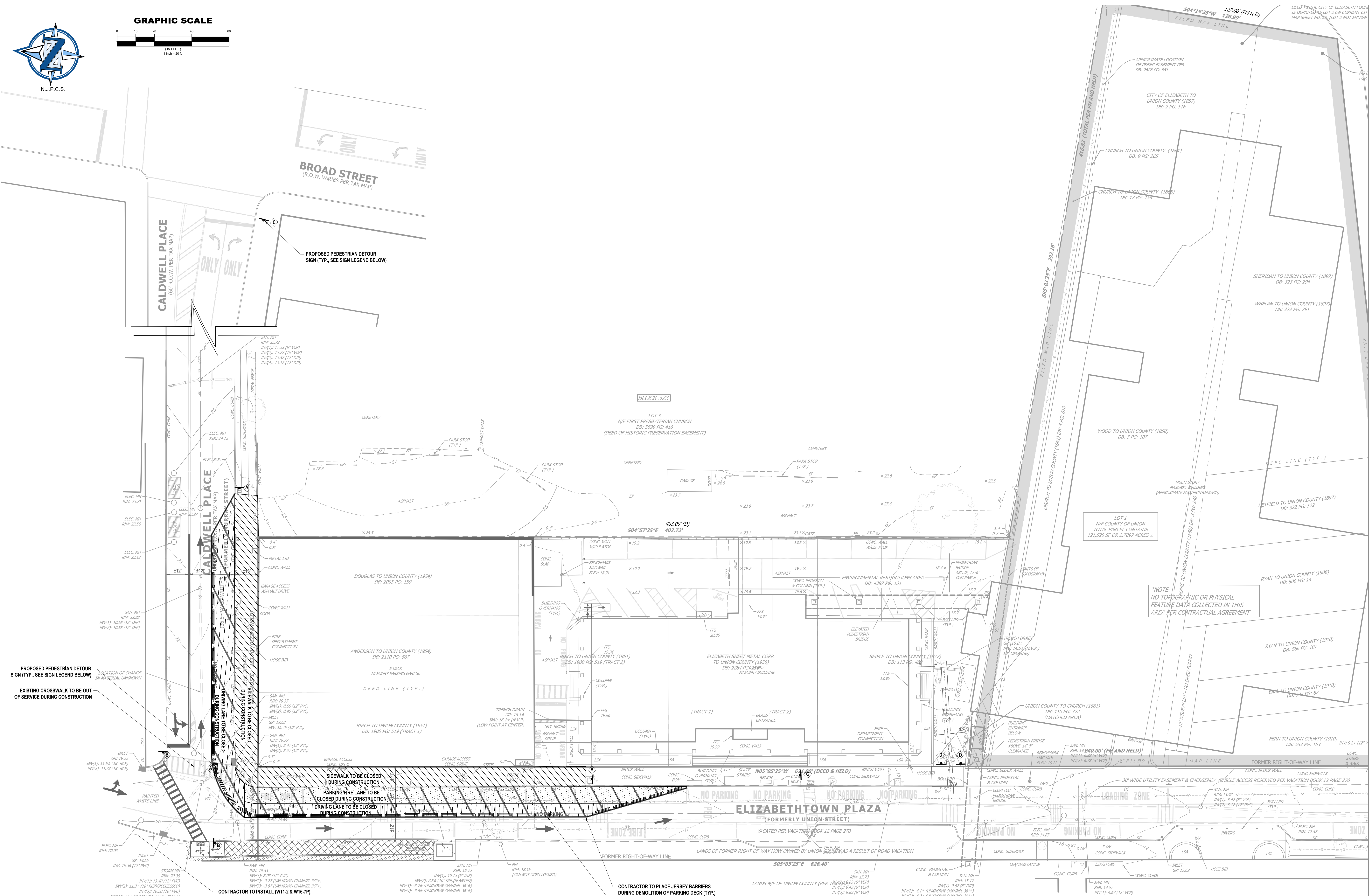
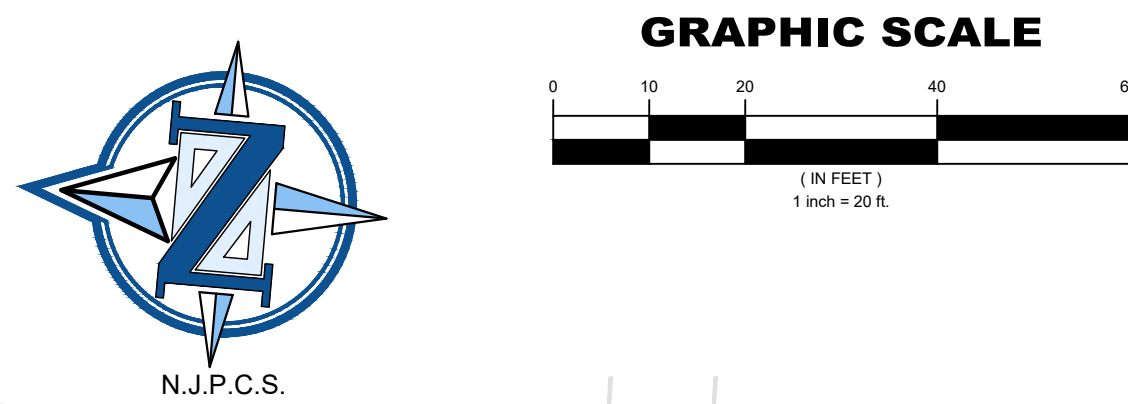


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THIS PLAN IS FOR INFORMATIONAL PURPOSES ONLY. REFER TO ARCHITECTURAL PLANS FOR DETAILED DEMOLITION PLANS AND SPECIFICATIONS

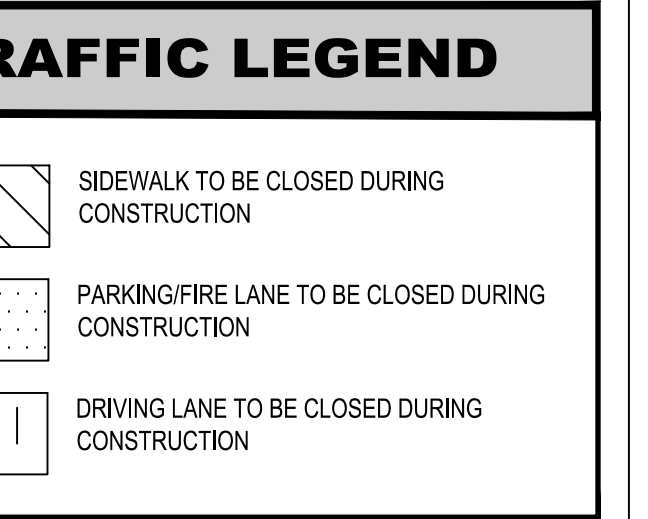
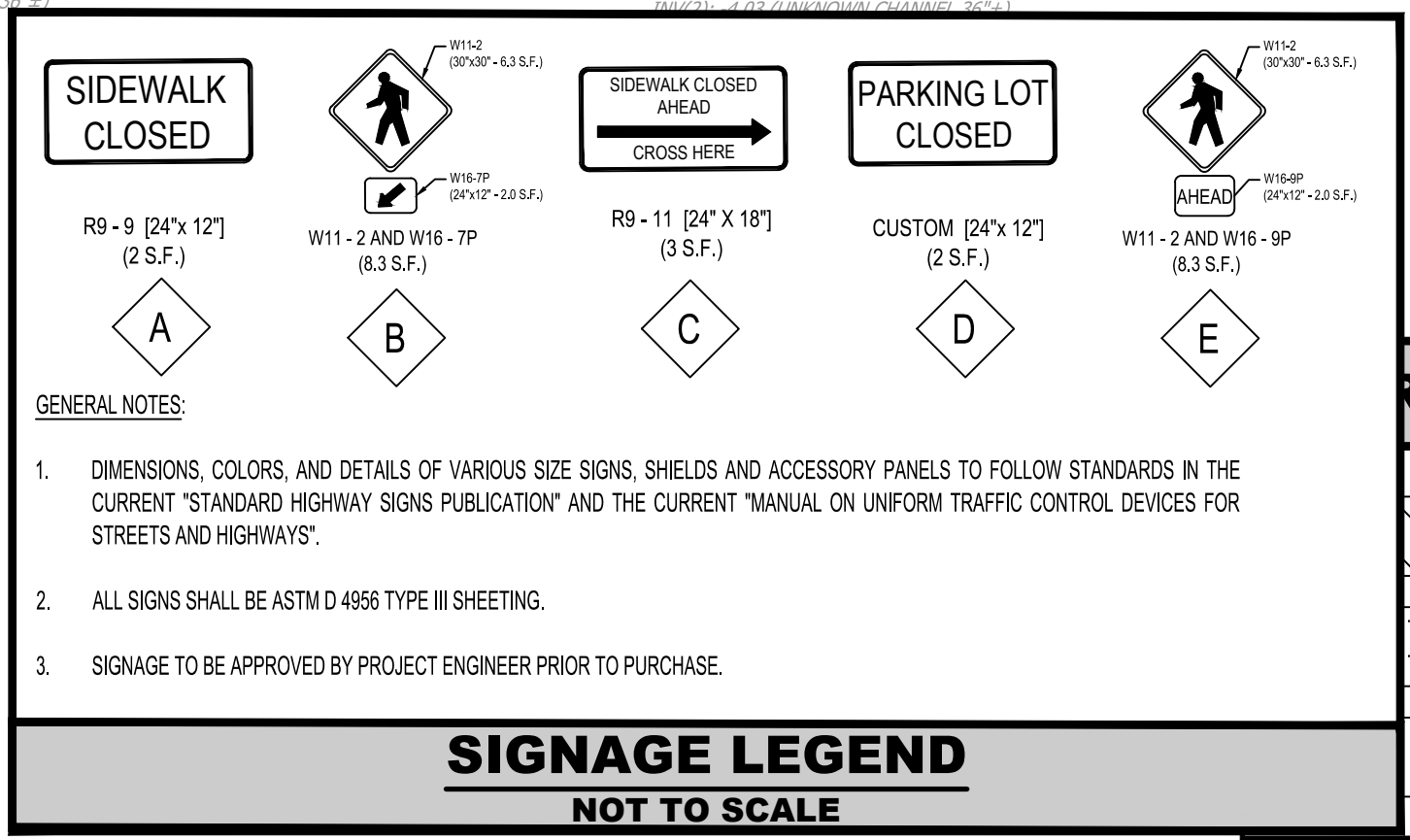
DEMOLITION OF COURTHOUSE PARKING DECK FOR THE COUNTY OF UNION CALDWELL PLACE & ELIZABETHTOWN PLAZA ELIZABETH, NJ 07201

10.10.23 ISSUED FOR BID	
No.	Date Issue or Revision
Drawing Title	
DEMOLITION PLAN	
Scale	USA Project No.
1" = 20'	2023-090
Drawing Date	Drawing No.
10.10.2023	
Drawn By	Checked By
MJG	DRA/NH
	3.00



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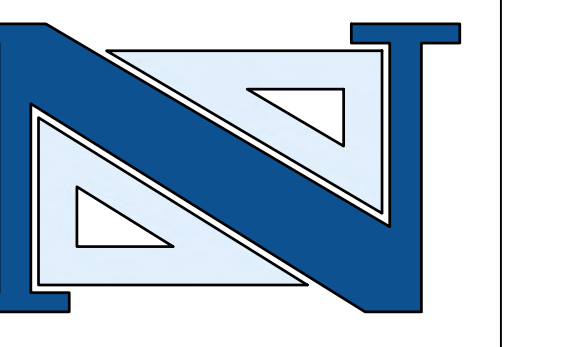


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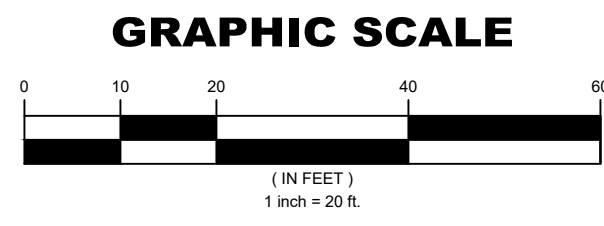
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DEMOLITION
OF
COURTHOUSE PARKING DECK
FOR THE
COUNTY OF UNION
CALDWELL PLACE & ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201

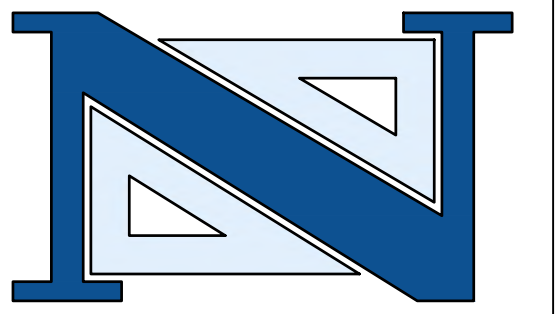
1 10.10.23 ISSUED FOR BID	
No.	Date
Drawing Title	
TRAFFIC CONTROL PLAN	
Scale	USA Project No.
1" = 20'	2023-090
Drawing Date	Drawing No.
10.10.2023	
Drawn By	Checked By
MJG	DRA/NH
5.00	



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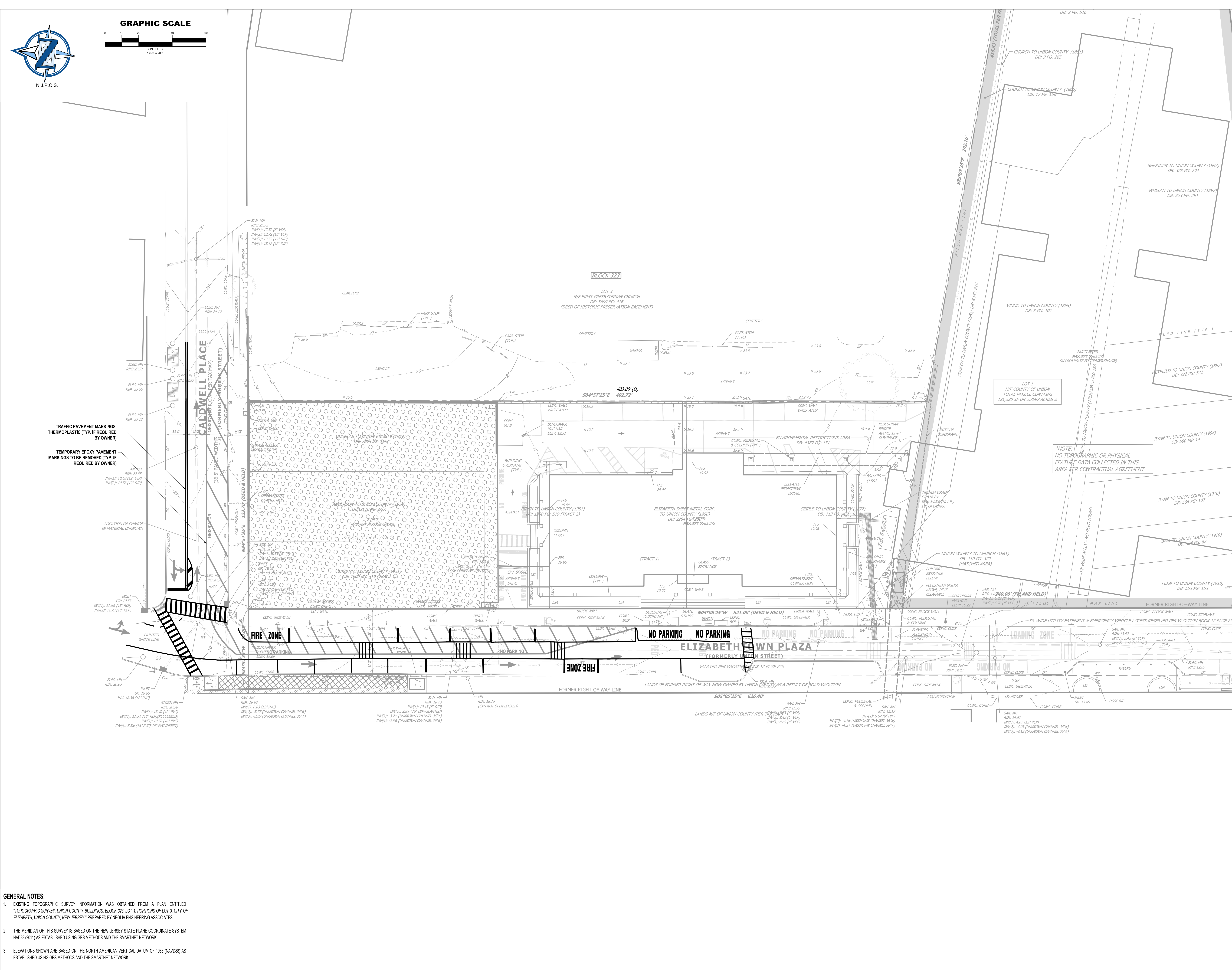
DEMOLITION
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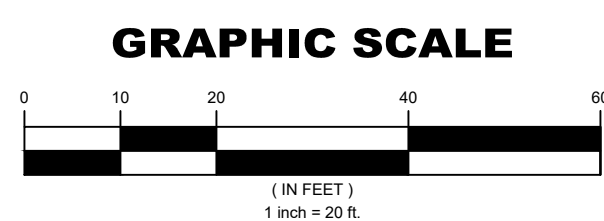
Drawing Title
**POST CONSTRUCTION
PAVEMENT STRIPING PLAN**

Scale 1" = 20'	USA Project No. 2023-090
Drawing Date 10.10.2023	Drawing No.
Drawn By MJG	Checked By DRA/NH
	6.00



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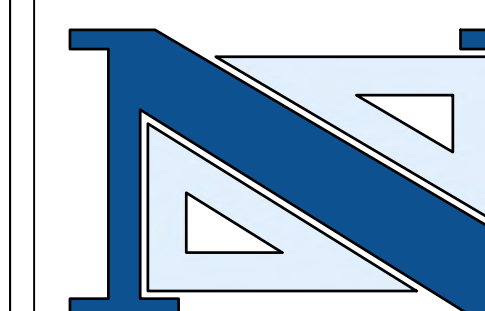


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Drawing Title
GRADING PLAN

Scale
1" = 20'

Drawing Date
10.10.2023

Drawn By
MJG

Checked By
DRA/NH

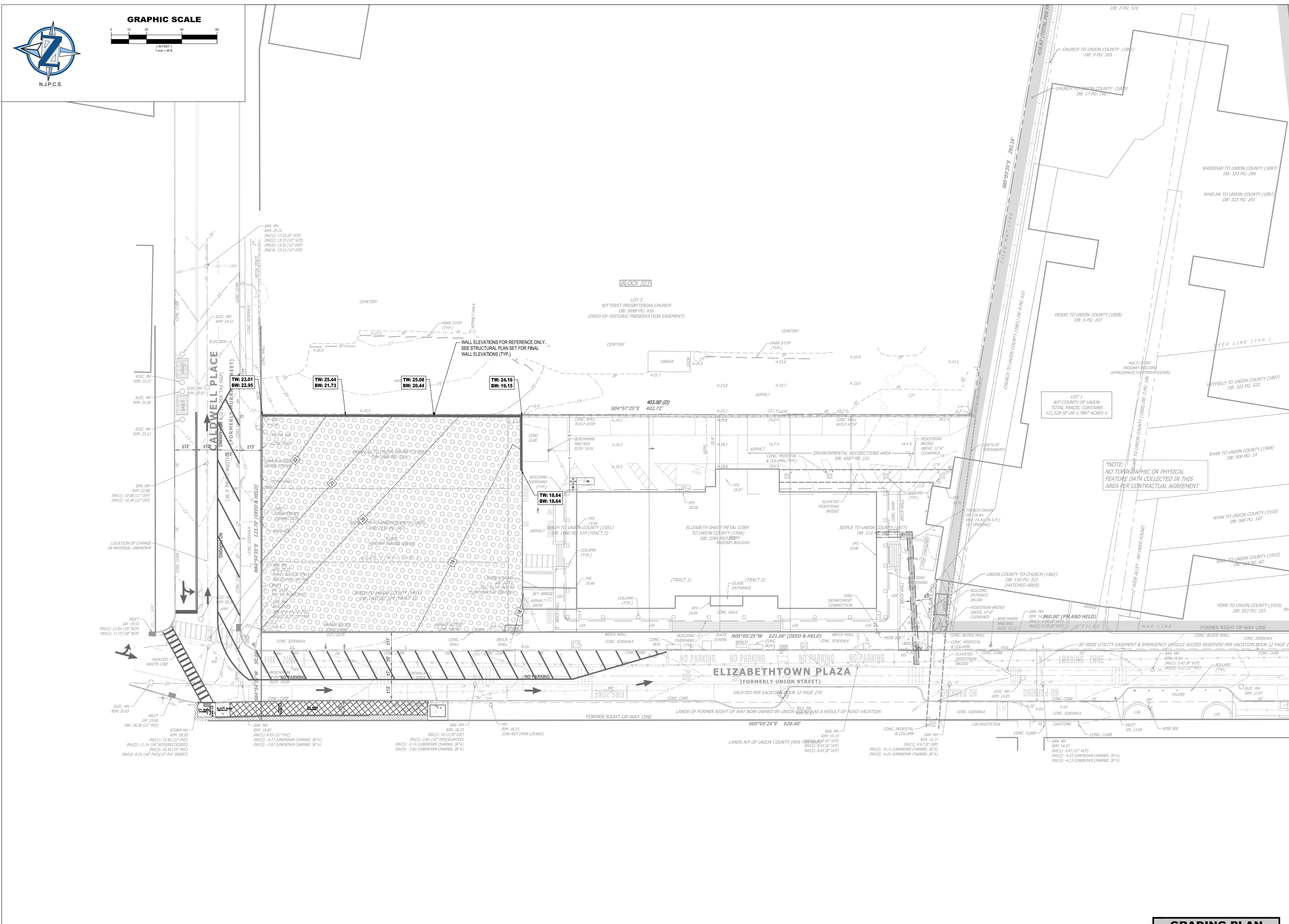
USA Project No.
2023-090

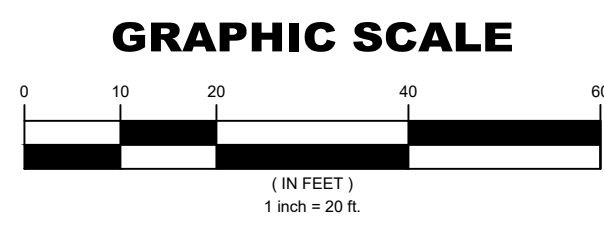
Drawing No.

7.00

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GRADING PLAN LEGEND	
	PROPOSED CONTOUR LINE
	TOP / BOTTOM OF WALL ELEVATION
	PROPOSED SLOPE



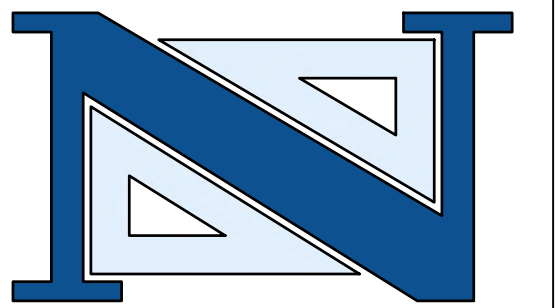


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DEMOLITION
OF
COURTHOUSE PARKING DECK
FOR THE
COUNTY OF UNION
CALDWELL PLACE & ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201

10.10.23 ISSUED FOR BID

No. Date Issue or Revision

Drawing Title
**SOIL EROSION
AND SEDIMENT
CONTROL PLAN**

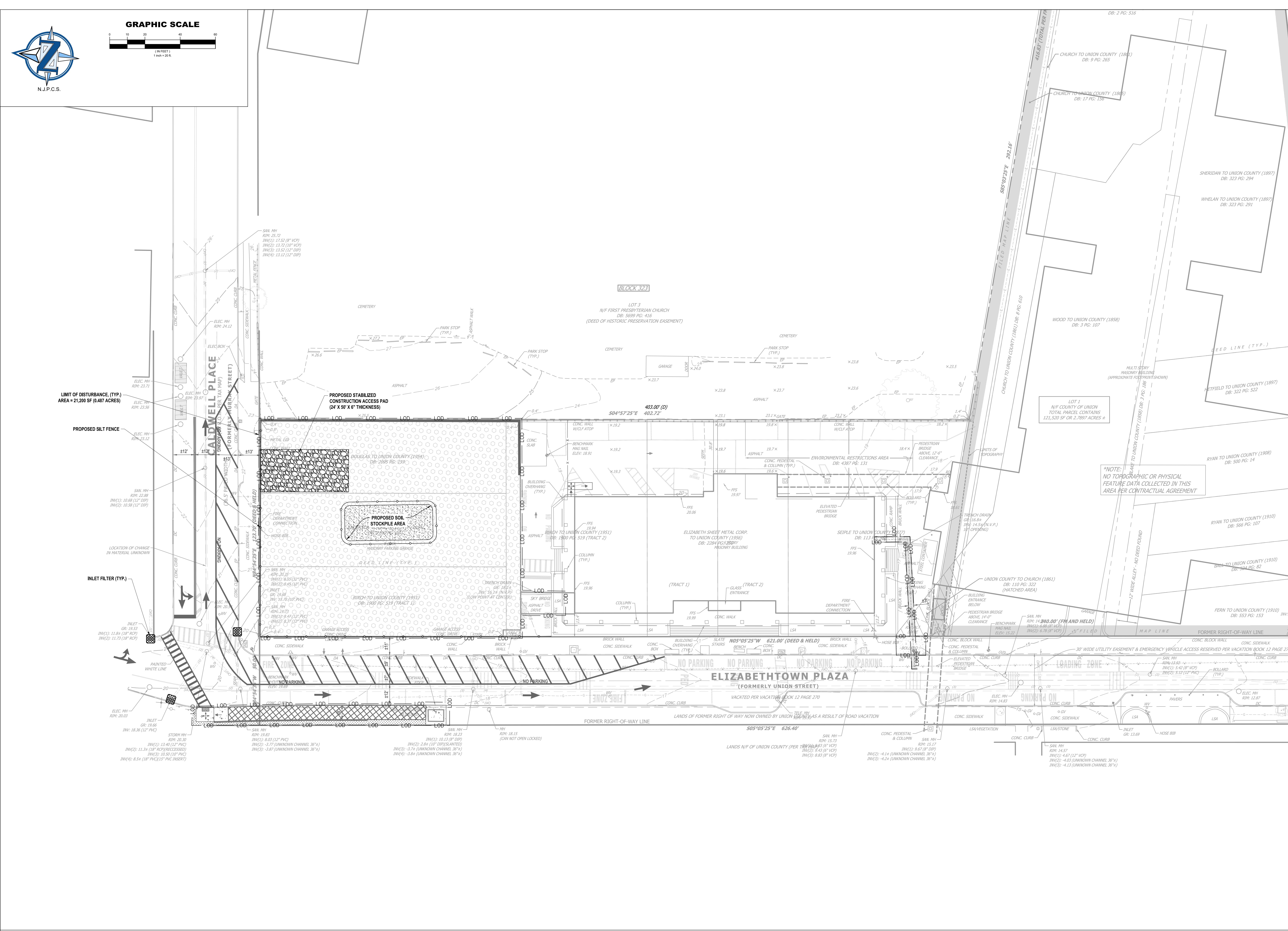
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Drawing Date: 10.10.2023
Drawing No.: 2023-090
Checked By: M/JG
Checked By: DRA/NH
8.00

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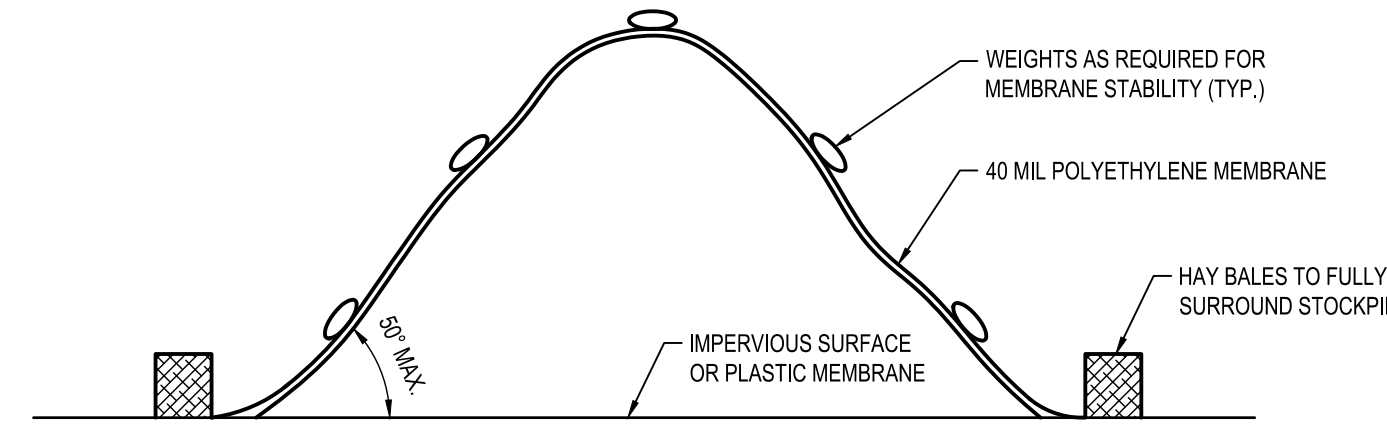
THIS PROJECT IS EXEMPT FROM SOIL COMPACTION TESTING AND REMEDIATION REQUIREMENTS RELATED TO SESC PERMITTING AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA

SESC PLAN LEGEND	
	LIMIT OF DISTURBANCE LINE
	SILT FENCE
	PROPOSED INLET FILTER PROTECTION



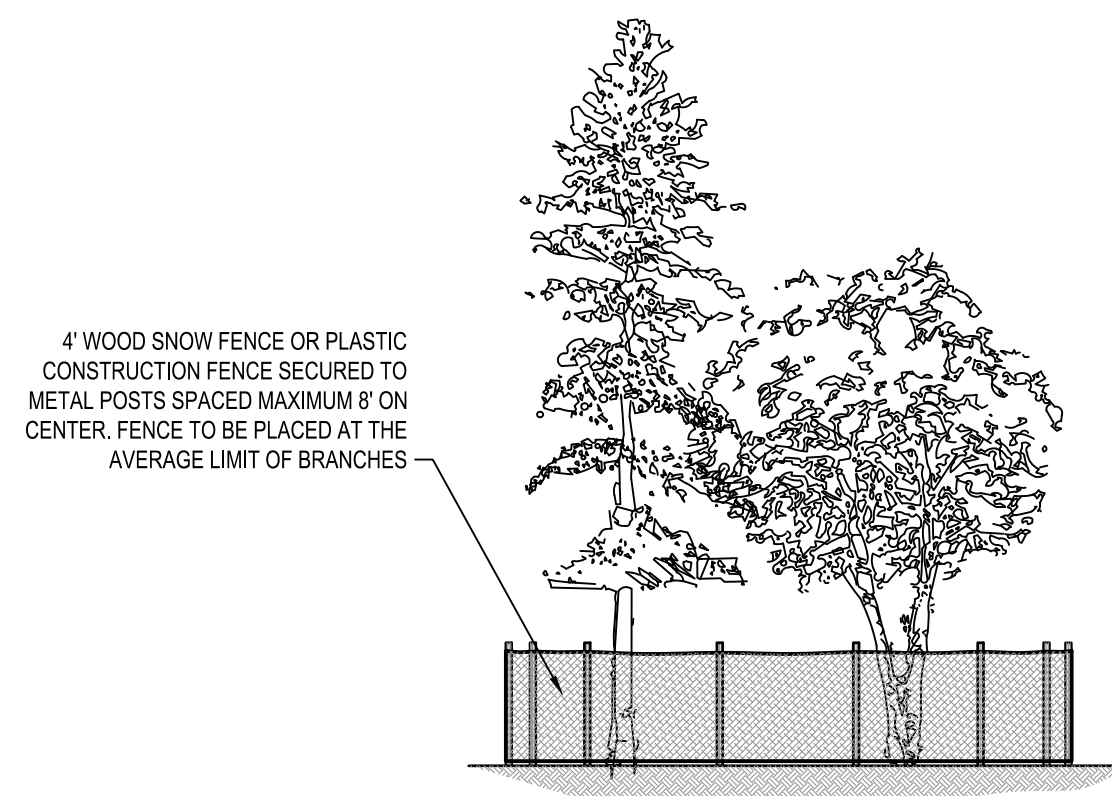
SOMERSET-UNION COUNTIES SOIL CONSERVATION DISTRICT SOIL EROSION & SEDIMENT CONTROL NOTES

- ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCES, OR IN THEIR PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
- ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN 30 DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO NJ STATE STANDARDS.
- PERMANENT VEGETATION SHALL BE SEEDED OR SODED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. MULCH WILL BE USED FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NJ STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
- A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS IN ORDER TO STABILIZE STREETS, ROADS, DRIVEWAYS AND PARKING AREAS. IN AREAS WHERE NO UTILITIES ARE PRESENT, THE SUB-BASE SHALL BE INSTALLED WITHIN 15 DAYS OR PRELIMINARY GRADING.
- IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES, ROADWAY EMBANKMENTS) WILL RECEIVE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO THE NJ STATE STANDARDS.
- ANY STEEP SLOPES RECEIVING PIPELINE INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY, AS THE INSTALLATION PROCEEDS (I.E. SLOPES GREATER THAN 3:1).
- TRAFFIC CONTROL STANDARDS REQUIRE THE INSTALLATION OF A 50"X30"X6" PAD OF 1 1/2" OR 2" STONE, AT ALL CONSTRUCTION DRIVEWAYS, IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING 48 HOURS IN ADVANCE OF ANY LAND DISTURBING ACTIVITY.
- AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER, SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
- IN THAT NJSA 42A-29 ET SEQ., REQUIRES THAT NO CERTIFICATE OF OCCUPANCY BE ISSUED BEFORE THE PROVISIONS OF THE CERTIFIED PLAN FOR SOIL EROSION AND SEDIMENT CONTROL, HAVE BEEN COMPLIED WITH FOR PERMANENT MEASURES, ALL SITE WORK FOR SITE PLANS AND ALL WORK AROUND INDIVIDUAL LOTS IN SUBDIVISIONS, WILL HAVE TO BE COMPLETED PRIOR TO THE DISTRICT ISSUING A REPORT OF COMPLIANCE FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY.
- CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
- ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT FOR RE-CERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT NJ STATE SOIL EROSION & SEDIMENT CONTROL STANDARDS.
- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED OF ANY CHANGES IN OWNERSHIP.
- MULCHING TO THE NJ STANDARDS IS REQUIRED FOR OBTAINING A CONDITIONAL REPORT OF COMPLIANCE. CONDITIONS ARE ONLY ISSUED WHEN THE SEASON PROHIBITS SEEDING.
- CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL ADJACENT ROADS CLEAN DURING LIFE OF CONSTRUCTION PROJECT.
- THE DEVELOPER SHALL BE RESPONSIBLE FOR REMEDIATING ANY EROSION OR SEDIMENT PROBLEMS THAT ARISE AS A RESULT OF ONGOING CONSTRUCTION AT THE REQUEST OF THE SOMERSET-UNION SOIL CONSERVATION DISTRICT.
- HYDRO SEEDING IS A TWO-STEP PROCESS. THE FIRST STEP INCLUDES SEED, FERTILIZER, LIME, ETC., ALONG WITH MINIMAL AMOUNTS OF MULCH TO PROMOTE CONSISTENCY. GOOD SEED TO SOIL CONTACT, AND GIVE A VISUAL INDICATION OF COVERAGE. UPON COMPLETION OF SEEDING OPERATION, HYDROMULCH SHOULD BE APPLIED AT A RATE OF 1000 LBS. PER ACRE IN SECOND STEP. THE USE OF HYDROMULCH, AS OPPOSED TO STRAW, IS LIMITED TO OPTIMUM SEEDING DATES AS LISTED IN THE NJ STANDARDS.



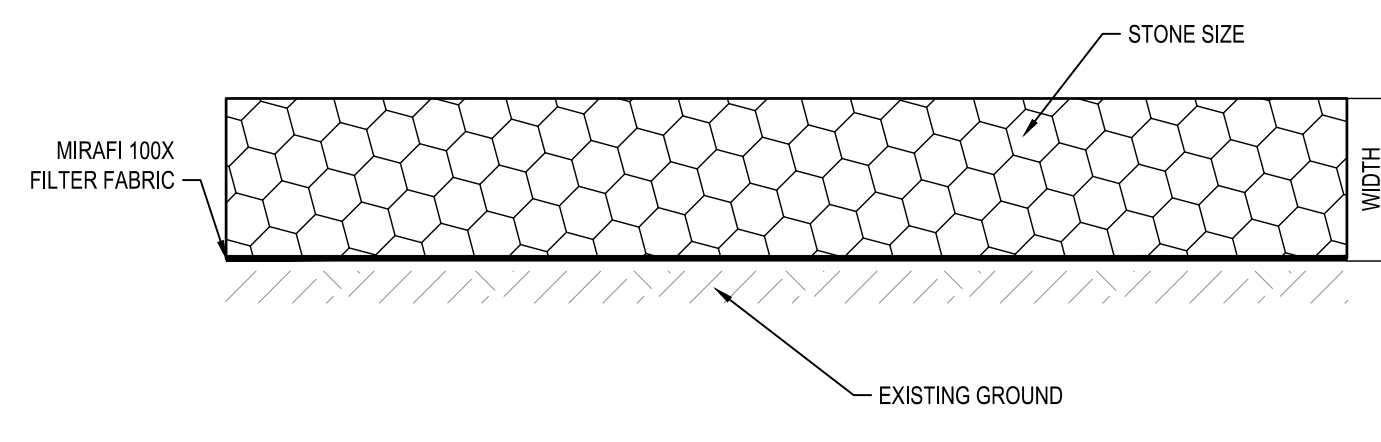
NOTES:
1. FOR NON-CONTAMINATED SOIL, SURROUND STOCKPILE WITH SILT FENCE. NO COVER REQUIRED.

**SOIL STOCKPILE
NOT TO SCALE**



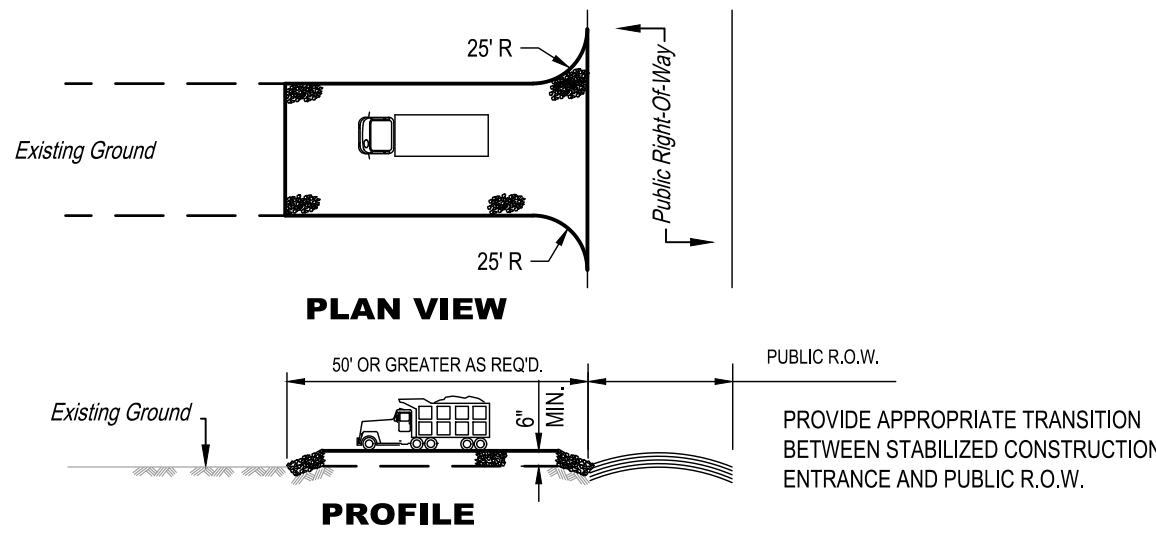
NOTES:
1. CONSTRUCTION EQUIPMENT OF ANY KIND IS TO BE PROHIBITED FROM DRIVING AND/OR PARKING UNDER TREES. THE STOCKPILE OF CONSTRUCTION MATERIAL SHALL BE PROHIBITED FROM BEING STORED UNDER ANY TREES.

**TREE PROTECTION
NOT TO SCALE**



NOTES:
1. APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION ENTRANCE AND PUBLIC R.O.W. MUST BE PROVIDED.
2. THE RATIO OF STONE SIZE TO WIDTH MUST BE 9:27.

**STABILIZED CONSTRUCTION PAD
NOT TO SCALE**

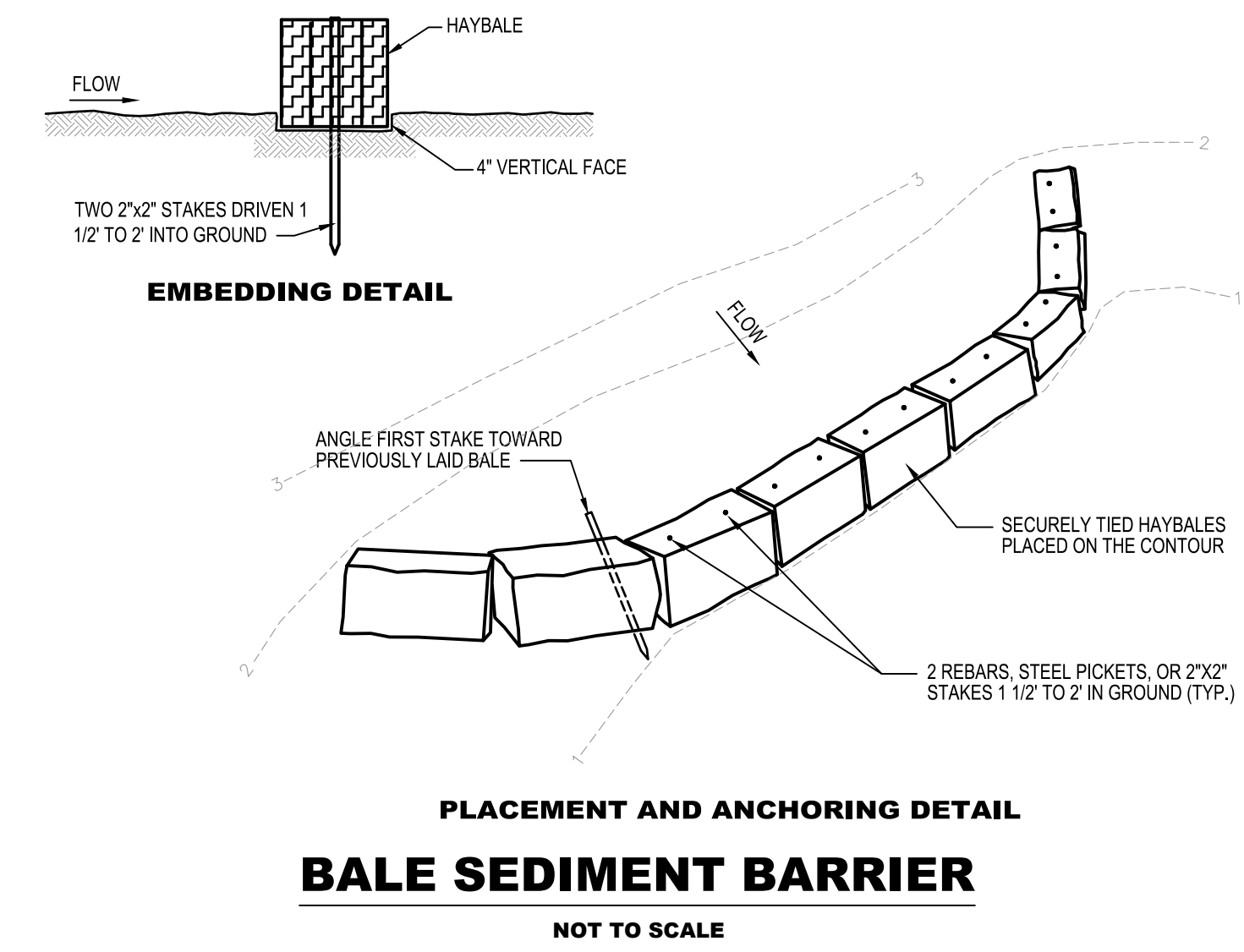


NOTES:
1. PLACE STABILIZED CONSTRUCTION ENTRANCE AT LOCATION(S) AS SHOWN ON THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
2. STONE SIZE SHALL BE ASTM C-33, SIZE NO.2 OR 3, CRUSHED STONE.
3. THE THICKNESS OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL NOT BE LESS THAN 6".
4. THE WIDTH AT THE EXIST. PAVEMENT SHALL NOT BE LESS THAN THE FULL WIDTH OF POINTS OF INGRESS AND EGRESS.
5. THE STAB. CONST. ENT. SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE R.O.W. PAVEMENT. THIS REQUIRES PERIODIC TOP PRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURE USED TO TRAP SEDIMENT.
6. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO THE PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. APPROPRIATE TRANSITION BETWEEN STAB. CONST. ENT. & PUBLIC R.O.W. MUST BE PROVIDED.
8. THE RATIO OF STONE SIZE TO WIDTH MUST BE 9:27.

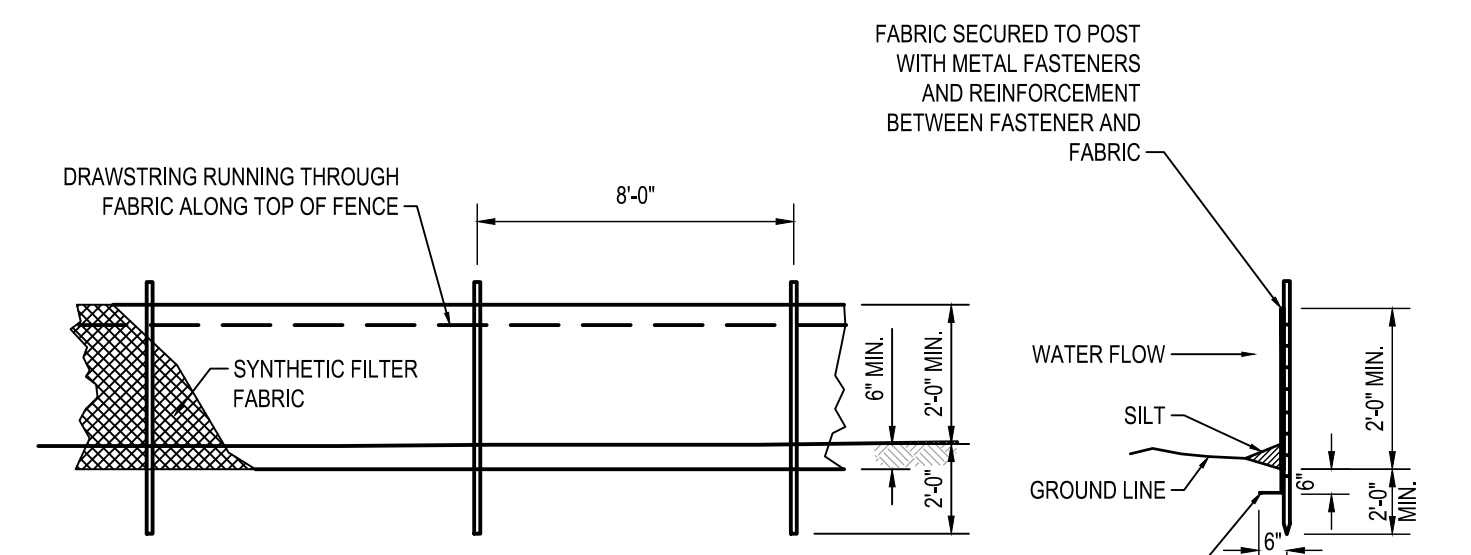
PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED
0 TO 2%	COARSE GRAINED SOILS - 50 FT. FINE GRAINED SOILS - 100 FT.
2 TO 5%	50 FT. 200 FT.
> 5%	ENTIRE SURFACE STABILIZED WITH FABRIC-BASE COURSE.

* AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

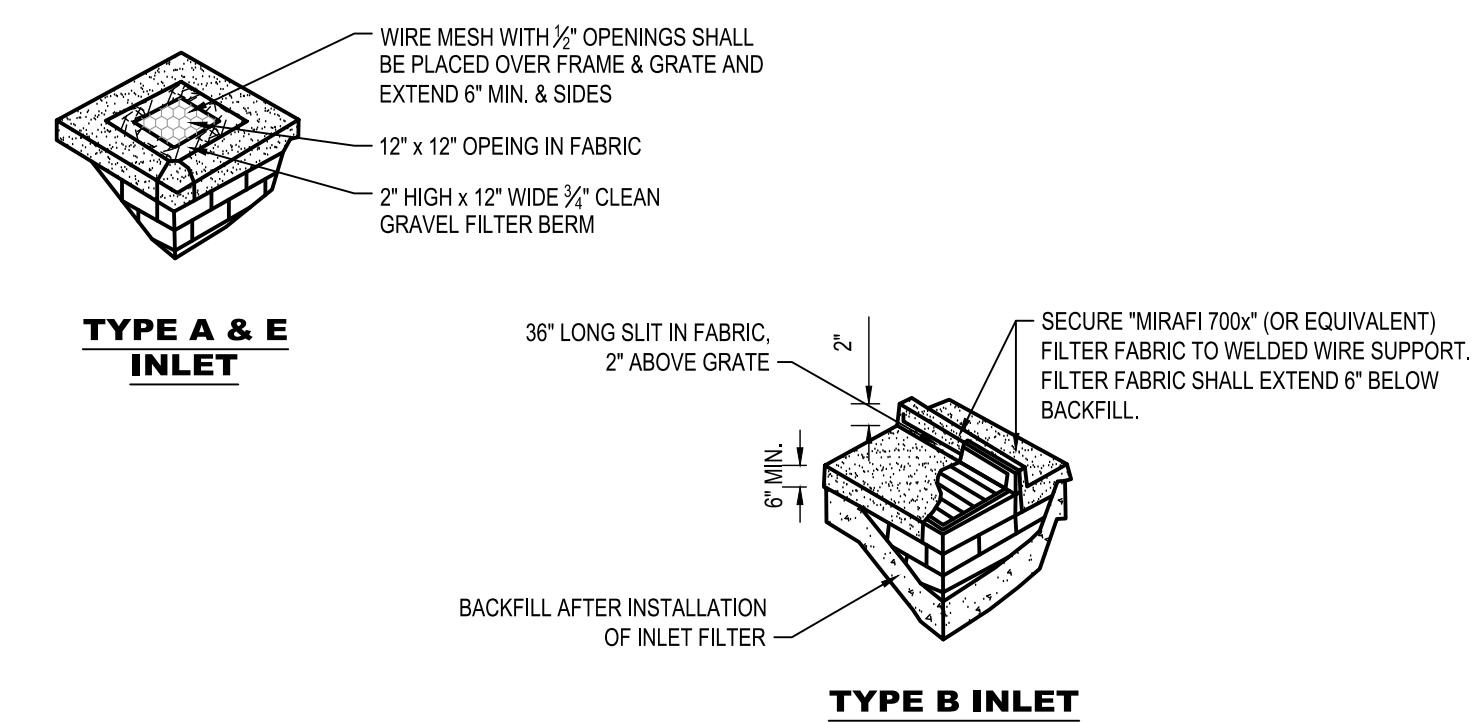
**STABILIZED CONSTRUCTION ACCESS
NOT TO SCALE**



**BALE SEDIMENT BARRIER
NOT TO SCALE**



**FILTER FENCE
NOT TO SCALE**



NOTES:
1. CONTRACTOR IS TO INSPECT INLET FILTER AFTER EVERY STORM, AND CLEAN OR REPLACE AS REQUIRED.
2. CONTRACTOR IS TO REMOVE FABRIC AND MESH JUST PRIOR TO PAVING.
3. FILTER FABRIC SHALL BE "MIRAFIX 700X" TYPE OR APPROVED EQUAL.
4. INLET FILTER SHALL FILTER RUNOFF FROM THE 1 YEAR 24-HOUR STORM EVENT AND SHALL SAFELY CONVEY HIGHER FLOWS DIRECTLY INTO STORM SEWER SYSTEM.

**INLET FILTER & PROTECTION
NOT TO SCALE**

DUST CONTROL NOTES

DEFINITION
THE CONTROL OF DUST ON CONSTRUCTION SITES AND ROADS.

PURPOSE
TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES. REDUCE ON- AND OFF-SITE DAMAGE AND HEALTH HAZARDS, AND IMPROVE TRAFFIC SAFETY.

WHERE APPLICABLE
THIS PRACTICE IS APPLICABLE TO AREAS SUBJECT TO DUST BLOWING AND MOVEMENT WHERE ON- AND OFF-SITE DAMAGE IS LIKELY WITHOUT TREATMENT. CONSULT WITH LOCAL MUNICIPAL ORDINANCES ON ANY RESTRICTIONS.

WATER QUALITY ENHANCEMENT
SEDIMENTS DEPOSITED AS "DUST" ARE OFTEN FINE COLLOIDAL MATERIAL WHICH IS EXTREMELY DIFFICULT TO REMOVE FROM WATER ONCE IT BECOMES SUSPENDED. USE OF THIS STANDARD WILL HELP TO CONTROL THE GENERATION OF DUST FROM CONSTRUCTION SITES AND SUBSEQUENT BLOWING AND DEPOSITION INTO LOCAL SURFACE WATER RESOURCES.

PLANNING CRITERIA
THE FOLLOWING METHODS SHOULD BE CONSIDERED FOR CONTROLLING DUST:
MULCHES- SEE STANDARDS FOR STABILIZATION WITH MULCHES ONLY (p. 5-1).
VEGETATIVE COVER- SEE STANDARDS FOR: TEMPORARY VEGETATIVE COVER (p. 7-1), PERMANENT VEGETATIVE COVER (p. 4-1), AND PERMANENT STABILIZATION WITH SOIL (p. 6-1).
SPRAY-ON ADHESIVES- ON MINERAL SOILS (NOT EFFECTIVE ON CLAY SOILS). KEEP TRAFFIC OFF THESE AREAS.

DUST CONTROL MATERIALS			
	WATER DILUTION	TYPE OF NOZZLE	APPLY GALLON/ACRE
ANIONIC ASPHALT EMULSION	7:1	COARSE SPRAY	1,200
LATEX EMULSION	12.5:1	FINE SPRAY	235
RESIN IN WATER	4:1	FINE SPRAY	300
POLYACRYLAMIDE (PAM) - SPRAY ON POLYACRYLAMIDE (PAM) - DRY SPREAD	APPLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS. MAY ALSO BE USED AS AN ADDITIVE TO SEDIMENT BASINS TO FLOCCULATE AND PRECIPITATE SUSPENDED COLLOIDS. SEE SEDIMENT BASIN STANDARD, p. 26-1.		
ACIDULATED SOY BEAN SOAP STICK	NONE	COARSE SPRAY	1,200

TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHisel-TYPE PLOWS SPACED ABOUT 12 INCHES APART, AND SPRING-TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
SPRINKLING - SITE IS SPRINKLED UNTIL THE SURFACE IS WET.
BARRIERS - SOLID BOARD FENCES, SNOW FENCES, BURLOP FENCES, CRATE WALLS, BALES OF HAY, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.
CALCIUM CHLORIDE - SHALL BE IN THE FORM OF LOOSE, DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS OR ACCUMULATION AROUND PLANTS.
STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

INLET PROTECTION STANDARDS

DEFINITION
A TEMPORARY BARRIER AND SETTLING FACILITY INSTALLED AT A STORM SEWER INLET.

PURPOSE
THE PURPOSE OF STORM SEWER INLET PROTECTION IS TO INTERCEPT AND RETAIN SEDIMENT, THUS PREVENTING THE ENTRANCE OF SEDIMENT INTO THE STORM SEWER SYSTEM.

CONDITIONS WHERE PRACTICE APPLIES

- CONTRIBUTING DRAINAGE AREA IS 3 ACRES OR LESS.
- A STORM SEWER OR THE OUTLET CHANNEL OF A STORM SEWER NEEDS PROTECTION FROM SEDIMENT.
- TRAFFIC WILL NOT DESTROY OR CAUSE CONSTANT MAINTENANCE OF THE STORM SEWER INLET PROTECTION.
- A TRAFFIC HAZARD WILL NOT BE CREATED.
- A FLOODING PROBLEM WILL NOT BE CREATED.

WATER QUALITY ENHANCEMENT
THE PRIMARY BENEFIT TO WATER QUALITY IS REMOVAL OF SEDIMENT FROM STORMWATER RUNOFF PRIOR TO ENTERING THE STORM SEWER SYSTEM. AS AN ADDED BENEFIT, OTHER FLOATABLE DEBRIS, SUCH AS VEGETATIVE MATTER AND LITTER, MAY ALSO BE FILTERED OUT OF THE RUNOFF.

DESIGN CRITERIA
THE FOLLOWING APPLIES TO ALL METHODS OF STORM SEWER INLET PROTECTION:

- MUST SLOW THE STORM WATER, PROVIDE THE COARSE SEDIMENT PARTICLES A CHANCE TO SETTLE, AND PROVIDE AN AREA TO RETAIN THE PARTICLES THAT HAVE SETTLED.
- IN ALL CASES, THE INLET PROTECTION SHOULD NOT COMPLETELY CLOSE OFF THE INLET.
- THE PROTECTION DEVICE WILL BE DESIGNED TO CAPTURE OR FILTER RUNOFF FROM THE 1 YEAR, 24 HOUR STORM EVENT AND SHALL SAFELY CONVEY HIGHER FLOWS DIRECTLY INTO THE STORM SEWER SYSTEM.

OTHER METHODS THAT ACCOMPLISH THE PURPOSE OF STORM SEWER INLET PROTECTION MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT.
INSPECTIONS SHALL BE FREQUENT. MAINTENANCE, REPAIR, AND REPLACEMENT SHALL BE MADE PROMPTLY, AS NEEDED. THE BARRIER SHALL BE REMOVED WHEN THE AREA DRAINING TOWARD THE INLET HAS BEEN STABILIZED.

SEQUENCE OF CONSTRUCTION

ACTIVITY	APPROXIMATE DURATION, (days)
1. INSTALL CONSTRUCTION ENTRANCE.	x
2. INSTALL SEDIMENT CONTROL MEASURES.	x
3. INSTALL NEW DOMESTIC WATER LATERAL TO ANNEX BUILDING.	x
4. DEMOLISH, CUT, AND CAP EXISTING UTILITIES TO THE PARKING DECK.	x
5. BEGIN SELECTIVE SITE CLEARING AND GRUBBING.	x
6. BEGIN STRIPPING TOPSOIL.	x
7. PLACE INLET SEDIMENT CONTROL DEVICE AS STRUCTURES ARE COMPLETED.	x
8. INSTALL CURBS AND SIDEWALKS.	x
9. PUT IN PLACE TEMPORARY TRAFFIC PLAN ELEMENTS.	x
10. DEMOLISH EXISTING PARKING DECK.	x
11. BEGIN FINAL GRADING.	x
12. INSTALL LANDSCAPING AS AREAS OF SITE ARE COMPLETED.	x
13. TOPSOIL, SEED AND MULCH AS AREAS OF SITE ARE COMPLETED.	x
14. REMOVE SOIL EROSION MEASURES.	x

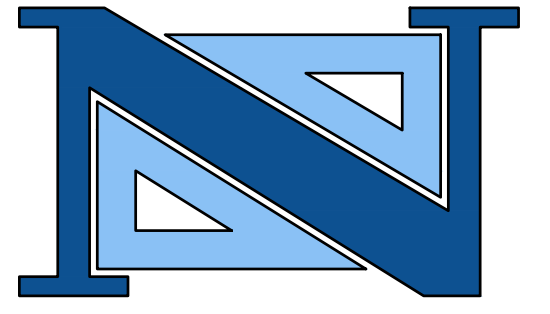


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DEMOLITION
OF
COURTHOUSE PARKING DECK
FOR THE
COUNTY OF UNION
CALDWELL PLACE & ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201

No.	Date	Issue or Revision
1	10.10.23	ISSUED FOR BID

Drawing Title
CONSTRUCTION DETAILS I

Scale
N.T.S.

USA Project No.
2023-090

Drawing Date
10.10.2023

Drawing No.

Drawn By
MJG

Checked By
DRA/NH

9.00

GENERAL STRUCTURAL AND CONSTRUCTION NOTES

1.0 GENERAL

- All work shall conform to the "2021 International Building Code, NJ Edition" and to all other applicable Federal, State, and Local regulations.
- In case of conflict between the General Notes, Specifications, and details, the most rigid requirements shall govern.
- Work not indicated on a part of the drawings but reasonably implied to be similar to that shown at corresponding places shall be repeated.
- Job site safety and construction procedures are the sole responsibility of the Contractor.
- The Contractor shall provide for dewatering as required during excavation and construction.
- All costs of investigation and/or redesign due to Contractor improper installation of structural elements or other items not in conformance with the Contract Documents shall be at the Contractor's expense.
- The structural drawings shall be used in conjunction with the specifications, architectural and mechanical drawings. If there is a discrepancy between drawings, it is the Contractor's responsibility to notify the Architect prior to performing the work.
- The Contractor shall verify and/or establish all existing conditions and dimensions at the site. Failure to notify Architect/Engineer of unsatisfactory conditions constitutes acceptance of unsatisfactory conditions.
- If the existing field conditions do not permit the installation of the work in accordance with the details shown, the Contractor shall notify the Architect/Engineer immediately and provide a sketch of the condition with his proposed modification of the details given on the Contract Documents. Do not commence work until condition is resolved and modification is approved by the Architect.
- Where alterations involve the existing supporting structure, the Contractor shall provide shoring and protection required to ensure the structural integrity of the existing structure.
- The Contractor shall be responsible to determine allowable construction loads and to provide design and construction of falsework, formwork, stagings, bracing, sheeting, and shoring, etc.
- Contractor to provide sheeting, bracing, and underpinning as necessary to prevent any lateral or vertical movements of existing buildings, streets, and any existing utility lines.
- Bracing, sheeting, shoring, etc., required to insure the structural integrity of the existing buildings or new construction, sidewalks, utilities, etc., shall be designed by a Professional Engineer engaged by the Contractor. Detailed signed and sealed shop drawings shall be prepared indicating all work to be performed. Submit the shop drawings in accordance with the Contract requirements.
- In no case shall heavy equipment be permitted closer than 8'-0" from any foundation wall. If it is necessary to operate such equipment closer than 8'-0" to the wall, the Contractor shall be the sole responsible party and, at his own expense, shall provide adequate supports or brace the wall to withstand the additional loads superimposed from such equipment.
- No blasting shall be permitted without written approval.
- The Contractor shall submit, for review, drawings and calculations for all performance assemblies identified in the General Notes and listed below: The design of these assemblies is the responsibility of the Contractor's Engineer registered in the Project's jurisdiction. All submittals shall bear this Engineer's seal and signature. Review shall be for general conformance with the project requirements as indicated on the Drawings and in the General Notes.
 - Non-load bearing stud wall and curtain wall systems and related connections: Designs shall take into account all vertical and lateral loads required by applicable building codes. Back up system and curtain wall shall be designed for a maximum deflection of 1/600 of the span, or 3/8", whichever is less, at the applicable design wind load without the code applied reduction factors.
- Shop drawings for all structural materials to be submitted to Architect for review prior to the start of fabrication or commencement of work. Review period shall be a minimum of two (2) weeks.
- Reproduction of any portion of the Structural Contract Drawings for resubmittal as shop drawings is prohibited. Shop drawings produced in such a manner will be rejected and returned.
- Shop drawings shall bear the Contractor's stamp of approval which shall constitute certification that the Contractor has verified all construction criteria, materials, and similar data and has checked each drawing for completeness, coordination, and compliance with the Contract Documents.
- The shop drawings shall include dimensioned floor and roof edges, openings and sleeves at all floors required for all trades.
- The drawings have been produced entirely on MPP Engineers CADD System. Any other lettering, lines or symbols, other than professional stamps and signatures, are invalid.
- The structural drawings shall govern the work for all structural features, unless noted otherwise. The architectural drawings shall govern the work for all dimensions.
- All materials shall be stored to protect them from the elements.

2.0 EARTHWORK

- Engineered (controlled compacted) fill within the building area shall be constructed prior to footing excavation
 - Excavation shall be performed so as not to disturb existing adjacent buildings, streets, and utility lines. Verify location of all utilities prior to commencement of work. Hand excavate around utilities as required.
- See the specifications and geotechnical report for excavation, backfill and preparation of the foundation and slab-on-grade subgrade, including compaction requirements.
- Satisfactory fill materials are those complying with ASTM D2487, groups GW, GP, GM, SM, SW, and SP. On site borrow material shall be tested to determine suitability for use as fill material.
- Compact soil to not less than the following percentages of maximum density of modified proctor (ASTM D1557):
 - Under building foundations - 98%
 - Under building slabs, steps, pavements - 95%
- Remove existing vegetation, topsoil, and unsatisfactory soil materials. Proof roll subgrade to obtain uniformly densified substrate prior to placing fill material evenly in 8" thick (maximum) layers and compacting to required density.
- The Owner shall retain the services of a Professional Geotechnical Engineer, subject to the approval of the Architect, to perform soil testing and inspection. The engineer shall inspect the subgrade to verify bearing levels and ensure that the safe bearing capacity meets or exceeds the design value indicated below. Reports shall be submitted to the Architect outlining the work performed and test results.
- Backfill shall be brought up simultaneously on each side of walls and grade beams, with a grade difference not to exceed 2'-0" at any time.

3.0 FOUNDATIONS

- Foundations have been designed and footing elevations established on the basis of a Subsurface Investigation Report and recommendations prepared by Remington & Venick Engineers Dated Dec 14th/ 2020. See the report for additional requirements. The requirements contained in the geotechnical report are part of the Construction Documents.
- Footings shall bear on undisturbed stratum or engineered fill with a minimum bearing capacity of 2000 psf.
- Prior to footing concrete placement, the footing subgrade shall be approved by the Inspecting Geotechnical Engineer. If conditions prove to be unacceptable at elevations shown, footing bottoms shall be lowered to acceptable subgrade material. Fill over-excavation with lean concrete (2,500 psi).
- The bottom of exterior footings shall be a minimum of three (3) feet below finished grade, or as required by local building codes.
- The bearing elevations of new footings adjacent to existing footings are to match the adjacent existing footing bearing elevations unless indicated otherwise on plans.
- Concrete for foundations shall be poured on the same day the subgrade is approved by the Geotechnical Engineer.
- Provide a continuous waterstop at all horizontal and vertical construction joints in the elevator pit and all other pit walls.
- The Contractor shall observe water conditions at the site and take the necessary precautions to ensure that the foundation excavations remain dry during construction. Any sheeting or shoring required for dewatering shall be the responsibility of the Contractor.
- The Contractor shall be responsible for coordinating the need to use foundation rebar as a grounding electrode system and shall be responsible for installing the bonding clamp prior to placement of the concrete as per NUVCC Bulletin No. 02-2.

4.0 CAST-IN-PLACE CONCRETE

- Concrete shall be designed and detailed in accordance with the Building Code Requirements for Structural Concrete (ACI-318-19), and constructed in accordance with the CRSI Manual of Standard Practice.
- Concrete for foundation and exterior concrete foundation wall shall have a minimum compressive 28-day strength of 4,500 psi, all other concrete shall be 4000 psi; Air Entrainment 45 to 65 in all exposed concrete work.
- Maximum water/cement ratios:
 - Foundations 0.44
 - Interior Slabs 0.47
 - Exterior Slabs 0.44
- All concrete shall be normal weight concrete (144 pcf +) with all cement conforming to ASTM C150, Type I. Maximum aggregate size shall be 1-1/2" for footings and 3/4" for walls and slabs, conforming to ASTM C33.
- Reinforcing steel: ASTM A615 Grade 60.
- Welded Wire Reinforcement: (WWR) ASTM A-185.
- Leveling Grout shall be non-shrink, non-metallic type, factory pre-mixed grout in accordance with CE-CRD-C621 or ASTM C109, with a minimum compressive 28-day strength of 5,000 psi.
- Reinforcing steel clear cover shall be as follows unless noted otherwise:
 - Concrete cast against and permanently exposed to earth 3".
 - Concrete exposed to earth or weather
 - #6 bars and larger 2"
 - #5 bars and smaller 1-1/2"
 - Concrete not exposed to weather or in contact with ground
 - Slabs, walls, joists
 - #11 bars and smaller 3/4"
 - Beams and columns
 - Primary reinforcement, ties, stirrups, or spirals 1-1/2"
- Cold weather concreting shall be in accordance with ACI-306. Hot weather concreting shall be in accordance with ACI-305R.
- Throughout construction, the concrete work shall be adequately protected against damage due to excessive loading, construction equipment, materials or methods, ice, rain, snow, excessive heat, and freezing temperatures.
- Prepare concrete test cylinders from each day's pour. Cylinders shall be properly cured and stored. Sample fresh concrete in accordance with ASTM C172.
- Retain laboratory for testing service. Slump per ASTM C231 air content per ASTM C313 or C173, cylinder tests per ASTM C31 and C39. One set of six (6) cylinders for each 50 cubic yards for each mix used. Reports of all tests to be submitted to the Architect.
- Submit to Architect/Engineer reinforcing steel shop drawings for approval and mix designs for review prior to placing any concrete.
- All reinforcement shall be securely held in place while placing concrete. If required, additional bars, stirrups or chairs shall be provided by the Contractor to furnish support for all bars.
- Lap welded wire reinforcement two (2) full wire spaces at splices and wire together.
- Provide plastic tipped bolsters and chairs at all locations where the concrete surface in contact with the bolsters or chairs is exposed.
- Placing of concrete shall not start until the placement of reinforcing has been approved by the Inspection Agency.
- Bonding agent shall be used where new concrete is placed against existing concrete.
- Prior to concrete placement, the Contractor shall submit to the structural engineer for review, concrete mix designs prepared in accordance with the specifications and requirements indicated in the general notes.
- Concrete shall not be pumped through aluminum pipes and shall not be placed in contact with aluminum forms, mixing drums, buggies, chutes, conveyors or other equipment made of aluminum.
- Chamber all exposed concrete corners unless noted otherwise on Architectural Drawings.
- Early drying out of concrete, especially during the first 24 hours, shall be carefully guarded against. All surfaces shall be moist cured or protected using a membrane curing agent applied as soon as forms are removed. If membrane curing agent is used, exercise care not to damage coating.

5.0 MASONRY

- Masonry has been designed in accordance with the Building Code Requirements for Masonry Structures (TMS 402-2016) and shall be constructed in accordance with the Specifications for Masonry Structures (TMS 602-2016), except where otherwise modified by these General Notes and Specifications.
- Mortar shall conform to ASTM C270, Type M or S. All Portland cement shall conform to ASTM C150, Type I. Lime shall conform to ASTM C207 and masonry cement shall conform to ASTM C91.
- Grout shall conform to ASTM C476 and shall have a minimum 28 day compressive strength of 3000 psi. Slump of grout shall be 8 to 10 inches and the maximum aggregate size shall be 3/8" (aggregate graded to produce fine grout in conformance with ASTM C476 and C404).
- Concrete Block Units:
 - A. Solid and hollow load bearing units per ASTM C90, Type N-1, as required to provide 28 day compressive strength, f'm as noted below.
- Minimum 28-day compressive strength of masonry, f'm shall be 1,500 psi, unless noted otherwise.
- Full bed and head joints shall be provided.
- Horizontal Joint Reinforcing: ASTM A82; 9-gage ladder-type, galvanized.
- Deformed bar reinforcement shall conform to ASTM A615, Grade 60 and shall be full height of walls unless otherwise noted. Provide bar spacers and positioners as required to properly locate and stabilize reinforcing during grouting operations. Grout all reinforced cells solid with grout.
- Hollow concrete units below grade and slab on grade shall be normal weight and have all cells grouted solid.
- Provide and install temporary bracing required insuring stability of all walls during construction and until erection of attached structural framing is completed.
- Provide galvanized horizontal joint reinforcement in all walls and partitions at 16" o.c. unless otherwise shown or noted. Provide one (1) piece prefabricated units at 8' o.c. at all wall corners and intersections.
- Lap splices for deformed reinforcing bars used in masonry construction shall be 50 bar diameters.
- Submit grout mix design and masonry unit certifications to the Architect for review.
- Grout placement shall not start until the placement of reinforcing has been approved by the Inspection Agency.
- Fill all cells in top two courses below finished floor, CMU lintels, bond beams, and beam bearings and cells with reinforcement full height solid with grout.
- Allow grout in reinforced CMU walls to cure a minimum of 48 hours before imposing concentrated or other loads from above.
- Provide masonry anchors set on caulking and attached to all beams at 32" o.c. horizontal, columns at 24" o.c. vertical, partitions and walls at 16" o.c. at all beams, columns, partitions and walls abutting or embedded in masonry unless noted otherwise on Architectural and Structural Drawings.
- Provide bond beams with two (2) #4 horizontal reinforcement continuous in all masonry walls at each framing level. Provide a minimum of two (2) #4 bars at the ends of all walls and on each side of each opening.
- All piers and partitions shall be bonded or anchored to adjacent masonry walls. Provide ties to adjacent floor and roof construction in accordance with details on drawings.
- The Contractor shall verify all openings below lintels indicated are adequate to accept doorframes, louvers, etc. as shown on the Architectural and Mechanical Drawings. Notify the Architect and Structural Engineer of any discrepancies prior to lintel installation.
- No openings shall be placed above any lintel within a height less than or equal to the width of the clear opening below the lintel, unless specifically shown or approved by the Structural Engineer.
- All masonry work to be executed in cold weather shall be in conformance with the recommendations for cold weather construction found in the Building Code Requirements for Masonry Structures (TMS 402-2016) and shall be constructed in accordance with the Specifications for Masonry Structures (TMS 602-2016) with the following additions: For all conditions when temperatures fall below 40 degrees F, the temperature of the newly laid masonry or newly grouted masonry shall be maintained above 32 degrees F for a minimum of 24 hours using the methods described in ACI 530.1.
- The Testing and Inspection Agency shall monitor the proportioning, mixing, and consistency of mortar and grout; the placement of mortar, grout, and masonry units; and the placement of reinforcing steel for compliance with the Contract Documents.
- All wall sections and piers less than two square feet in cross-sectional area shall be fully grouted.
- Provide vertical masonry control joints at maximum 25'-0" on center unless detailed on Architectural drawings, coordinate locations with Architect.

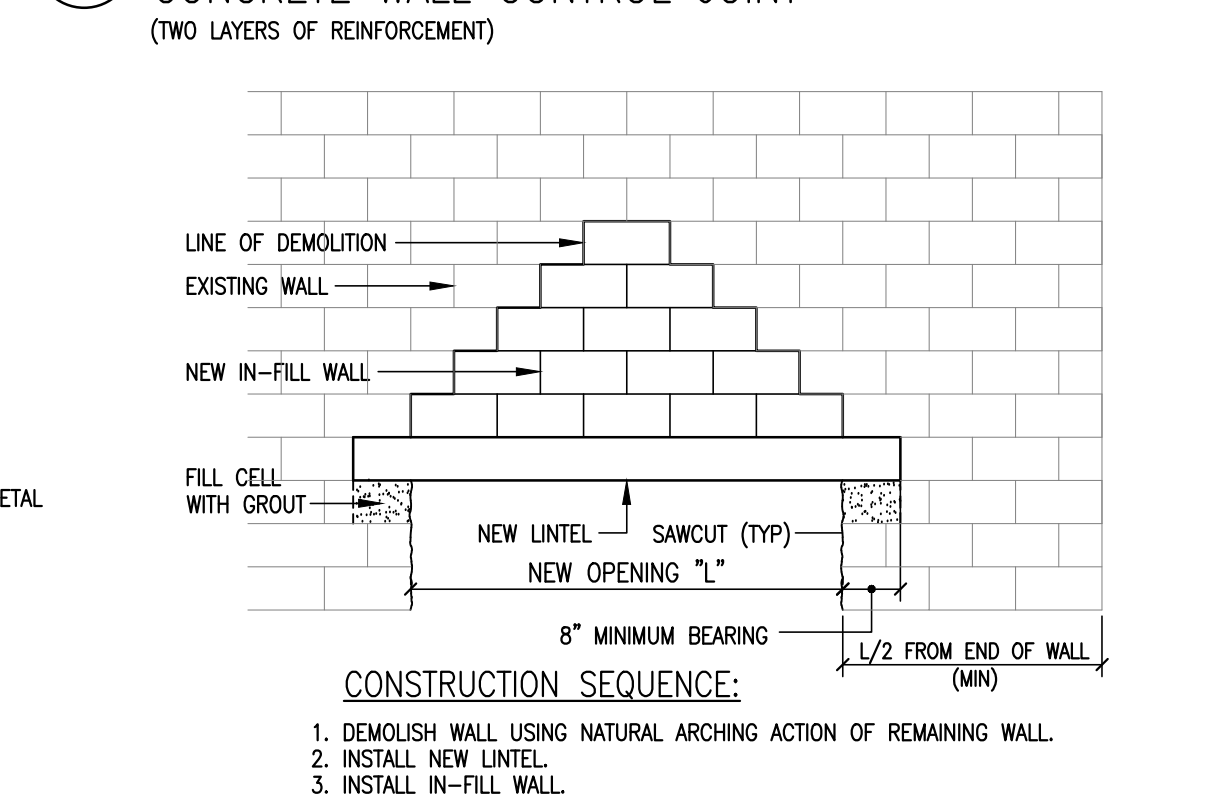
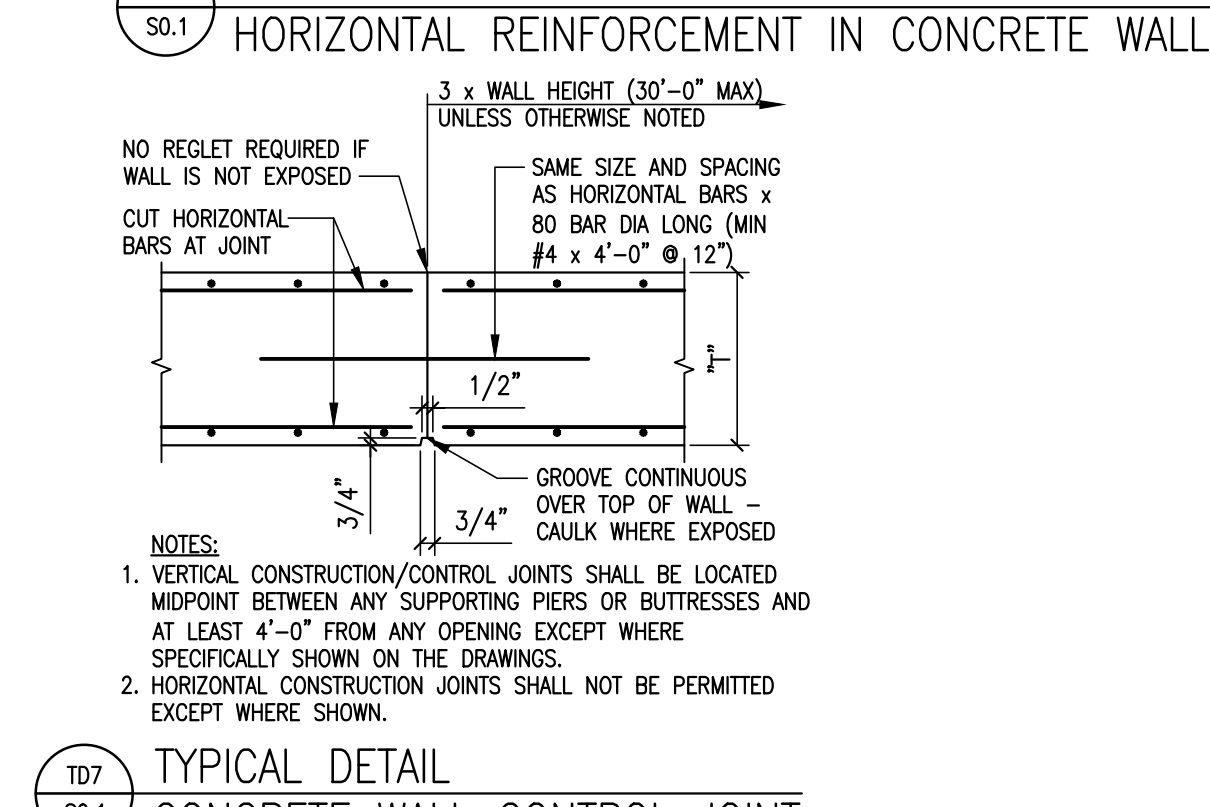
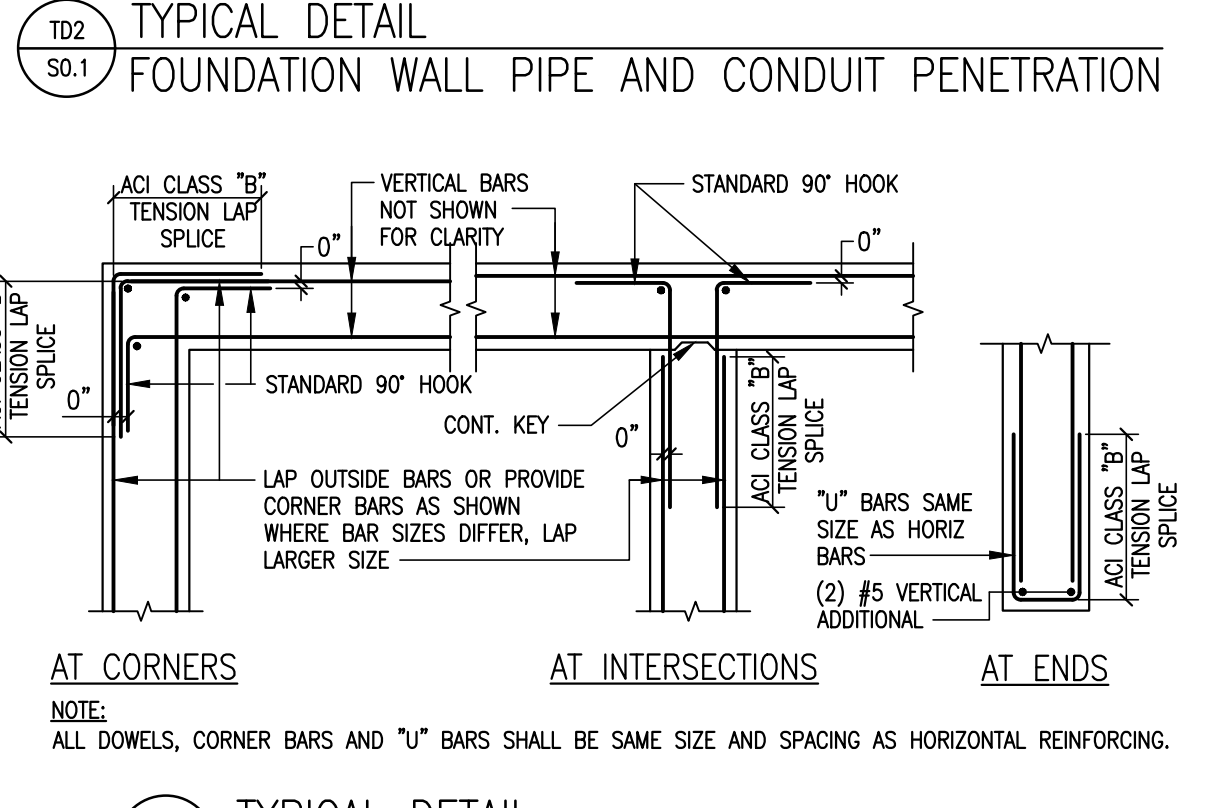
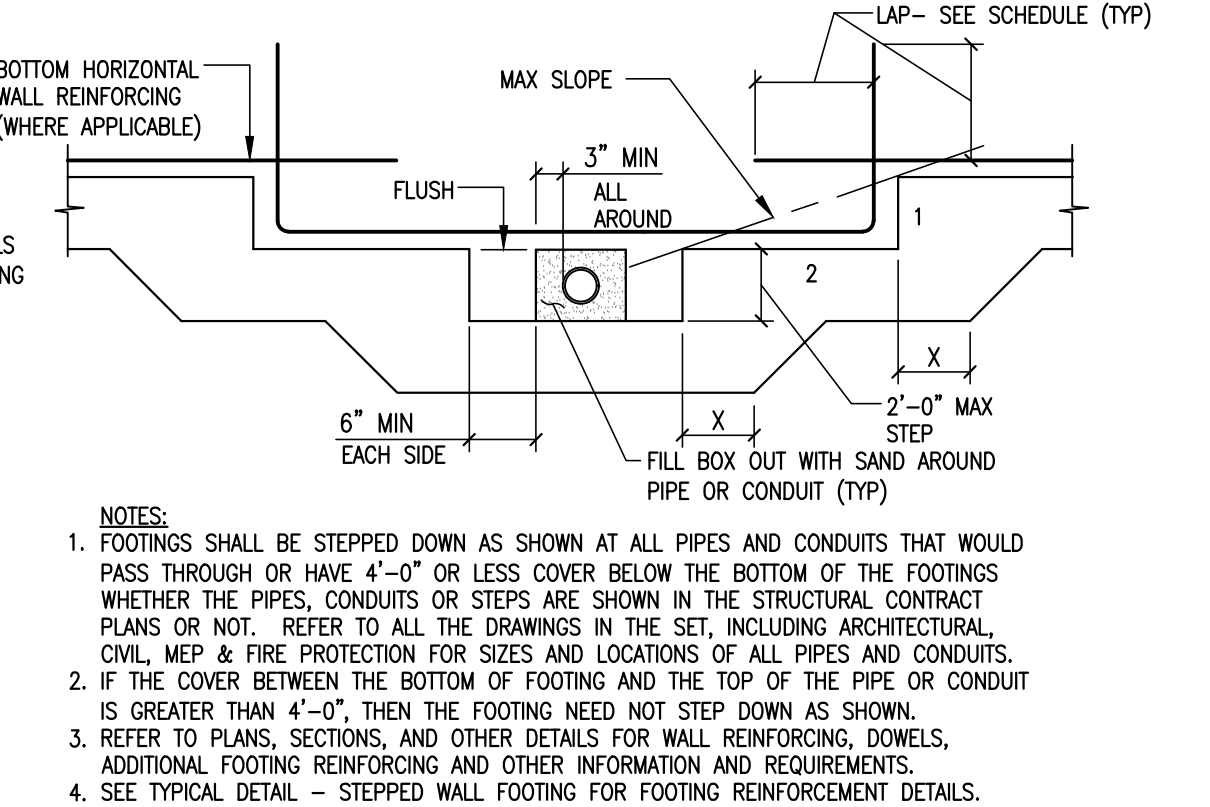
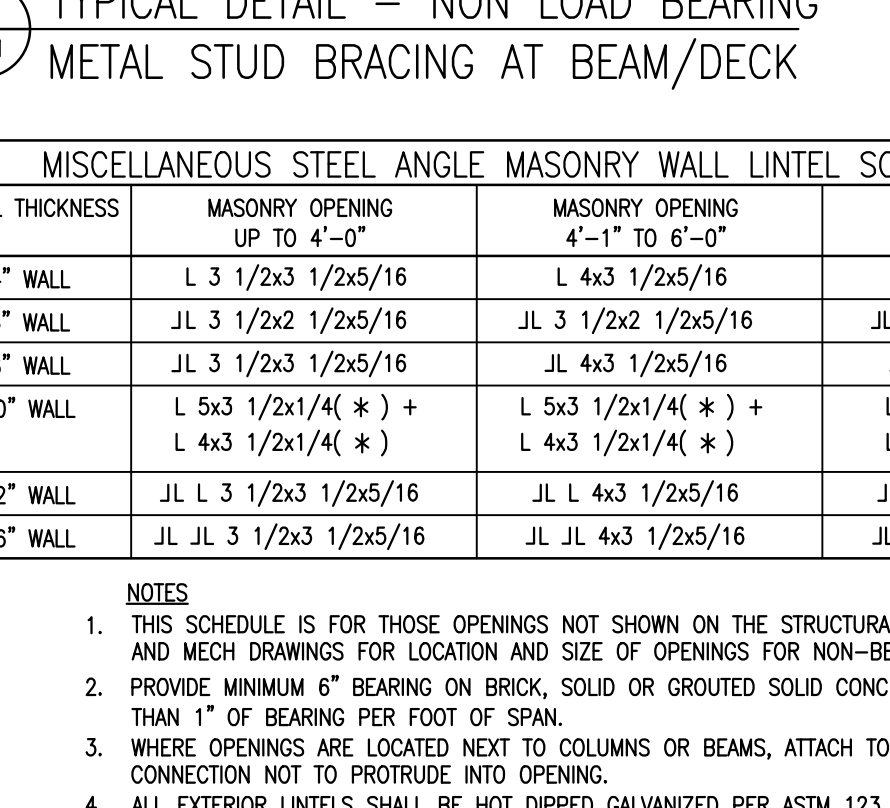
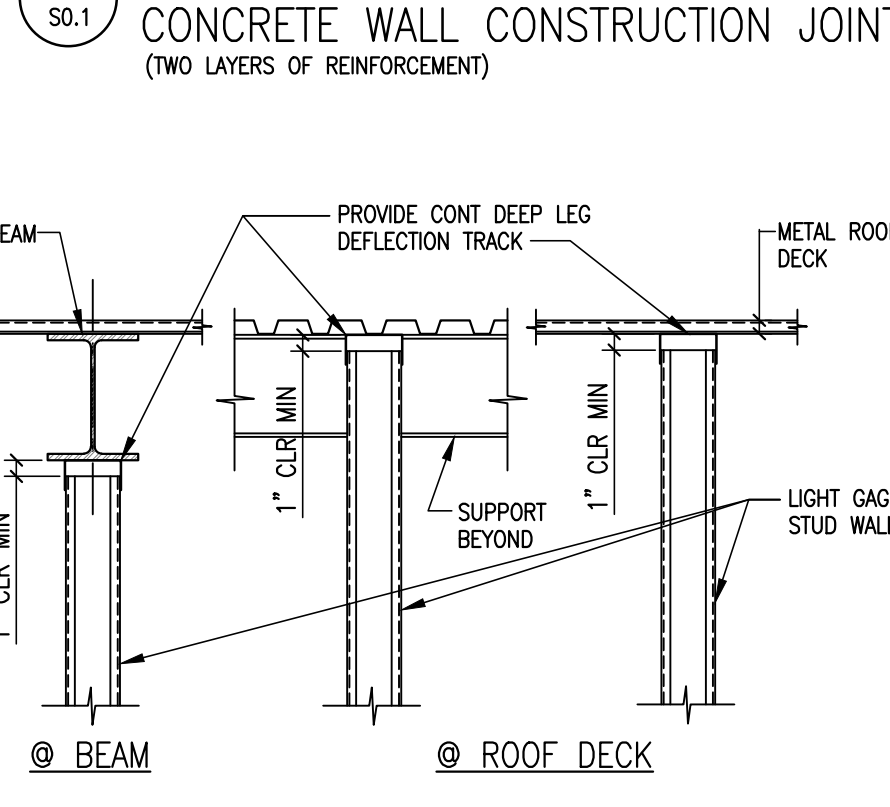
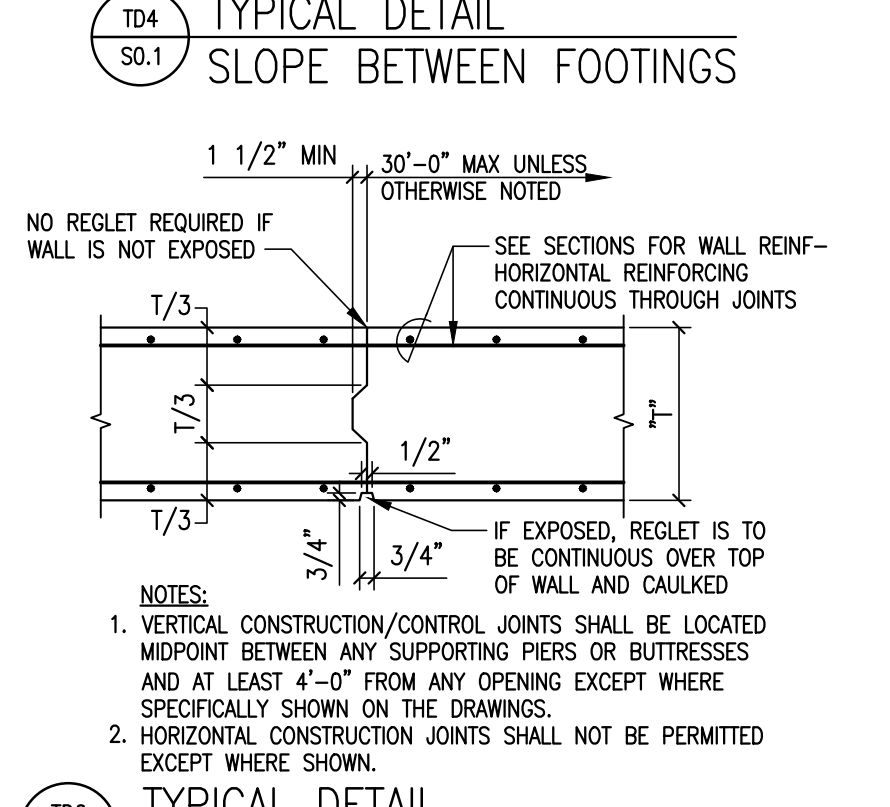
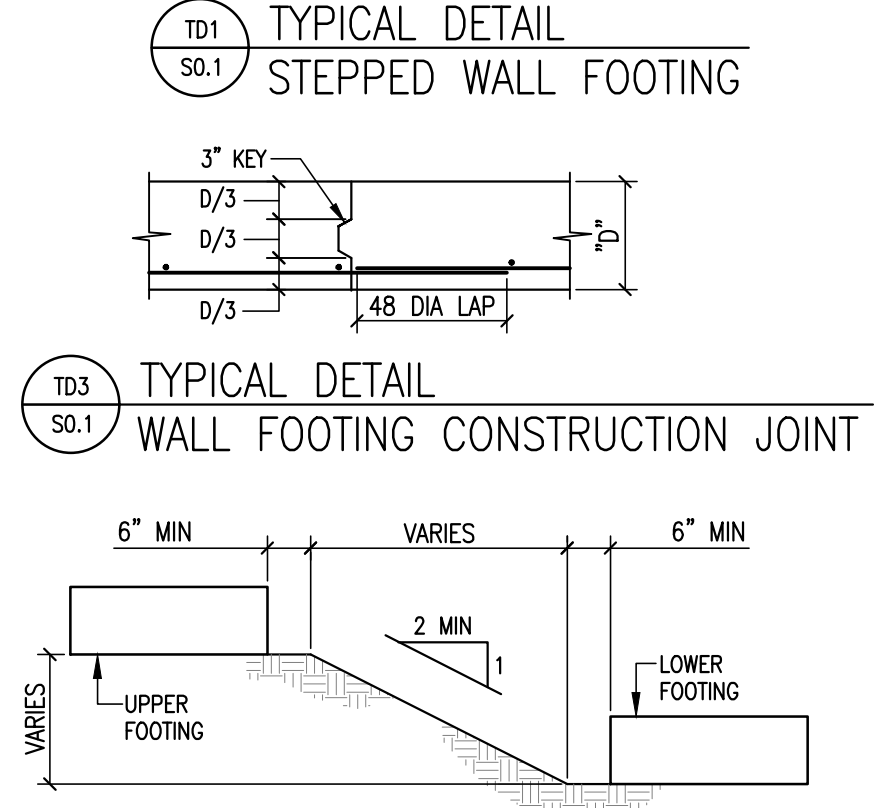
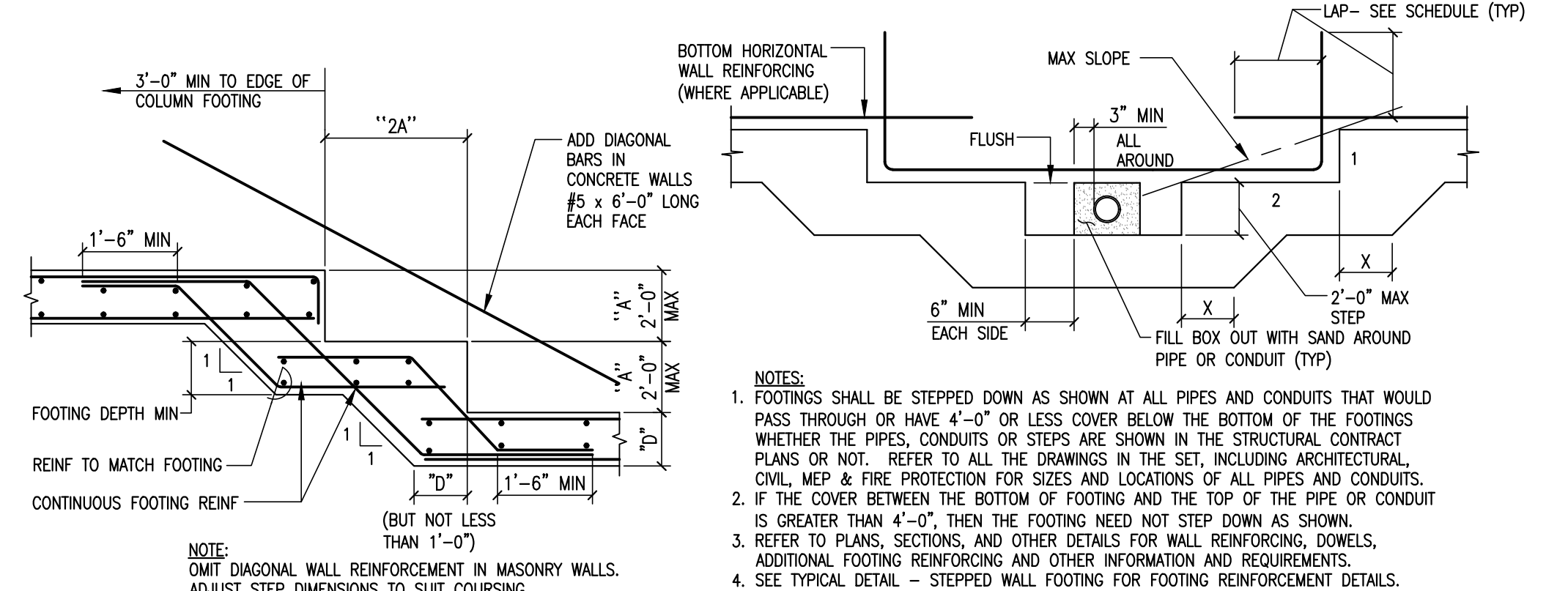
6.0 LIGHT GAGE METAL FRAMING

- Light gage metal framing shall be designed and detailed according with "Specification for the Design of Cold-Formed Steel Structural Members - AISI S100-16", American Iron and Steel Institute.
- All stud and/or joist framing members shall be of the type, size, and gage as required by design. Size and gage shall not be less than shown on drawings.
- The first set of numbers indicate the web size (nominal member depth):
 - 6" member = 600
 - 3-5/8" member = 362
- Flange Designations:
 - C stud = 15/8" Flange S162
 - C-Stud = 2" Flange S200
 - C-Stud = 2 1/2" Flange S250
 - Runner Track = 1 1/8" Leg T125
- The last two numbers indicate the steel thickness:
 - Gauge Design Thickness Minimum Thickness SSM
 - 20 0.0346" 0.0329" 33 mils
 - 18 0.0451" 0.0428" 43 mils
 - 16 0.0566" 0.0538" 54 mils
 - 14 0.0713" 0.0677" 68 mils
 - 12 0.1017" 0.0966" 97 mils
- All galvanized studs, joists, track, bridging, and accessories, 12, 14, and 16 gage, shall be formed from steel that corresponds to the requirements of ASTM A563, Grade 50, with a minimum yield of 50,000 psi.
- All galvanized studs, joist, track, bridging and accessories, 18 and 20 gage, shall be formed from steel that corresponds to the requirements of ASTM A563, Grade 33, with a minimum yield of 33,000 psi.
- All studs, joist, and accessories, shall be formed from steel having a G60 galvanized coating in conformance with ASTM C955.
- Prior to prefabrication of framing, the Contractor shall submit signed and sealed fabrication and erection drawings to the Architect for review. Include with the drawings cross sections, plans and/or elevations depicting components types and locations for each unique framing application, connection details depicting fastener type, and quantity. Submit signed and sealed Calculations prepared by an Engineer registered in the Project's jurisdiction.
- Framing components may be preassembled into panels prior to erecting. Prefabricated panels shall be square with components attached in a manner as to prevent racking and to minimize distortion while lifting and transporting.
- Cutting of steel framing shall be by saw, shear or plasma cutting equipment only.
- Temporary bracing shall be provided until erection is complete and all attached adjacent framing is complete.
- Insulation shall be placed in components inaccessible to the insulation contractor after their installation.
- Splices in axially loaded studs are not permitted.
- Where splicing of track is necessary between stud spacing, a piece of stud shall be placed between adjacent tracks and fastened by welds or screws to each side of the track, each end.
- Studs shall be plumbed, aligned, and securely attached to the flanges or webs of both upper and lower tracks.
- Axially loaded studs shall be installed in a manner which will assure that ends of the studs are positioned against the inside track web, prior to stud and track attachment. Studs shall be squarely cut and positively clamped and positioned until properly fastened.
- Wall stud bridging shall be attached in a manner to prevent stud rotation. Bridging, of the type and spacing shown on the Contract or Shop Drawings shall be installed prior to loading. Bridging spacing shall be as required by design but shall not exceed 5'-0" on center.
- Provision for structure vertical movement shall be provided where indicated on the plans using vertical slide clips or other means. Frame both sides of expansion joints with separate studs; do not bridge the expansion joints with stud system components.
- Framed wall openings shall include headers and supporting studs as shown on the plans and shop drawings. Provide additional jock and king studs as required at all openings which exceed 24 inches.
- Joists shall be located directly over bearing studs or a load distribution member to be provided at the top track.
- Provide an additional joist under parallel, non-load bearing partitions that run more than 1/3 the span of the joist.
- Connections shall be by welding, riveting, bolting or other approved fastening devices or methods providing positive attachment and resistance to loosening. Fasteners shall be of compatible material.
- Welded connections shall be performed in accordance with AWS Specification for Welding Sheet Steel in Structures, D1.4.
- Contractor shall refer to installation instructions published by the screw manufacturer and ASTM C954 for minimum spacing and edge distances requirements and torque requirements.
- Exterior stud walls directly resisting the lateral and/or gravity forces as well as curtain wall systems and related connections: Designs shall take into account all vertical and lateral loads required by applicable building codes. Back up system and curtain wall shall be designed for a maximum deflection of 1/600 of the span, or 3/8", whichever is less, at the applicable design wind load without the code applied reduction factors.

7.0 STRUCTURE DEMOLITION GENERAL NOTES

- Conduct Predemolition Conference at Project site.
- Inspect and discuss condition of construction to be demolished.
- Review structural load limitations of existing structure.
- Review and finalize demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
- Review requirements of work performed by other trades that rely on substrates exposed by demolition operations.
- Review areas where existing construction is to remain and requires protection.
- Schedule of Demolition Activities: Indicate the following: Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
- Predemolition Photographs or Video: Submit before Work begins.
- Notify Architect/Engineer of discrepancies between existing conditions and Drawings before proceeding with demolition.
- Verify that utilities have been disconnected and capped before starting demolition operations.
- Survey existing conditions and correlate with requirements indicated to determine extent of demolition required.
- 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.
- Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
- 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 demolished.
- Site Access and Temporary Controls: Conduct demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- Temporary Shoring: Provide temporary shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- Strengthen or add new supports when required during progress of demolition.
- 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:
 - Proceed with demolition systematically, from higher to lower level. Complete demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 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 proper fire-suppression devices during flame-cutting operations.

- Maintain adequate ventilation when using cutting torches.
- Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
- Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
- Locate demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- Dispose of demolished items and materials promptly.
- Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly firm openings to dimensions indicated.
- Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- Existing foundations below elements being removed: Remove existing footings, foundation walls and/or piers minimum 8' below proposed finished floor level.
- Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.
- Do not allow demolished materials to accumulate on-site.
- Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- Burning: Do not burn demolished materials.
- Dispose: Transport demolished materials off Owner's property and legally dispose of them.
- Clear adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before demolition operations begin.



WALL THICKNESS	MASONRY OPENING UP TO 4'-0"	MASONRY OPENING 4'-1" TO 6'-0"	MASONRY OPENING 6'-1" TO 8'-0"
4" WALL	L 3 1/2x3 1/2x5/16	L 4x3 1/2x5/16	L 6x3 1/2x5/16
6" WALL	JL 3 1/2x2 1/2x5/16	JL 3 1/2x2 1/2x5/16	JL 3 1/2x2 1/2x3/8
8" WALL	JL 3 1/2x3 1/2x5/16	JL 4x3 1/2x5/16	JL 6x3 1/2x5/16
10" WALL	L 5x3 1/2x1/4 (*) + L 4x3 1/2x1/4 (*)	L 5x3 1/2x1/4 (*) + L 4x3 1/2x1/4 (*)	L 5x5x5/16 (*) + L 4x4x5/16 (*)
12" WALL	JL L 3 1/2x3 1/2x5/16	JL L 4x3 1/2x5/16	JL L 6x3 1/2x5/16
16" WALL	JL JL 3 1/2x3 1/2x5/16	JL JL 4x3 1/2x5/16	JL JL 6x3 1/2x5/16

MASONRY OPENING	LINTEL SIZE	REMARKS
2'-0" TO 6'-0"	WT 7 x 11	
6'-1" TO 8'-0"	WT 8 x 13	

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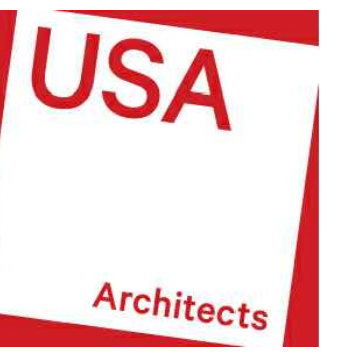
DEMOLITION
OF
COURTHOUSE PARKING DECK
FOR THE
COUNTY OF UNION
CALDWELL PLACE & ELIZABETHOWN PLAZA
ELIZABETH, NJ 07201

Scale	AS NOTED	USA Project No.	2023-090
Drawing Date	10.10.2023	Drawing No.	S0.1
Drawn By	MPP	Checked By	SWM

Drawing Title
GENERAL NOTES AND TYPICAL DETAILS

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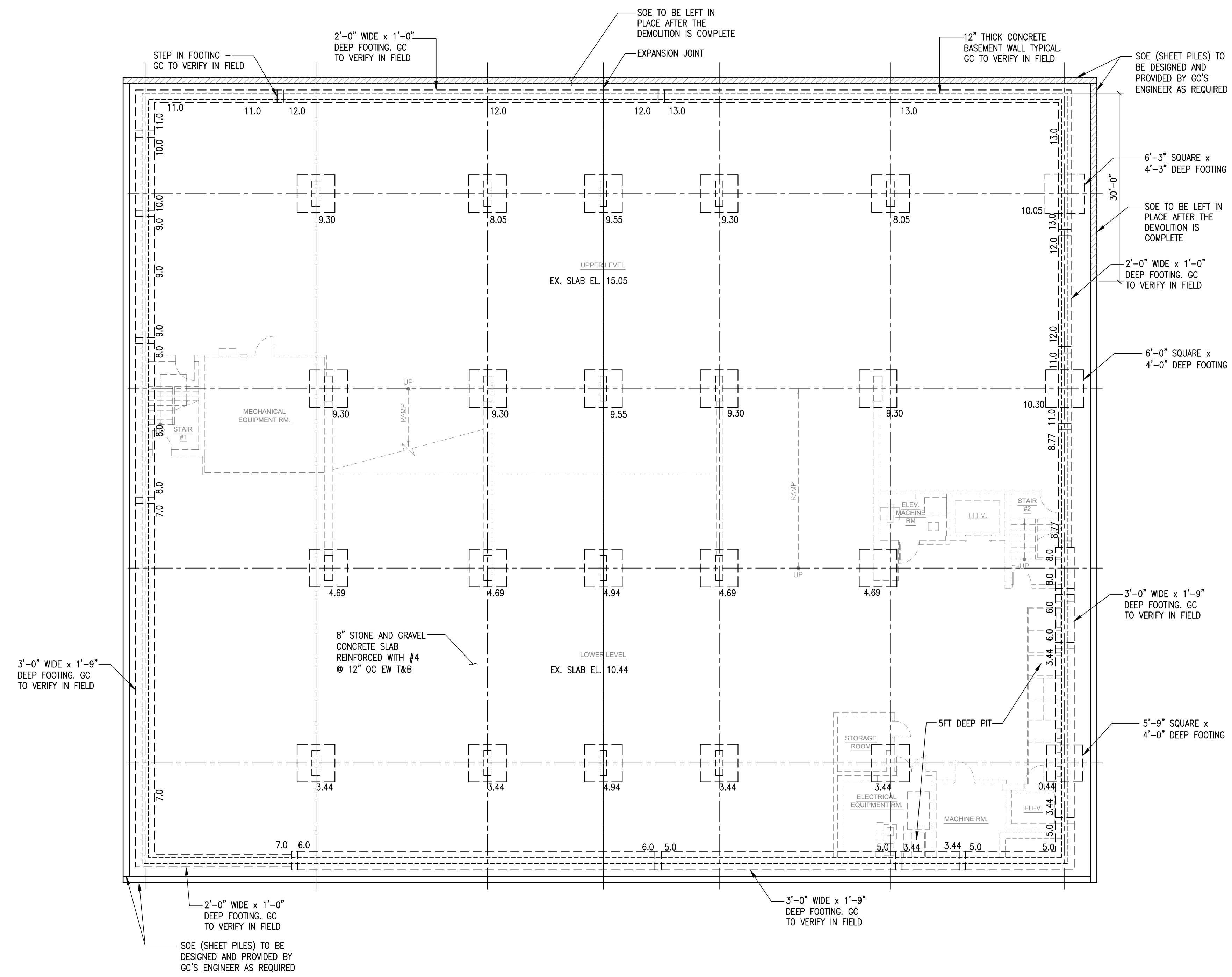
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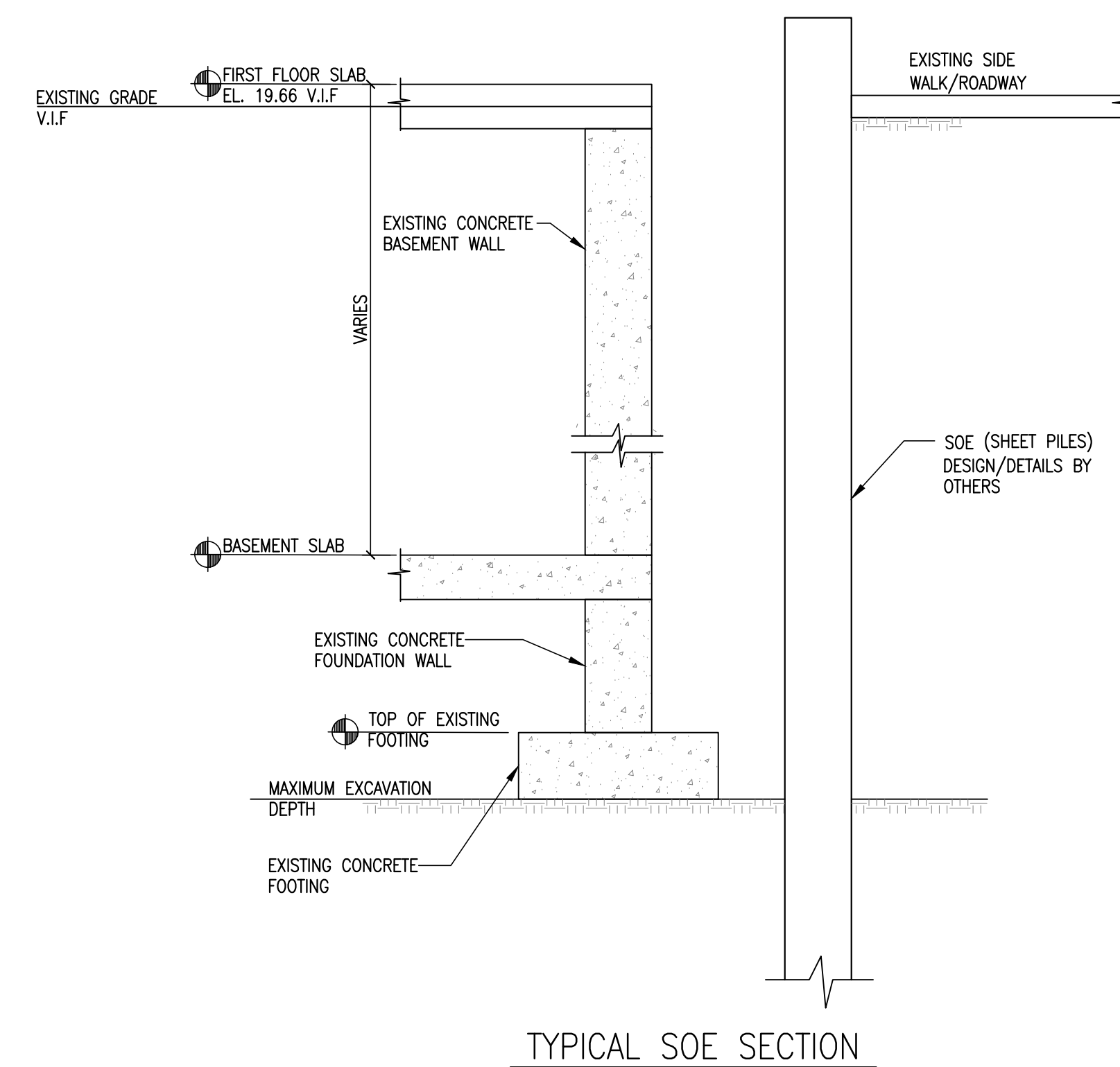
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EXISTING GARAGE BASEMENT PLAN

SCALE: N.T.S.
ALL ELEVATIONS SHOWN ON THIS PLAN ARE TOP OF SLAB/FOOTING ELEVATION
GC TO VERIFY IN FIELD ALL ELEVATIONS



GENERAL STRUCTURAL AND CONSTRUCTION NOTES

- 1.0. GENERAL
- ALL DIMENSIONS & FIELD CONDITIONS SHALL BE VERIFIED BY CONTRACTOR PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE PROFESSIONAL OF ANY DISCREPANCIES.
 - ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2018 (IBC 2018).
 - THESE GENERAL NOTES SUPPLEMENT THE PROJECT SPECIFICATIONS. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 - IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES AND DETAILS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.
 - WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED.
 - JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
 - THE CONTRACTOR SHALL PROVIDE FOR DEWATERING AS REQUIRED DURING EXCAVATION AND CONSTRUCTION.
 - THE CONTRACTOR SHALL VERIFY AND/OR ESTABLISH ALL EXISTING CONDITIONS AND DIMENSIONS AT THE SITE.
 - IF THE EXISTING FIELD CONDITIONS DO NOT PERMIT THE INSTALLATION OF THE WORK IN ACCORDANCE WITH THE DETAILS SHOWN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND PROVIDE A SKETCH OF THE CONDITION WITH HIS PROPOSED MODIFICATION OF THE DETAILS GIVEN ON THE CONTRACT DOCUMENTS. DO NOT COMMENCE WORK UNTIL CONDITION IS RESOLVED AND MODIFICATION IS APPROVED BY THE ENGINEER.
 - NO BLASTING SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL.
 - METHODS, PROCEDURES AND THE SEQUENCES (OTHER THAN THAT NOTED ON THE DRAWINGS) OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTION TO MAINTAIN AND INSURE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION AND COORDINATION OF WORK WITH MECHANICAL AND ELECTRICAL WORK.

EXCAVATION SUPPORT AND PROTECTION

- SHEETING, SHORING AND ASSOCIATED EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH OSHA GUIDELINES.
- PROTECT STRUCTURES, UTILITIES, SIDEWALK, PAVEMENTS, AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, AFSHOOT AND OTHER HAZARDS THAT COULD DEVELOP DURING EXCAVATION SUPPORT AND PROTECTION SYSTEM OPERATIONS.
- SHORE, SUPPORT AND PROTECT UTILITIES ENCOUNTERED.
- INSTALL EXCAVATION SUPPORT AND PROTECTION SYSTEMS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT AND USED FACILITIES.
- MONITOR EXCAVATION SUPPORT AND PROTECTION SYSTEMS DAILY DURING EXCAVATION PROGRESS AND FOR AS LONG AS EXCAVATION REMAINS OPEN. PROMPTLY CORRECT BULGES, BREAKAGE, OR OTHER EVIDENCE OF MOVEMENT TO ENSURE THAT EXCAVATION SUPPORT AND PROTECTION SYSTEMS REMAIN STABLE.

SPECIAL INSPECTIONS:
THE FOLLOWING IBC 2018, NJ SPECIAL INSPECTIONS ARE REQUIRED (CHAPTER 17)

TABLE 1705.2 REQUIRED SPECIAL INSPECTIONS FOR STRUCTURAL STEEL
THE STEEL FABRICATOR SHALL SUPPLY MILL CERTIFICATES FOR THE STRUCTURAL STEEL ELEMENTS. PERIODIC INSPECTION OF STRUCTURAL WELDS IS REQUIRED.

TABLE 1705.6 REQUIRED SPECIAL INSPECTIONS OF SOILS
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL (PERIODIC).

TABLE 1705.8 REQUIRED SPECIAL INSPECTIONS AND TESTS OF CAST-IN PLACE DEEP FOUNDATION ELEMENTS. INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT (CONTINUOUS). VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, LENGTHS, EMBEDMENTS AND ADEQUATE END BEARING STRATA. RECORD GROUT VOLUMES.

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CALDWELL PLACE & ELIZABETHTOWN PLAZA
ELIZABETH, NJ 07201

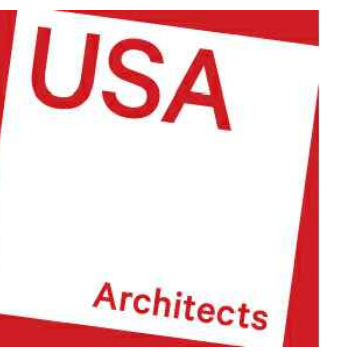
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No. Date Issue or Revision

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EXISTING GARAGE BASEMENT PLAN, NOTES AND DETAIL	
Scale	USA Project No.
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Drawing Date	Drawing No.
10.10.2023	
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MPP	SWM
S1.0	



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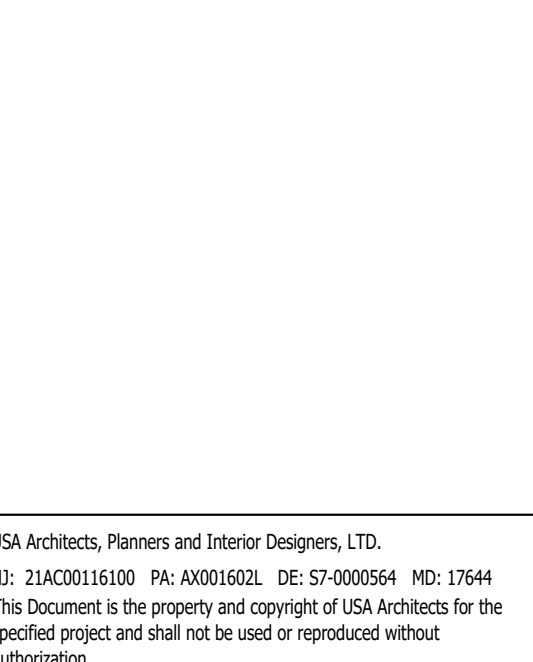
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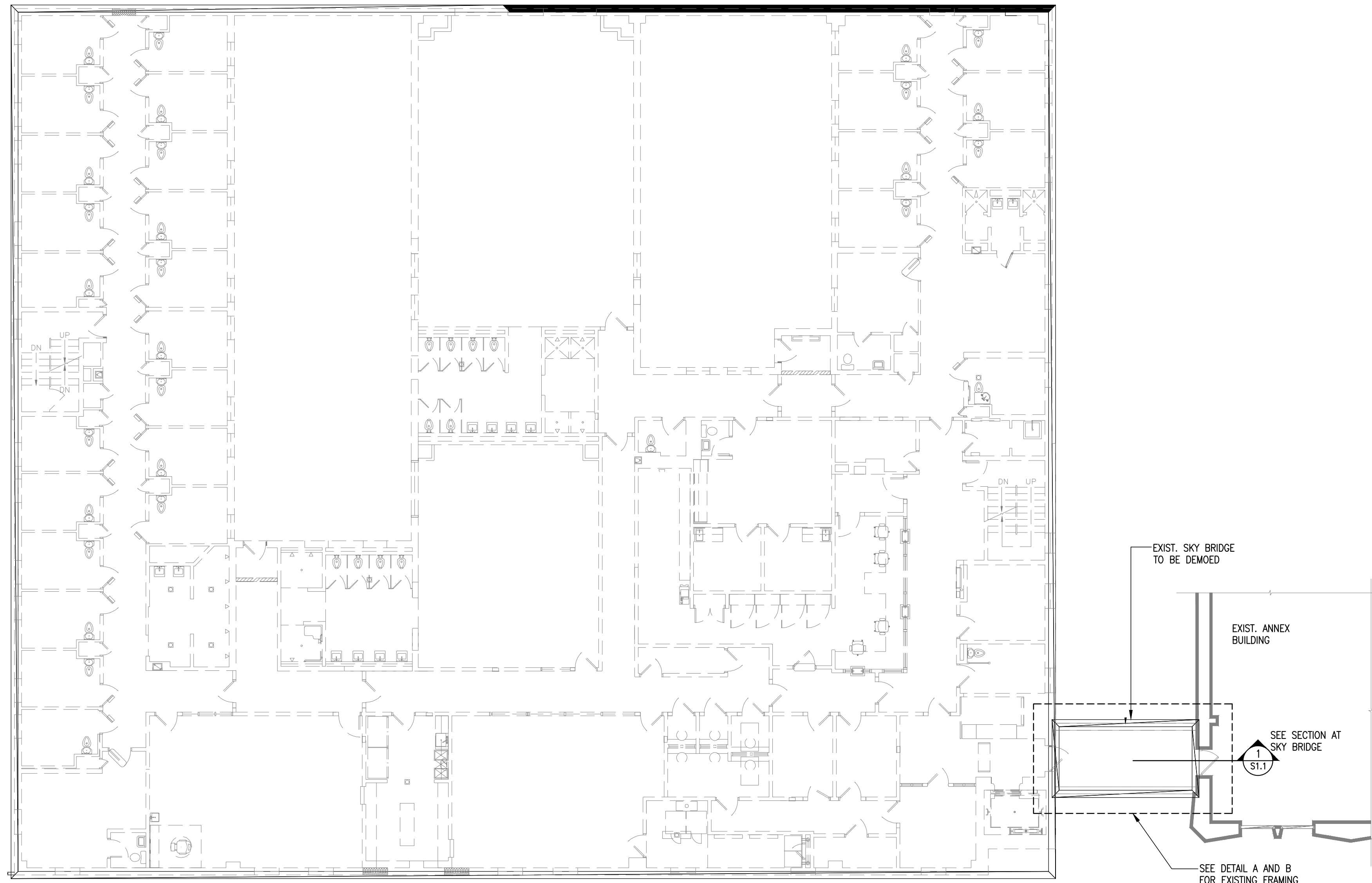
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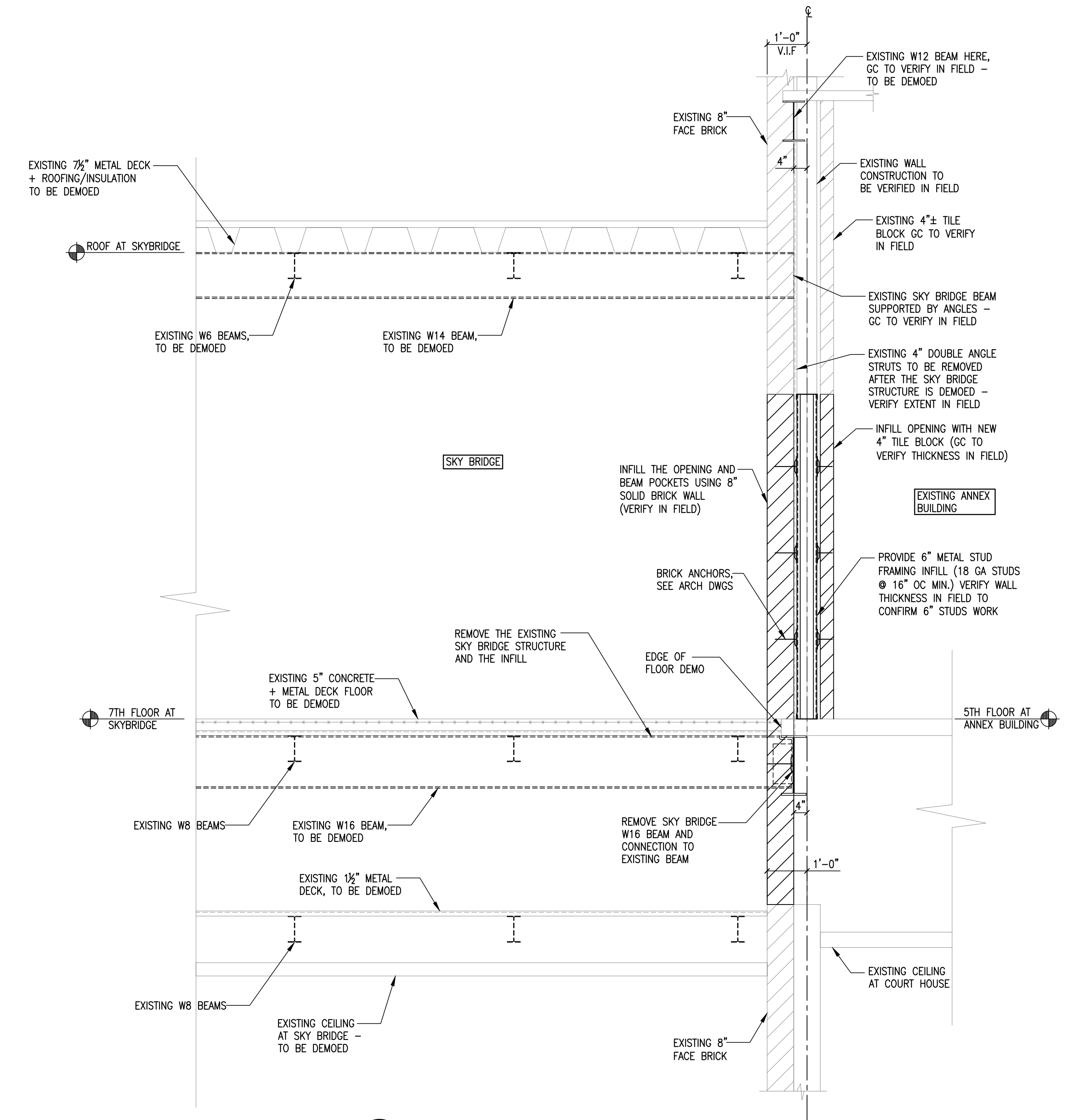
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Drawing Title	
DEMOLITION PLAN/DETAILS AND SITE RETAINING WALL DETAIL	
Scale	USA Project No.
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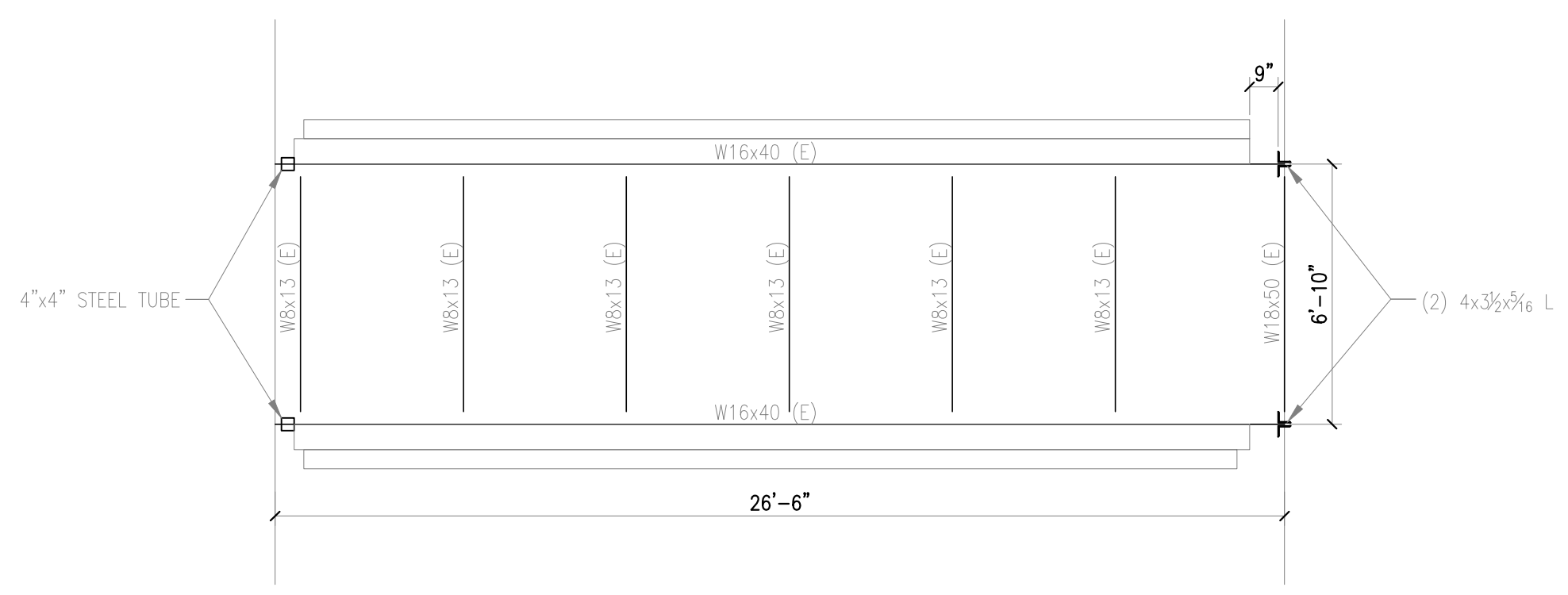
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EXISTING 7TH FLOOR GARAGE DEMO PLAN
SCALE: N.T.S.

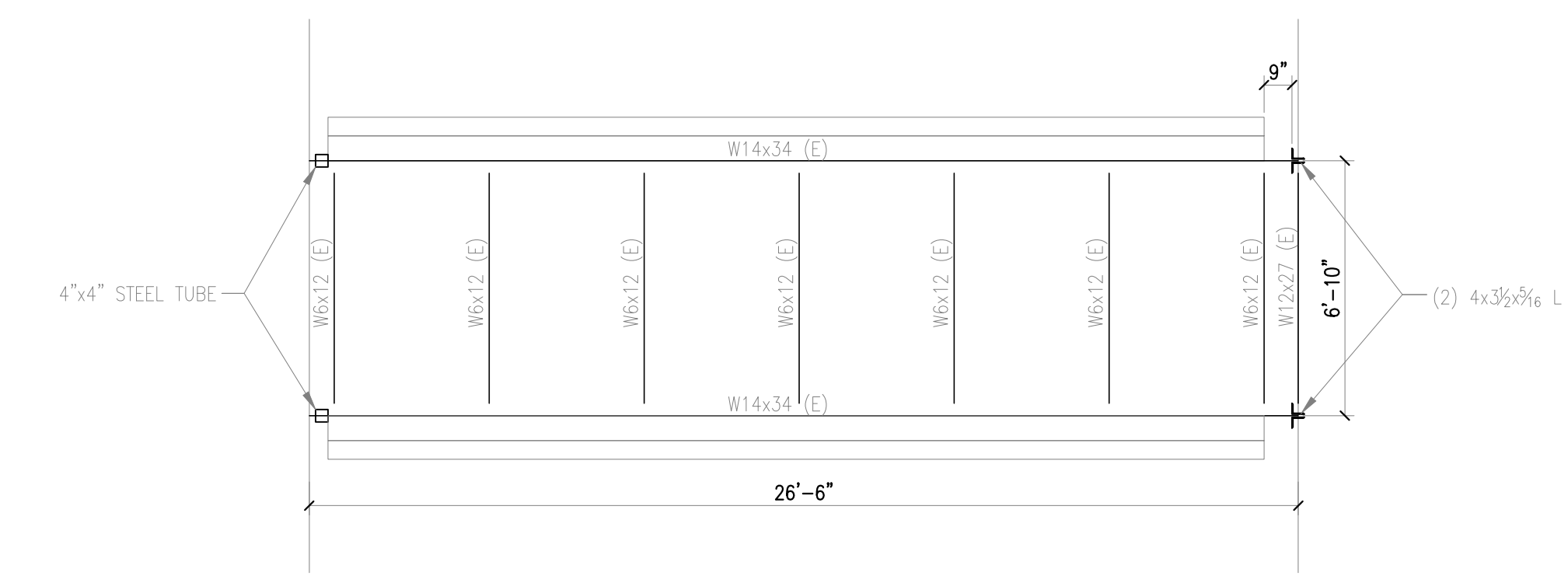


1 BUILDING SECTION - SKY BRIDGE
SCALE: 1/2"=1'-0"



DETAIL A - SEVENTH FLOOR SKY BRIDGE FRAMING
SCALE: 1/2"=1'-0"

NOTE:
1. (E) - DENOTES EXISTING STEEL
2. ALL SKYBRIDGE FRAMING TO BE DEMOED.



DETAIL B - SKY BRIDGE ROOF FRAMING
SCALE: 1/2"=1'-0"

NOTE:
1. (E) - DENOTES EXISTING STEEL
2. ALL SKYBRIDGE FRAMING TO BE DEMOED.



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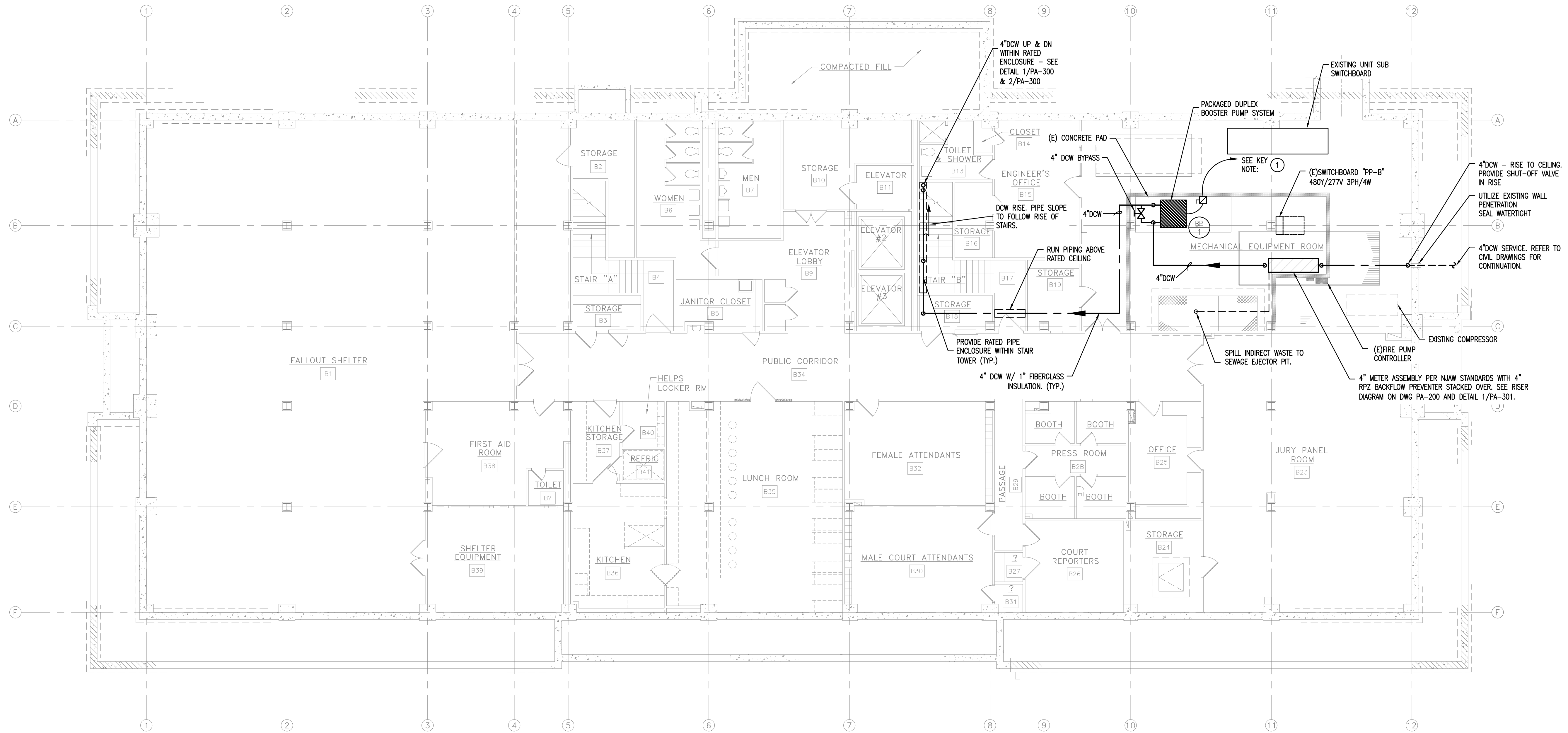
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1 PLUMBING BASEMENT FLOOR PLAN
PA-100 SCALE: 1/8"=1'-0"
SCALE BAR: 1/8"=1'-0"

NEW WORK ELECTRICAL NOTES:

- 1. GENERAL NOTES:**
- CONTRACTOR SHALL INSTALL ALL (N) EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND SHALL MAINTAIN ALL CLEARANCES AS NOTED WITHIN THE WRITTEN INSTRUCTIONS.
 - ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2020 EDITION OF THE NATIONAL ELECTRICAL CODE.
 - ALL POWER SHUT DOWNS MUST BE COORDINATED WITH THE PROPERTY/OWNER'S REPRESENTATIVE.
 - THE ELECTRICAL CONTRACTOR SHALL MAKE AN ON SITE INSPECTION TO DETERMINE THE FULL SCOPE OF WORK AND WORKING CONDITIONS BEFORE SUBMITTING A PROPOSAL.
 - ALL CIRCUIT BREAKERS SERVING HVAC EQUIPMENT SHALL BE UL LISTED AS "MCR".
 - THE DRAWINGS ARE DIAGNOSTIC. EXACT LOCATION OF EQUIPMENT, WIRING AND RACEWAYS SHALL BE DETERMINED BY CONTRACTOR SUBJECT TO ARCHITECT APPROVAL.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ELECTRICAL CHARACTERISTICS OF ALL NEW EQUIPMENT, MOTORS, ETC. BEFORE INSTALLING CABLING AND RACEWAY. IF THERE ARE ANY DISCREPANCIES BETWEEN THE ACTUAL RATING OF EQUIPMENT AT THE SITE AND THE DRAWINGS, THEN THE ENGINEER SHALL BE NOTIFIED.
 - ALL PANELS, WIRING DEVICES, BOXES, AND ENCLOSURES LOCATED INDOORS SHALL BE NEMA 1.
 - THE ELECTRICAL CONTRACTOR TO PROVIDE MOUNTING SUPPORTS FOR ALL DISCONNECT SWITCHES MOUNTED ON ROOF. USE P1000 UNISTRUT FOR ALL INDOOR SUPPORTS AND GALVANIZED P1000 UNISTRUT FOR ALL OUTDOOR SUPPORTS.
 - ALL RACEWAYS PENETRATING FIRE RATED PARTITIONS, WALLS, AND CEILINGS SHALL BE SEALED USING APPROVED FIRE RATED SEALANT TO MATCH THE REQUIRED WALL FIRE RATING.
 - THE ELECTRICAL CONTRACTOR SHALL SECURE FROM OTHER CONTRACTORS ON THE PROJECT: SHOP DRAWINGS TO VERIFY CHARACTERISTICS OF ALL EQUIPMENT TO BE WIRED. IF THE CONTRACTOR FINDS DISCREPANCIES BETWEEN THE SHOP DRAWINGS AND THE ELECTRICAL PLANS, THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE ENGINEER PROMPTLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTIONS TO THE ELECTRICAL INSTALLATION IF THE DRAWING REVIEW IS NOT COMPLETED BY THE CONTRACTOR.
 - THE CONTRACTOR SHALL SUBMIT TO THE OWNER: CERTIFICATES OF INSPECTION FOR THE ELECTRICAL INSTALLATION FROM AN APPROVED INSPECTION AGENCY UPON COMPLETION OF ELECTRICAL WORK.

NEW WORK ELECTRICAL NOTES:

- GENERAL NOTES CONTINUED:**
- THE ELECTRICAL SYSTEM AFFECTED BY THIS WORK SHALL BE TESTED FOR PROPER GROUNDING AND OPERATION. TEST HALL VERIFY THAT THE SYSTEM HAS NO SHORT CIRCUITS, OPENS, OVERLOADS, OR PANEL IMBALANCES. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND TEST INSTRUMENTS. ALL EQUIPMENT AND WIRING SYSTEMS SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
 - ALL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATION MAINTENANCE, AND REPAIR. MINOR DEVIATIONS FROM THE PLANS MAY BE MADE TO ACCOMPLISH THIS, SUBJECT TO THE APPROVAL OF THE ENGINEER.
 - THE ELECTRICAL CONTRACTOR SHALL USE MAXIMUM OF 6' OF FLEXIBLE CONDUIT FOR EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT, AND FOR ALL MOTORS. USE LIQUID TIGHT FLEXIBLE CONDUIT IN WET OR DAMP LOCATIONS. INSTALL SEPARATE GROUND CONDUCTOR ACROSS FLEXIBLE CONNECTIONS.
 - ALL WIRING SHALL BE COPPER CONDUCTOR WITH 600 VOLT TYPE THHN, OR THWN INSULATION IN CONDUIT. THE MINIMUM SIZE WIRE FOR POWER CIRCUITS SHALL BE #12 AWG. SOLID CONDUCTORS SHALL BE USED FOR NUMBER 10 AND 12; STRANDED CONDUCTORS SHALL BE USED FOR NUMBER 8 AND LARGER. THE CONTRACTOR MAY USE METAL CLAD TYPE "MC" WHERE ALLOWED BY THE NATIONAL ELECTRICAL CODE AND APPROVED FOR USE BY THE AUTHORITIES HAVING JURISDICTION.
 - ALL MATERIALS AND EQUIPMENT FURNISHED FOR THIS PROJECT SHALL BE NEW, LISTED, AND APPROVED BY UL.
 - THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, INSPECTIONS, LICENSES AND PAY UTILITY COMPANY FEES.
 - ALL FUSED AND NON-FUSED DISCONNECT SWITCHES SHALL HAVE: 600 VOLT RATING FOR 480 VOLT CIRCUITS. SIZE FUSES TO COMPLY WITH NAMEPLATE RATING OF EQUIPMENT SERVED.
- 2. NEW WORK KEYED NOTES:**
- GENERAL:** NEW WORK NOTES ARE INDICATED WITH THE FOLLOWING SYMBOL (○) AND ARE NUMBERED AS FOLLOWS:
- THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL (1)30/3 POLE CIRCUIT BREAKER IN EXISTING 480/277V, 400 AMP ITE SWITCHBOARD PP-B LOCATED IN MECHANICAL EQUIPMENT ROOM FOR PACKAGED BOOSTER PUMP. PROVIDE AND INSTALL 3/10 & 1/10 G - 3/4" C (EMT) FROM PANEL PP-B TO NEW BOOSTER PUMP LOCATION. NEW CIRCUIT BREAKER SHALL MATCH EXISTING TYPE AND RATING AND BE MARK RATED. REFER TO MECHANICAL APPROVED SHOP DRAWINGS FOR ADDITIONAL INFORMATION. CONTRACTOR SHALL VERIFY IF THE BOOSTER PUMP HOA CAN BE UTILIZED FOR LOCAL MEANS OF DISCONNECT AND PROVIDE ADDITIONAL 30 A DISCONNECT AS REQUIRED IF NECESSARY.

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PLUMBING BASEMENT FLOOR PLAN	
Scale	USA Project No.
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Drawing Date	Drawing No.
10.10.2023	PA-100
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CEG	CEG

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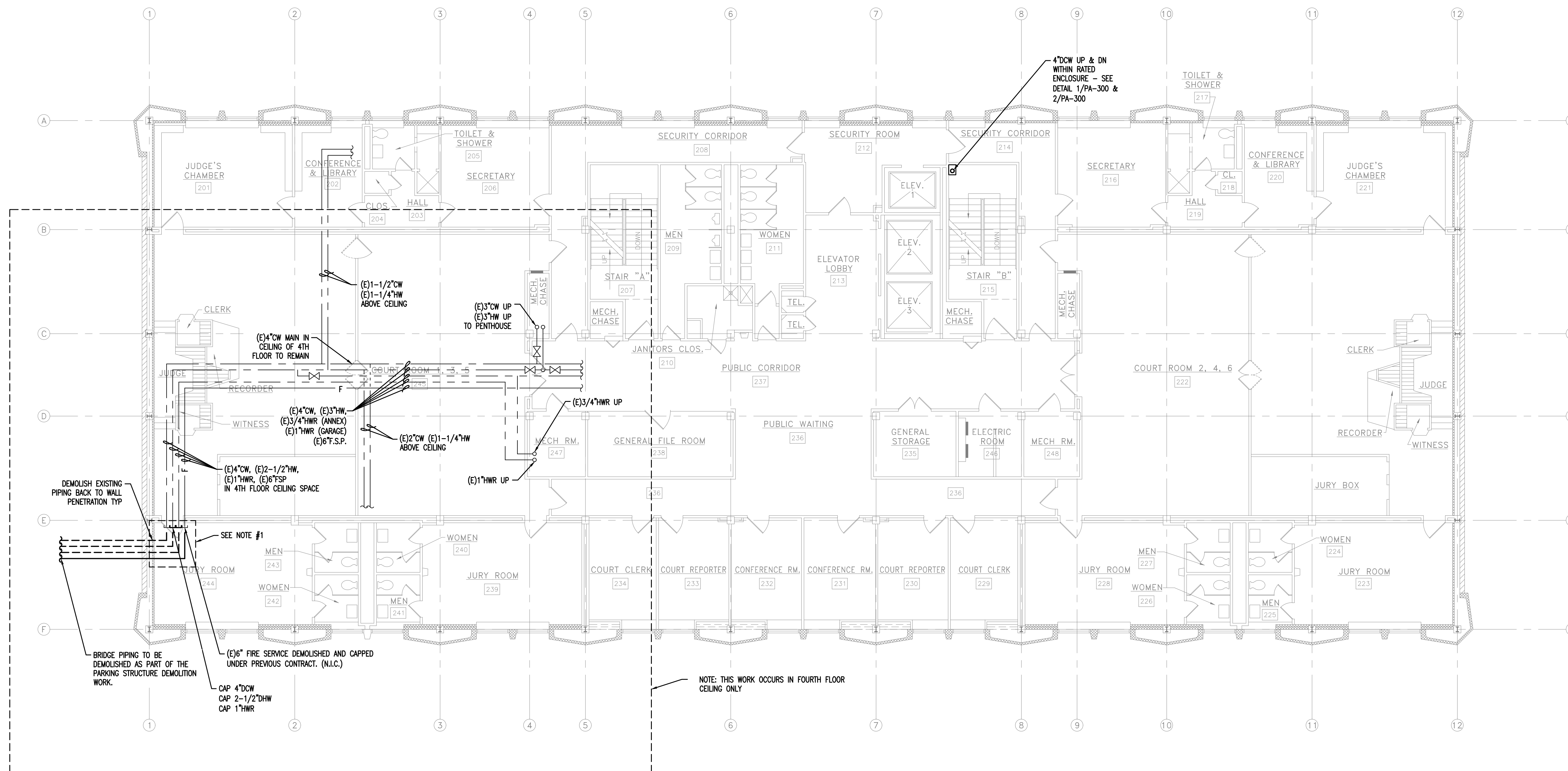
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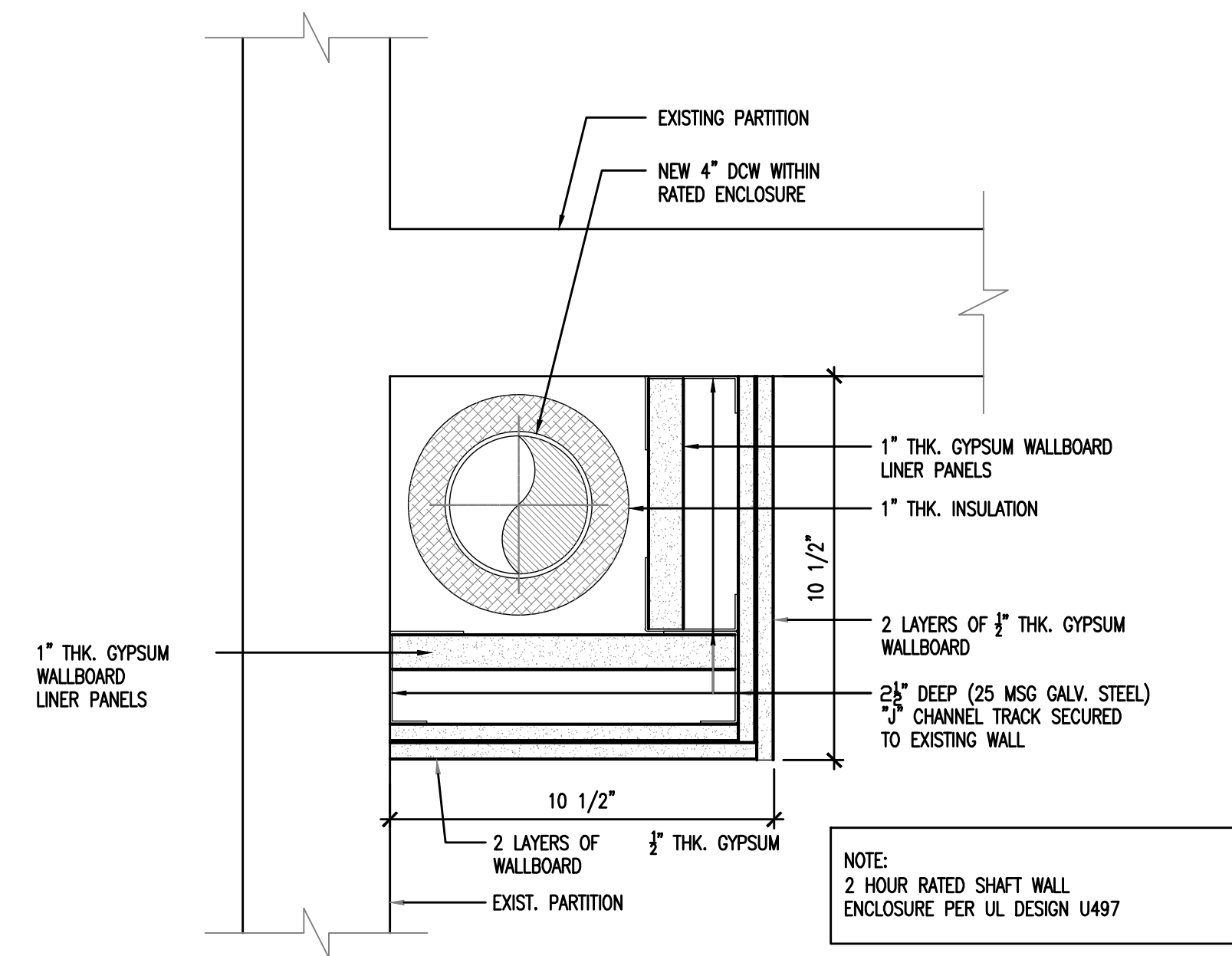
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Armand T. Christopher, Jr., AIA James McAuliffe, AIA
Peter C. Campiano, AIA Marlene Boruso, AIA
Andrew P. Adornato, AIA

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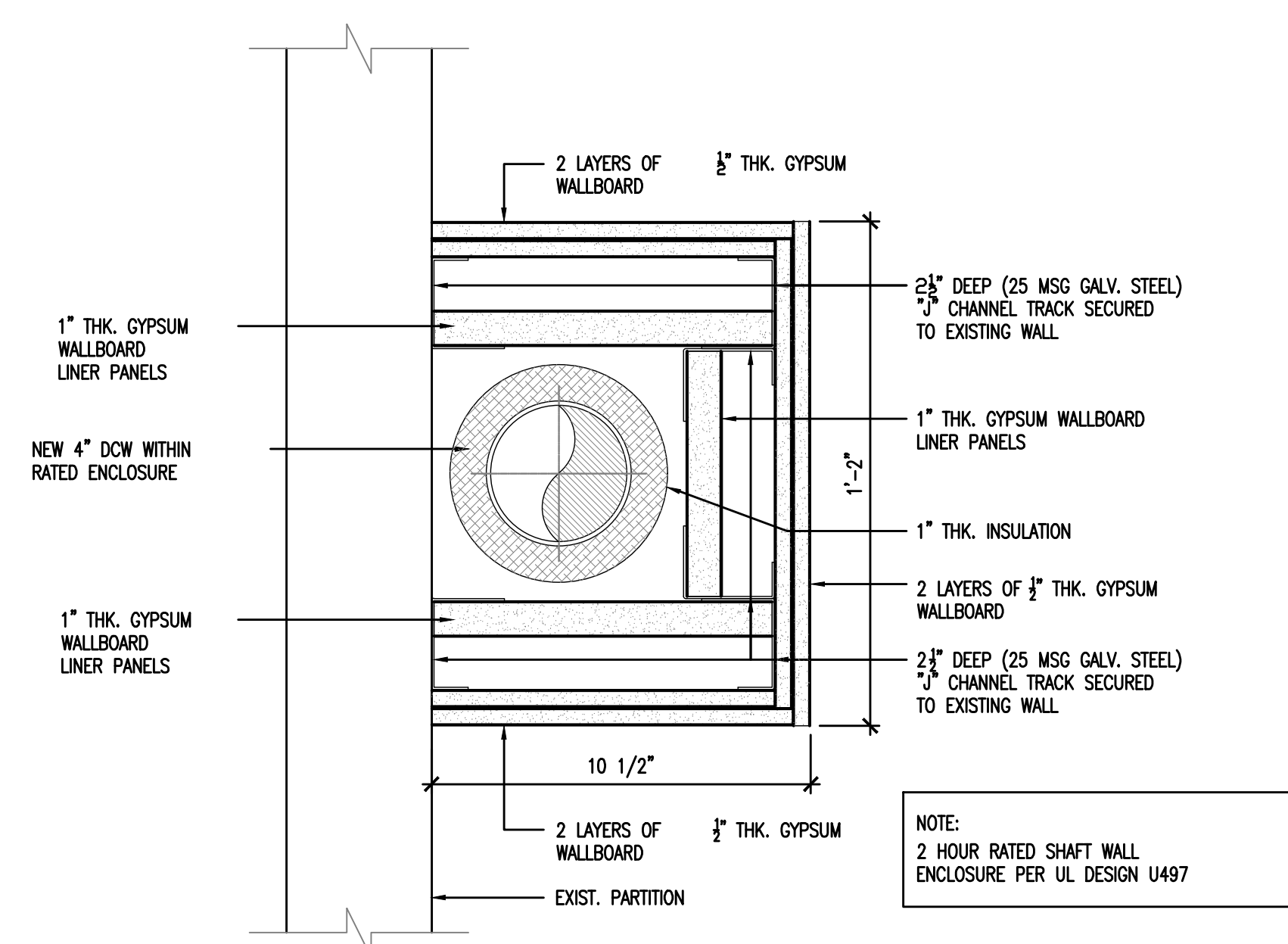
Professional Engineer
John A. Marchitava P. E.



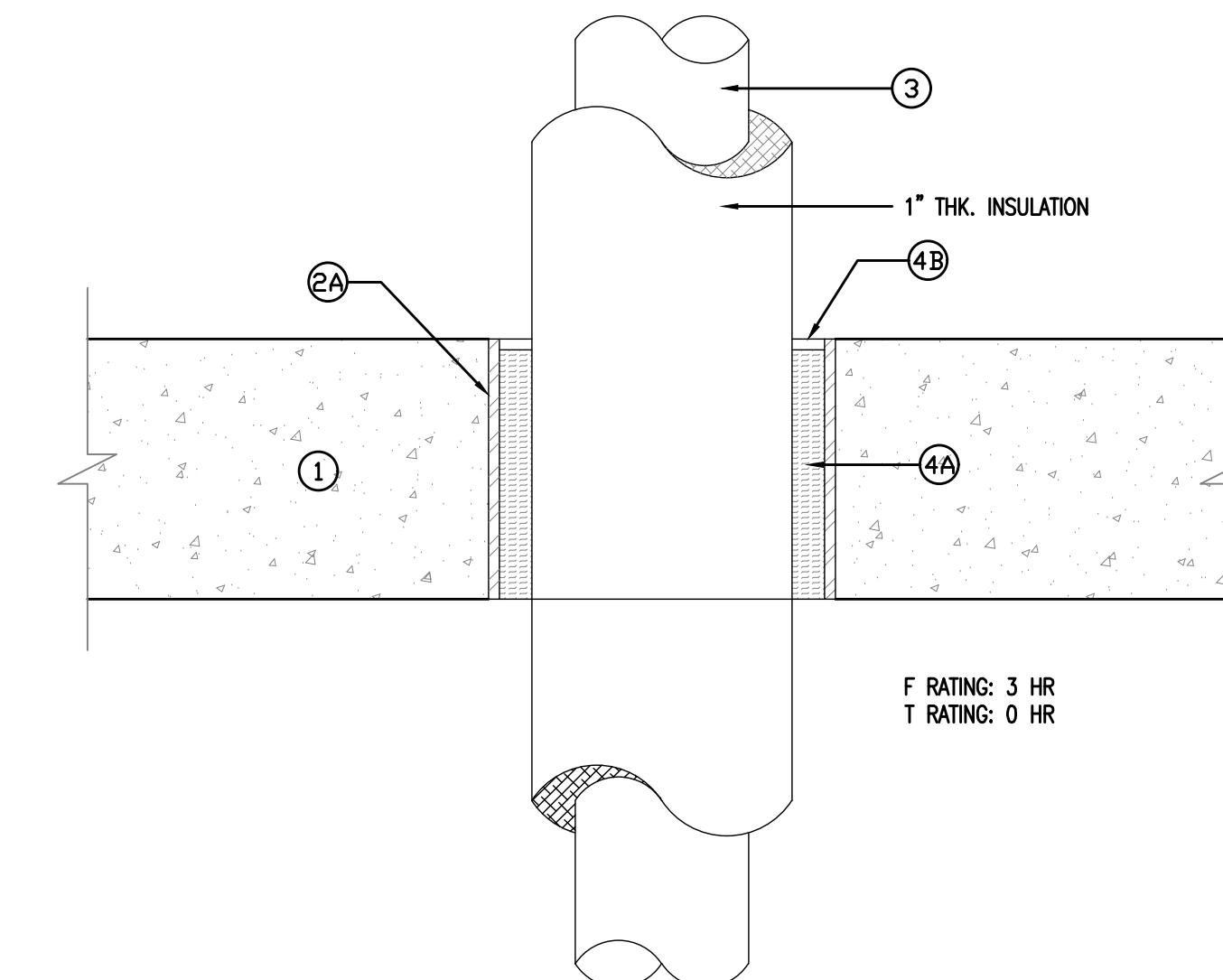
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1 NEW 2 HR. RATED VERTICAL ENCLOSURE IN STAIRWELL B - BASEMENT, 2ND, 3RD & 4TH FLOORS
PA-300 SCALE: NTS

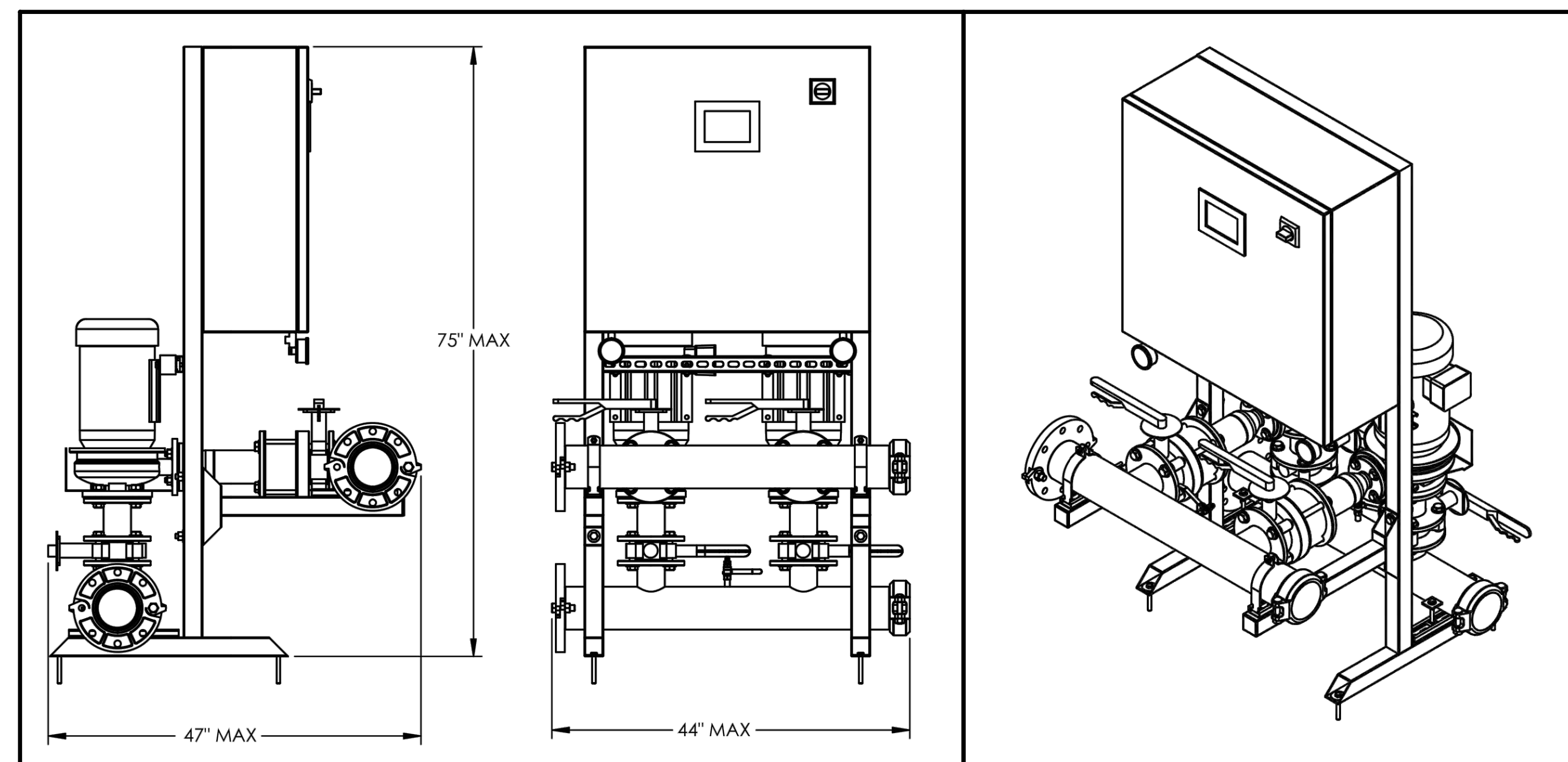


2 NEW 2 HR. RATED HORIZONTAL ENCLOSURE IN STAIRWELL B - 1ST FLOOR & PENTHOUSE FLOOR
PA-300 SCALE: NTS



3 THROUGH-PENETRATION FIRESTOP SYSTEM PER UL C-AJ-1226
PA-300 SCALE: NTS

- FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAX DIAMETER OF OPENING IS 12 IN.
- METALLIC SLEEVE - (OPTIONAL) NOM 3/4 IN. DIAMETER (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL SLEEVE CAST OR GROUDED INTO FLOOR OR WALL ASSEMBLY. FLUSH WITH FLOOR OR WALL SURFACES OR EXTENDING A MAX OF 3 IN. ABOVE FLOOR OR BEYOND BOTH SURFACES OF WALL.
 - 2A. SHEET METAL SLEEVE - (OPTIONAL) MAX 6" DIA., MIN. 26 GA. GALV. STEEL PROVIDED WITH A 26 GA. GALVANIZED STEEL SQUARE FLANGE SPOT WELDED TO THE SLEEVE AT APPROXIMATE MID-HEIGHT AND SIZED TO BE A MIN OF 2" LARGER THAN THE SLEEVE DIAMETER. THE SLEEVE IS TO BE CAST IN PLACE AND MAY EXTEND A MAX OF 4" BELOW THE BOTTOM OF THE DECK AND A MAX OF 1" ABOVE THE TOP SURFACE OF THE CONCRETE FLOOR.
 - 2B. SHEET METAL SLEEVE - (OPTIONAL) - MAX 12" DIAMETER, MIN. 24 GA. GALVANIZED STEEL PROVIDED WITH A 24 GA. GALVANIZED STEEL SQUARE FLANGE SPOT WELDED TO THE SLEEVE AT APPROXIMATE MID-HEIGHT AND SIZED TO BE A MIN OF 2" LARGER THAN THE SLEEVE DIAMETER. THE SLEEVE IS TO BE CAST IN PLACE AND MAY EXTEND A MAXIMUM OF 4" BELOW THE BOTTOM OF THE DECK AND A MAX OF 1" ABOVE THE TOP SURFACE OF THE CONCRETE FLOOR.
- THROUGH-PENETRANT - ONE METALLIC PIPE, TUBE OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PENETRANT AND PERIPHERY OF OPENING SHALL BE MINIMUM 0" (POINT CONTACT) TO MAX 1-7/8" PENETRANT MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PENETRANT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PENETRANTS MAY BE USED:
 - A. STEEL PIPE - NOM. 3/4" DIA. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
 - B. IRON PIPE - NOM. 3/4" DIA. (OR SMALLER) CAST OR DUCTILE IRON PIPE.
 - C. COPPER PIPE - NOM. 6" DIA. (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
 - D. COPPER TUBING - NOM. 6" DIA. (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
 - E. CONDUIT - NOM. 6" DIA. (OR SMALLER) STEEL CONDUIT.
 - F. CONDUIT - NOM. 4" DIA. (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT).
- FIRESTOP SYSTEM - THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
 - A. PACKING MATERIAL - MIN. 4" THICKNESS OF MIN. 4 PCF MINERAL WOOL BATT. INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR SLEEVE OR FROM BOTH SURFACES OF WALL OR SLEEVE AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
 - B. FILL VOID OR CAVITY MATERIAL - SEALANT - MIN 1/4" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR SLEEVE OR WITH BOTH SURFACES OF WALL OR SLEEVE. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PENETRANT AND CONCRETE OR SLEEVE, A MIN 1/4" DIA. BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE OR SLEEVE/PIPE PENETRANT INTERFACE ON THE TOP SURFACE OF FLOOR AND ON BOTH SURFACES OF WALL.



4 BOOSTER PUMP DIMENSIONAL DETAIL
PA-300 SCALE: NTS

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1 09-29-23 ISSUED FOR BID
No. Date Issue or Revision

Drawing Title

PLUMBING DETAILS

Scale AS NOTED USA Project No. 2023-090

Drawing Date 10.10.2023 Drawing No.

Drawn By CEG Checked By CEG PA-300

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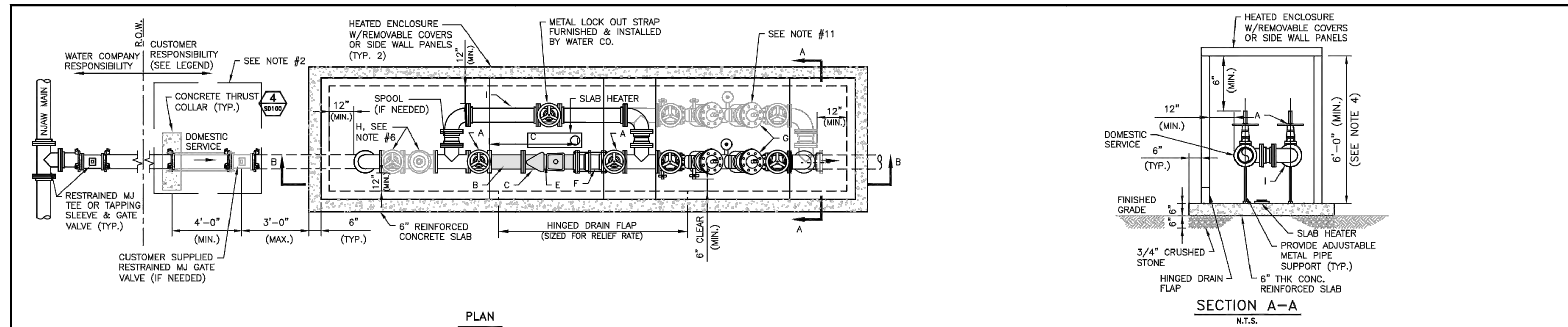
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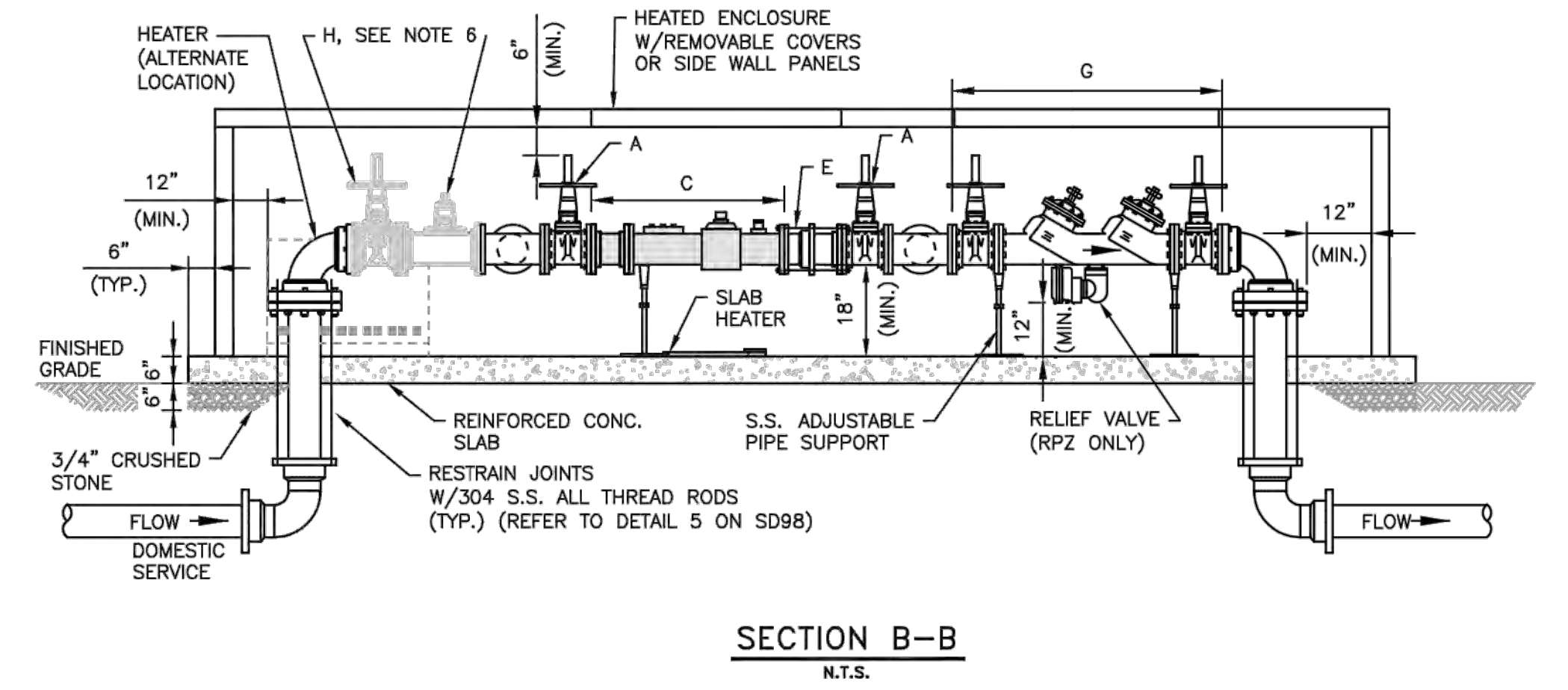


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- NOTES:**
- IN LIEU OF PROVIDING A VAULT FOR LARGE METER(S) (3" & LARGER) AND AN ABOVEGROUND, HEATED ENCLOSURE FOR A BACKFLOW PREVENTER ASSEMBLY, NJAW MAY ALLOW BOTH THE METER ASSEMBLY AND THE BACKFLOW PREVENTER ASSEMBLY TO BE INSTALLED IN A SINGLE ABOVEGROUND, HEATED ENCLOSURE. IF APPROVED BY NJAW, THE ENCLOSURE AND ALL APPURTENANCES ARE TO BE FURNISHED AND INSTALLED BY CUSTOMER, UNLESS SPECIFICALLY INDICATED OTHERWISE IN THE LEGEND. ALL ENCLOSURE AND PIPING CONSTRUCTION IS SUBJECT TO WATER COMPANY APPROVAL PRIOR TO SERVICE.
 - IF ENCLOSURE IS >20 FEET FROM NJAW SHUTOFF VALVE, CUSTOMER IS REQUIRED TO FURNISH & INSTALL AN ADDITIONAL RESTRAINED MECHANICAL JOINT GATE VALVE & VALVE BOX WITHIN 3 FEET OF THE ENCLOSURE. IF VAULT IS <20 FEET FROM NJAW SHUTOFF VALVE, CUSTOMER SHALL INSTALL A SOLID, GASKETED, MECHANICAL JOINT SLEEVE RESTRAINED WITH WEDGE ACTION RESTRAINING GLANDS WITHIN 3 FEET OF VAULT.
 - EXTERIOR VALVES SHALL & FITTINGS BE RESTRAINED WITH WEDGE ACTION RESTRAINING GLANDS, THRUST COLLARS AND/OR 304 STAINLESS STEEL RODS/NUTS AND CLAMPS.
 - BASED ON THE LARGEST SIZE GATE VALVE REQUIRED, THE MINIMUM ENCLOSURE HEIGHT (INTERIOR DIMENSION) SHALL BE AS INDICATED BELOW. LENGTH AND WIDTH SHALL BE AS INDICATED ON STANDARD DETAIL SD101.

G.V. SIZE	ENCLOSURE HEIGHT
2" TO 8"	6'-0"
10"	6'-8"
12"	7'-0"
 - ENCLOSURE PIPING TO BE DUCTILE IRON MEETING ANSI/AWWA C115/A21.15, OR TYPE K DRAWN (HARD) TEMPER COPPER MEETING ASTM-B88. THE USE OF FLANGED COUPLING ADAPTERS IS STRICTLY PROHIBITED.
 - THE CUSTOMER MUST INSTALL A WATER PRESSURE REDUCING VALVE WHERE REQUIRED BY STATE OF NEW JERSEY PLUMBING CODE. INSTALLATION RECOMMENDED WHERE AVERAGE PRESSURE IS GREATER THAN 80 PSI. WHERE A PRV IS REQUIRED IT SHALL BE PRECEDED BY AN ADDITIONAL OS&Y GATE VALVE.
 - BACKFLOW PREVENTER ASSEMBLY SHALL NOT BE SUBJECT TO FLOODING.
 - BACKFLOW PREVENTER MUST BE INSTALLED ABOVE NATURAL GROUND, ABOVE THE 100 YEAR FLOOD LEVEL, UNLESS OTHERWISE APPROVED BY NJAW.
 - ENCLOSURE MUST MEET OSHA 29 CFR 1910.145 AND ASSE 1060 CLASS 1.
 - INSULATED HEATED ENCLOSURE CHARACTERISTICS:
 - ENCLOSURE-5052-H32 MARINE GRADE ALUMINUM (0.050/18 GAUGE), MILL FINISH, OR 1/8" POLYESTER RESIN REINFORCED WITH FIBERGLASS STRAND
 - INSULATION- 1-1/2" (R9) POLYISOCYANURATE FOAM
 - HEATING SYSTEM- SLAB OR WALL MOUNT THERMOSTATICALLY CONTROLLED ELECTRIC HEATER MEETING SECTION 49 OF UL-2021 FOR DAMP OR WET LOCATIONS, WITH GFI RECEPTACLE, U.L. 943 NEMA 3R MOUNTED 8" (MIN.) ABOVE SLAB.
 - HEATER(S) SHALL BE PROVIDED AS NECESSARY TO MAINTAIN TEMPERATURE ABOVE 40° F AT ALL TIMES.
 - CUSTOMERS THAT REQUIRE UNINTERRUPTED SUPPLY OF POTABLE WATER MUST INSTALL REDUNDANT BACKFLOW PREVENTER ASSEMBLIES.
 - ENCLOSURE MUST BE A SUFFICIENT SIZE TO HOUSE ALL REQUIRED PIPING. ENCLOSURE SHALL BE LOCKABLE. ACCESS PANELS SHALL BE ABOVE THE CENTERLINE OF THE ASSEMBLIES, OR IN SIDE WALLS. ENCLOSURE TO HAVE HINGED ONE-WAY DRAIN FLAP SIZED FOR FULL PORT BACKFLOW DISCHARGE TO SURROUNDING GRADE. REFER TO DRAWING SD101.



- LEGEND:**
- COMPONENTS SHADED IN GRAY TO BE FURNISHED BY WATER CO.
- A- OS&Y GATE VALVE WITH FLANGED ENDS (FURNISHED & INSTALLED BY CUSTOMER)
 - C- DOMESTIC COMPOUND METER ASSEMBLY- METERS WITH FLANGED ENDS (FURNISHED BY WATER CO., INSTALLED BY CUSTOMER)
 - E- DISMANTLING JOINT TO HAVE FLANGED ENDS WITH JOINT RESTRAINT (FURNISHED & INSTALLED BY CUSTOMER)
 - G- BACKFLOW PREVENTER ASSEMBLY (FURNISHED & INSTALLED BY CUSTOMER)
 - H- PRESSURE REDUCING VALVE & OS&Y GATE VALVE (IF REQUIRED FURNISHED & INSTALLED BY CUSTOMER- SEE NOTE #7)
 - I- BYPASS SIZE SHALL BE NO GREATER THAN ONE STANDARD PIPE SIZE SMALLER THAN DOMESTIC SERVICE SIZE AND SHALL HAVE METAL STRAP FOR LOCKING OUT BYPASS VALVE (STRAP FURNISHED & INSTALLED BY WATER CO.)



REVISIONS	REVISIONS
△	△
△	△
△	△
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AMERICAN WATER ENGINEERING 3900 GURCH RD. MT. LAUREL, NJ 08054 	STANDARD DETAIL	
	DOMESTIC METER & BACKFLOW PREVENTER	
IN HEATED ENCLOSURE		
DRAWN BY R. BEATTY PROJECT ENG'N E. SCHWARTZ DATE 08-24-18 PROJECT	NEW JERSEY AMERICAN WATER STANDARDS USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES	USE DIMENSIONS ONLY SCALE AS SHOWN 0201-0601-SD96 02010601SD96

1 NEW JERSEY AMERICAN WATER DOMESTIC METER & BACKFLOW PREVENTER DETAIL
PA-301 SCALE: NTS

- PROVIDE ALL NJAW REQUIRED COMPONENTS AS SHOWN ON DETAIL 1/PA-301 IN BASEMENT MECHANICAL ROOM WORK.

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AS NOTED	2023-090
Drawing Date	Drawing No.
10.10.2023	PA-301
Drawn By	Checked By
CEG	CEG

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