SPECIFICATIONS

FOR

REPLACEMENT OF UNDERGROUND STORAGE TANK AT THE DEPARTMENT OF PUBLIC WORKS FACILITY TOWNSHIP OF SCOTCH PLAINS, COUNTY OF UNION, NEW JERSEY

BA#44-2016; UNION COUNTY ENGINEERING PROJECT #2015-038

SEPTEMBER 2016

UNION COUNTY OFFICIALS
BOARD OF CHOSEN FREEHOLDERS

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Sergio Granados, Vice Chairman
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COUNTY MANAGER
Alfred J. Faella

DEPARTMENT OF ENGINEERING, PUBLIC WORKS AND FACILITIES MANAGEMENT
Joseph A. Graziano, Sr., CPWM, Director

COUNTY ENGINEER
DIVISION OF ENGINEERING
Thomas O. Mineo, P.E.
2325 South Avenue
Scotch Plains, New Jersey 07076
Telephone: (908) 789-3675
Fax: (908) 789-3674

PREPARED BY:
T&M ASSOCIATES
11 Tindall Road
Middletown, New Jersey 07748
T: 732-671-6400

REPLACEMENT OF UNDERGROUND STORAGE TANK AT THE DEPARTMENT OF PUBLIC WORKS FACILITY TOWNSHIP OF SCOTCH PLAINS, COUNTY OF UNION, NEW JERSEY BA#44-2016; Union County Engineering Project #2015-038

TABLE OF CONTENTS

GENERAL SPECIFICATIONS CONTINUED

BIDDING DOCUMENTS

SS - STANDARD SPECIFICATIONS SS-1

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR AIA DOCUMENT A-101/2007
(Draft form until contract is awarded**)**

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION AIA DOCUMENT A-201/2007
(Draft form until contract is awarded**)**

NEW JERSEY PREVAILING WAGE DETERMINATION DOCUMENTS

TECHNICAL SPECIFICATIONS

COUNTY OF UNION
NOTICE TO BIDDERS

Sealed bids will be received by the director of the Division of Purchasing, or his designee, at the County of Union, New Jersey on October 6, 2016 at 10:30 a.m., prevailing time, in the 3rd Floor Conference Room, U.C. Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey for:

REPLACEMENT OF UNDERGROUND STORAGE TANK AT THE DEPARTMENT OF PUBLIC WORKS FACILITY TOWNSHIP OF SCOTCH PLAINS, COUNTY OF UNION, NEW JERSEY BA#44-2016; UNION COUNTY ENGINEERING PROJECT #2015-038

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.

Bidders on this project are required to be classified by the State of NJ, Division of Property Management and Construction (DPMC) under classification(s) # C113 – Underground Storage Tanks / Closure & Installation 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.

The County reserves the right to reject any and all bids and to waive any and all informalities in the bid.

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.S.A.C. 17:27.

Laura M. Scutari, QPA, MPA, Director of Purchasing

UNION COUNTY BOARD OF CHOSEN FREEHOLDERS

We're Connected to You!

UNION COUNTY BOARD OF CHOSEN FREEHOLDERS
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 Chosen Freeholders
UC Administration Building, 6th Floor
10 Elizabethtown Plaza
Elizabeth, New Jersey 07207

ADDRESS BIDS AND SUBMIT TO:

Union County Division of Purchasing
UC Administration Building, 3rd Floor
10 Elizabethtown Plaza
Elizabeth, NJ 07207
Attn: Laura M. Scutari, QPA, MPA, Director, Division of Purchasing
Telephone: 908-527-4130
Facsimile: 908-558-2548

TITLE OF PROJECT: Replacement of Underground Storage Tank at the Department of Public Works Facility, Township of Scotch Plains County of Union, New Jersey BA#44-2016; Union County Engineering Project Number 2015-038

BIDDER: Bidder shall be a single overall contract bidder

ENGINEER: T&M Associates
11 Tindall Road
Middletown, New Jersey 07748

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

COUNTY ENGINEER:

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

GENERAL SPECIFICATIONS

1. BID FORM

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

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

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

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

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

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

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

Change Order(s). See Section 39, 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 informality in the bids received so long as said waiver is not of a response which is considered to be material and non-waivable pursuant to law.

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 Michael M. Yuska, QPA, 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, Michael M. Yuska, QPA, Director of the Division of Purchasing or his designee may contact all bidders, after bids are opened, to ascertain if any bidders wish to, or already have exercised a request to withdraw their bid pursuant to N.J.S.A. 40A:11-23.3.

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

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

3. QUALIFICATIONS OF BIDDERS AND REQUIRED SUBMISSIONS

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

4. INTERPRETATIONS AND ADDENDA

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

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

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

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

5. OBLIGATION OF BIDDER TO INSPECT SITE AND CONTRACT DOCUMENTS

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

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

6. BID AND PERFORMANCE GUARANTEE

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

Each bidder must furnish with the bid a certificate from a Surety Company, i.e. Consent of Surety, stating that in the event of the contract being awarded to said bidder,

such Surety Company will provide the Contractor with Bonds guaranteeing the faithful performance of the Work in accordance with the plans and specifications, and the payment for labor, materials, and all other indebtedness which may accrue on the account of this Work. A Performance, Labor and Materials bond will be furnished by the Contractor upon an award of Contract, and will be in the amount of 100% of the contract price.

A one-year Maintenance Bond will be required upon acceptance of the Project by the County in the amount as stated in Section 17 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:11-1.1 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 of Union shall award the contract or reject all bids within sixty (60) days; except that the bids of any bidders who consent thereto may, at the request of the County be held for consideration for such longer periods as may be agreed.

The County will return all certified checks or cashier's checks after the proposals have been opened, read, tabulated and checked except those of the three (3) bidders who have bid the lowest total price for carrying out the Project. 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 the said 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. CLASSIFICATION AND QUALIFICATION OF BIDDERS

Pursuant to Ordinance Number 557-2002 as adopted by the County on September 5, 2002, all bidders on contracts for public works shall be classified and qualified in accordance with NJSA 40A:11-25 as well as NJSA 52:35-1 et. seq. (See Section 52 of the General Specifications)

This provision shall not apply to subcontractors.

10. UNCOMPLETED CONTRACTS (BUILDING PROJECTS ONLY)

The Bidder shall submit a current Classification/Prequalification Certificate and accompanying form(s) indicating the dollar amount of uncompleted contracts, and a notarized and itemized list of these uncompleted contracts in the form provided, with their bid. (See form enclosed)

11. BID SECURITY

All Bidders are required to submit a form of Bid Security with their bids.
(Bid Bond or Certified Funds)

The Bid Security shall be in the amount of ten percent (10%) of the Bid, but not in excess of Twenty Thousand Dollars ($20,000.00), and payable to the order of the "County of Union."

12. 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.

13. 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 Chosen Freeholders, officers, employees, agents and servants shall be included as an additional insured. Coverage is provided on a primary and on-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 Chosen Freeholders, 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.

14. INDEMNIFICATION REQUIREMENTS

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

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

15. 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.

16. 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".

17. 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.

18. 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.

19. 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.

20. OWNERSHIP DISCLOSURES REQUIRED

Pursuant to P.L. 1977, N.J.S.A. 52:25-24.2, the Bidder shall submit with its Bid, or prior to receipt of bids, a statement setting forth the names and addresses of all stockholders in the corporation or partnership bidding who own ten percent (10%) or greater interest therein. (See forms attached)

21. 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.

22. 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.

23. COMPLIANCE WITH NEW JERSEY PREVAILING WAGE ACT

The County of Union, in order to fulfill the requirements of N.J.S.A. 34:11-56a.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 Industry 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 Chosen Freeholders on May 8, 2014. The resolution is furnished in Section 53 of these General Specifications.

UNION LABOR IS PREFERRED ON ALL COUNTY WORK

The foregoing reference to specific laws will not be deemed to be a limitation of obligation of the Contractor to perform his obligations in full compliance with the provisions and requirements of all federal and state statues 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)

24. 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.

25. 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.

26. NUMBER OF WORKING DAYS

In accordance with NJSA 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.

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

Pursuant to NJSA 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. SUB-LETTING OF WORK

Except for the List of Subcontractors, pursuant to NJSA 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 NJSA 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 NJSA 40A:11-16 will not be permitted except with the consent of the County Engineer.

34. 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 Commerce shall be observed.

35. 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.

36. 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.

37. PERMITS

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

38. 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.

39. CHANGE ORDERS

Change Order Procedures shall comply with *N.J.A.C.* 5:30-11.1 *et seq.*, "Change Orders and Open End Contracts" and subsequent provisions of the New Jersey Administrative Code.

40. 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 38. 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.

41. FORM OF CONTRACT

Contracts will be let on the attached Form of Agreement Between County ("Owner") and Contractor (AIA 101), and General Conditions (AIA 201), as supplemented.

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.

42. 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 NJSA 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 17 of these general specifications); **b)** Certification of Compliance, New Jersey Prevailing

Wage Act (see Sections 23 & 53); and **c)** General Release (see Section 38) 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.

43. 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.

44. 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.

45. 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.

46. AFFIRMATIVE ACTION REQUIREMENTS

EXHIBIT B
(Revised 4/10)

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

CONSTRUCTION CONTRACTS

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

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

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

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

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

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. l7:27-7.2; provided,

however, that the Division may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B and C, as long as the Division is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Division, that its percentage of active "card carrying" members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. l7:27-7.2. 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:

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

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

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

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

Service and other approved referral sources in the area;

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

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

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

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

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

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

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

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

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

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

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

(D) The contractor and its subcontractors shall furnish such reports or other documents to the Division of Public Contracts Equal Employment Opportunity Compliance as may be requested by the Division from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Public Contracts Equal Employment Opportunity Compliance for conducting a compliance investigation pursuant to **Subchapter l0 of the Administrative Code (NJAC 17:27).**

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47. INVESTMENT ACTIVITIES WITH IRAN

Pursuant to P.L. 2012, c.25, codified as NJSA 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.

48. COMPLIANCE WITH THE PUBLIC WORKS CONTRACTOR REGISTRATION ACT - (NJSA 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 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.

49. 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.

50. 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.

51. 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.

52. DISPUTES UNDER THE CONTRACT

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

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

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

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53. ORDINANCE NO. 557-2002 ADOPTED ON SEPTEMBER 5, 2002 BY THE BOARD OF CHOSEN FREEHOLDERS

Ordinance No. 557-2002 adopted on September 5, 2002 by the Board of Chosen Freeholders on Preclassification of Bidders by the NJDPMC **(if applicable)** pursuant to Ordinance No. 557-2002, the County of Union requires all bidders on projects for the construction, reconstruction, demolition, alteration, repair or maintenance of public buildings to be preclassified by the State of New Jersey, Department of Treasury, Division of Property Management and Construction ("DPMC").

Bidders must provide proof of classification in the form of a Certificate/Notice of Classification from the DPMC showing a sufficient aggregate rating to cover their bid amount, which is active on the date of receipt of these bids. Further, Bidder must also provide proof of preclassification in the applicable/appropriate trade code necessary for Work on the Project.

AN ORDINANCE IN ACCORDANCE WITH N.J.S.A. 40A:11-25 ESTABLISHING REASONABLE REGULATIONS APPROPRIATE FOR CONTROLLING THE QUALIFICATIONS OF PROSPECTIVE BIDDERS UPON CONTRACTS TO BE AWARDED ON BEHALF OF THE CONTRACTING UNIT, BY THE CLASS OR CATEGORY OF GOODS AND SERVICES TO BE PROVIDED OR PERFORMED AND FIXING THE QUALIFICATIONS REQUIRED ACCORDING TO THE FINANCIAL ABILITY AND EXPERIENCE OF THE BIDDERS AND THE CAPITAL AND EQUIPMENT AVAILABLE TO THEM PERTINENT TO AND REASONABLY RELATED TO THE CLASS AND CATEGORY OF SERVICE TO BE PERFORMED IN THE PERFORMANCE OF ANY SUCH CONTRACT.

WHEREAS, N.J.S.A. 40A:11-25 provides that the governing body of any contracting unit may establish reasonable regulations appropriate for controlling the qualifications of prospective bidders upon contracts to be awarded on behalf of the contracting unit, by the class or category of goods and services to be provided or performed; and

WHEREAS, N.J.S.A. 40A:11-25 also states that the regulations established by the governing body may fix the qualifications required according to the financial ability and experience of the bidders and the capital and equipment available to them pertinent to and reasonably related to the class and category of service to be performed in the performance of any such contract; and

WHEREAS, N.J.S.A. 40A:11-25 also requires that prior to the adoption of any such regulations, a contracting unit shall submit them to a public hearing and notice and a general description of the subject matter shall be published in not less than two newspapers; and

WHEREAS, N.J.S.A. 52:35-1 et seq. and 18A:18A-27 et seq. establish qualifications for the experience and financial abilities of bidders and the capital and equipment available to them relative to the specific services to be performed; and

WHEREAS, currently state officials, under the Department of Treasury, Division of Property Management and Construction, classify all prospective bidders as to the character and

amount of public works on which they shall be qualified to submit bids and bids shall be accepted only from persons qualified in accordance with such classifications; and

WHEREAS, application for classification is open to all Contractors, regardless of the size of the business; and

WHEREAS, classification is based on general standards equally applicable to all Contractors; and

WHEREAS, classification is expressed in terms of trade and an aggregate rating determined on the basis of experience, financial ability, equipment and capital; and

WHEREAS, generally aggregate ratings can range from 0 to $200,000.00; and

WHEREAS, the County of Union will determine the aggregate rating it will require on contracts depending on the size and expense of the Project, but at no time shall the required aggregate rating exceed $25,000,000.00 for any one project; and

WHEREAS, such provisions are of considerable benefit to the County and to bidders by insuring that such bidders have the requisite experience, expertise and resources necessary to effectively perform the terms and conditions of the contract:

BE IT ORDAINED by the Board of Chosen Freeholders of the County of Union that it formally adopts as **Policy** that all prospective bidders for building construction projects be classified in accordance with the Department of Treasury – Division of Property Management and Construction pursuant to N.J.S.A. 52:35-1 *et seq*. and N.J.S.A. 18A:18A-27 *et seq*.

BE IT FURTHER ORDAINED that the Board of Chosen Freeholders of the County of Union hereby adopts the classification of bidders by the New Jersey Department of Treasury, Division of Property Management and Construction as a reasonable regulation for controlling the qualifications of prospective bidders upon contracts to be awarded for construction on behalf of the County of Union.

BE IT FURTHER ORDAINED that the provisions of this ordinance are severable. To the extent any clause, phrase, sentence, paragraph or provision of this ordinance shall be declared invalid, illegal or unconstitutional, the remaining provisions shall continue to be in full force and effect.

BE IT FURTHER ORDAINED that a public hearing shall be held on this ordinance on September 5, 2002 at the meeting of the Board of Freeholders, County Administration Building, Elizabeth, New Jersey.

BE IT FURTHER ORDAINED that the Clerk of the Board of Freeholders of the County is hereby directed to publish and post notice of this ordinance as required by law.

BE IT FURTHER ORDAINED that within 10 days hereof the Clerk of the Board of Freeholders of the County shall forward certified copies of this ordinance to the County Manager, Director of Finance, County Counsel, and Division of Local Government Services.

This ordinance shall take effect twenty (20) days after final adoption and publication in accordance with applicable law.

54. CONTRACTOR BUSINESS REGISTRATION CERTIFICATE
New Mandatory Requirement -Effective 1/18/2010

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

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

Proof of business registration shall be

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

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

Note: A NJ Certificate of Authority is <u>not</u> acceptable.

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

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

IN ADDITION:

N.J.S.A. 52:32-44 imposes the following requirements on Contractors and all subcontractors that knowingly provide goods or perform services for a Contractor fulfilling this contract:

1) the Contractor shall provide written notice to its subcontractors and suppliers to submit proof of business registration to the Contractor;

2) subcontractors through all tiers of a project must provide written notice to their subcontractors and suppliers to submit proof of business registration and subcontractors shall collect such proofs of business registration and maintain them on file;

3) prior to receipt of final payment from a contracting agency, the Contractor must submit to the contacting agency an accurate list of all subcontractors and suppliers or attest that none was used; and,

4) during the term of this contract, the Contractor and its affiliates shall collect and remit, and shall notify all subcontractors and their affiliates that they must collect and remit, to the Director, New Jersey Division of Taxation, 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 this State.

A Contractor, subcontractor or supplier who fails to provide proof of business registration or provides false business registration information shall be liable to a penalty of $25 for each day of violation, not to exceed $50,000 for each business registration copy not properly provided or maintained under a contract with a contracting agency. Information on the law and its requirements are available by calling (609) 292-9292.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

55. 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.

56. AMERICAN GOODS AND PRODUCTS WHERE POSSIBLE

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

57. 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 NJSA 19A:44A-1 et. seq. are NOT REQUIRED to be provided with the bids.

58. STATEMENT OF EQUIPMENT TO BE USED IN CONSTRUCTION

Pursuant to NJSA 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.

59. 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,” (NJSA 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).

ALFRED J. FAELLA
COUNTY MANAGER

LAURA M. SCUTARI, QPA, MPA
DIRECTOR / DIVISION OF PURCHASING

BID DOCUMENT SUBMISSION CHECKLIST

ALL SIGNATURES AND SEALS SHALL BE ORIGINALS UNLESS OTHERWISE SPECIFIED
BID SHEETS SHOULD NOT BE SUBMITED 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 – 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

_____ Time of Completion

_____ Disclosure of Investment Activities in Iran form

I HAVE TAKEN THE FOLLOWING ACTIONS:

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

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

_____ Reviewed Bond Requirements

_____ Provided Proof of Compliance with New Jersey Prevailing Wage Act

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

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

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)**
- **SPECIFCATIONS: As outlined in the Table of Contents and included in the Project Manual.**
- **DRAWINGS: As per List of Drawings, indicated on the Project Title Sheet.**

Bidder's Name_____

BID FORM

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

REPLACEMENT OF UNDERGROUND STORAGE TANK AT THE DEPARTMENT OF PUBLIC WORKS FACILITY TOWNSHIP OF SCOTCH PLAINS, COUNTY OF UNION, NEW JERSEY BA #44-2016; Union County Engineering Project 2015-038

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 BASE BID:

_____ _____
Written Figures

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

Fifty Thousand Dollars and No Cents **$50,000.00**_____
Written Figures

TOTAL LUMP SUM PLUS BID CONTINGENCY AMOUNT:

_____ _____
Written Figures

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

Bidder's Name_____

CONSENT OF SURETY

TO ACCOMPANY PROPOSAL (BID)

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

NOTE:
Expiration date
Needed if Annual
Surety

_____

_____
NAME OF INSURANCE COMPANY

ADDRESS: _____
_____
_____

_____
ORIGINAL SIGNATURE
ATTORNEY-IN-FACT FOR INSURANCE CO.

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

BIDDER SIGNATURE PAGE

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

1. If doing business under a **trade name, partnership or a sole proprietorship**, you must submit the bid under exact title of the trade name, partnership, or proprietorship, and the bid must be signed by either the **owner**, or a **partner** and **witnessed** by a **notary public**.

2. If a **Corporation**, the bid must be signed by the **President** or **Vice President** and **witnessed** by a **Corporate Secretary** (corporate title must be exact) and **affix corporate seal**. If a Corporate Secretary does not exist, President or Vice President's signature shall be witnessed by a Notary Public.

3. Other persons **authorized** by **corporate resolution** to execute agreements in its behalf may also sign the bid documents (pages). **Copy of a resolution must accompany the bid**.

4. The person who signs this bid form **must also** sign the **Non-Collusion Affidavit**.

5. You **cannot** witness your own signature.

_____

NAME OF BIDDER

_____

_____

_____

ADDRESS OF BIDDER

_____

ORIGINAL SIGNATURE
CORPORATE SECRETARY

_____

PRINT NAME AND TITLE
CORPORATE SECRETARY

TEL: _____
FAX: _____
E-Mail: _____

BY: _____

ORIGINAL SIGNATURE

Corporate Seal

_____

_____

PRINT OR TYPE NAME AND TITLE

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

Bidder's Name_____

BIDDER DISCLOSURE STATEMENT

N.J.S.A. 52:25-24.2 (P.L. 1977 c. 33)

Failure of the bidder/respondent to submit the required information is cause for automatic rejection.
CHECK ONE

☐ I certify that the list below contains the names and home addresses of all stockholders holding 10% or more of the issued and outstanding stock of the undersigned.

OR

☐ I certify that no one stockholder owns 10% or more of the issued and outstanding stock of the undersigned.

LEGAL NAME OF BIDDER:_____

Check the box that represents the type of business organization:

☐Partnership ☐Corporation ☐Sole Proprietorship
☐Limited Partnership ☐Limited Liability Company ☐Limited Liability Partnership
☐Subchapter S Corporation

Complete if the bidder/respondent is one of the 3 types of corporations:

Date Incorporated:_____ **Where Incorporated:**_____

BUSINESS ADDRESS:

Street Address	**City**	**State**	**Zip Code**

Telephone # **Fax #**

Pursuant to N.J.S.A. 52:25-24.2, also referred to as P.L. 1977, c. 33, no corporation or partnership shall be awarded any contract for the performance of any work or the furnishing of any materials or supplies, unless, prior to the receipt of the bid or accompanying the bid of said corporation or partnership, there is submitted a statement setting forth the names and addresses of all stockholders in the corporation or partnership who own ten (10) percent or more of its stock of any class, or of all individual partners in the partnership who own a ten (10) percent or greater interest therein. Further, the Attorney General has concluded that the provisions of N.J.S.A. 52:25-24.2, in referring to corporations and partnerships, are intended to apply to all forms of business entities, including, but not limited to, corporations, limited partnerships, limited liability companies, limited liability partnerships, Subchapter S corporations, partnerships and sole proprietorships.

Bidders are required to disclose whether they are a partnership, corporation, limited liability company or sole proprietorship. The Stockholder Disclosure Certification form shall be completed, signed and notarized. Failure of the bidder to submit the required information is cause for automatic rejection of the bid.

Bidder's Name_____

BIDDER DISCLOSURE STATEMENT – (Continued)

N.J.S.A. 52:25-24.2, also referred to as **P.L. 1977, Ch. 33**, requires all corporate, limited liability and partnership bidders for state, county, municipal or school district contracts to submit a list of names and addresses of all stockholders owning 10% or more of their stock or 10% or more of the stock of the corporate stockholders or in the case of partnership or limited liability company, the names and addresses of those partners or owners owning 10% or greater interest in the partnership or limited liability company. Furthermore, the Union County Board of Chosen Freeholders requires a statement from all Bidders, which must indicate all Principals of Bidders.

You must set forth the name, home address, title and percentage of ownership of every person who is an owner of the bidder. You must also set forth the business form of the bidder.

II. Principals:

NAME	HOME ADDRESS	TITLE	% OF OWNERSHIP
1.			
2.			
3.			
4.			

If one or more of the owners of the Bidder is itself a corporation, limited liability company or partnership, then for that corporation, limited liability company or partnership owner you must set forth the name, home address, title and percentage of ownership of every person who is an owner of that corporation, limited liability company or partnership.

NAME	HOME ADDRESS	TITLE	% OF OWNERSHIP
1.			
2.			
3.			
4.			

Bidder's Name_____

SUBCONTRACTOR IDENTIFICATION STATEMENT

LIST OF SUBCONTRACTORS

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

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

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

Company Name:_____

Address:_____

Telephone: _____ Subcontract Amount: $_____

Specific Scope of Work Subcontracted: _____

_____

License No. _____

Company Name:_____

Address: _____

Telephone: _____ Subcontract Amount: $_____

Specific Scope of Work Subcontracted: _____

_____

License No. _____

Company Name:_____

Address: _____

Telephone: _____ Subcontract Amount: $_____

Specific Scope of Work Subcontracted: _____

_____

License No. _____

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

(Continued on following page)

Bidder's Name_____

SUBCONTRACTOR IDENTIFICATION CERTIFICATION

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

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

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

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

_____
Witness

Date _____

_____
NAME OF BIDDER

_____

_____
ADDRESS

By: _____
ORIGINAL SIGNATURE ONLY

_____

_____
PRINT NAME AND TITLE

Bidder's Name: _____

ACKNOWLEDGMENT OF ADDENDUM

COUNTY OF UNION

_____ _____

(Name of Construction /Public Works Project) **(Project or Bid Number)**

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

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

ACKNOWLEDGMENT BY BIDDER:

NAME OF BIDDER: _____

ORIGINAL SIGNATURE: _____

PRINTED NAME AND TITLE:_____

DATE: _____

CONTRACTOR BUSINESS REGISTRATION CERTIFICATE

New Mandatory Requirement - Effective 1/18/2010

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

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

Proof of business registration shall be

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

Register online at www.nj.gov/treasury/revenue/taxreg.htm. Click the "online" link and then select "Register for Tax and Employer Purposes or call the Division at 609-292-1730.
Note: A NJ Certificate of Authority is <u>not</u> acceptable.

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

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

IN ADDITION:

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

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

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

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

Bidder's Name_____

BUSINESS REGISTRATION

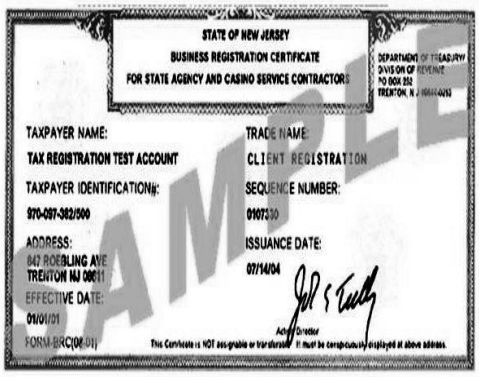
Mandatory Requirement

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

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

Proof of business registration shall be:

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



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

TAXPAYER NAME:
TAX REGISTRATION TEST ACCOUNT

TRADE NAME:
CLIENT REGISTRATION

TAXPAYER IDENTIFICATION#:
970-087-382/000

SEQUENCE NUMBER:
0107330

ADDRESS:
847 ROEBLING AVE
TRENTON NJ 08611

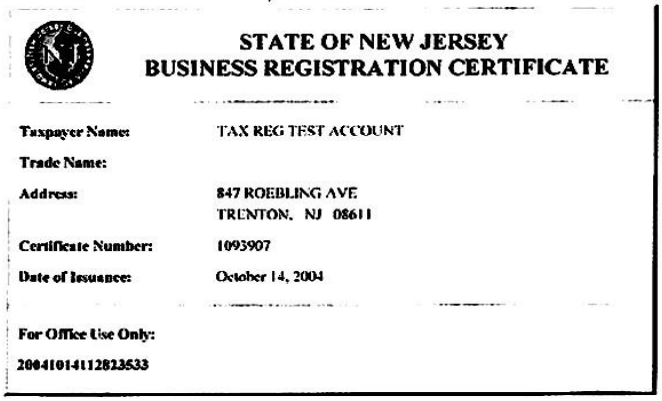
ISSUANCE DATE:
07/14/04

EFFECTIVE DATE:
01/01/01

FORM BRC(08.01)

This Certificate is NOT assignable or transferable. It must be conspicuously displayed at above address.

SAMPLE



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:

20041014112823533

ATTACH BRC HERE

Bidder's Name_____

AFFIRMATIVE ACTION REQUIREMENT

REQUIRED AFFIRMATIVE ACTION EVIDENCE

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

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

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

_____
NAME OF BIDDER

_____
ORIGINAL SIGNATURE

_____
PRINT OR TYPE NAME AND TITLE

_____
DATE THIS FORM IS COMPLETED

EXPERIENCE STATEMENT

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

Witness

Date

NAME OF BIDDER

ADDRESS

By:

ORIGINAL SIGNATURE ONLY

PRINT NAME AND TITLE

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

Bidder's Name_____

CERTIFICATE OF BIDDER SHOWING ABILITY TO PERFORM CONTRACT

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 ("Contractor'), and that I executed said proposal with full authority to do so; and that said Contractor, pursuant to N.J.S.A. 40A:11-20, certifies that it owns, leases or controls all the necessary equipment required by the Plans, Specifications and Advertisements under this Bids are asked for.

If the Bidder is not the actual owner or lessee of any such equipment, then the Bidder shall attach to this Certificate information identifying the source from which the equipment will be obtained, and such information shall be accompanied by a certificate from the owner or person in control of the equipment definitively granting to the Bidder the control of the equipment required during such time as may be necessary for the completion of that portion of the contract.

_____
(Also type or print name of affiant under signature)

By:_____

Bidder's Name_____

NON-COLLUSION AFFIDAVIT

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

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

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

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

_____

NAME OF BIDDER

_____

ORIGINAL SIGNATURE ONLY

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

Subscribed and sworn before me
this _____day of _____, 200____.

_____
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. 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
Division of Wage & Hour Compliance
PO Box 389
Trenton, New Jersey 08625-0389
Telephone: 609-292-9464
Fax: 609-633-8591
E-mail: contreg@dol.state.nj.us

Bidder's Name_____

AMERICANS WITH DISABILITIES ACT

EQUAL OPPORTUNITY FOR INDIVIDUALS WITH DISABILITIES

The contractor and the County of Union (hereafter "Owner") do hereby agree that the provisions of Title II of the Americans With Disabilities Act of 1990 (the "Act") (42 U.S.C.S12.101 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 thereunto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the Owner pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the Owner in any action or administrative proceeding commenced pursuant to this Act. The contractor shall indemnify, protect, and save harmless the Owner, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the Owner's grievance procedure, the contractor agrees to abide by any decision of the Owner which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the Owner, or if the Owner incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

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

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

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

Name _____ **(Please print or type)**

Signature _____**Date** _____

Bidder's Name_____

STATEMENT OF BIDDER'S QUALIFICATIONS

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

1. _____
   (Name of Bidder)

2. _____
   (Permanent Main Office Address)

3. _____
   (When Organized)

4. _____
   (If a Corporation, where incorporated)

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

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

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

   _____

   _____

   _____

8. General character of work performed by you._____

   _____

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

   _____

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

    _____

    _____

Bidder's Name_____

STATEMENT OF BIDDER'S QUALIFICATIONS - (continued)

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

_____

_____

12. List your major equipment available for this Contract.

_____

_____

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

_____

_____

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

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

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

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

17. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the proper agency? _____

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.

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

Phone _____

Fax _____

E-mail_____

Mobile _____

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

_____
BIDDER (Signature)

_____
BIDDER (Print Name)

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

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

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

Bidder's Name_____

CONTRACTOR PERFORMANCE RECORD

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

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

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

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

Bidder's Name_____

CERTIFICATION

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

_____
(Name of Organization)

_____
(Signature)

_____
(Title)

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

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

Bidder's Name_____

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.

Bidder's Name_____

PRIOR NEGATIVE EXPERIENCE QUESTIONNAIRE

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

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

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

   _____
   _____
   _____
   _____

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

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

   _____
   _____
   _____
   _____

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

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

   _____
   _____
   _____
   _____

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

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

   _____
   _____
   _____
   _____

Bidder's Name_____

PRIOR NEGATIVE EXPERIENCE CERTIFICATION

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

_____
Name of Contractor

By_____
(Signature of Authorized Representative)

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

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

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

Bidder's Name_____

TO BE COMPLETED ONLY WHEN FINAL PAYMENT IS REQUESTED

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

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

CONTRACT:

PROJECT:

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

COUNTY OF UNION

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

CONTRACTOR: _____
ADDRESS: _____
_____

BY: _____
ORIGINAL SIGNATURE ONLY

STATE OF NEW JERSEY
COUNTY OF _____

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

Subscribed and sworn before me
this ____day of _____, 200___.

_____

Notary Public: _____
My Commission Expires: _____

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

Bidder's Name_____

UNCOMPLETED CONTRACTS AFFIDAVIT

(To be submitted with DPMC Form 701)

PURSUANT TO N.J.A.C. 17:19-2.13, BIDDER DECLARES THE FOLLOWING WITH RESPECT TO ITS UNCOMPLETED CONTRACTS, ON ALL WORK, FROM WHATEVER SOUCE (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 FRM ENTITY FOR VERIFICATION**

TOTAL AMOUNT OF UNCOMPLETED CONTRACTS $_____

Sworn and Subscribed to Before me

This _____day of _____20___

_____
Notary Public

BIDDER:

_____
(Signature)

_____
(Print Name)

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

Bidder's Name_____

CERTIFICATE OF INSURANCE STATEMENT

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

_____
BIDDER (Signature)

_____
BIDDER (Print Name)

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

Bidder's Name_____

COLLECTION OF USE TAX ON SALES TO LOCAL GOVERNMENTS STATEMENT

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

_____
BIDDER (Signature)

_____
BIDDER (Print Name)

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

Bidder's Name_____

TIME OF COMPLETION

The undersigned proposed that if awarded the Contract, the scope of work will be started within ten (10) calendar days and will be substantially completed within **One Hundred and Five (105) 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

Solicitation Number: _____ Bidder/Offeror: _____
_____

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 the person or entity, or one of the person or entity's parents, subsidiaries, or affiliates, is not identified on a list created and maintained by the Department of the Treasury as a person or entity engaging in investment activities in Iran. If the Director finds a person or entity to be in violation of the principles which are the subject 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 person or entity.

I certify, pursuant to Public Law 2012, c. 25, that the person or entity listed above for which I am authorized to bid/renew:

□is not providing goods or services of $20,000,000 or more in the energy sector of Iran, including a person or entity that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipe lines used to transport oil or liquefied natural gas, for the energy sector of Iran,
AND

□is not a financial institution that extends $20,000,000 or more in credit to another person or entity, for 45 days or more, if that person or entity will use the credit to provide goods or services in the energy sector in Iran.

In the event that a person or entity is unable to make the above certification because it or one of its parents, subsidiaries, or affiliates has engaged in the above-referenced activities, a detailed, accurate and precise description of the activities must be provided in part 2 below to the Division of Purchase under penalty of perjury. Failure to provide such 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 FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN. You must provide, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran outlined above by completing the boxes below.

Name_____ Relationship to Bidder/Offeror_____

Description of Activities_____

Duration of Engagement_____Anticipated Cessation Date_____

DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN – (Continued)

Bidder/Offeror
Contact Name_____ Contact Phone Number_____

Certification: I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the above referenced person or entity. I acknowledge that Union County is relying on the information contained herein and hereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the County to notify the County in writing of any changes to the answers of information contained herein. I acknowledge 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 recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with Union County, New Jersey and that the County at its option may declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print) _____Signature_____

Title_____Date_____

STANDARD SPECIFICATIONS

The Standard Specifications for Road and Bridge Construction of New Jersey Department of Transportation, 2007 Edition; is added to and/or amended elsewhere herein by the Notice to Contractors (Advertisement), Proposal, Information for Bidders, General Conditions, Special Provisions, 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 Bidders (Advertisement), Proposal, General Conditions, Instructions to Bidders, Special Provisions, Project Plans and/or Technical 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 words "RESIDENT ENGINEER (RE)", "ENGINEER" or "STATE" 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 Manual on Uniform Traffic Control Devices (MUTCD), Institute of Traffic Engineers (ITE), Federal Highway Administration (FHWA), American Association of State Highway Officials (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.

DRAFT

AIA® Document A101™ – 2007

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)

«County of Union»
« »
« »

The County Engineer or his designee:
(Name, legal status, address and other information)

« »« »
« »
« »
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

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

AIA Document A201™–2007, 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.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

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. The Contractor will not be compensated for labor or materials outside the scope of work that is not properly authorized.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a Notice to proceed issued by the Owner, which is anticipated to be on or about

« »

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows: Not applicable.

« »

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

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than « » (« ») days from the date of commencement, or as follows:

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

« »

Portion of Work	Substantial Completion Date
Entire Work	TBD

, subject to adjustments of this Contract Time as provided in the Contract Documents.
(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

« » Should the Contractor fail to complete fully, and in conformity with all provisions of the Contract within the Contract Time, the Contractor shall, and hereby agrees to pay the Owner One Thousand Dollars ($1,000.00) per day for as liquidated damages, for each consecutive calendar day beyond the number of days allowed by the Contract, which sum is agreed upon as reasonable and proper measure of damages that the Owner will sustain per diem by failure of Contractor to complete Work within time as stipulated; it is being recognized by Owner and Contractor that the injury to Owner that could result from a failure of the Contractor to complete on schedule, is uncertain and cannot be computed exactly. In no way shall costs of Liquidated Damages to be construed as a penalty to the Contractor. (See Bid Documents)

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 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

« »

§ 4.3 Unit prices, if any:
(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price Per Unit ($0.00)

§ 4.4 Allowances included in the Contract Sum, if any:
(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price

ARTICLE 5 PAYMENTS

§ 5.1 PROGRESS PAYMENTS

§ 5.1.1 Based upon Applications for Payment submitted to the County Engineer or his designee by the Contractor and Certificates for Payment issued by the County Engineer or his designee, 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 The Contractor shall submit a Preliminary Payment Request (Pencil Requisition) to the County Engineer or his designee on the twenty-fifth (25th) day of any given calendar month for Work performed during that month,

Upon receipt of the Pencil Requisition from the Contractor, the County Engineer or his designee shall review the Pencil Requisition and approve or disapprove of it in whole or in part as set forth hereafter. Within (4) calendar days of receipt of the Pencil Requisition from the Contractor, the County Engineer or his designee shall return the Pencil Requisition to the Contractor, with those charges that are approved or disapproved, if any, by the County Engineer or his designee, for the Contractor's incorporation into an Application for Payment . Within two (2) calendar days of return of the Pencil Requisition from the County Engineer or his designee, the Contractor shall submit a formal application for Payment to the County Engineer or his designee for review and approval by the County Engineer or his designee incorporating any revisions made by the County Engineer or his designee in the Pencil Requisition submission. Within five (5) calendar days of receipt of Contractor's Application for Payment, the County Engineer or his designee shall take any one of the following actions:

1) Certify the entire Application for Payment;

2) Certify partial payment and provide the Contractor with reasons for withholding the remaining portion of the payment; or

3) Withhold certification of the entire Application for Payment and provide the Contractor with reasons for withholding the entire payment,

Once the Application for Payment id certified either in whole or in part, the County Engineer or his designee shall transmit the Certified Payment Application within three (3) calendar days to the Owner for its review and payment. The Owner shall make payment to the Contractor for the Certified Payment Amount by no later than the time period set forth in the New Jersey Prompt Payment Act following receipt of the Certificate for Payment from the County Engineer or his designee. The Owner shall not be obligated to pay any Application for Payment until the Application for Payment is certified by the County Engineer or his designee. Approval of any Application for Payment may be withheld should the Contractor fail to submit Manning Reports in a timely manner.

Pursuant to N.J.S.A. 2A:30A-1 et seq. (the "Prompt Payment Act"), a public or governmental entity that requires the entity's governing body to vote on authorizations for each periodic payment, final payment, or retainage monies, such as the Owner, is excepted from the timing requirements of the Act. Accordingly, the Owner shall not approve the Contractor's Application for Payment until it is certified by the County Engineer or his designee in accordance herewith and shall not approve the Contractor's Certified Payment Application until the next scheduled public meeting of the Owner following the Owner's receipt of the Certified Payment Application from the County Engineer or his designee. The Owner shall not make payment to the Contractor for the Certified Payment Amount until the Owner's subsequent payment cycle following its approval of the Payment Application.

Pursuant to this same Act, if a payment due pursuant to the provisions herein is not made in a timely manner, the Owner shall be liable for the amount of money owed under the contract, plus interest at a rate equal to the prime rate plus one percent (1%), notwithstanding anything to the contrary in the Contract Documents. Interest on amounts due pursuant to the Act shall be paid to the prime contractor for the period beginning on the day after the required payment date and ending on the day on which the check for payment is received by the Contractor.

Pursuant to this same Act, disputes regarding whether a party has failed to make payments required by the Act may be submitted to a process of alternative dispute resolution, notwithstanding anything to the contrary in the contract documents, where the parties agree to same. Alternative dispute resolution permitted by the Act shall not apply to disputes concerning any other matters that may arise under or from this Contract. Any civil action brought to collect payments shall be conducted in Union County, State of New Jersey, and the prevailing party shall be awarded reasonable costs and attorneys' fees.

§5.1.4 The County Engineer or his designee may decide not to certify payment and may withhold a Certificate for Payment, in whole or in part, to the extent reasonably necessary to protect the Owner if, in the County Engineer or his designee's opinion, the representations as described in Section 5.1.5 below cannot be made to the Owner. If the County Engineer or his designee withholds a Certificate for Payment, the County Engineer or his designee will notify the Contractor and Owner as provided in Section 5.1.3 above. If the Contractor and County Engineer or his designee cannot agree on a revised amount, the County Engineer or his designee will issue a Certificate for Payment for the amount for which the County Engineer or his designee is able to make such representations to the Owner as set forth in Section 5.1.3 above. The County Engineer or his designee may also decide to withhold certifying

payment in whole or in part, or, because of subsequently discovered evidence or subsequent observations, to such extent as may be necessary in the County Engineer or his designee's opinion to protect the Owner from loss because of:

.1 Defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims;
.3 failure of the Contractor to make payments properly to Subcontractors or 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 another 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;
.7 failure to carry out the Work in accordance with the Contract Documents;
.8 avoidable delay in the progress of the Work;
.9 deliberate delay in the submission for approval of names of Subcontractors, materialmen, sources of supply, shop drawings, and samples;
.10 failure to maintain the Project Site in a safe and satisfactory condition in accordance with good construction practices as determined by the County Engineer or his designee; or
.11 failure to submit updates as required by the General Conditions.

When the foregoing reasons for withholding certification are resolved, certification will be made for amounts previously withheld in the manner set forth in Section 5.1.3 above.

§5.1.5 The issuance of a separate Certificate for Payment will constitute representations made separately by the County Engineer or his designee to the Owner, based on its individual observations at the site and the data comprising the Application for Payment submitted by the Contractor, that the Work has progressed to the point indicated and that, to the best of the County Engineer or his designee's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contact Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the County Engineer or his designee. The issuance of a separate Certificate of Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a separate Certificate for Payment will not be a representation that the County Engineer or his designees has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed the Contractor's construction means, methods, techniques, sequences or procedures; (3) reviewed copies of requisitions received from Subcontractor's and materials 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.

§5.1.6 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 County Engineer or his designee may require. This schedule, unless objected to by the County Engineer or his designee, shall be sued as a basis for reviewing the Contractor's Applications for Payment.

§5.1.7 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.

§ 5.1.8 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of [redacted] percent ([redacted] %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™–2007, General Conditions of the Contract for Construction;

.2 Add 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), less retainage of [redacted] percent ([redacted] %);

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract amounts, if any, for which the County Engineer or his designee has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201–2007.

§5.1.9 The progress payment amount determined in accordance with Section 5.1.8 shall be further modified under the following circumstances:

.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the County Engineer or his designee shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and

.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201-2007.

§5.1.10 Retainage shall be determined as follows: Pursuant to N.J.S.A. 40A:11-6.1, the Owner will withhold two percent (2%) of the amount due on each partial payment when the outstanding balance of the Contract exceeds One Hundred Thousand Dollars ($100,000.00.

§5.1.11 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 Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the County Engineer or his designee.

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

« »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The County Engineer or his designee will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as 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 County Engineer or his designee.)

« »
« »
« »
« »

§ 6.2 BINDING DISPUTE RESOLUTION

Except as provided in Section 5.1.3 of the Standard Form of Agreement between the Owner and Contractor, all claims, disputes or other matters in question between the parties to this Contract, arising out of or relating to the Project or to the Contract, or the alleged breach hereof, shall be subject one to mediation, and if not resolved, then same shall be decided in a Court of competent jurisdiction venued in Union County, New Jersey. No party may be compelled to submit any dispute concerning the Project to arbitration. In the event any claim arising from the Project is beyond the jurisdiction of the court, the Contract consents to joinder as a party to such action or alternative dispute proceeding.

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 A201–2007.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall in no instance bear interest, except as required by law in accordance with Section 5.1.3 hereof.

§8.3 The Contractor shall ensure that the Project Site is maintained in a clean and safe condition at all times, based upon Owner's sole discretion. If the Contractor fails to keep the Project Site in a clean and safe condition, said failure shall result in the following:

.1 all claims resulting from the Contractor's failure shall be the Contractor's responsibility;
.2 said failure shall constitute an act of default and a substantial breach of the Contract giving the Owner remedies under the contract Documents; and
.3 the Owner shall have the right to withhold any payments until the Contractor cures its failure.

Failure to do so shall authorize the Owner to withhold any Applications for payment until such time as the Contractor has rectified same. Further, if the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

§8.4 Indemnification – See Indemnification Requirements in Bid Documents.

§8.5 The within contract shall be governed by and interpreted pursuant to the law of the State of New Jersey.

§8.6 The Contractor shall comply with the anti-discrimination provisions of N.J.S.A. 10:2-1 et seq., the New Jersey Law Against Discrimination, N.J.S.A. 10:5-1 et seq., N.J.A.C. 17:27-1.1 et seq. and shall guarantee to afford equal opportunity in performance of the Work in accordance with an affirmative action program approved by the State Treasurer. (See Page G-21).

§8.7 The Contractor shall submit proof of Business Registration for itself and it subcontractors to the Owner and shall provide written notice to its subcontractors and suppliers of the responsibility to submit proof of business registration to the contractor. The requirement of proof of Business Registration extends down through all levels (tiers) of the Project.

The Contractor agrees to comply with the rules and regulations promulgated pursuant to the Contractor Use Tax Collection Legislation.

For the term of the contract, the Contractor, any subcontractor, and each of their affiliates [N.J.S.A. 52:32-44(g)93)], shall collect and remit to the New Jersey Director of the Division of Taxation in the Department of Treasury, the use tax due pursuant to the "Sales and Use Tax Act," P.L. 1966, c. 30 (C.54:32B-1 et seq.) on all of their sales of tangible personal property delivered into the State of New Jersey, regardless of whether the tangible personal property is intended for a contract with a contracting agency. 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.

§8.8 This Standard Form of Agreement and the General Conditions set forth in the Bid Documents shall control in the case of conflict between these documents and the Project Specifications, the Project Manual, and any other exhibits incorporated by reference in this Contract.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below, and incorporated herein as if set forth in their entirety.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

§ 9.1.4 The Specifications:

(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

« See Specifications as referenced by Exhibit B »

Section	Title	Date	Pages

§ 9.1.5 The Drawings:

(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

« See List of Drawings, annexed hereto as Exhibit C »

Number	Title	Date

§ 9.1.6 The Addenda, if any:

Number	Date	Pages

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

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

.1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

« »

.2 Other documents, if any, listed below:

« »

ARTICLE 10 INSURANCE AND BONDS

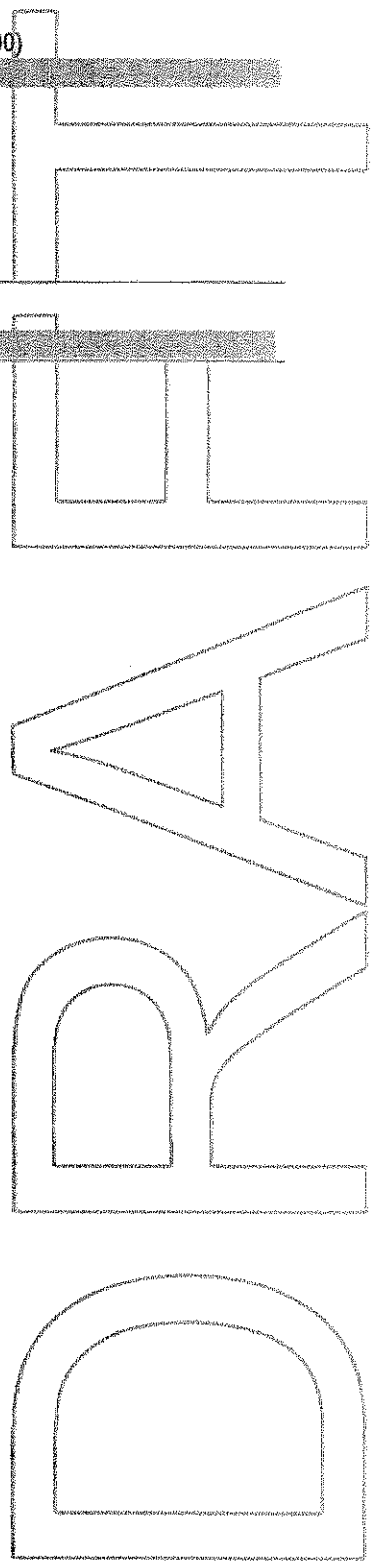
The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

Type of insurance or bond	Limit of liability or bond amount ($0.00)

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)*



DRAFT

AIA® Document A201™ - 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)
«County of Union»
« »

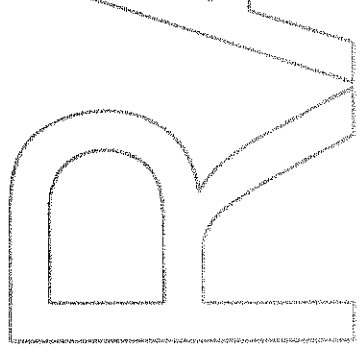
THE OWNER:
(Name, legal status and address)
« »« »
« »

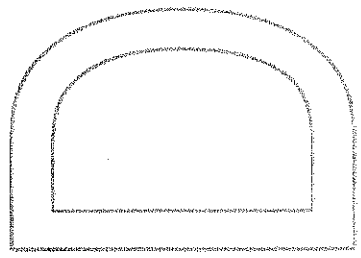
THE ENGINEER, OR HIS DESIGNEE :
(Name, legal status and address)
« »« »
« »

TABLE OF ARTICLES

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

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





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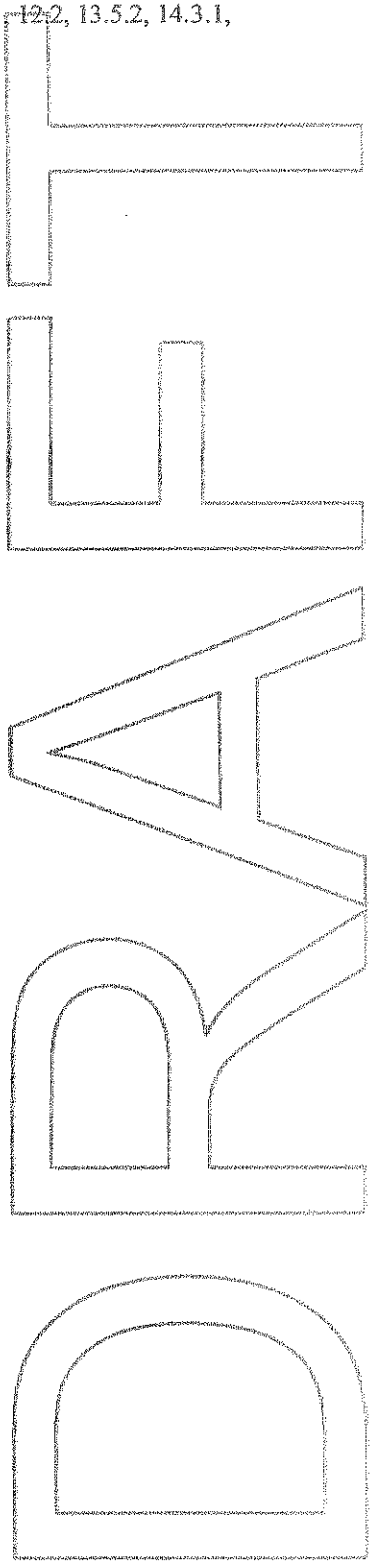
INDEX
(Topics and numbers in bold are section headings.)



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 or Engineer 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 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 Engineer, or his designee or the Engineer, or his designee 's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Engineer, or his designee or the Engineer, or his designee 's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Engineer, or his designee s hall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Engineer, or his designee '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 Engineer, or his designee and the Engineer, or his designee '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 and certify termination of the Agreement under Section 14.2.2.

§ 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.

§ 1.2.2 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 Engineer, or his designee s.

§ 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 Engineer, or his designee and the Engineer, or his designee 's consultants shall be deemed the authors and Owners of their respective Instruments of Service, including the Drawings and Specifications. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment 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 this Project is not to be construed as publication in derogation of the Engineer, or his designee or Engineer, or his designee 's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them 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 material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Engineer, or his designee and the Engineer, or his designee 's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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 elsewhere in the Contract Documents, the Engineer, or his designee does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 The Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only in the event that: (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 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.

§ 2.2.3 If readily available, the Owner shall furnish surveys describing physical characteristics and legal limitations 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. The Contractor shall be responsible for requesting and obtaining a utility mark-out.

§ 2.2.4 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.

§ 2.2.5 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.

§ 2.3 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 Article 12 or 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. Owner shall in no way be responsible for any delays or claims arising from delays for enforcement of this Section.

§ 2.4 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 seven-day period after receipt of written 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 deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Engineer, or his designee 's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

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 and shall maintain as current any approvals or certifications that may be required to perform the Work. 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 obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Engineer, or his designee in the Engineer, or his designee '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 2.2.3, 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 Engineer, or his designee any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Engineer, or his designee 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 Engineer, or his designee any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Engineer, or his designee may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Engineer, or his designee 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 make 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 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 Engineer, or his designee 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, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and 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 written notice to the Owner and Engineer, or his designee and shall not proceed with that portion of the Work without further written instructions from the Engineer, or his designee . If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required 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 authorized by the Engineer, or his designee in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after

evaluation by the Engineer, or his designee 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

The Contractor warrants to the Owner and Engineer, or his designee 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 Engineer, or his designee , the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Such warranty shall continue for a period of one (1) year from the date of Substantial Completion of the Work. Under this warranty, the Contractor shall remedy at his expense any such failure for the Work to be conforming to the requirement of the Contract, or any other defect appearing in the Work. In addition, the Contractor shall remedy at his own expense, any damage to Owner's owned, controlled, real or personal property, when that damage is the result of the Contractor's failure to proved conforming Work as it relates to the Contract Documents or any other defect of equipment, material, workmanship or design. The Contractor shall also restore any Work damaged in fulfilling its obligations under the terms of this provision. The Contractor's warranty with respect to the Work repaired or repaced hereunder will run for a period of one (1) year from the date of repair or replacement.

§ 3.6 TAXES

The Contractor shall pay 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 Engineer, or his designee before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Engineer, or his designee will promptly investigate such conditions and, if the Engineer, or his designee 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 an equitable adjustment in the Contract Sum or Contract Time, or both. If the Engineer, or his designee 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 Engineer, or his designee shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Engineer, or his designee 's determination or recommendation, that party may proceed 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 Engineer, or his designee . 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.

§ 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. The unused balance of any allowance shall be deducted from the Contract Sum upon completion and acceptance of the Work by Change Order.

§ 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 furnish in writing to the Owner through the Engineer, or his designee the name and qualifications of a proposed superintendent. The Engineer, or his designee may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Engineer, or his designee has reasonable objection to the proposed superintendent or (2) that the Engineer, or his designee requires additional time to review. Failure of the Engineer, or his designee to reply 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 Engineer, or his designee 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 SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Engineer, or his designee 's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Engineer, or his designee 's approval. The Engineer, or his designee 's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Engineer, or his designee reasonable time to review submittals. If the Contractor fails to submit a 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 Engineer, or his designee .

§3.10.4 Should the Contractor responsible for the scheduling requirements of Article 3 herein fail to comply with said scheduling requirements, said failure shall result in the following:

.1 all claims resulting from the Contractor's failure to prepare or submit a schedule shall be the Contractor's responsibility;

.2 shall constitute an act of default and a substantial breach of the Contract giving the Owner remedies under the Contract Documents; and

.3 the Owner shall have the right to withhold any payments until the Contractor complies with the scheduling requirements of Article 3 herein.

§3.10.5 In the event of a Five Prime Contract, the General Contractor shall be responsible for the preparation and submittal of the schedule.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Engineer, or his designee and shall be delivered to the Engineer, or his designee 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 the way by which 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 Engineer, or his designee is subject to the limitations of Section 4.2.7. Informational submittals upon which the Engineer, or his designee 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 Engineer, or his designee without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Engineer, or his designee Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Engineer, or his designee 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 Engineer, or his designee 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 Engineer, or his designee .

§ 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 requirements of the Contract Documents by the Engineer, or his designee 's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Engineer, or his designee in writing of such deviation at the time of submittal and (1) the Engineer, or his designee 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 Engineer, or his designee '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 Engineer, or his designee on previous submittals. In the absence of such written notice, the Engineer, or his designee '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 Engineer, or his designee ure 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. 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 Engineer, or his designee will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly 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 Engineer, or his designee . The Owner and the Engineer, or his designee shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Engineer, or his designee have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Engineer, or his designee will review, 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. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

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

§3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Owner before using any portion of the Site.

§3.13.3 The Contractor shall store its apparatuses, materials, supplies, and equipment in such orderly fashion at the Site of the Work, if permitted, as will not unduly interfere with the progress of the Work or ongoing operations. The Contractor shall provide protective fencing around the designated storage areas.

§3.13.4 The Contractor shall see that stockpiles of materials and storage of equipment are kept to a minimum and neatly stored where directed by the Owner and the Engineer, or his designee.

§3.13.5 If the Work is to be executed in areas occupied by the Owner, the Contractor shall inform the Owner in advance of the areas scheduled to be worked on, so that the Owner's personnel may make proper preparations to protect equipment and records.

§3.13.6 The Contractor understands that some or all the Work of the Contract may be performed while the facilities are occupied by personnel, and accordingly shall make all reasonable and necessary provisions to ensure that the contract Work will be of minimal disruption to the environment.

§3.13.7 Materials and equipment that are to be used only directly in the Work, shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project Site. Protection of construction materials and equipment stored at the Project Site from weather, theft, damage and all other adversity is solely the Contractor's responsibility. The Contractor shall bear the responsibility to replace all such materials that may be lost, damaged, or stolen at its expense, whether such materials or equipment have been entirely or partially paid for by the Owner.

§3.13.8 The Contractor and any entity for whom the Contractor is responsibility, shall not erect any sign on the Project Site without the prior written consent of the Owner, which may be withheld in the sole discretion of the Owner.

§3.13.9 Contractor shall ensure that the Work is performed at all times in a manner that affords reasonable access, both vehicular and pedestrian, to the Site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the Site of the Work shall be free from all debris, building materials, and equipment likely to cause hazardous conditions.

§3.13.10 Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project Site, including, without limitation, the lavatories, toilets, entrances, and parking areas, other than those designated by the Owner. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project Site and the Building, as amended from time to time. The Contractor shall immediately notify the Owner in writing, if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable. This notification shall set forth the problems of such compliance and shall suggest alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project Site and the Building.

§ 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 and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents. Any costs incrred by the Onwer for defective cutting or patching shall be borne by the Contractor responsible therefore.

§ 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 such construction by the Owner or a separate Contractor except with written consent of the Owner and of such separate Contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate Contractor the Contractor's 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 or 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 Owner shall be entitled to reimbursement from the Contractor, or shall be entitled to reduce the Contract Amount in an amount equal to the Owner's cost to clean up.

§3.15.3 The Contractor shall, on a daily basis, clean debris resulting from its Work, and protect construction in progress and maintain adjoining materials in place during handling and installation, and provide protective covering where required to assure protection from damage or deterioration until Substantial Completion.

§3.15.4 The Contractor shall clean and provide maintenance on completed construction, after installation, as frequently as necessary through the remainder of the construction period.

§3.15.5 The Contractor shall supervise its construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. The term "clean" shall include the removal of debris from the work area to dumpsters furnished by the Prime General Work Contractor or the Contractor for Single Overall Contract Work, whichever contracting method shall apply.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Engineer, or his designee 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 Engineer, or his designee harmless from loss on account thereof, but shall not be responsible for such 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 Engineer, or his designee . However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Engineer, or his designee .

§ 3.18 INDEMNIFICATION

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

> "To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner and Owner's consultants, agents, representatives, and employees from and against any and all claims, damages, losses, costs, and expenses, including, but not limited to attorney's 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 work itself) caused or alleges 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 Owner and the Owner'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 claims, damage, loss, cost, or expense is attributable to bodily injury, sickness, disease or death, or to injury to destruction of tangible property (other than work itself) caused or alleged to be caused by the negligent acts, negligent omissions, and/or fault of the Owner or the Owner'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."

§ 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 ENGINEER, OR HIS DESIGNEE OR ENGINEER

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an Engineer, or his designee lawfully licensed to practice Engineer, or his designee ure or an entity lawfully practicing Engineer, or his designee are in the jurisdiction where the Project is located. That person or entity is identified as the Engineer, or his designee in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Engineer, or his designee will provide administration of the Contract as set forth in its respective Agreements with the Owner and as described in the Contract Documents.

§ 4.2.2 The Engineer, or his designee 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.

§ 4.2.3 On the basis of the site visits, the Engineer, or his designee will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Engineer, or his designee about matters arising out of or relating to the Contract. Communications by and with the Engineer, or his designee 's consultants shall be through the Engineer, or his designee . Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

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

§ 4.2.6 The Engineer, or his designee has authority to reject Work that does not conform to the Contract Documents. Whenever the Engineer, or his designee considers it necessary or advisable, the Engineer, or his designee will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Engineer, or his designee 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 Engineer, or his designee to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Engineer, or his designee 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 Engineer, or his designee 's action will be taken in accordance with the submittal schedule approved by the Engineer, or his designee or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Engineer, or his designee '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 Engineer, or his designee '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 Engineer, or his designee 's review shall not constitute

approval of safety precautions or, unless otherwise specifically stated by the Engineer, or his designee , of any construction means, methods, techniques, sequences or procedures. The Engineer, or his designee 's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Engineer, or his designee will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7. The Engineer, or his designee will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Engineer, or his designee 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 Engineer, or his designee agree, the Engineer, or his designee will provide one or more project representatives to assist in carrying out the Engineer, or his designee 's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in the Owner's Agreement with the Engineer, or his designee

§ 4.2.11 The Engineer, or his designee will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Engineer, or his designee '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 Engineer, or his designee 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 Engineer, or his designee will endeavor to secure faithful performance by both Owner and Contractor and will not show partiality.

§ 4.2.13 The Engineer, or his designee will review and respond to requests for information about the Contract Documents. The Engineer, or his designee 's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Engineer, or his designee 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 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 Identification of Subcontractors required by N.J.S.A. 40A:11-16 shall be provided with the bid submission in accordance with the requirements of that statute. Names of persons or entities for any Subcontractor not covered by N.J.S.A. 18A-18 shall be furnished within thirty (30) thirty days of notification of Award of Contract. The Engineer, or his designee will notify the Contractor in wiring if the Owner or Engineer, or his designee , after due investigation, has reasonable objection to any such proposed person or entity. The list of proposed Subcontractors shall include a description of the materials and equipment each proposes to furnish and install in the Work. The description shall be insufficient detail to allow the Engineer, or his designee to determine general conformance to Contract requirements. Approval of the submittals as required under this Article shall not relieve the Contractor from conformance to Contract requirements.

§5.2.2 Subcontractors shall comply with the statutory requirements of N.J.S.A. 34:11-56.25 and N.J.S.A. 34:11-56.48. Any subcontractors who fail to comply with those statutory provisions shall be rejected.

§5.2.3 Written confirmation of award of each major subcontract shall be submitted to the Owner by the Contractor, in form subject to his approval, within seven (7) days after receipt of Owner's approval of proposed Subcontractor list as provided under this Article. Every subcontract shall be in writing, shall be submitted to Owner for review and approval prior to execution, and shall specifically provide that the Owner is an intended third (3rd) party beneficiary of such subcontract.

§ 5.2.4 The Contractor shall not contract with a proposed person or entity to whom the Owner or Engineer, or his designee has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.5 If the Owner or Engineer, or his designee has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Engineer, or his designee 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.

§ 5.2.6 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Engineer, or his designee makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

§5.3.1By appropriate agreement, written where legally required for validity, 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, which the Contractor, by these Documents assumes toward the Owner and Engineer, or his designee . Each subcontract agreement shall preserve and protect the rights of the Owner and Engineer, or his designee under the Contract Documents and at law. No Subcontract shall diminish in any way any rights or benefits conferred upon the Owner by these Contract Documents. The Contractor shall make all Contract Documents available to the Subcontractors.

§5.3.2 Where the Contractor sublets portions of the Work, the entire responsibility for the subdividing of Work rests with the Contractor. The Owner and the Engineer, or his designee are not responsible for the manner of the subdivision of the Work, nor will they enter into or settle disagreements or disputes between Contractor and Subcontractors. The Contractor is, and will be held, responsible for the proper execution of the Work of all 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 in writing.

§ 5.4.2 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity.

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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site.

§ 6.1.2 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 other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the 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.

§ 6.2 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 report to the Engineer, or his designee apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report 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, except as to defects not then reasonably discoverable.

§ 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 the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§6.2.4.1 Should the Contractor cause damage to the Work or property of any separate Contractor on the Project, the Contractor shall promptly settle with such other Contractor by agreement, or otherwise resolve the dispute. If such separate Contractor institutes any legal proceeding against the Owner on account of any damage alleged to have been so sustained, the Contractor shall, indemnify, defend, or bear the cost of defense as the Owner shall in its own discretion determine, and hold the Owner's harmless. Said Indemnification shall be governed by Section 13, Page G7 of the Instructions to Bidders.

§ 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 Engineer, or his designee will allocate the cost among those responsible, which amounts the Owner shall be entitled to reduce the Contract Amounts of the various contracts of 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. Change Orders and Construction Change Directives shall be subject to and processed in accordance with N.J.A.C. 6A:23-7 and N.J.A.C. 6A:26-4.9, where applicable.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Engineer, or his designee ; a Construction Change Directive requires a written agreement by the Owner and Engineer, or his designee and may or may not be agreed to by the Contractor; an order for a minor change in the Work which does not extend the Contract Time, increase the Contract Sum or change the Project Scope may be issued by the Engineer, or his designee alone.

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

§7.1.4 In order to facilitate checking of quotations for extras or credits, all proposals shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also. In no case will a change be approved without such itemization.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Engineer, or his designee and signed by the Owner, Contractor and Engineer, or his designee 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.

A Change Order shall not require consent of the Owner if the Owner has provided an allowance for such a change.

§7.2.2 Methods used in determining adjustments to the Contract Sum shall be those listed in Section 7.3.3.

§7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change, and any and all adjustments to the Contract Sum and the construction schedule. In the event a Change Order increases the Contract Sum, Contractor shall include the Work covered by such Change Orders in Applications for Payment as if such Work were originally part of the Contract Documents.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Engineer, or his designee and signed by the Owner and Engineer, or his designee , directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. A Construction Change Directive shall not require the Agreement of the Engineer, or his designee if the Owner specifically waives their consent in writing. 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 7.3.6.

§ 7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Engineer, or his designee 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. The Contractor's failure to comply with a Construction Change Directive shall constitute an incident of default and cause for termination by the Owner.

§ 7.3.5 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.

§ 7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Engineer, or his designee shall determine the method and 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 Engineer, or his designee may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.6 shall be limited to the following:

.1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

.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; and

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work.

§ 7.3.7 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 Engineer, or his designee . 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.

§ 7.3.8 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 Engineer, or his designee will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Engineer, or his designee determines, in the Engineer, or his designee 's professional judgment, to be reasonably justified. The Engineer, or his designee '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.

§ 7.3.9 When the Owner and Contractor agree with a determination made by the Engineer, or his designee 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 Engineer, or his designee will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§7.3.10 In subparagraphs 7.3.3 and 7.3.6, the allowance for overhead and profit combined shall be based upon the following schedule:

.1 For the Contractor, for work performed by his own forces, 10% of cost.

.2 For each Subcontractor, for the work performed by his own forces, 10% of cost.

.3 For the Contractor, for work performed by a subcontractor, 5% of cost.

§7.3.11 Lump sum quotations for changes in the Work will not be accepted. Proposals shall be completely itemized and broken down. They shall be accompanied by such supporting data as the Engineer, or his designee may require, such as copies of subcontractor's or vendor's quotations, quantity take-off sheets, or other similar information.

§ 7.4 MINOR CHANGES IN THE WORK

The Engineer, or his designee has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Engineer, or his designee and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

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 and services as required by the Contract

Documents, Substantial Completion of the Work shall be accomplished within the period of consecutive calendar days (or by the date), as stated in the Agreement, plus any authorized extension(s) of time as approved by written agreement. Final Completion of the Work shall be no later than thirty (30) consecutive calendar days from the date of Substantial Completion of the Work, unless otherwise set forth in Article 3.2 of the Owner/Contractor Agreement.

§ 8.1.2 Intentionally omitted

§ 8.1.3 Intentionally omitted.

§ 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. There will be no bonus or incentives paid, should the Work, or any portion thereof, be completed in advance of the specified activity milestone dates.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 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 Intentionally omitted

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

§ 8.3.3 Intentionally omitted

§8.3.4 No payment, compensation, or adjustment of any kind shall be made to the Contractor by the Owner for damages resulting from hindrances or delays caused by the delays of other contractors, or from foreseeable circumstances not attributable to the Owner's conduct. The Contractor agrees that it will make no claim against the Owner for payment, compensation, damages, mitigation of Liquidated Damages, or adjustment of any kind for such hindrances or delays, and will accept such extensions of time as may be granted by the Owner in the Owner's sole discretion in full satisfaction for any and all alleged claims against the Owner for any and all such hindrances or delays. For purposes of this Agreement, disputes arising between contractors before or during construction, adverse weather conditions, and delays on the part of local authorities issuing permits shall be considered foreseeable circumstances. Notwithstanding the foregoing, nothing herein shall limit the Contractor's remedies for Owner's negligence, bad faith, active interference, tortuous conduct, or other reasons uncontemplated by the parties that delay expenditures paid by the Owner to the Engineer, or his designee , other individual or entity, or to any inspector or inspectors necessarily employed by it on the Work, for any number of days in excess of the Contract Time, shall be deducted for the Contract Sum.

§8.3.5 The provisions of this Article shall not be so interpreted or construed as to preclude or prevent the Contractor from making and prosecuting any claim against any separate Contractor engage or employed by the Owner for damages alleged to have been caused or occasioned by any such separate Contractor.

§8.3.6 To the extent permitted by law, the Owner may suspend the whole or any part of the Work, if it shall deem it for the best interest of the Owner to do so, without compensation to the Contractor for such suspension, other than extending the time for completion of the Work as much as it may have been delayed by such suspension. During such suspension, all materials delivered upon, but no placed in the Work shall be neatly piled by the Contractor so as not to obstruct public travel, or shall be removed from the line of Work at the direction of the Owner and, unless the

materials be moved by the Contractor upon such direction, the materials shall be removed by the Owner and expense thereof will be charged to the Contractor.

§8.4.1 Should the Contractor fail to complete fully, and in conformity with all provisions of the Contract within the Contract Time, the Contractor shall, and hereby agrees to, pay the Owner one thousand dollars ($1,000.00) per day, for each consecutive calendar day beyond the number of days allowed by the Contract, which sum is agreed upon as reasonable and proper measure of damages that the Owner will sustain per diem by failure of Contractor to complete Work within time as stipulated; it being recognized by Owner and Contractor that the injury to Owner that could result from a failure of the Contractor to complete on schedule, is uncertain and cannot be computed exactly, In no way shall costs of Liquidated Damages be construed as a penalty to the Contractor.

§8.4.2 It is expressly understood and agreed by and between the Contractor and Owner that the Contract Time prescribed herein is a reasonable time for the completion of the Work.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

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.

§ 9.2 SCHEDULE OF VALUES

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

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 See Article 5 of Standard Form of Agreement between Owner/Contractor.

§ 9.3.1.1 Applications for Payment may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

§ 9.3.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

§ 9.3.1.3 All applications for payment shall be accompanied by the Application and Certificate of Payment, AIA Document G702, and the Continuation Sheet, AIA Document G703, fully completed as required or such other application for Payment as the Owner's representative shall use.

§9.3.1.4 In cases where the work is awarded on a Single Overall Contract basis, payments shall be made in accordance with applicable State of New Jersey statutes.

§ 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, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§9.3.3.1 All municipal mechanic's liens filed by a lien claimant shall be governed by N.J.S.A. 2A:44-125 et seq. In the event a municipal mechanic's lien is filed, the Owner reserves the right to withhold the full amount of the lien. The Owner may release the funds to the party against whose account the lien is claimed, only after that party files with the Owner's financial officer, a bond in an amount double of all sums claimed ("Double Bond") under the lien, and such bond's form has been approved by the Owner's chief law officer and financial officer, per N.J.S.A. 2A:44-130 or if an acceptable release of liens is filed by the lien claimant.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 See Article 5 of Standard Form of Agreement between Owner and Contractor.

§ 9.4.2 See Article 5 of Standard Form of Agreement between Owner and Contractor

§9.4.3 See Article 5 of Standard Form of Agreement between Owner and Contractor.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 See Article 5 of Standard Form of Agreement between Owner and Contractor

§ 9.5.2 See Article 5 if Standard Form of Agreement between Owner and Contractor.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Engineer, or his designee 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 Engineer, or his designee .

§ 9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, 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 and shall certify same to Owner. 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 Engineer, or his designee 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 Owner and Engineer, or his designee on account of portions of the Work done by such Subcontractor.

§ 9.6.4 Neither the Owner nor Engineer, or his designee shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

§ 9.6.5 Payment to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.7 FAILURE OF PAYMENT

If the Engineer, or his designee 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 Engineer, or his designee or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Engineer, or his designee , 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 shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§9.7 REIMBURSEMENT TO OWNER

§9.7.1 If the Owner is entitled to any reimbursement or payment from the Contractor under, or pursuant to, the Contract Documents, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to: (1) deduct an amount equal to that which the Owner is entitled from any

payment then, or thereafter, due the Contractor from the Owner; or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

§ 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; provided, however, that a condition precedent to Substantial Completion shall be the Owner's receipt of all certificates of occupancy (permanent or temporary) and any other permits, approvals, licenses, and other documents from any governmental authority having jurisdiction thereof necessary for the occupancy of the Project. The Owner may withhold a certification of Substantial Completion if temporary installations or temporary construction exists in areas requesting certification, or if certificates of occupancy are temporary or conditional.

§ 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 Engineer, or his designee shall prepare a comprehensive list of items to be completed or corrected ("Punch List"). The Contractor shall proceed immediately to complete and correct items on the list. 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. Upon receipt of the list, the Engineer, or his designee, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Engineer, or his designee 's inspection discloses any item, whether or not included on the list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Engineer, or his designee . The Contractor shall then submit a request for another inspection by the Engineer, or his designee to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Engineer, or his designee will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall 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. The Certificate of Substantial Completion shall be submitted to the Contractor for its written acceptance and to the Owner for its approval and acceptance as required by Section 9.8.1 No Certificate of Substantial Completion shall be deemed effective unless executed by both Owner and Contractor.

§ 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, who shall obtain all necessary modifications to its insurance coverage to permit such occupancy or use. In addition, Contractor shall obtain consent of those public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete pursuant to the terms of that Agreement. When the Contractor considers a portion substantially complete, the Engineer, or his designee shall prepare a Punch List as provided under Section 9.8.2 Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Engineer, or his designee 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.

§9.9.4 The occupancy of any portion of the Work shall not constitute acceptance of any Work, except as hereinafter stated, nor does it waive the Owner's right to Liquidated Damages. Final Acceptance of the Work shall be for the whole Work only and not part.

§9.9.5 Occupancy by the Owner shall not be deemed to constitute a waiver of existing claims on behalf of the Owner or Contractor against each other.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Engineer, or his designee a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Engineer, or his designee a final Contractor's Application for Payment. The Engineer, or his designee will promptly make such inspection. When the Engineer, or his designee finds the Work acceptable under the Contract Documents and the Contract fully performed, the Engineer, or his designee will promptly issue a final Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their observations and inspections, the Work has been completed in accordance with terms and conditions of 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 Engineer, or his designee '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 complies with all requirements set forth in Section 6 of the Standard From of Agreement between Owner and Contractor and the Contractor submits to the Engineer, or his designee (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 and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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 and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, 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. If such lien 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 such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 Intentionally omitted

§ 9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee

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. The Contractor shall submit the Contractor's safety program to the Engineer, or his designee for review and coordination with the safety programs of other Contractors.

§ 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 or the Contractor's Subcontractors or Sub-subcontractors; 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.

.4 **Construction or operations by the Owner or other Contractors.**

§ 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 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 Owners and users of adjacent sites and utilities.

§ 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, 10.2.1.3 and 10.2.1.4 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, 10.2.1.3 and 10.2.1.4, except damage or loss attributable to acts or omissions of the Owner or Engineer, or his designee 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 Engineer, or his designee .

§ 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, written notice of such 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

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. 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 report the condition to the Owner and Engineer, or his designee in writing.

§ 10.3.2 Upon receipt of the Contractor's written 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 Engineer, or his designee the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance.

§ 10.3.3 Intentionally omitted

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for 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 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 indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance 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 Intentionally omitted

§ 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 LIABILITY INSURANCE

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

1. Automobile Liability Insurance in any amount of not less than $1,000,000.00 combined single limits for Bodily Injury and Property Damage Liability. A certificate of such current insurance will be provided to the County and will reflect the provision of at least thirty (30) days notice to the County before any major cancellation or major change may be made the policy.

2. Workers Compensation Insurance insuring the obligations of the Contractor and all Subcontractors under the New Jersey Workers Compensation and Occupational Disability Laws as respects to Work performed under the Contract. Insurance will be extended to include any obligations under the United States Longshoremen's and Harbor Workers Act or any maritime act, when applicable.

3. General Liability Insurance will be provided on a Comprehensive General Liability form with a combined single limit of $3,000,000.00 per occurrence for Bodily Injury Liability and Property Damage Liability and will include the interest of the County with respect to Work emanating from the Contract with the County. The insurance will include the following:

a) Personal Injury Liability
b) Blanket Contractual Liability applies to assumption of liability under any written Contract
c) Coverage for A, X, C, U exposures, relating to excavation, blasting underground damage
d) Broad Form Property Damage Liability
e) Products and/or Completed Operations Liability

A Certificate of Insurance will be filed with the County prior to commencement of any Work. This certificate will contain a provision that insurance afforded under the policies will not be canceled without at least (30) days prior written notice being given to the County.

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§ 11.1.2 The insurance required by Section 11.1.1 shall remain in effect for the duration of the project, i.e., from beginning of construction until final payment and closeout.

§ 11.1.3 All insurance required by Section 11.1.1 shall be issued by insurance companies authorized to do business in the State of New Jersey and rated as "A' or better as determined by A.M. Best Company.

§ 11.1.4 The Contractor waives all rights against the Owner for damages caused by fire or other perils to the extent covered by insurance provided under this Article. Any deductibles, co-insurance, or contribution to the loss will be borne solely by the Contractor.

§11.1.5 A certificate of insurance evidencing the coverages required by Section 11.1.1 shall be submitted to the Owner's attorney for approval and transmittal to the Owner and Engineer, or his designee prior to the commencement of the Work. The certificate must be submitted on the ACORD from Certificate of Insurance. Theses certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least thirty (30) days' written notice has been given to the Owner. If requested by the Owner, the Contractor shall provide complete copies of any policies of insurance required by this Contract to be obtained by the Contractor and Subcontractor(s). Information concerning any reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

§ 11.2 PROPERTY INSURANCE

§ 11.2.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost

basis without voluntary deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurance interest in the property required by this Section 11.2 to be covered, whichever is earlier. This insurance shall include the interest of the Owner, Contractor, Subcontractor(s), and Sub-Contractor(s) in the Work.

§ 11.2.1.1 Property insurance shall be on an "all-risk" policy form and shall against the perils of fire and extended coverage and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, falsework, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Engineer, or his designee 's services and expenses required as a result of such insured loss. Coverage for all other perils shall not be required unless otherwise provided in the Contract Documents.

§ 11.2.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractor(s) and Sub-subcontractor(s) in the Work,.. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.2.1.3 If the property insurance requires minimum deductibles, and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Owner or insurer increases the required minimum deductibles over the amounts so identified or of the Owner elects to purchase this insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles.

§ 11.2.1.4 Unless otherwise provided in the Contract documents, this property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

§ 11.2.1.5 A loss insured under Owner's property insurance 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 mortgage clause and of Section 11.3.10. The Contractor shall pay Subcontractor(s) their just shares of insurance proceeds received the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractor(s) to make payments to their Sub-Contractor(s) in a similar manner.

§ 11.2.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds. The Owner as fiduciary shall have the power to adjust and settle a loss with insurers.

§ 11.2.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused.

§ 11.2.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3 PERFORMANCE BOND, PAYMENT BOND AND MAINTENANCE BOND

§ 11.3.1Contractor, at its sole expense, shall furnish bonds covering faithful performance of the contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract, including material and labor..

§ 11.3.2 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 made

§11.3.3 The Contractor shall file with the Owner, as a condition of final acceptance, a statement from the Surety of its Performance Bond and Payment Bond, that the Surety is satisfied that all claims for labor and material supplied under its contract have been satisfactorily settled.

§11.3.4 As a condition of Substantial Completion of the Work, the Contractor shall provide an acceptable Maintenance Bond in accordance with section 16, page G-9 of the Instructions to Bidders .

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

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

§ 12.1.2 If a portion of the Work has been covered that the Engineer, or his designee has not specifically requested to examine prior to its being covered, the Engineer, or his designee may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate Contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

The Contractor shall promptly correct Work rejected by the Engineer, or his designee or failing to conform to the requirements of the Contract Documents, whether discovered before or after 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 Engineer, or his designee 's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 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 an 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 written 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. The Owner shall give such notice promptly after discovery of the non-conforming work. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after the receipt of notice from the Owner or Engineer, or his designee , the Owner may correct it in accordance with Section 2.4. This obligation under Section 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract.

§ 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 Intentionally omitted.

§ 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 work, whether completed or partially completed, of the Owner or separate contractors 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, nor to any deficient Work discovered after the one-year period that could not have readily been discovered.

§ 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. However, there shall be no implied or expressed acceptance of Work not in compliance with applicable law. The amount of said reduction will be within the exclusive determination of the Owner as it representative.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

§ 13.1.1The Contract shall be governed by the laws of the State of New Jersey.

§ 13.1.2 Nothing in the Contract Documents shall be construed to permit deviation from the governing law.

§ 13.1.3 In accordance with N.J.S.A. 40A:11-18, American manufactured products or materials shall be used in the Work, wherever possible.

13.1.4 RATE OF WAGES

Where the Project is not subject to a Project Labor Agreement, wage notes shall be paid pursuant to the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq, the Contractor and Subcontractor are required to do the following:

§ 13.1.4.1 Pay to all workmen engaged engaged in the performance of services, directly upon a public work, the prevailing rate of wages, which shall be those in effect for the Project site(s) on the Contract Date and such rates shall remain in effect for (2) years, unless superseded by a subsequent determination.

§ 13.1.4.2 Before final payment, furnish Owner with an affidavit stating that all workmen have been paid the prevailing rate of wages specified in the contract.

§ 13.1.4.3 Keep an accurate record showing the name, craft, or tradeand actual hourly rate of wages paid to each workman employed by it in connection with any public work. Records shall be preserved for two (2) years from date of payment.

§ 13.1.4.4 Post the prevailing wage rated 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, and at such place or places as are used by them to pay workmen their wages.

§ 13.1.4.5 Submit the Owner, certified payroll records for each payroll period within ten (10) date of the payment of wages. A certified payroll record is defined as "a payroll record that is attested by the employer or the Owner of the company doing business as the employer, or a corporate officer of such company, or an authorized agent of the employer". A copy of the certified payroll form for submission of the payroll records may be obtained by contacting the Department of Labor, Division of Workplace Standards at 609.292.2259.

§ 13.1.4.6 In the event the Owner finds that any workers employed by the Contractor or Subcontractor, covered by the said contract, have been paid a rate off wages less than the prevailing wage required to be paid by such contract, the Ownert may terminate the Contractor's or Subcontractor's right to proceed with the Work, or such part of the

Work as to where there has been a failure to pay required wages, and to prosecute the Work to completion or otherwise, the Contractor and its sureties shall be liable to the Owner for any excess costs occasioned thereby,

§ 13.1.4.7 a current wage rate determination is on file at the offices of the Owner for inspection and Contractor's use.

§ 13.1.5 SAFETY AND HEALTH REGULATIONS (OSHA)

§ 13.1.5.1 The Contractor shall comply with the laws, rules, regulations and codes dealing with occupational safety and health, including, but not limited to, the latest amendments of the following:

§ 13.1.5.2 Williams – Steiger Occupational Safety and Health Act of 1970, Public Law 91-595.

§ 13.1.5.3 Part 1910 – Occupational Safety and Health Standards Chapter XV11 of Title 29, Code of Federal Regulations.

§ 13.1.5.4 Part 126 – Safety and Heath Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

§ 13.1.5.3 N.J.A.C. 8:59-5.1-5.109requirements properly label any substances stored in containers) of the Woker and Community Right to Know Act, P.L. 1983, c.315.

§13.1.6 ENVIRONMENTAL REGULATIONS

§13.1.6.1 The Contractor shall comply with laws, rules, regulations, and codes dealing with the prevention of environmental pollution and the preservation of public natural resources, including but not limited to, the latest amendments of the following:

§13.1.6.2 Chapter 251, public Law of 1975 of the State of New Jersey, "soil Erosion and Sediment Control Act."

§13.1.7 AFFIRMATION ACTIONE EMPLOYMENT LAW

Contractor agrees to comply with the terns of the Mandatory Equal Employment Opportunity Language, a copy of which is annexed to the Contract Documents as Exhibit F and incorporated as if set forth herein.

§13.1.7.1 Contractor shall submit a copy of the 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 Owner

§13.1.7.2 Contractor shall complete and submit to the Owner an Initial Project Workforce Report, New Jersey Department of Treasury Form AA 201, upon notification of award and no later than the execution of this Agreement. Failure to submit this completed form may result in this Agreement being terminated.

§ 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. neither party to the Contract shall assign the Contract as a whole without written consent of the other, unless as may be provided for elsewhere in the Contract Documents. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 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.

§ 13.4.2 No action or failure to act by the Owner, Engineer, or his designee 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 there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 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 Engineer, or his designee timely notice of when and where tests and inspections are to be made so that the Engineer, or his designee may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Engineer, or his designee , Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Engineer, or his designee 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 Engineer, or his designee of when and where tests and inspections are to be made so that the Engineer, or his designee may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 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 Engineer, or his designee 's services and expenses shall be at the Contractor's expense.

§ 13.5.4 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 Engineer, or his designee .

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

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

§ 13.6 INTEREST

Except as required by Section 5.1.3 of the Owner Contractor Agreement and not withstanding anything to the contrary contained in the Contract Documents and related documents, the Owner will pay no interest whatsoever for any payments due.

§ 13.7 TIME LIMITS ON CLAIMS

Intentionally deleted.

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 or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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;

§ 14.1.2 Intentionally deleted

§ 14.1.3 If one of the reasons described in Section 14.1.1 exists, the Contractor may, upon thirty (30) days' written notice to the Owner and Engineer, or his designee , terminate the Contract

§ 14.1.4 Intentionally deleted.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor after Notice and an opportunity to cure.

.1 refuses or fails to supply enough properly skilled workers or proper materials;
.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
.3 disregards laws, ordinances, rules or regulations, or orders of a public authority having jurisdiction;
.4 fails to furnish the Owner with assurances satisfactory to the Owner, evidencing the Contractor's ability to complete the Work in compliance with all requirements of the Contract Documents;
.5 fails after commencement of the Work, to proceed continuously with the construction and completion of the Work, for more than three (3) days, except as permitted by the Contract Documents;
.6 disregards orders of the Owner or Engineer, or his designee ;
.7 fails to maintain the Site in a clean , safe and orderly manner;
.8 fails to comply with a Construction Change Directive; or
.9 otherwise is guilty of any breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, 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' written 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. And charge the costs incurred against the Contractor's Contract balance

§ 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. The Engineer, or his designee 's certification issued pursuant to Section 14.2.2 shall be given a presumption of correctness.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Engineer, or his designee '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 Engineer, or his designee , 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 Intentionally deleted.

§ 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 written 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 Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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 adjustment or interpretation of Contract terms, payment of money, extension of time, or other relief with respect to the terms of the Contract. Any Contractor Claim seeking the payment of money shall not include consequential damages, which Contractor hereby waives, and shall be calculated in accordance with Section 7.3.6 and Section 7.3.10 hereof.

§ 15.1.2 DECISION OF ENGINEER, OR HIS DESIGNEE

Owner and Contractor agree that the Engineer, or his designee shall be the initial arbiter of all Claims, including those alleging error or omission by the Engineer, or his designee . All claims, shall be referred, initially to the Engineer, or his designee for action as provided in Article 4 and shall be required as a condition precedent to litigation of a Claim between the Contractor and Owner to all such matters arising prior to the date final payment is due, regardless of: (1) whether such matters relate to execution and progress of the Work; or (2) the extent to which the work has been completed. The decision by the Engineer, or his designee in response to a Claim shall not be a condition precedent to litigation in the event: (1) the position of the Engineer, or his designee is vacant; (2) the Engineer, or his designee has not received evidence or has failed to render a decision within agreed time limits; (3) the Engineer, or his designee has failed to take action required under Article 4 within thirty (30) days after the Claim is made; (4) forty-five (45) days have passed after the Claim has been referred to the Engineer, or his designee ; or, (5) the claim relates to a mechanic's lien.

§ 15.1.3 TIME LIMITS ON CLAIMS

Claims must be within twenty one (21) calendar days after the occurrence of the event giving rise to the Claim or within twenty-one (21) calendar days after the claimant first becomes aware of the condition giving rise to the Claim, whichever is later. There shall be no time limitation upon any Claims made by the Owner. Claims must be made by written notice to the Engineer, or his designee . An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted pursuant to the requirements of this Paragraph. Notice shall be deemed effective upon the Engineer, or his designee 's receipt of the Notice.

§ 15.1.4 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments to the extent required by the Contract Documents.

§15.1.5 CLAIMS FOR CONCEALED OR UNKNOWN CONDITIONS

If conditions are encountered at the Site which are: (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents; or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for the Contract Documents, the Owner and Contractor mutually agree to give written notice to each other; including the Engineer, or his designee and any affected Contractor or subcontractor, upon the observation of the condition within twenty-four (24) hours if first observation of the condition., The Engineer, or his designee will investigate such conditions within seventy-two (72) hours and will diligently process and render a recommendation within twenty-one (21)days unless otherwise agreed in writing. If the Engineer, or his designee determines that the condition 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 Engineer, or his designee shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in

opposition to such determination must be made within seven (7) days after the Engineer, or his designee has given notice of the decision.

§ 15.1.6 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum written notice as provided herein shall be given before proceeding to execute the Work. All documentation in support of the Contractor's request shall, likewise be provided at the time said written request is made. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3 or elsewhere in the Contract Documents..

§ 15.2 CLAIMS FOR ADDITIONAL TIME

§ 15.2.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work, , all documentation in support of the Contractor's request shall, likewise be provided at the time said written request is made. In the case of a continuing delay, only one Claim is necessary.

§ 15.2.2 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. The term "abnormal" as used here shall be construed according to the following formula: average rainfall (or snow, low temperature, etc) for the past five (5) years for the month in question, plus ten percent (10%). Accordingly, weather is not deemed to be abnormal unless it is ten percent (10%) worse than the average for the month over the past five (5) years. Claims relating to weather must be submitted within seven (7) calendar days of the occurrence of any such delays.

§ 15.3 CLAIMS FOR INJURY OR DAMAGE TO PERSON OR PROPERTY. If either Party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party, including the Engineer, or his designee , within a reasonable time not exceeding twenty-one (21) days after first occurrence, unless another time period is required by law. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided for in Article 15.

§ 15.3.2 The Owner is not required to institute a claim under this section in order to terminate this Agreement.

§ 15.4 RESOLUTION OF CLAIMS AND DISPUTES

The Engineer, or his designee will review Claims and take one or more of the following preliminary actions with ten (10) days of receipt of a Claim: (1) request additional supporting data from the claimant; (2) reject the Claim in who or in part, stating reasons for rejection ; (3) recommend approval of the Claim by other party; or (4) suggest a compromise.

§ 15.4.2 If a Claim has been resolved, the Engineer, or his designee will prepare or obtain appropriate documentation in consultation with Owner's counsel as circumstances dictate.

§ 15.4.3 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Engineer, or his designee , the Engineer, or his designee will notify the parties in writing that the Engineer, or his designee 's decision will be made within seven (7) days, which decision shall be final. Upon expiration of such time period, the Engineer, or his designee will render to the parties the Engineer, or his designee 's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both.

§ 15.5. CLAIMS FORUM

Unless otherwise required by Section 5.1.3 of the Standard Form of Agreement between the Owner and Contractor, claims, disputes, or other matters in question between the parties to this Contract arising out of or relating to the Project or to this Contract, or the alleges breach thereof, shall be subject in the first instance to mediation and failing that, there in, a Court of competent jurisdiction venued in Union County, New Jersey. The Owner may not be compelled to submit any dispute concerning the Project to arbitration. By accepting award of the Contract and executing the Agreement, the Contractor consents to its joinder as a party in any litigation, mediation, arbitration or any other legal proceeding involving the Project and any references in the Contract documents.

§ 16.1 INTERPRETATIONS IN WRITING

§ 16.1.1 Neither the price bid for the work of any Contract, nor the Contract Sum, shall be based in any manner upon oral opinions, or real or alleged instructions of an oral nature, regardless if whether such opinions or instructions are expressed by the Owner, the Engineer, or his designee or its Consultants, the Contractor, or agents or representative of any of them and no such oral communication shall form the basis of a Claim.

§ 16.1.2 These provisions do not intend to deny, on an oral basis, normal discussion, recommendations, explanations, suggestions, approvals, rejections, and similar activity in pursuit if the work of the Project, such as at job conferences and otherwise at the Site. In such instances, the written minutes, correspondence, shop drawing records, written field orders, and other written data shall govern over personal claims regarding statements made contrary to the written data.

§ 17.1 JOB SITE MEETINGS

§ 17.1.1 Job site meetings, when called by the Engineer, or his designee , shall be held at a location and time convenient to the Owner's representatives, the Engineer, or his designee , and Contractor(s). Each Contractor shall attend such meeting, or be represented by a person in authority who is thoroughly familiar with the Project and who can speak and make decisions for the Contractor. In the instance of a Single Overall Contract, each of the major Subcontractors-Structural Steel, and ornamental iron work, plumbing, gas fitting and all kindered work and steam power plants, steam, and hot water heating and ventilating apparatus and Electrical-shall have a person in authority who is thoroughly familiar with the Project attend the meetings.

§ 18.1 MANDATORY LAW AGAINST DISCRIMINATION LANGUAGE
PROCUREMENT, PROFESSIONAL AND SERVICE CONTRACTS
(N.J.A.C. 13:6-1.3)

§ 18.1.1 The parties of this contract do hereby agree that the provision of N.J.S.A. 10:2-1 through N.J.S.A. 10:2-4 dealing with discrimination in employment on public contracts, and the rules and regulations promulgated pursuant thereunto, are hereby made a part of this contract and are binding upon them.

§ 18.1.1 Pursuant to the provision of N.J.S.A. 10:2-1 through N.J.S.A. 10:2-4, during the performance of this contract, the Contractor agrees as follows:

§ 18.2.1.1 In the hiring of persons for the performance of work under this contract or any subcontract hereunder, or for the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under this contract, no Contractor, including without limitation, the Contractor, nor any person acting on behalf of such Contractor or subcontractor, shall by reason of race, creed, color national origin, ancestry, Marital status, gender identity or expression, affectional or sexual orientation, or sex, discriminate against any person who is qualified and available to perform the Work, to which the employment relates;

§ 18.2.1.2 No Contractor, including, without limitation, the Contractor, Subcontractor, nor any person acting on its behalf shall, in any manner, discriminate against or intimidate any employee engaged in the performance of work under this Contract or any subcontract hereunder, or engaged in the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under such Contract, on account of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation, or sex;

§ 18.2.1.3 There may be deducted from the amount payable to the Contractor by the Owner, under the Contract, a penalty of $50.00 (fifty dollars) for each person for each calendar day during which such person is discriminated against or intimidated in violation of the provisions of the Contract; and

§ 18.2.1.4 This contract may be canceled or terminated by the Owner, and all the money due or to become due hereunder may be forfeited, for any violation of this section of the Contract occurring after notice to the Contractor from the contracting public agency or any prior violation of this section of the Contract.

§ 19.1 CONTRACTOR AND SUBCONTRACTOR COLLECTION OF USE TAX TO LOCAL GOVERNMENTS

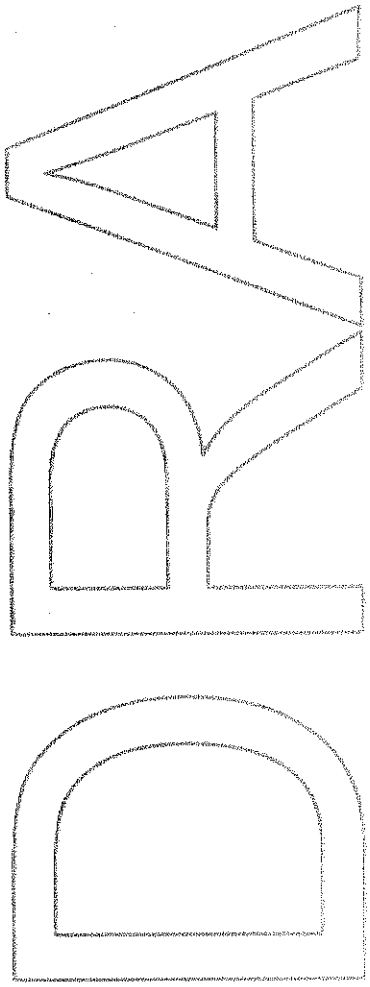
§ 19.1.1 The Contractor acknowledges and agrees that pursuant to P.L. 2004, c. 57, enacted by the State of New Jersey on June 29, 2004, contractors or contractors with subcontractors, or their affiliates, who enter into contracts

with New Jersey local government entities, including without limitation, boards of education, are, effective as of September 1, 2004, required to collect and remit to the New Jersey Director of Taxation in the Department of the Treasury the use tax pursuant to the "sales and Use Tax Act," P.L. 1966, c. 30 (C.54:32B-1 et. seq.) on all their sales of tangible personal property delivered into the State of New Jersey (hereinafter referred to as the "Contractor Use Tax Collection Legislation").

§ 19.2.1 The Contractor hereby covenants and agrees that the Contractor, any subcontractor and each of their affiliates, shall collect and remit to the New Jersey Director of the Division of Taxation in the Department of Treasury, the use tax due pursuant to the "Sales and Use Tax Act, " P.L. 1966, c. 30 (C.54:32B-1 et. seq.) on all their sales of tangible personal property delivered into the State of New Jersey. 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 preceeding sentence, an entity controls another entity if it owns, directly or indirectly, more than fifty percent (50%) of the Ownership interest in that entity.

§ 19.3.1 The parties intend that this Article 19 shall comply with the rules and regulations promulgated pursuant to the Contractor Use Tax Collection Legislation and shall be interpreted consistent therewith.

§ 19.4 Notwithstanding anything contained in the Agreement to the contrary, the Contractor hereby agrees to indemnify and hold the Owner harmless from and against any and all fines, taxes, penalties, interest, claims, losses. Costs, expenses, liabilities, or damages arising out of or in connection with the Contractor's failure to comply with the terms and condition of Sections 19.1 and 19.2 to the fullest extent permitted by law and public policy.



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 <u>not</u> 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**

	03/14/16
Journeyman (Mechanic)	W37.18 B21.68 T58.86

Expiration Date: 02/28/2017

Craft: Air Conditioning & Refrigeration - Service and Repair **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
As Shown	Mo. 1-3	Mo. 4-12	2nd Year	3rd Year	4th Year	5th Year		Wage = %	of Jnymn	Wage
Wage and Bene	50%	55%	60%	65%	75%	85%		Bene = %	of Jnymn	Bene

Ratio of Apprentices to Journeymen - 1:4

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 3-1-13:

INTERVAL	PERIOD AND RATES					
As Shown	1st Year	2nd Year	3rd Year	4th Year	5th Year	Wage =% of Jnymn Wage
Wage and Benefit	40%	50%	60%	70%	80%	Bene. =% of Jnymn Wage

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**

	01/01/16
Foreman	W47.00 B41.02 T88.02
General Foreman	W49.00 B42.00 T91.00
Journeyman	W42.00 B39.42 T81.42

Expiration Date: 12/31/2016

Craft: Boilermaker **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
1000 Hours	65%	70%	75%	80%	85%	90%	95%			
Benefit =	33.33	34.20	35.08	35.94	36.82	37.69	38.55			

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, hoilday 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.

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**

	02/26/16
Foreman	W31.54 B16.17 T47.71
General Foreman	W32.04 B16.17 T48.21
Mechanic	W30.04 B16.17 T46.21

Expiration Date: 12/31/2016

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).

OVERTIME:
Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays (except Labor Day) shall be paid at double the hourly rate. All hours on Labor Day shall be paid at four times the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Washington's Birthday, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Thanksgiving Day, day after Thanksgiving, Christmas Day. Saturday holidays observed the preceding Friday, Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Bricklayer, Stone Mason **PREVAILING WAGE RATE**

	05/01/16	11/01/16	05/01/17	05/01/18
Deputy Foreman	W42.25 B30.68 T72.93	W0.00 B0.00 T73.91	W0.00 B0.00 T76.04	W0.00 B0.00 T78.23
Foreman	W45.25 B30.68 T75.93	W0.00 B0.00 T76.91	W0.00 B0.00 T79.04	W0.00 B0.00 T81.23
Journeyman	W39.25 B30.68 T69.93	W0.00 B0.00 T70.91	W0.00 B0.00 T73.04	W0.00 B0.00 T75.23

Expiration Date: 04/30/2019

Craft: Bricklayer, Stone Mason **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	40%	50%	55%	60%	65%	70%	75%	80%		
Benefits	3.72	4.65	5.12	5.58	20.28	21.62	22.97	24.31		

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.

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: Carpenter **PREVAILING WAGE RATE**

	05/06/16
Foreman	W52.83 B30.11 T82.94
Journeyman	W45.94 B26.19 T72.13

Expiration Date: 10/31/2016

Craft: Carpenter **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	40%	55%	65%	80%	90%					
Benefit	57% of	Appren	tice	Wage Rate	for all	intervals				

Ratio of Apprentices to Journeymen - 1:3

Craft: Carpenter **COMMENTS/NOTES**

FOREMAN REQUIREMENTS:
- When there are 2 or more Carpenters on a job, 1 shall be designated as a Foreman.
- When there are 21 or more Carpenters on a job, 2 shall be designated as Foremen.

The regular workday shall consist of 8 hours, starting between 7:00 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.

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, 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: Carpenter - Resilient Flooring **PREVAILING WAGE RATE**

	05/06/16
Foreman	W52.83 B30.11 T82.94
Journeyman	W45.94 B26.19 T72.13

Expiration Date: 10/31/2016

Craft: Carpenter - Resilient Flooring **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	40%	55%	65%	80%	90%					
Benefit	57%	of	Appren	tice	Wage Rate	for all	intervals			

Ratio of Apprentices to Journeymen - *

* 1 apprentice shall be allowed to every 2 journeymen or major fraction therof. No more than 3 apprentices on any one job or project.

Craft: Carpenter - Resilient Flooring **COMMENTS/NOTES**

FOREMAN REQUIREMENTS:
- On any job where there are 4 or more Carpenters of Resilient Flooring, 1 must be designated a Foreman.

FOR SYNTHETIC TURF INSTALLATION ONLY:
- The rate shall be 90% of the wage and benefit rate.

The regular workday consists of 8 hours, starting between 6:00 AM and 9:00 AM.

SHIFT DIFFERENTIALS:
- When a 2 shift schedule (including a day shift) is established, the day shift, shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis, and receive the regular wage rate plus 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 wage rate, the second shift shall receive the regular wage rate plus 15% and the third shift shall receive the regular wage 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. The second shift shall receive the regular wage rate plus 15% and the third shift shall receive the regular wage rate plus 20%.

OVERTIME:
- Hours in excess of 8 per day or 40 per week, or before or after the regular workday, Monday through Friday, shall be paid at time and one-half the wage rate. Saturday may be used as a make-up day, at straight time, up to 8 hours, for hours lost to reasons beyond the control of the employer, up to a total of 40 hours per week; hours in excess of 8 on Saturday shall then be paid at time and one-half the wage rate. If Saturday is not a make-up day, all hours on Saturday shall be paid at time and one-half the wage rate. All hours on Sundays and holidays shall be paid at double the wage rate.
- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for hours lost to reasons beyond the control of the employer. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the wage rate.

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: Cement Mason **PREVAILING WAGE RATE**

See "Bricklayer, Stone Mason" Rates

Expiration Date:

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: Diver **PREVAILING WAGE RATE**

	11/06/15
Diver	W55.34 B43.07 T98.41
Tender	W43.38 B43.07 T86.45

Expiration Date: 04/30/2016

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
5-125 feet: + $0.78 per foot
126-200 feet: + $1.60 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

OVERTIME:
Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day, Christmas Day. Veterans' Day may be switched with the day after Thanksgiving.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Dockbuilder **PREVAILING WAGE RATE**

	11/06/15
Foreman	W50.14 B43.07 T93.21
Foreman (Concrete Form Work)	W50.14 B35.23 T85.37
Journeyman	W43.60 B43.07 T86.67
Journeyman (Concrete Form Work)	W43.60 B35.23 T78.83

Expiration Date: 04/30/2016

Craft: Dockbuilder **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	17.44	21.80	28.34	34.88						
Benefit	29.28	for all	intervals		Concrete	Form Work	Only Ben.	= 24.03	for all	intervals

Ratio of Apprentices to Journeymen - *

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

Craft: Dockbuilder **COMMENTS/NOTES**

CREOSOTE HANDLING:
When handling creosote products on land piledriving, floating marine construction, and construction of wharves, the worker shall receive an additional $0.25 per hour.

HAZARDOUS WASTE WORK:
- Hazardous waste removal work on a state or federally designated hazardous waste site where Level A, B, or C personal protection is required: an additional 20% of the hourly rate, per hour.
- Hazardous waste removal work in Level D, or where personal protection is not required: an additional $1.00 per hour.

CERTIFIED WELDER: When required on the job by the project owner, a Certified Welder shall receive an additional $1.00 per hour.

FOREMAN REQUIREMENTS:
The first Dockbuilder on the job shall be designated a Foreman.

OVERTIME:
Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the

hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day, Christmas Day. Veterans' Day may be switched with the day after Thanksgiving.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Drywall Finisher **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Foreman	W42.55 B23.10 T65.65	W44.30 B22.60 T66.90
General Foreman	W44.45 B23.10 T67.55	W46.20 B22.60 T68.80
Journeyman	W38.75 B23.10 T61.85	W40.50 B22.60 T63.10

Expiration Date: 04/30/2018

Craft: Drywall Finisher **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
4 Months	30%	40%	50%	60%	70%	75%	80%	85%	90%	
Benefits	Intervals	1 to 3 =	9.85	Intervals	4 to 6 =	12.28	Intervals	7 to 9 =	14.95	

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**

	05/30/16	05/29/17	05/28/18
Cable Splicer	W58.71 B33.74 T92.45	W60.08 B34.53 T94.61	W61.52 B35.35 T96.87
Foreman	W59.77 B34.34 T94.11	W61.17 B35.15 T96.32	W62.64 B35.98 T98.62
Journeyman	W53.37 B30.67 T84.04	W54.62 B31.39 T86.01	W55.93 B32.13 T88.06

Expiration Date: 05/31/2019

Craft: Electrician **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
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**

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:
- On any job where there are 1 to 10 Journeymen electricians, 1 shall be designated a 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**

	11/06/15
Master Technician/General Foreman	W51.01 B29.16 T80.17
Senior Technician/Lead Foreman (21-30 Workers on Job)	W46.70 B26.69 T73.39
Technician A/Foreman (11-20 Workers on Job)	W44.73 B25.57 T70.30
Technician B/Working Foreman (4-10 Workers on Job)	W42.77 B24.45 T67.22
Technician C/Journeyman (1-3 Workers on Job)	W39.24 B22.43 T61.67

Expiration Date: 10/30/2016

Craft: Electrician - Teledata (15 Voice/Data Lines & Less) **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	19.66	20.97	23.15	25.77	28.83	31.45	34.51	37.56		
Benefits	8.15	8.70	9.60	10.69	11.96	13.04	14.31	15.57		

Ratio of Apprentices to Journeymen - 2:3

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

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 10-31-14:

INTERVAL	PERIOD AND RATES							
6 Months	17.47	18.78	20.97	23.59	26.64	29.27	32.32	35.38
Benefits	7.25	7.79	8.70	9.78	11.05	12.14	13.40	14.67

NOTES:
- These rates are for service, maintenance, moves, and/or changes affecting 15 Voice/Data (teledata) lines or less. These rates may NOT be used for any teledata work in new construction (including additions) or any fiber optic work.
- The number of Teledata workers on the jobsite is the determining factor for which Foreman category applies .

The regular workday shall be 8 hours, between 8:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.
- 2nd Shift (4:30 PM to 12:30 AM) shall receive 8 hours pay for 7.5 hours work + an additional 10% of the regular rate, per hour, inclusive of benefits.
- 3rd Shift (12:30 AM to 8:00 AM) shall receive 8 hours pay for 7 hours work + an additional 15% of the regular rate, per hour, inclusive of benefits.

OVERTIME:
Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, and all hours on Saturdays, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

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

County - UNION

Craft: Electrician - Teledata (16 Instruments & More) **PREVAILING WAGE RATE**

See "Electrician" Rates

Expiration Date:

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**

	05/30/16	05/29/17	05/28/18
Cable Splicer	W58.99 B33.46 T92.45	W60.37 B34.24 T94.61	W61.82 B35.06 T96.88
Certified Welder	W56.31 B31.94 T88.25	W57.62 B32.68 T90.30	W59.01 B33.47 T92.48
Equipment Operator	W53.63 B30.42 T84.05	W54.88 B31.13 T86.01	W56.20 B31.88 T88.08
Foreman (1-10 Journeyman workers on job)	W60.07 B34.07 T94.14	W61.47 B34.86 T96.33	W62.94 B35.70 T98.64
Foreman (11-20 Journeyman workers on job)	W61.67 B34.98 T96.65	W63.11 B35.79 T98.90	W64.63 B36.66 T101.29
General Foreman (21-30 Journeyman workers on job)	W63.28 B35.89 T99.17	W64.76 B36.73 T101.49	W66.32 B37.61 T103.93
General Foreman (31-60 Journeyman workers on job)	W68.65 B38.94 T107.59	W70.25 B39.84 T110.09	W71.94 B40.80 T112.74
General Foreman (61+ Journeyman workers on job)	W69.72 B39.54 T109.26	W71.34 B40.46 T111.80	W73.06 B41.44 T114.50
Groundman	W32.18 B18.26 T50.44	W32.93 B18.68 T51.61	W33.72 B19.13 T52.85
Journeyman Lineman/Technician	W53.63 B30.42 T84.05	W54.88 B31.13 T86.01	W56.20 B31.88 T88.08
Sub-Foreman	W60.07 B34.07 T94.14	W61.47 B34.86 T96.33	W62.94 B35.70 T98.64

Expiration Date: 05/31/2019

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Electrician- Outside Commercial **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
1000 Hours	60%	65%	70%	75%	80%	85%	90%			
Benefits	56.4% of	Journey	man	wage	+ $.01					

Craft: Electrician- Outside Commercial **COMMENTS/NOTES**

EFFECTIVE 5-30-16- The apprentice benefit rate shall be 56.7% + $.01.
EFFECTIVE 5-29-17- The apprentice benefit rate shall be 56.7% + $.01.
EFFECTIVE 5-28-18- The apprentice benefit rate shall be 56.7% + $.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:
On jobs where there are 2 Journeymen, one shall be a Foreman. The following number of Foreman, General Foreman, Assistant General Foreman and Sub-Foreman shall be required with respect to number of Journeymen on site:
2-10 Journeymen (1 Foreman)
11-20 Journeymen (1 Foreman and 1 Sub-Foreman)
21-30 Journeymen (1 Foreman and 2 Sub-Foremen)

SHIFT DIFFERENTIALS:
Shift work must run for a minimum of 5 consecutive workdays.
2nd Shift (4:30 PM to 12:30 AM): 8 hrs. pay for 7.5 hrs. work + an additional 10% of the regular rate, inclusive of benefits.
3rd Shift (12:30 AM to 8:00 AM): 8 hrs. pay for 7 hrs. work + an additional 15% of the regular rate per hour, inclusive benefits.

OVERTIME:
Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, and all hours on Saturdays, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS:
New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day and Christmas Day.

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

County - UNION

Craft: Electrician-Utility Work (North) **PREVAILING WAGE RATE**

Rates are located in the "Statewide" rate package

Expiration Date:

Craft: Electrician-Utility Work (North) **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	60%	65%	70%	75%	80%	85%	90%			
Benefits	62.5% 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.

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

Expiration Date:

Craft: Electrician-Utility Work (South) **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
6 Months	26.72	28.95	31.18	33.41	35.63	37.86	40.09			
Benefits	23.08	24.40	25.72	27.02	28.33	29.64	30.94			

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**

	03/17/16	03/17/17	03/17/18
Journeyman	W60.96 B39.77 T100.73	W62.64 B41.56 T104.20	W64.48 B43.36 T107.84

Expiration Date: 03/16/2019

Craft: Elevator Constructor **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	27.22	33.53	39.62	45.72						
Benefits	31.75	32.88	34.41	35.93						

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**

	03/17/16	03/17/17	03/17/18
Journeyman	W47.91 B38.17 T86.08	W49.14 B39.91 T89.05	W50.49 B41.66 T92.15

Expiration Date: 03/16/2019

Craft: Elevator Modernization & Service **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	27.22	26.35	31.14	35.93						
Benefits	31.68	31.99	33.37	34.74						

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**

	06/20/16
Foreman	W47.39 B23.26 T70.65
General Foreman	W49.39 B23.50 T72.89
Journeyman	W43.39 B22.78 T66.17

Expiration Date: 04/30/2017

Craft: Glazier **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
4 Months	30%	40%	50%	60%	70%	75%	80%	85%	90%	
Benefits	Intervals	1 to 3 =	6.51	Intervals	4 to 6 =	9.33	Intervals	7 to 9 =	11.67	

Ratio of Apprentices to Journeymen - 1:4

Craft: Glazier **COMMENTS/NOTES**

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AS OF 5-1-14:

INTERVAL	PERIOD AND RATES							
6 Months	50%	55%	60%	65%	70%	75%	80%	90%
Benefits	8.10	8.10	10.34	10.34	11.51	11.51	14.62	14.62

Hazard/Height Pay: +$1.00 per hour

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

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**

	10/13/15
Foreman	W51.77 B29.42 T81.19
General Foreman	W54.32 B30.53 T84.85
Journeyman	W50.49 B28.86 T79.35

Expiration Date: 09/18/2016

Craft: Heat & Frost Insulator **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	23.39	27.74	33.52	39.36						
Benefits	17.46	20.63	22.69	24.56						

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 8:00 AM and 4:30 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**

	10/13/15
Asbestos Helper Abatement	W33.52 B22.69 T56.21
Firestop/Hazmat	W26.93 B9.25 T36.18
Foreman	W51.77 B29.42 T81.19

Expiration Date: 09/18/2016

Craft: Heat & Frost Insulator - Asbestos Worker **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
	SEE	HEAT &	FROST	INSULATOR						

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 8:00 AM and 4:30 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: Ironworker **PREVAILING WAGE RATE**

	08/02/16	07/01/17
Rod /Fence Foreman	W42.24 B44.27 T86.51	W0.00 B0.00 T88.51
Rod/Fence Journeyman	W39.24 B44.27 T83.51	W0.00 B0.00 T85.51
Structural Foreman	W44.54 B44.27 T88.81	W0.00 B0.00 T90.56
Structural Journeyman	W41.54 B44.27 T85.81	W0.00 B0.00 T87.56

Expiration Date: 06/30/2018

Craft: Ironworker **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	50%	60%		Yearly	70%	80%	90%			

Ratio of Apprentices to Journeymen - 1:4

Craft: Ironworker **COMMENTS/NOTES**

HAZARDOUS WASTE WORK: On hazardous waste removal work on a state or federally designated hazardous waste site where the Ironworker is required to wear Level A,B, or C personal protection: + $3.00 per hour

The regular workday consists of 8 hours between 6:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:
When there are 2 or more Ironworkers on a job, 1 shall be designated a Foreman.

SHIFT DIFFERENTIALS:
- When a 2 shift schedule is established, the first, or day shift , shall be established on an 8 hour basis .The second shift shall be established on an 8 hour basis, and receive the regular rate plus 15%.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular hourly rate, the second shift shall receive the regular rate plus 15%, and the third shift shall receive the regular rate plus 20%.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis.
- When an irregular shift is established for the Ironworker (Structural) classification, the rate shall be paid at time and one-half the regular rate, inclusive of benefits. When an irregular shift is established for the Rod /Fence classification, the shift shall be established on an 8 hour basis and receive the regular rate, plus 20%.

OVERTIME:
- 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**

	04/07/16
Journeyman (Handler)	W29.87 B22.92 T52.79

Expiration Date: 11/30/2016

Craft: Laborer - Asbestos & Hazardous Waste Removal **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	17.92	20.91	23.90	26.88						
Benefits	21.27	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 between 6:00 AM and 6:00 PM.

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.
- When the owner (Public Body) mandates that work is to be performed on Sunday, those hours may be worked at straight time, up to 8 hours per day, up to 40 hours per week.
- Benefits on ALL overtime hours shall be paid at straight time.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Good Friday, Easter, 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 - Building **PREVAILING WAGE RATE**

	05/04/16
Class A Journeyman	W31.30 B26.57 T57.87
Class B Journeyman	W30.80 B26.57 T57.37
Class C Journeyman	W26.18 B26.57 T52.75
Foreman	W35.21 B26.57 T61.78
General Foreman	W39.13 B26.57 T65.70

Expiration Date: 10/31/2016

Craft: Laborer - Building **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	60%	70%	80%	90%						
Benefit	23.32	23.32	23.32	23.32						

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 nozzlemen 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 establised 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 on the basis of 8 hours pay for 7 hours worked. The day shift shall receive the regular rate, the second shift shall receive the regular rate plus an additional 10%, and the third shift shall receive the regular rate plus an additional 15%.
- When a second or third shift is worked with no day shift, the second or third shift shall be established on the basis of 8 hours pay for 8 hours worked. The second shift shall receive the regular rate plus an additional 10%, and the third shift shall receive the regular rate plus an additional 15%.

OVERTIME:
- Hours in excess of 8 per day, or outside the regular workday that are not shift work, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. Saturday may be used as a make-up day (paid at straight time) for a day lost to inclement weather, or for a holiday that is observed during the work week, Monday through Friday. All hours on Sundays and holidays shall be paid at double the regular rate.
- Four 10-hour days may be worked Monday to Thursday, at straight time, with Friday used a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the regular rate.
- Benefits on ALL overtime hours shall be paid at time and one-half.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, 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: Laborer - Heavy & General **PREVAILING WAGE RATE**

Rates are located in the
"Statewide" rate package

Expiration Date:

Craft: Laborer - Heavy & General **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
1000 Hours	60%	70%	80%	90%						
Benefit	18.78	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.

With respect to the APPRENTICE RATE SCHEDULE, the following shall apply:

On 9-1-16- benefits shall be $18.78.
On 3-1-17- benefits shall be $19.53.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Millwright **PREVAILING WAGE RATE**

	05/01/16
Foreman	W52.96 B31.31 T84.27
Journeyman	W46.05 B27.30 T73.35

Expiration Date: 10/31/2016

Craft: Millwright **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	40%	45%	50%	55%	60%	65%	70%	75%	85%	95%
Benefits	58% of	Appren	tice	Wage	Rate	for all	intervals	+ $.60		

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.
- When there are 21 or more Millwrights on a job, 2 shall be designated as Foremen.

The regular workday shall consist of 8 hours, starting between 7:00 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.

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, 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: Operating Engineer **PREVAILING WAGE RATE**

Rates are located in the
"Statewide" rate package

Expiration Date:

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

Expiration Date:

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 - Bridges **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Foreman	W57.38 B26.92 T84.30	W61.13 B25.67 T86.80
General Foreman	W59.38 B26.92 T86.30	W63.13 B25.67 T88.80
Journeyman	W52.38 B26.92 T79.30	W56.13 B25.67 T81.80

Expiration Date: 01/31/2019

Craft: Painter - Bridges **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	40%	50%			60%	70%		80%	90%	
Benefits	Intervals	1 to 2 =	8.88	Intervals	3 to 4 =	10.81	Intervals	5 to 6 =	13.48	

Ratio of Apprentices to Journeymen - 1:4

Craft: Painter - Bridges **COMMENTS/NOTES**

These rates apply to: All bridges that span waterways, roadways, railways and canyons. All tunnels, overpasses, viaducts and all appurtenances.

FOREMEN REQUIREMENTS:
- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Painter - Line Striping **PREVAILING WAGE RATE**

	12/01/15	12/01/16	12/01/17
Foreman (Charge Person)	W35.80 B16.10 T51.90	W36.80 B16.90 T53.70	W38.05 B17.74 T55.79
Helper (1st Year)	W28.05 B16.10 T44.15	W29.05 B16.90 T45.95	W30.30 B17.74 T48.04
Helper (2nd Year)	W29.38 B16.10 T45.48	W30.38 B16.90 T47.28	W31.63 B17.74 T49.37
Helper (3rd Year)	W31.53 B16.10 T47.63	W32.53 B16.90 T49.43	W33.78 B17.74 T51.52
Journeyman	W35.30 B16.10 T51.40	W36.30 B16.90 T53.20	W37.55 B17.74 T55.29

Expiration Date: 11/30/2018

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: Painter - New Construction **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Foreman	W42.26 B22.94 T65.20	W44.39 B22.35 T66.74
General Foreman	W46.10 B23.40 T69.50	W48.43 B22.81 T71.24
Journeyman	W38.42 B22.49 T60.91	W40.36 B21.90 T62.26

Expiration Date: 04/30/2018

Craft: Painter - New Construction **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
4 Months	30%	40%	50%	60%	70%	75%	80%	85%	90%	
Benefits	Intervals	1 to 3 =	8.00	Intervals	4 to 6 =	10.00	Intervals	7 to 9 =	11.00	

Ratio of Apprentices to Journeymen - 1:4

Craft: Painter - New Construction **COMMENTS/NOTES**

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM ON 5-1-14:

INTERVAL	PERIOD AND RATES							
6 Months	40%	45%	55%	65%	70%	75%	80%	90%
Benefits	8.00	8.00	10.00	10.00	11.00	11.00	14.00	14.00

Spraying, sandblasting, lead abatement, work on tanks or stacks, 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, Veterans' Day, Thanksgiving Day, Christmas Day.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Painter - Repainting **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Foreman	W31.59 B18.45 T50.04	W34.17 B18.45 T52.62
General Foreman	W34.45 B18.87 T53.32	W37.39 B18.45 T55.84
Journeyman	W28.74 B18.87 T47.61	W31.16 B18.45 T49.61

Expiration Date: 04/30/2018

Craft: Painter - Repainting **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
	SEE	PAINTER	NEW	CONSTR UC	TION					

Ratio of Apprentices to Journeymen - 1:4

Craft: Painter - Repainting **COMMENTS/NOTES**

NOTE: These rates may only be used on jobs where no major alterations occur, and where not more than 3 other trades are present on the job, but may NOT, under any circumstances, be used for work on bridges, stacks, elevated tank, or generating stations.

Spraying, sandblasting, lead abatement, work on tanks or stacks, work performed above 3 stories or 30 feet in height, or using swing scaffolds requires an additional 10% of the wage rate.

FOREMEN REQUIREMENTS:
- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

OVERTIME:
- Hours in excess of 8 per day and 40 per week shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.
- Four 10-hour days may be worked, at straight time, Monday through Sunday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, General Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Painter- Containment **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Journeyman	W33.43 B23.92 T57.35	W37.68 B22.92 T60.60

Expiration Date: 01/31/2019

Craft: Painter- Containment **COMMENTS/NOTES**

NOTE: These rates shall require no painting, but used in a supporting capacity only, such as wrapping, boxing, fencing, etc. on tanks.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

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..
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Painter-Elevated Water Tanks **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Foreman	W47.17 B24.17 T71.34	W50.92 B22.92 T73.84
General Foreman	W49.17 B24.17 T73.34	W52.92 B22.92 T75.84
Journeyman	W42.17 B24.17 T66.34	W45.92 B22.92 T68.84

Expiration Date: 01/31/2019

Craft: Painter-Elevated Water Tanks **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
	SEE	PAINTER	BRIDGES							

Craft: Painter-Elevated Water Tanks **COMMENTS/NOTES**

These rates apply to: All new and repaint elevated water tanks (interior and exterior).

FOREMEN REQUIREMENTS:
- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Painter-Structural Steel **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Foreman	W46.12 B24.51 T70.63	W49.87 B23.26 T73.13
General Foreman	W48.12 B24.51 T72.63	W51.87 B23.26 T75.13
Journeyman	W41.12 B24.51 T65.63	W44.87 B23.26 T68.13

Expiration Date: 01/31/2019

Craft: Painter-Structural Steel **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
	SEE	PAINTER	BRIDGES							

Craft: Painter-Structural Steel **COMMENTS/NOTES**

These rates apply to: All work in power plants (any aspect). On steeples, on dams, on hangers, transformers, substations, etc. and on open steel, whether new or repaint. All new work (excluding traditional commercial painting work) in refineries, tank farms, water/sewerage treatment facilities and on pipelines.

FOREMEN REQUIREMENTS:
- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Paperhanger - New Construction **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Foreman	W43.25 B22.59 T65.84	W45.32 B21.44 T66.76
Journeyman	W39.32 B22.59 T61.91	W41.20 B22.01 T63.21

Expiration Date: 04/30/2018

Craft: Paperhanger - New Construction **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
4 Months	30%	40%	50%	60%	70%	75%	80%	85%	90%	
Benefits	Intervals	1 to 3 =	8.00	Intervals	4 to 6 =	10.00	Intervals	7 to 9 =	11.00	

Ratio of Apprentices to Journeymen - 1:4

Craft: Paperhanger - New Construction **COMMENTS/NOTES**

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM ON 5-1-14:

INTERVAL	PERIOD AND RATES							
6 Months	40%	45%	55%	65%	70%	75%	80%	90%
Benefits	8.00	8.00	10.00	10.00	11.00	11.00	14.00	14.00

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: Paperhanger - Renovation **PREVAILING WAGE RATE**

	05/01/16	05/01/17
Foreman	W32.39 B18.96 T51.35	W35.06 B18.53 T53.59
Journeyman	W29.45 B18.96 T48.41	W31.88 B18.53 T50.41

Expiration Date: 04/30/2018

Craft: Paperhanger - Renovation **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
	SEE	PAPER-	HANGER	NEW	CONSTR UC	TION				

Ratio of Apprentices to Journeymen - 1:4

Craft: Paperhanger - Renovation **COMMENTS/NOTES**

NOTE: These rates may only be used on jobs where no major alterations occur, and where not more than 3 other trades are present on the job, but may NOT, under any circumstances, be used for work on bridges, stacks, elevated tanks, or generating stations.

FOREMEN REQUIREMENTS:
- When there are 4 or more Paperhangers on a job, 1 shall be designated a Foreman.

OVERTIME:
- Hours in excess of 8 per day and 40 per week shall be paid at time and one-half the regular rate.
- Four 10-hour days may be worked, at straight time, Monday through Sunday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Pipefitter **PREVAILING WAGE RATE**

	05/04/16	05/01/17	05/01/18	05/01/19
Foreman	W51.07 B40.18 T91.25	W0.00 B0.00 T93.35	W0.00 B0.00 T95.57	W0.00 B0.00 T97.79
Journeyman	W47.32 B37.25 T84.57	W0.00 B0.00 T86.67	W0.00 B0.00 T88.89	W0.00 B0.00 T91.11

Expiration Date: 04/30/2020

Craft: Pipefitter **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	35%	45%	55%	65%	75%					
Benefit	14.46	18.16	21.89	25.48	27.82					

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 25% per hour.
- 3rd Shift (11:30 PM-7:00 AM) shall work 7 hours and receive 8 hours pay at the regular rate, plus 30% per hour.

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.
- 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.

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 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

Expiration Date:

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**

	05/04/16
Foreman	W55.52 B32.99 T88.51
General Foreman	W59.12 B32.99 T92.11
Journeyman	W51.41 B32.99 T84.40

Expiration Date: 04/30/2017

Craft: Plumber **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	30%	45%	55%	65%	75%					
Benefits	12.77	18.77	20.44	22.13	23.80					

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 of 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**

	06/06/16
Foreman	W36.52 B25.03 T61.55
Journeyman	W35.52 B25.03 T60.55

Expiration Date: 05/31/2017

Craft: Roofer **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
6 Months	14.21	17.76	21.31	24.86	28.42	31.97				
Benefits	2.10	2.10	22.28	22.28	22.28	22.28				

Ratio of Apprentices to Journeymen - *

* A) For roofing jobs that are of the 1 or single ply nature: 1:2 or fraction thereof
B) For roofing jobs on new built up roofs: 1:3 or fraction thereof
C) For roofing jobs that are of a tear-off nature: 1:2 or fraction thereof
D) For roofing jobs {not requiring complete removal of existing systems, installation done over existing roof}: 1:3 or fraction thereof

Craft: Roofer **COMMENTS/NOTES**

Pitch: +.50 per hour

Mop Man: +.30 per hour

The regular workday consists of 8 hours between 8:00 AM and 4:30 PM.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturdays, Sundays, and holidays shall be paid at time and one-half the regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Sheet Metal Sign Installation **PREVAILING WAGE RATE**

	04/01/16	10/31/16
Foreman	W33.79 B30.60 T64.39	W33.79 B31.82 T65.61
Journeyman	W32.54 B30.60 T63.14	W32.54 B31.82 T64.36

Expiration Date: 03/31/2017

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	9.86	11.25	12.64	14.04	15.80	17.22	18.65	20.08	21.49	22.91

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 though 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**

	08/02/16	06/01/17
Foreman	W49.99 B38.73 T88.72	W0.00 B0.00 T91.22
General Foreman	W50.99 B38.73 T89.72	W0.00 B0.00 T92.22
Journeyman	W46.49 B38.73 T85.22	W0.00 B0.00 T87.72

Expiration Date: 05/31/2018

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**

	07/01/16
Foreman	W63.33 B25.72 T89.05
General Foreman	W66.33 B25.72 T92.05
Journeyman	W59.23 B25.72 T84.95

Expiration Date: 12/31/2016

Craft: Sprinkler Fitter **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
1000 Hours	9.50	11.25	50%	55%	60%	65%	70%	75%	80%	85%
Benefits	10.67	10.67	21.22	21.22	21.22	21.22	Intervals	7 to 10	Jourymn	Ben.

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES REGISTERED AS OF 7-1-13:

INTERVAL	PERIOD AND RATES									
1000 hours	25%	30%	40%	45%	55%	60%	70%	75%	85%	90%
Benefits	10.67	10.67	21.22	21.22	21.22	21.22	Intervals 7 to 10 receive Journeyman Ben.			

Craft: Sprinkler Fitter **COMMENTS/NOTES**

The regular workday consists of 8 consecutive hours between 6:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:
- The first Sprinkler Fitter on the job must be designated a Foreman.
- On any job having 12 or more Sprinkler Fitters, one must be designated a General Foreman.

SHIFT DIFFERENTIALS:
- Shift work must run for a minimum of 2 consecutive workdays.
- 2nd and 3rd shift shall receive an additional 15% of the regular rate, per hour.
- Any "off hours" shift starting at 8:00 PM or later shall receive an additional 25% of the regular rate, per hour.

OVERTIME:
The first 2 hours in excess of 8 per day, after the regular workday that are not shift work, Monday through Friday, shall be paid at time and one-half the regular rate. Hours worked in excess of 10 per day, Monday through Friday, and all hours on Saturday, Sunday and holidays, shall be paid double the regular rate.
Four 10 hour days may be worked, Monday through Thursday, at striaght-time.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Tile Finisher-Marble **PREVAILING WAGE RATE**

	07/01/16	01/01/17	07/01/17	01/01/18
Finisher	W45.66 B31.95 T77.61	W46.01 B32.68 T78.69	W46.32 B33.44 T79.76	W46.66 B34.18 T80.84

Expiration Date: 06/30/2018

Craft: Tile Finisher-Marble **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
750 Hours	50%	55%	65%	70%	75%	85%	90%	95%		

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Finisher-Marble **COMMENTS/NOTES**

OVERTIME:
Hours in excess of 7 per day, Monday through Friday, and the first 7 hours on Saturdays shall be paid at time and one half the regular rate, inclusive of benefits. Hours in excess of 7 on Saturdays and all hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Tile Setter - Ceramic **PREVAILING WAGE RATE**

	06/30/16	12/05/16
Finisher	W42.89 B28.74 T71.63	W0.00 B0.00 T72.45
Setter	W55.38 B32.01 T87.39	W0.00 B0.00 T88.52

Expiration Date: 06/01/2017

Craft: Tile Setter - Ceramic **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
750 Hours	50%	55%	60%	65%	70%	75%	85%	95%	100%	

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**

	07/01/16	01/01/17	07/01/17	01/01/18
Tile Setter	W57.32 B33.23 T90.55	W57.74 B34.26 T92.00	W58.18 B35.27 T93.45	W58.53 B36.37 T94.90

Expiration Date: 06/30/2018

Craft: Tile Setter - Marble **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
750 Hours	50%	55%	65%	70%	75%	85%	90%	95%		

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Setter - Marble **COMMENTS/NOTES**

OVERTIME:
Hours in excess of 7 per day, Monday through Friday, and the first 7 hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. Hours in excess of 7 on Saturdays, and all hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Tile Setter - Mosaic & Terrazzo **PREVAILING WAGE RATE**

	07/01/16	01/01/17
Grinder or Assistant	W50.21 B33.64 T83.85	W0.00 B0.00 T85.00
Mechanic	W51.82 B33.65 T85.47	W0.00 B0.00 T86.62

Expiration Date: 06/30/2017

Craft: Tile Setter - Mosaic & Terrazzo **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
750 Hours	50%	55%	65%	70%	75%	85%	90%	95%		

Ratio of Apprentices to Journeymen - 1:5

Craft: Tile Setter - Mosaic & Terrazzo **COMMENTS/NOTES**

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**

	06/20/16	11/01/16	05/01/17	11/01/17	05/01/18	11/01/18
Bucket, Utility, Pick-up, Fuel Delivery trucks	W35.65 B33.01 T68.66	W36.45 B33.01 T69.46	W36.88 B33.78 T70.66	W36.88 B34.58 T71.46	W37.31 B35.40 T72.71	W37.71 B35.80 T73.51
Dump truck, Asphalt Distributor, Tack Spreader	W35.65 B33.01 T68.66	W36.45 B33.01 T69.46	W36.88 B33.78 T70.66	W36.88 B34.58 T71.46	W37.31 B35.40 T72.71	W37.71 B35.80 T73.51
Euclid-type vehicles (large, off-road equipment)	W35.75 B33.01 T68.76	W36.55 B33.01 T69.56	W36.98 B33.78 T70.76	W36.98 B34.58 T71.56	W37.41 B35.40 T72.81	W37.81 B35.80 T73.61
Helper on Asphalt Distributor truck	W35.65 B33.01 T68.66	W36.45 B33.01 T69.46	W36.88 B33.78 T70.66	W36.88 B34.58 T71.46	W37.31 B35.40 T72.71	W37.71 B35.80 T73.51
Slurry Seal, Seeding/Fertilizing/ Mulching truck	W35.65 B33.01 T68.66	W36.45 B33.01 T69.46	W36.88 B33.78 T70.66	W36.88 B34.58 T71.46	W37.31 B35.40 T72.71	W37.71 B35.80 T73.51
Straight 3-axle truck	W35.65 B33.01 T68.66	W36.45 B33.01 T69.46	W36.88 B33.78 T70.66	W36.88 B34.58 T71.46	W37.31 B35.40 T72.71	W37.71 B35.80 T73.51
Tractor Trailer (all types)	W35.75 B33.01 T68.76	W36.55 B33.01 T69.56	W36.98 B33.78 T70.76	W36.98 B34.58 T71.56	W37.41 B35.40 T72.81	W37.81 B35.80 T73.61
Vacuum or Vac-All truck (entire unit)	W35.65 B33.01 T68.66	W36.45 B33.01 T69.46	W36.88 B33.78 T70.66	W36.88 B34.58 T71.46	W37.31 B35.40 T72.71	W37.71 B35.80 T73.51
Winch Trailer	W35.85 B33.01 T68.86	W36.65 B33.01 T69.66	W37.08 B33.78 T70.86	W37.08 B34.58 T71.66	W37.51 B35.40 T72.91	W37.91 B35.80 T73.71

Expiration Date: 04/30/2019

Craft: Truck Driver **COMMENTS/NOTES**

BLENDED RATE:
When a truck driver is performing work on the site and also serving as a material delivery driver, the driver shall be paid a "blended rate" which shall be 80% of the above-listed wage rates, plus the full benefit rate. This rate shall be used when the driver "round robins" for a minimum of 6 hours during the work day.

HAZARDOUS WASTE REMOVAL:
- On hazardous waste removal work on a State designated hazardous waste site where the driver is in direct contact with hazardous materials and when personal protective equipment is required for respiratory, skin, and eye protection, the driver shall receive an additional $3.00 per hour (with or without protective gear).
- A hazardous waste related certified worker at a designated hazardous waste site who is not working in a zone requiring level A, B or C personal protection shall receive an additional $1.00 per hour.

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

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): + $2.50 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: + $2.50 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.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day (Decoration Day), July 4th, Labor Day, Presidential Election 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: Truck Driver-Material Delivery Driver **PREVAILING WAGE RATE**

	05/01/12
Driver	W22.90 B10.17 T33.07

Expiration Date: 05/30/2016

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, Presidential Election 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

Expiration Date:

Craft: Welder **COMMENTS/NOTES**

Welders rate is the same as the craft to which the welding is incidental.

STATEWIDE RATES

TERRITORY
ENTIRE STATE

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

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

{For apprentice rates refer to "Operating Engineers" apprentice rates in any county rate package}

On all machines, including pile drivers with booms of 100 feet and over (including jib) the Operating Engineer shall receive the regular hourly rate plus: $1.00 per hour on rigs with 100 foot Boom (including jib) up to 139 feet, and $2.00 per hour on rigs with 140 foot Boom (including jib) and over. On all hoists where "Cat Head" or "Sheave Point" is 100 feet or more above ground level, the same differential pay shall apply as applicable to booms 100 feet and over.

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:
- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:
- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

	07/01/2016		01/01/2017
Rate	Fringe	Total	Total
46.48	30.63	77.11	78.26

CLASSIFICATIONS:

A-Frame

Backhoe (combination)

Boom Attachment on loaders (Except pipehook)

Boring & Drilling Machine

Brush Chopper, Brush Shredder, Tree Shredder

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 (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)

Hydraulic Crane (10 tons & under)

Hydro-Axe

Hydro-Blaster

Jack (screw, air hydraulic, power-operated unit, or console type, Except hand jack or pile load test type)

Log Skidder

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
46.48	30.63	77.11	78.26

CLASSIFICATIONS:

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)

Vacuum Truck

Whiphammer

Winch Truck (hoisting)

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
44.57	30.63	75.20	76.35

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 (Hetzel, Rexomatic & similar types)

Concrete Vibrator

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
44.57	30.63	75.20	76.35

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

Grader & Motor Patrols

Grout Pump

Gunnite Machine (Excluding nozzle)

Hammer - Vibratory (in conjunction with generator)

Heavy Equipment Robotics - Operator/Technician

Hoist (roof, tugger, aerial platform hoist, house car)

Hopper

Hopper Doors (power operated)

Ladder (motorized)

Laddervator

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
44.57	30.63	75.20	76.35

CLASSIFICATIONS:

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)

Roller (black top)

Scale (power)

Seamen Pulverizing Mixer

Shoulder Widener

Silo

Skimmmer Machine (boom type)

Steel Cutting Machine (service & maintenance)

Tamrock Drill

Tractor

Transfer Machines

Tug Captains

Tug Master (Power Boats)

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
44.57	30.63	75.20	76.35

CLASSIFICATIONS:

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:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
41.23	30.63	71.86	73.01

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

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
38.65	30.63	69.28	70.43

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
48.81	30.63	79.44	80.59

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (minimum)

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
48.07	30.63	78.70	79.85

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

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

Helicoptor Co-Pilot

Helicoptor Communications Engineer

Juntann Pile Driver

Locomotive (large)

Mucking Machine

Pavement & Concrete Breaker (Superhammer & Hoe Ram)

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
48.07	30.63	78.70	79.85

CLASSIFICATIONS:

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

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
42.94	30.63	73.57	74.72

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 : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
42.94	30.63	73.57	74.72

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:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
49.89	30.63	80.52	81.67

CLASSIFICATIONS:

Helicoptor Pilot/Engineer

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
53.82	30.63	84.45	86.35

CLASSIFICATIONS:

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

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
52.82	30.63	83.45	85.35

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), over 100 tons and TOWER CRANE with boom (including jib and/or leads) from 100 ft. to 139 ft.

OPERATING ENGINEERS **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
50.07	30.63	80.70	81.85

CLASSIFICATIONS:

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

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
51.82	30.63	82.45	84.35

CLASSIFICATIONS:

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

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
49.07	30.63	79.70	80.85

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 : 06/30/2017**

{For apprentice rates refer to "Operating Engineers" apprentice rates in any county rate package}

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:
- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:
- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

Effective Dates:

	07/01/2016		**01/01/2017**
Rate	Fringe	Total	Total
51.70	30.63	82.33	83.48

CLASSIFICATIONS:

Helicopter Pilot or Engineer

STRUCTURAL STEEL ERECTION **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
47.64	30.63	78.27	79.42

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

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
44.98	30.63	75.61	76.76

CLASSIFICATIONS:

Aerial Platform Used On Hoists

Apprentice Engineer/Oiler with Compressor or Welding Machine

Captain (Power Boats)

Compressor (2 or 3 in battery)

Conveyor or Tugger Hoist

Elevator or House Car

Fireman

Forklift

Generator (2 or 3)

Maintenance Utility Man

Tug Master (Power Boats)

Welding Machines, Gas or Electric Converters on any type-2 or 3 in battery including diesels

STRUCTURAL STEEL ERECTION **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
43.45	30.63	74.08	75.23

CLASSIFICATIONS:

Compressor (Single)

Generators

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

Welding System, Multiple (Rectifier Transformer Type)

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
41.69	30.63	72.32	73.47

CLASSIFICATIONS:

Assistant Engineer/Oiler

Drillers Helper

Field Engineer - Transit/Instrument Man

Maintenance Apprentice (Deckhand)

Maintenance Apprentice (Oiler)

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
49.26	30.63	79.89	81.04

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (Minimum)

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
38.65	30.63	69.28	70.43

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

STRUCTURAL STEEL ERECTION **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
48.40	30.63	79.03	80.18

CLASSIFICATIONS:

Field Engineer-Chief of Party

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
55.84	30.63	86.47	88.37

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) over 100 tons and Tower Cranes.

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
54.18	30.63	84.81	86.71

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, less than 140 ft. abovr ground), Derricks (all derricks. land, floating or Chicago Boom type with booms including jib, less than 140 ft. above ground), Pile Drivers (all types), over 100 tons and Tower Crane.

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
52.09	30.63	82.72	83.87

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:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
50.43	30.63	81.06	82.21

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.

STRUCTURAL STEEL ERECTION **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
52.09	30.63	82.72	83.87

CLASSIFICATIONS:

Helicopter Co-Pilot

Helicopter Communications Engineer

TEST BORING PRELIMINARY TO CONSTRUCTION-SOUTH/WEST **Rates Expiration Date : 06/30/2017**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Hunterdon, Mercer, Monmouth, Ocean, Salem, Sussex, Warren

On all machines, including pile drivers with booms of 100 feet and over (including jib) the Operating Engineer shall receive the regular hourly rate plus: $1.00 per hour on rigs with 100 foot Boom (including jib) up to 139 feet, and $2.00 per hour on rigs with 140 foot Boom (including jib) and over. On all hoists where "Cat Head" or "Sheave Point" is 100 feet or more above ground level, the same differential pay shall apply as applicable to booms 100 feet and over.

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:
- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:
- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

Effective Dates:

	07/01/2016		**01/01/2017**
Rate	Fringe	Total	Total
48.07	30.63	78.70	79.85

CLASSIFICATIONS:

Driller

TEST BORING PRELIMINARY TO CONSTRUCTION-SOUTH/WEST **Rates Expiration Date : 06/30/2017**

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
41.23	30.63	71.86	73.01

CLASSIFICATIONS:

Driller's Helper

FREE AIR TUNNEL JOBS **Rates Expiration Date : 08/31/2017**

{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 $2.50 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

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Effective Dates:

	03/01/2016		**09/01/2016**	**03/01/2017**
Rate	Fringe	Total	Total	Total
39.50	27.53	67.03	68.13	70.53

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

	03/01/2016		**09/01/2016**	**03/01/2017**
Rate	Fringe	Total	Total	Total
39.20	27.53	66.73	67.83	70.23

CLASSIFICATIONS:

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

FREE AIR TUNNEL JOBS **Rates Expiration Date : 08/31/2017**

Effective Dates:

	03/01/2016		09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
38.70	27.53	66.23	67.33	69.73

CLASSIFICATIONS:

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

Effective Dates:

	03/01/2016		09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
41.20	27.53	68.73	69.83	72.23

CLASSIFICATIONS:

Blaster

Effective Dates:

	03/01/2016		09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
38.15	27.53	65.68	66.78	69.18

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

	03/01/2016		09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.80	27.53	65.33	66.43	68.83

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:

	03/01/2016		09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.65	27.53	65.18	66.28	68.68

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)

FREE AIR TUNNEL JOBS **Rates Expiration Date : 08/31/2017**

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.15	27.53	64.68	65.78	68.18

CLASSIFICATIONS:

All Others (including Powder Watchman, Change House Attendant, Top Laborer)

DRILL FOR GROUND WATER SUPPLY **Rates Expiration Date : 06/30/2017**

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:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
46.82	30.63	77.45	78.60

CLASSIFICATIONS:

Driller

Effective Dates:

07/01/2016			01/01/2017
Rate	Fringe	Total	Total
39.98	30.63	70.61	71.76

CLASSIFICATIONS:

Driller's Helper

OPERATING ENGINEERS MARINE-DREDGING **Rates Expiration Date : 09/30/2018**

NOTE: 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:

02/16/2016			10/01/2016	10/01/2017
Rate	Fringe	Total	Total	Total
36.34	13.33	49.67	51.03	52.51

CLASSIFICATIONS:

Lead Dredgerman, Operator, Leverman

Licensed Tug Operator (over 1000 HP)

Effective Dates:

02/16/2016			10/01/2016	10/01/2017
Rate	Fringe	Total	Total	Total
31.43	12.93	44.36	45.60	46.95

CLASSIFICATIONS:

Derrick Operator, Spider/Spill Barge Operator

Engineer, Electrician, Chief Welder, Chief Mate

Fill Placer, Operator II

Licensed Boat Operator

Maintenance Engineer

Effective Dates:

02/16/2016			10/01/2016	10/01/2017
Rate	Fringe	Total	Total	Total
29.59	12.79	42.38	43.56	44.86

CLASSIFICATIONS:

Certified Welder

OPERATING ENGINEERS MARINE-DREDGING **Rates Expiration Date : 09/30/2018**

Effective Dates:

02/16/2016			10/01/2016	10/01/2017
Rate	Fringe	Total	Total	Total
28.78	12.42	41.20	42.36	43.64

CLASSIFICATIONS:

Mate, Drag Barge Operator, Steward, Assistant Fill Placer

Welder

Effective Dates:

02/16/2016			10/01/2016	10/01/2017
Rate	Fringe	Total	Total	Total
27.85	12.35	40.20	41.32	42.58

CLASSIFICATIONS:

Boat Operator

Effective Dates:

02/16/2016			10/01/2016	10/01/2017
Rate	Fringe	Total	Total	Total
23.13	11.67	34.80	35.81	36.92

CLASSIFICATIONS:

Shoreman, Deckhand, Rodman, Scowman

MICROSURFACING/SLURRY SEAL **Rates Expiration Date : 02/28/2018**

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:

	03/01/2016		03/01/2017
Rate	Fringe	Total	Total
35.75	20.35	56.10	57.77

CLASSIFICATIONS:

Foreman

Effective Dates:

	03/01/2016		03/01/2017
Rate	Fringe	Total	Total
33.10	20.35	53.45	55.07

CLASSIFICATIONS:

Box man

Effective Dates:

	03/01/2016		03/01/2017
Rate	Fringe	Total	Total
31.10	20.35	51.45	53.02

CLASSIFICATIONS:

Microsurface/Slurry Preparation

Effective Dates:

	03/01/2016		03/01/2017
Rate	Fringe	Total	Total
31.10	20.35	51.45	53.02

CLASSIFICATIONS:

Squeegee man

MICROSURFACING/SLURRY SEAL **Rates Expiration Date : 02/28/2018**

Effective Dates:

03/01/2016			03/01/2017
Rate	Fringe	Total	Total
29.60	20.35	49.95	51.57

CLASSIFICATIONS:

Cleaner, Taper

ASPHALT LABORERS - SOUTH **Rates Expiration Date : 08/31/2017**

"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 $2.50 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:

	03/01/2016		09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
39.00	27.53	66.53	67.63	70.03

CLASSIFICATIONS:

Paving Foreman

Effective Dates:

	03/01/2016		09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.55	27.53	65.08	66.18	68.58

CLASSIFICATIONS:

Head Raker

Effective Dates:

	03/01/2016		09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.40	27.53	64.93	66.03	68.43

CLASSIFICATIONS:

Raker, Screedman, Luteman

ASPHALT LABORERS - SOUTH **Rates Expiration Date : 08/31/2017**

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.15	27.53	64.68	65.78	68.18

CLASSIFICATIONS:

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

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.25	27.53	64.78	65.88	68.28

CLASSIFICATIONS:

Milling Controller

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.45	27.53	64.98	66.08	68.48

CLASSIFICATIONS:

Traffic Control Coordinator

TEST BORING PRELIMINARY TO CONSTRUCTION-NORTH **Rates Expiration Date : 10/16/2018**

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 $1.00 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 10% 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:

11/13/2015			10/17/2016	10/17/2017
Rate	Fringe	Total	Total	Total
30.17	24.10	54.27	56.21	58.15

CLASSIFICATIONS:

Helper (4th year helper)

Effective Dates:

11/13/2015			10/17/2016	10/17/2017
Rate	Fringe	Total	Total	Total
37.82	24.10	61.92	64.13	66.34

CLASSIFICATIONS:

Driller

Effective Dates:

11/13/2015			10/17/2016	10/17/2017
Rate	Fringe	Total	Total	Total
43.42	24.10	67.52	69.93	72.34

CLASSIFICATIONS:

Foreman

HEAVY & GENERAL LABORERS - NORTH **Rates Expiration Date : 08/31/2017**

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 $2.50 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:

	03/01/2016		**09/01/2016**	**03/01/2017**
Rate	Fringe	Total	Total	Total
36.75	27.53	64.28	65.38	67.78

CLASSIFICATIONS:

"D" Rate:
basic, landscape, asphalt, slurry seal, or railroad track laborer; utility meter installer; traffic director/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:

	03/01/2016		**09/01/2016**	**03/01/2017**
Rate	Fringe	Total	Total	Total
37.45	27.53	64.98	66.08	68.48

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 : 08/31/2017**

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.70	27.53	65.23	66.33	68.73

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:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
41.25	27.53	68.78	69.88	72.28

CLASSIFICATIONS:

"A" Rate:
blaster

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
39.00	27.53	66.53	67.63	70.03

CLASSIFICATIONS:

"FOREMAN" Rate:
labor foreman, asphalt foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
40.00	27.53	67.53	68.63	71.03

CLASSIFICATIONS:

"GENERAL FOREMAN" Rate

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date : 08/31/2017**

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 $2.50 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:

	03/01/2016		**09/01/2016**	**03/01/2017**
Rate	Fringe	Total	Total	Total
36.75	27.53	64.28	65.38	67.78

CLASSIFICATIONS:

basic, landscape, or railroad track laborer; utility meter installer; traffic director/flagman; salamander tender; pitman; dumpman; rakers or tampers on cold patch work; wrappers or coaters of pipe; waterproofers

tree cutter, timberman

Effective Dates:

	03/01/2016		**09/01/2016**	**03/01/2017**
Rate	Fringe	Total	Total	Total
37.45	27.53	64.98	66.08	68.48

CLASSIFICATIONS:

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

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date : 08/31/2017**

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.45	27.53	64.98	66.08	68.48

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:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.45	27.53	64.98	66.08	68.48

CLASSIFICATIONS:

wagon or directional drill operator; drill master

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
41.25	27.53	68.78	69.88	72.28

CLASSIFICATIONS:

blaster

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
39.00	27.53	66.53	67.63	70.03

CLASSIFICATIONS:

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

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
40.00	27.53	67.53	68.63	71.03

CLASSIFICATIONS:

general foreman

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date : 08/31/2017**

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.70	27.53	65.23	66.33	68.73

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 : 06/04/2017**

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: $42.50; Pipeline Journeyman Welder: $102.50; and Pipeline Helper: $42.50. Note: in order to receive the per diem payment an employee must work a minimum of 8 hours in a 24 hour period.

NOTES:
- Journeymen employed as "stringer bead" welders and journeymen who are regularly employed as "hot-pass" welders shall receive $1.00 per hour more than other journeymen.
- Welders running "stringer bead" or "hot-pass" on "cutouts" or "tie-ins" on a production basis shall be paid $1.00 per hour above the journeymen rate.
- Whenever a welder helper is employed using a power buffer or power grinder immediately behind the stringer bead and/or hot-pass welders, and the pipe gang is set on a production basis, the helper shall be paid $2.00 per hour above the helper rate.
- If back welding is performed inside a pipe under either or both of the following conditions, the welder engaged in the welding will receive $3.00 per hour above the regular rate for the job only for the days on which such back welding is performed:
  - The employer elects, as a regular procedure, to back weld each line-up. This condition is not intended to apply to occasional back welding performed by the pipe gang to repair a bead, to rectify a "high-lo" condition or wall thickness, etc.
  - A welder is required to back weld a completed weld behind the firing line.
- If the welder helper is required to go inside the pipe for the purpose of brushing, buffing and grinding the weld, they shall receive a wage rate $1.00 per hour above the regular
helper rate for the days involved.
- Welders working on "hot work" shall be paid $2.00 per hour above the regular rate for each day engaged in such work. "Hot work' is defined as work on lines in service where there is the danger of fire or explosion.

The regular workday shall be 8 hours, between 8:00 AM and 4:30 PM.

OVERTIME:
Hours in excess of 8 per day, and all hours on Sundays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

	06/01/2016	
Rate	Fringe	Total
54.56	26.59	81.15

CLASSIFICATIONS:

Pipeline Journeyman Welder

PIPELINE - MAINLINE TRANSMISSION **Rates Expiration Date : 06/04/2017**

Effective Dates:

06/01/2016

Rate	Fringe	Total
54.56	26.59	81.15

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

06/01/2016

Rate	Fringe	Total
32.99	18.73	51.72

CLASSIFICATIONS:

Pipeline Helper

PIPELINE - GAS DISTRIBUTION **Rates Expiration Date : 10/31/2017**

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:

	11/01/2015		11/01/2016
Rate	Fringe	Total	Total
55.95	21.10	77.05	79.13

CLASSIFICATIONS:

Pipeline Journeyman Welder

Effective Dates:

	11/01/2015		11/01/2016
Rate	Fringe	Total	Total
55.95	21.10	77.05	79.13

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

	11/01/2015		11/01/2016
Rate	Fringe	Total	Total
36.22	15.29	51.51	52.90

CLASSIFICATIONS:

Pipeline Helper

ASPHALT LABORERS- NORTH **Rates Expiration Date : 08/31/2017**

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 $2.50 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:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
39.00	27.53	66.53	67.63	70.03

CLASSIFICATIONS:

Asphalt Foreman

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.70	27.53	65.23	66.33	68.73

CLASSIFICATIONS:

Asphalt Screedman

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
37.45	27.53	64.98	66.08	68.48

CLASSIFICATIONS:

Asphalt Raker or Lute Man

ASPHALT LABORERS- NORTH **Rates Expiration Date : 08/31/2017**

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
36.75	27.53	64.28	65.38	67.78

CLASSIFICATIONS:

Asphalt Laborer

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date : 12/03/2017**

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 wokday Monday through Friday, that is not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the hourly rate, inclusive of benefits.
Four 10-hour days may worked, at straight time, between 7:00 AM and 6:30 PM, Monday through Thursday.

RECOGNIZED HOLIDAYS:
New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day and Christmas Day, or day on which they are legally observed.

Effective Dates:

	11/29/2015		**12/04/2016**
Rate	Fringe	Total	Total
50.52	33.84	84.36	87.27

CLASSIFICATIONS:

Chief Lineman

Effective Dates:

	11/29/2015		**12/04/2016**
Rate	Fringe	Total	Total
47.66	31.93	79.59	82.34

CLASSIFICATIONS:

Journeyman Lineman

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date : 12/03/2017**

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
47.66	31.93	79.59	82.34

CLASSIFICATIONS:

Special License Operator

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
47.18	31.61	78.79	81.51

CLASSIFICATIONS:

Transit Man

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
45.75	30.65	76.40	79.04

CLASSIFICATIONS:

Line Equipment Operator

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
40.03	26.82	66.85	69.17

CLASSIFICATIONS:

Dynamite Man

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
56.24	37.68	93.92	97.16

CLASSIFICATIONS:

General Foreman

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
54.81	36.72	91.53	94.68

CLASSIFICATIONS:

Assistant General Foreman

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date : 12/03/2017**

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
53.38	35.76	89.14	92.21

CLASSIFICATIONS:

Line Foreman

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
38.60	25.86	64.46	66.69

CLASSIFICATIONS:

Straight Light Mechanical Leader

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
36.70	24.58	61.28	63.40

CLASSIFICATIONS:

Groundman Winch Operator

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
36.70	24.58	61.28	63.40

CLASSIFICATIONS:

Groundman Truck Operator

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
36.22	24.26	60.48	62.57

CLASSIFICATIONS:

Straight Light Mechanic

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
36.22	24.26	60.48	62.57

CLASSIFICATIONS:

Line Equipment Mechanic

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date : 12/03/2017**

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
30.98	20.75	51.73	53.52

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
28.60	19.16	47.76	49.39

CLASSIFICATIONS:

Groundman 1st Year

Effective Dates:

11/29/2015			12/04/2016
Rate	Fringe	Total	Total
47.18	31.61	78.79	81.51

CLASSIFICATIONS:

Line Equipment Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date : 11/30/2017**

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 wokday 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 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:

	12/01/2015		**11/29/2016**
Rate	Fringe	Total	Total
57.01	43.16	100.17	102.92

CLASSIFICATIONS:

General Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date : 11/30/2017**

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
50.78	39.48	90.26	93.01

CLASSIFICATIONS:

Foreman

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
48.10	37.90	86.00	88.75

CLASSIFICATIONS:

Small Job Foreman

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
44.54	35.82	80.36	83.11

CLASSIFICATIONS:

Heavy Equipment Operator

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
44.54	35.82	80.36	83.11

CLASSIFICATIONS:

Cable Splicer

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
44.54	35.82	80.36	83.11

CLASSIFICATIONS:

Journeyman Lineman

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
44.54	35.82	80.36	83.11

CLASSIFICATIONS:

Journeyman Welder

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date : 11/30/2017**

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
44.54	35.82	80.36	83.11

CLASSIFICATIONS:

Journeyman Painter

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
35.63	30.58	66.21	68.96

CLASSIFICATIONS:

Light Equipment Operator

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
31.18	27.97	59.15	61.90

CLASSIFICATIONS:

Groundman Truck Driver

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
28.95	26.65	55.60	58.35

CLASSIFICATIONS:

Groundman 3rd Year

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
26.72	25.33	52.05	54.80

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
24.50	24.04	48.54	51.29

CLASSIFICATIONS:

Groundman 1st Year

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

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date : 11/30/2017**

Effective Dates:

12/01/2015			11/29/2016
Rate	Fringe	Total	Total
19.60	21.16	40.76	43.51

CLASSIFICATIONS:

Flagman

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date : 08/31/2017**

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 $2.50 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:

	03/01/2016		**09/01/2016**	**03/01/2017**
Rate	Fringe	Total	Total	Total
59.25	27.53	86.78	88.31	91.28

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

	03/01/2016		**09/01/2016**	**03/01/2017**
Rate	Fringe	Total	Total	Total
58.50	27.53	86.03	87.86	90.83

CLASSIFICATIONS:

Heading Foreman, Shaft Foreman, Rod Foreman, Electrical Foreman, Rigging Foreman

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date : 08/31/2017**

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
58.05	27.53	85.58	87.11	90.08

CLASSIFICATIONS:

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

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
61.80	27.53	89.33	90.86	93.83

CLASSIFICATIONS:

Blaster

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
57.23	27.53	84.76	86.28	89.26

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
56.70	27.53	84.23	85.76	88.73

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:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
56.48	27.53	84.01	85.53	88.51

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)

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date : 08/31/2017**

Effective Dates:

03/01/2016			09/01/2016	03/01/2017
Rate	Fringe	Total	Total	Total
55.73	27.53	83.26	84.78	87.76

CLASSIFICATIONS:

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

TECHNICAL SPECIFICATIONS

INDEX

APPENDICES

Appendix A: French & Parrello Associates Geotechnical Report

Appendix B: Existing Tank Permit

Appendix C: Gasboy Pump Installation Manual

SECTION 01 10 00 - SUMMARY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Permits.
   2. Construction Activity Plans

1.2 PERMITS

A. Furnish all necessary permits for construction of Work including the following:
   1. Soil Erosion and Sediment Control Permit
      a. Not required because the limits that are being disturbed are less than 5000 sq. ft.
   2. Online Underground Storage Tank (UST) Removal Permit (To be completed by site LSRP).
      a. Contractor and Contractor's Foreman needs to be certified as a Tank Removal Contractor from NJDEP (DPMC classification # C113 Underground Storage Tank Closure and Installation).
      b. Existing UST registration certificate under permit #UST150002
         1) A copy of the NJDEP's approval of the notice of intent to close the tank, which is automatically generated upon submission of the online notification is required to be provided to the applicable municipal and county health departments, and the applicable local authority with the application for a local demolition permit at least 14 calendar days prior to the anticipated closure date.
         2) http://www.nj.gov/dep/rules/rules/njac7_14b.pdf

1.3 CONSTRUCTON ACTIVITY PLANS

A. Contractor to implement plans within construction activities including the following:
   1. Health and Safety Plan

B. Contractor to follow construction activity:
   1. Spill Prevention Plan (SPCC)
      a. SPCC that is provided by the county prior to start of construction.

1.4 SITE LICENSED SITE REMEDIATION PROFESSIONAL (LSRP) CONTACT INFORMATION:

Thomas DeMichele, LSRP
Matrix New World Engineering, P.C.
26 Columbia Tpk, 2nd Floor
Florham Park, NJ 07932
Phone: 973-240-1800
Fax: 973-240-1818
Email: tdemichele@matrixneworld.com

END OF SECTION

SECTION 013120

PRE-FABRICATED METAL CANOPY SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Freestanding, pre-engineered metal canopies including concrete foundation, steel framing, metal roof, roof drains and leaders, fascia components, and metal ceiling and accessories.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-In-Place Concrete.

1.3 REFERENCES

A. American Institute of Steel Construction, Inc. (AISC): AISC 360 - Specification for Structural Steel Buildings (copyrighted by AISC, ANSI approved).

B. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures (copyrighted by ASCE, ANSI approved).

C. American Welding Society (AWS): AWS D1.1 - Structural Welding Code - Steel (copyrighted by AWS, ANSI approved).

D. ASTM International (ASTM):
1. ASTM A 36/A 36M - Standard Specification for Structural Steel.

E. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM MFM - Metal Finishes Manual.

F. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code (copyrighted by NFPA, ANSI approved) - hereinafter referred to as NEC.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide pre-engineered canopies and concrete foundations capable of withstanding the effects of gravity and lateral loads as stated on the structural drawings.

B. Deflection limits based on manufacturer’s standards.

C. Thermal Movements: Provide pre-engineered canopies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 degrees F, ambient; 180 degrees F, material surfaces.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's data sheets on each product to be used, including:
   1. Structural Framing System.
   2. Roof Panels.
   3. Fascia Panels, color to match existing building as closely as possible.
   4. Drainage System.
   5. Concrete Foundations.

B. Shop Drawings: For the following overhead canopy system components. Include plans, elevations, sections and details.

   1. For installed components indicated to comply with design loads, include structural analysis data signed and sealed by the qualified New Jersey Licensed Professional Engineer responsible for their preparation.
   2. Anchor-Bolt Plans: Include location, diameter, and projection of anchor bolts required to attach metal canopy to foundation.
   3. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
   4. Roof Layout Drawings: Show layouts of panels on support framing, details of edge conditions, joints, panel profiles, corners, custom profiles, supports, anchorages, trim, flashings, closures, drainage and special details. Distinguish between factory- and field-assembled work.
   5. Concrete footing details.
      5.1. Note that two of the footings will be in the vicinity of a footing from an existing concrete screening wall and building structure. Test pits will be excavated to confirm the location of the existing footings and the design of the two footings in the vicinity will be designed accordingly.
      5.2. A geotechnical report for the area of the canopy has been included in this specification for the Contractor’s reference.
   6. Lighting Fixtures and installation details.

C. Samples:

   1. Submit samples for initial color selection. Submit samples of each specified finish. Submit samples in form of manufacturer's color charts showing full range of colors and finishes available. Where finishes involve normal color variations, include samples showing the full, range of variations expected.

D. Product Certificates: Signed by manufacturers of metal canopy systems certifying that products furnished comply with requirements.

   1. Letter of Design Certification: Signed and sealed by a qualified New Jersey Professional Engineer.
      Include the following:

      a. Name and location of Project.
      b. Name of manufacturer.
      c. Overhead Canopy dimensions, including width, length, and height.
      d. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
      e. Governing building code and year of edition.
      f. Design Loads: Include dead load, roof live load, roof snow load, wind loads/speeds and exposure and seismic design category.

g. Building-Use Category: Indicate category of building use and its effect on load importance factors.

E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, must have an annual audit and review of their quality assurance program, and other information specified.

F. Warranty Data: Submit warranty documents specified herein.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in engineering and manufacturing pre-engineered canopies with a minimum documented experience of five years and with a quality assurance program utilizing a quality inspection for each system.

B. Professional Engineer Qualifications: A professional engineer who is legally licensed and qualified to practice in the state of New Jersey and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal canopy systems that are similar to those indicated for the project in material, design, and extent.

C. Erector Qualifications: An erector with a minimum of five years of experience who has specialized in erecting and installing work similar in material, design, and extent to that indicated for this project and who is acceptable to manufacturer.

D. Welding: Qualify procedures and personnel according to the following:
1. Welding shall be in accordance with AWS D1.1. “Structural Welding Code Steel”.
2. Steel shop connections shall be welded and field connections shall be bolted (unless otherwise noted on the Drawings). Shop welds may be changed to field welds with the approval of the project engineer.
3. Slag shall be cleaned from welds and inspected. Steel shall be painted with red oxide rust-inhibitive primer.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. Source Limitations: Obtain pre-engineered metal canopy through one source from a single manufacturer who shall manufacture and install the canopy, unless another installer is approved by the engineer.

G. Product Options:
1. Information on the Drawings and in the Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance. If modifications are proposed, submit comprehensive explanatory data to the Engineer for review.

2. The Drawings indicate size, profiles, and dimensional requirements of pre-engineered metal canopies and are based on the specific system indicated. If modifications are proposed, submit comprehensive explanatory data to the Engineer

for review.

H. Coordination:
   1. The Contractor shall conduct site meetings to verify project requirements, substrate conditions, utility connections, manufacturer's drawings and installation instructions.
   2. Coordinate size and location of concrete foundations and casting of anchor-bolt inserts into foundation footings. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section “Cast-In-Place Concrete”.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect components and accessories from corrosion, deformation, damage, and deterioration when stored at job site. Keep materials free from dirt and foreign matter.

C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weather tight and ventilated covering. Store roof and wall panels to ensure dryness. Do not store panels in contact with materials that might cause staining, denting, or other surface damage.

1.8 PROJECT CONDITIONS

A. Field Measurements: The Contractor shall verify location and elevation of footings relative to finished grade, columns, and other construction contiguous with pre-engineered metal canopies by field measurements before fabrication and indicate measurements on shop drawings.

   1. Established Dimensions: The Contractor shall, where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating metal canopies without field measurements. Contractor is responsible to coordinate footer locations and elevations with any interferences with or attachments to abutting structures.

B. Weather Limitations: Proceed with installation only when weather conditions permit roof and fascia panel installation to be performed according to manufacturer’s written instructions and warranty requirements.

1.9 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights. Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

   1. Warranty Period: One year from date of Substantial Completion.

B. Special Warranty on Panels: Written warranty, executed by manufacturer agreeing to repair or replace roof and fascia panels that fail in materials or workmanship within specified warranty period.

   1. Warranty Period: One year from date of Substantial Completion.

C. Special Warranty on Panel Finishes: Written warranty, signed by manufacturer agreeing to repair finish or replace metal panels that show evidence of deterioration of factory-applied

finishes within specified warranty period. Deterioration of finish includes, but is not limited to, color fade, chalking, cracking peeling, and loss of film integrity.

1. Warranty Period for Roof Panels: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturer's: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. TFC Canopy a division of Centurion Industries, Inc.
   1107 North Taylor Road
   Garrett, Indiana 46738
   (800) 832-3212

2. Fasion, Inc.
   1019 North Street P.O. Box 1050
   Ottawa, Kansas 66067
   (800) 255-1009

3. Austin Mohawk and Company, Inc.
   2175 Beechgrove Place
   Utica, New York 13501
   (315) 793-3000

2.2 MATERIALS

A. Structural Steel:
   1. Material and work shall conform to the latest AISC 360.

      - Structural Steel Shapes: ASTM A 992/A 992M 50 ksi minimum yield strength.
      - Steel plate, Bar, or Strip: ASTM A 529/A 529M 50 ksi minimum yield strength.
      - Structural Square HSS Tube Steel: A500 Grade B 46 minimum yield strength.
      - Structural Round HSS Tube Steel: A500 Grade B 42 minimum yield strength.

   2. Structural steel shall be painted with a rust inhibitive (red oxide) primer (std).
   3. Structural steel shall be hot-dip-galvanized.

B. Sheet Metal:
   1. Decking: 3 inch (76 mm) by 16 inch (406 mm) by 20 gage smooth white, ASTM A 653/A 653M GR40, Fy = 40 ksi, galvanized steel with baked enamel finish.
   2. Center and Tapered Gutter: 24 gage hot-dip galvanized steel baked enamel finish.
   3. Perimeter Gutter: 20 gage hot-dip galvanized steel baked enamel finish.
   4. Internal Downspout: 3 inch (76 mm) diameter PVC.
   5. External Downspouts: 3 inch (76 mm) by 4 inch (102 mm) by 24 gage hot-dip galvanized steel with baked enamel finish.

2.3 PRE-ENGINEERED METAL CANOPY

A. General: Provide a complete, integrated set of manufacturer's standard design canopy components using a flexible frame with fixed base wherein the steel framing system uses stacked I Beam construction transferring the moment to the concrete footing without requiring a rigid connection between steel frame members. The beam arrangements allow for a cantilever design which can bring the columns from the perimeter of the structure to the inner protected zones between the drive lanes. These mutually dependent components form a pre-engineered canopy, ready for construction on project site. Said pre-engineered metal canopy will be designed to meet all site structural wind, snow and seismic requirements.

B. Canopy Fascia:
   1. Provide manufactures' standard smooth finish fascia panels on all sides of canopy.

C. Canopy Finishes: Comply with NAAMM MFM for recommendations for applying and designating finishes.
   1. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

D. Fabrication: Fabricate pre-engineered canopies completely in factory.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which the work is to be installed, and notify the Contractor in writing, with a copy to the Owner and the Architect, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
   1. Examine supporting foundations for compliance with manufacturer's requirements, including installation tolerances and other conditions affecting performance of supporting members.
   2. Verify the rough-in of required mechanical and electrical services prior to placement of the structure.

3.2 PREPARATION

A. Clean substrates of substances, including oil, grease, rolling compounds, incompatible primers, and loose mill scale that impair bond of erection materials.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. A work area shall be required extending 10 feet (3 m) beyond buildings and canopies in all directions to the extent practical. The work area shall be flat, comprised of hard-packed soil

or gravel, asphalt, or concrete, and free of open excavation, debris, construction equipment and construction workers. An additional flat work space a minimum of 25 feet (7.6 m) by 25 feet (7.6 m) or as practical shall be provided adjacent to the canopy and/or building for unloading and storing materials. Site to meet OSHA guidelines to allow lift equipment and scaffolding to maneuver the work area.

B. Set pre-engineered metal canopy plumb and aligned. Level base plates true to plane with full bearing on concrete bases.

C. Fasten pre-engineered metal canopy columns to anchor bolts and/or foundation bolts.

D. Provide anchor bolts as follows:
   1. Anchor bolts or foundation bolts will be set by the Owner in accordance with approved site specific drawings. They must not vary from the size and dimensions shown on the erection drawings. Use of a plywood template is recommended. Remove template prior to column erection.
   2. Anchor bolts shall conform to ASTM A 307, and shall have a minimum of 7 inches (178 mm) of exposed thread and 23 inch (584 mm) minimum embedment with 1-1/4 inch (32 mm) nut and washer as embedment end.

E. Provide bolted connections as follows:
   1. Structural erection bolts shall conform to ASTM A 325/A 325M.
   2. Bolts shall be tightened to snug tight per latest RCSC specifications (unless otherwise specified).

F. Provide screws as follows:
   1. Fastening shall be performed per installation prints provided by the manufacturer.
   2. Self-drilling and self-tapping screws shall have a sufficient cut point and a 1/2 inch (13 mm) outside diameter dished metal-backed neoprene washer to be used in water sealing applications.

G. Provide pedestrian protection and warnings during construction which comply with local, Federal, and OSHA codes.

H. Prior to steel erection of any kind, the Contractor shall grade, backfill and otherwise prepare the job site to allow for rolling scaffold and ensure safe working conditions including the removal or relocation of overhead power lines.

I. Any grade or elevation situations which deviate from the approved manufacturer's plans shall be conveyed to the manufacturer prior to fabrication.

J. All anchor bolts and/or leveling plates shall be set within 1/4 inch (6 mm) tolerance on layout and grade level.

K. Temporary electrical power shall be provided.

L. Connect electrical power service to power distribution system according to requirements specified in Section 26 05 33.

M. Dumpster for trash and debris shall be provided by the Contractor.

3.4 ADJUSTING AND CLEANING

A. After completing installation, inspect exposed finishes and repair damaged finishes.

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair, or replace damaged products before Substantial Completion. Any such panels/components not meeting the owners' acceptance shall be replaced.

END OF SECTION

SECTION 02 65 00 - UNDERGROUND STORAGE TANK REMOVAL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Remove 15,000 gallon diesel fuel tank.
   2. Remove 15,000 gallon gasoline tank.

B. Related Sections:
   1. Section 31 05 16 - Aggregates for Earthwork: Aggregates for backfill.
   2. Section 31 23 16 - Excavation.
   3. Section 31 23 23 - Fill.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Petroleum Institute Publications:
   1. API 1604 - Removal and Disposal of Used Underground Petroleum Storage Tanks.

C. ASTM International:
   1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   3. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   4. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

D. National Fire Protection Association:
   1. NFPA 241- Safeguarding Construction, Alteration and Demolition Operations.

1.3 SYSTEM DESCRIPTION

A. Existing Storage Tanks: 15,000 gallon storage tanks are located under concrete pad. Tanks lie atop subsurface anchor. Tanks are connected to pad by steel straps. Storage tanks were installed circa 1993. Contractor to coordinate with Union County DPW for removal of any residual fuel within tanks.

1.4 SUBMITTALS

A. Samples: Submit 10 lb soil samples for contamination testing (LSRP Only).

B. Test Reports: Indicate test results of soil samples (LSRP Only).

C. Certificates: Submit certificates for tank removal company and site personnel issued by NJDEP regulating tank removal.

D. Disposal Records: Submit documentation satisfactory to Owner, attesting to final and legal disposal of waste materials removed from site. Include records for the following:
   1. Tank contents.
   2. Tank sludge.
   3. Tank flush and wash water.
   4. Contaminated soil.
   5. Tanks.
   6. Tank foundations.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of tank removal, capped piping, and electrical services.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. United States Environmental Protection Agency (EPA).
   2. New Jersey Department of Environment Protection (NJDEP)
      a. http://www.nj.gov/dep/rules/rules/njac7_14b.pdf
         1) See subchapters 4, 6,7,8,9, and 10.

B. Perform Work in accordance with NJ, Township of Scotch Plains Public Work's standard.

C. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Tank Removal Company: Company specializing in performing work of this section certified by NJDEP regulating tank removal. (DPMC classification # C113 Underground Storage Tank Enclosure and Installation)

B. Removal, Testing, and Inspection Site Personnel: Individuals specializing in performing work of this section certified by NJDEP regulating tank removal.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Prevent surface runoff from entering excavation.

B. Excavated soil shall not be stockpiled on site but rather deposited in approved containers.

C. During tank removal an LSRP is to inspect the condition of the tanks to ensure there are no leaks prior to disposal to offsite storage facility.

1.9 COORDINATION

A. Coordinate work with Owner for tank removal.

B. Coordinate work with Site LSRP for tank removal.
   1. Contact Thomas DeMichele, LSRP at (973)585-9035 or (973)240-1800

1.10 BACKFILL AND COVER MATERIALS

A. Backfill: Fill Type as specified in Section 31 05 16.

B. Cover: Fill Type as specified in Section 31 05 16.

C. Onsite Soil Backfill: Suitable material unless otherwise specified by geotechnical engineer.
   1. Suitable material includes the following:
      a. Subsoil with no rocks over 6 inches in diameter, frozen earth, or foreign matter
      b. A compaction of 95% can be achieved
      c. Moisture content at time of placement shall not exceed 2% above or 3% below optimum.

D. Plastic:
   1. Provide plastic cover in accordance with State or Local regulations.

PART 2 EXECUTION

2.1 EXAMINATION

A. Verify location and number of underground tanks to be removed.

2.2 PREPARATION

A. Notify regulating agencies regarding tank removal activities.

B. Obtain licenses, permits, and inspections required for tank removal and disposal.

C. Notify affected utility companies before starting work and comply with their requirements.

D. Mark location of utilities.

E. Permanently disconnect storage system-related electrical circuits before initiation of excavation work.

2.3 EXCAVATION

A. Excavate in accordance with Section 31 23 16 for Work of this Section.

B. Remove cover over tank including concrete, macadam, and soil, as needed to facilitate tank removal.

C. Excavated soil shall not be stockpiled on site but rather deposited in approved containers

D. Store contaminated soil in container and cover with plastic until soil testing and analysis is complete if needed (by LSRP).

2.4 UNDERGROUND STORAGE TANK DECOMMISSIONING

A. Pump out product residuals and sludge into storage tanks or tanker transport in accordance with NJDEP
   1. http://www.nj.gov/dep/rules/rules/njac7_14b.pdf
      See subchapters 4, 6,7,8,9, and 10

B. Remove drop tube, fill pipe, gauge pipe, vapor recovery fitting and other tank fixtures. Maintain vent line until tank is purged.

C. Carefully drain piping completely into tank to avoid spillage to excavation area. Disconnect product piping from tank.

D. Remove piping runs.

E. Purge tanks of flammable vapors in accordance with API 1604.

F. After purging tanks, flush tank sides, remove sludge, and pressure wash entire tank. Remove tank contents and legally dispose.

2.5 UNDERGROUND STORAGE TANK REMOVAL AND BACKFILL

A. Carefully remove the two tanks and accessories and legally dispose. Do not crush or cut tanks on site.

B. Remove concrete pad underlying tanks when indication of contamination within excavation is discovered and integrity of concrete pad is questionable.

C. Remove concrete pads and deposit in approved enclosed containers.

D. Backfill excavation in accordance with Section 31 23 23. Provide imported fill materials to replace contaminated soil to complete backfilling to subgrade.

E. Replace surface concrete pad in accordance with Section 321313 to match existing.

2.6 WASTE DISPOSAL

A. Collect waste from construction area, daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris.

B. Handle hazardous, dangerous or unsanitary waste materials separately from other waste, containerize properly, and legally dispose off-site.

C. Remove debris, rubbish, and other materials resulting from tank removal operations. Transport and legally dispose off-site.
   1. When hazardous materials are encountered during tank removal operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
   2. Burning of removed materials is not permitted on project site.
   3. Properly ventilate heating oil storage tank to abate explosion possibility during disposal handling.
   4. Pay for required weighing and measuring fees and charges to legally dispose waste materials off-site.

D. Remove contaminated soil and legally dispose off-site.

E. Deposit uncontaminated excavated material in approved enclosed containers.

2.7 FIELD QUALITY CONTROL

A. Visually inspect for soil possible contamination.

B. When possible contamination is discovered during tank excavation, site LSRP to collect soil samples and test soil in accordance with State or Local regulations for contamination to determine soil disposal requirements.

C. Compaction Testing for Bedding: In accordance with [ASTM D1557.] [ASTM D698.] [AASHTO T180.] [ASTM D2922.] [ASTM D3017.]

D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

END OF SECTION

SECTION 03 10 00.01 - CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Formwork for cast-in place concrete.
   2. Shoring, bracing, and anchorage.
   3. Form accessories.
   4. Form stripping.

B. Related Sections:
   1. Section 03 20 00 - Concrete Reinforcing.
   2. Section 03 30 00 - Cast-In-Place Concrete.

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
   2. ACI 301 - Specifications for Structural Concrete.
   3. ACI 318 - Building Code Requirements for Structural Concrete.
   4. ACI 347 - Guide to Formwork for Concrete.

B. American Forest and Paper Association:
   1. AF&PA - National Design Specifications for Wood Construction.

C. The Engineered Wood Association:
   1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.

D. West Coast Lumber Inspection Bureau:
   1. WCLIB - Standard Grading Rules for West Coast Lumber.

1.3 DESIGN REQUIREMENTS

A. Design, engineer and construct formwork, shoring and bracing in accordance with ACI 318 to conform to achieve concrete shape, line and dimension as indicated on Drawings.

1.4 SUBMITTALS

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

B. For wood products furnished for work of this Section, comply with AF&PA.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver void forms and installation instructions in manufacturer's packaging.

B. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.7 COORDINATION

A. Coordinate this Section with other sections of work, requiring attachment of components to formwork.

PART 2 PRODUCTS

2.1 SUSTAINABILITY CHARACTERISTICS

A. Materials and Resources Characteristics:
   1. Recycled Content Materials: Furnish materials with maximum available recycled content.
   2. Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.
   3. Certified Wood Materials: Furnish wood materials certified in accordance with FSC Guidelines.

2.2 WOOD FORM MATERIALS

A. Form Materials: At discretion of Contractor.

2.3 FORMWORK ACCESSORIES

A. Form Ties: Snap-off type, galvanized metal, capable of leaving holes larger than 1 inch in concrete surface.

B. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1 inch of concrete face. Wire ties, wood spreaders or through bolts are not permitted.

C. Form Anchors and Hangers:
   1. Do not use anchors and hangers exposed concrete leaving exposed metal at concrete surface.
   2. Symmetrically arrange hangers supporting forms from structural steel members to minimize twisting or rotation of member.
   3. Penetration of structural steel members is not permitted.

D. Form Release Agent: Colorless mineral oil that will not stain concrete, or absorb moisture.

E. Corners: Chamfer 1x 1inch size; maximum possible lengths.

F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength and character to maintain formwork in place while placing concrete.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.

B. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Architect/Engineer.

3.2 INSTALLATION

A. Formwork - General:
   1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
   2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
   3. Camber forms where necessary to produce level finished soffits unless otherwise shown on Drawings.
   4. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
   5. Complete wedging and bracing before placing concrete.

B. Forms for Smooth Finish Concrete:
   1. Use steel, plywood or lined board forms.
   2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
   3. Install form lining with close-fitting square joints between separate sheets without springing into place.
   4. Use full size sheets of form lines and plywood wherever possible.
   5. Tape joints to prevent protrusions in concrete.
   6. Use care in forming and stripping wood forms to protect corners and edges.
   7. Level and continue horizontal joints.
   8. Keep wood forms wet until stripped.

C. Architectural Form Liners:
   1. Erect architectural side of formwork first.
   2. Attach form liner to forms before installing form ties.
   3. Install form liners square, with joints and pattern aligned.
   4. Seal form liner joints to prevent grout leaks.
   5. Dress joints and edges to match form liner pattern and texture.

D. Forms for Surfaces to Receive Membrane Waterproofing: Use plywood or steel forms. After erection of forms, tape form joints to prevent protrusions in concrete.

E. Framing, Studding and Bracing:
   1. Space studs at 16 inches on center maximum for boards and 12 inches on center maximum for plywood.

2. Size framing, bracing, centering, and supporting members with sufficient strength to maintain shape and position under imposed loads from construction operations.
3. Construct beam soffits of material minimum of 2 inches thick.
4. Distribute bracing loads over base area on which bracing is erected.
5. When placed on ground, protect against undermining, settlement or accidental impact.

F. Erect formwork, shoring, and bracing to achieve design requirements, in accordance with requirements of ACI 301.

G. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

H. Obtain Engineer's approval before framing openings in structural members not indicated on Drawings.

I. Install chamfer strips on external corners of work.

J. Install void forms in accordance with manufacturer's recommendations.

K. Do not patch formwork.

3.3 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer's specifications. Do not coat forms for concrete indicated to receive "scored finish". Apply form coatings before placing reinforcing steel.

3.4 INSTALLATION - INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Install formed openings for items to be embedded in or passing through concrete work.

B. Locate and set in place items required to be cast directly into concrete.

C. Coordinate with Work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Form Ties:
1. Use sufficient strength and sufficient quantity to prevent spreading of forms.
2. Place ties at least 1 inch away from finished surface of concrete.
3. Leave inner rods in concrete when forms are stripped.

4. Space form ties equidistant, symmetrical and aligned vertically and horizontally unless otherwise shown on Drawings.

F. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.

G. Construction Joints:
   1. Install surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints.
   2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
   3. Show no overlapping of construction joints. Construct joints to present same appearance as butted plywood joints.
   4. Arrange joints in continuous line straight, true and sharp.

H. Embedded Items:
   1. Make provisions for pipes, sleeves, anchors, inserts, and other features.
   2. Do not embed wood or uncoated aluminum in concrete.
   3. Obtain installation and setting information for embedded items furnished under other Specification sections.
   4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
   5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 for size and location limitations.

I. Openings for Items Passing Through Concrete:
   1. Frame openings in concrete where indicated on Drawings. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
   2. Coordinate work to avoid cutting and patching of concrete after placement.
   3. Perform cutting and repairing of concrete required as result of failure to provide required openings.

J. Screeds:
   1. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
   2. Slope slabs to drain where required or as shown on Drawings.
   3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.

K. Screed Supports:
   1. For concrete over waterproof membranes and vapor retarder membranes, use cradle, pad or base type screed supports which will not puncture membrane.
   2. Staking through membrane is not be permitted.

L. Cleanouts and Access Panels:
   1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris and waste material.
   2. Clean forms and surfaces against which concrete is to be placed. Remove chips, saw dust and other debris. Thoroughly blow out forms with compressed air just before concrete is placed.

3.5 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.6 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads and removal has been approved by Engineer.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

D. Leave forms in place for minimum number of days as specified in ACI 347.

3.7 ERECTION TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301.

END OF SECTION

SECTION 03 20 00.01 - CONCRETE REINFORCING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Reinforcing bars.
   2. Welded wire fabric.
   3. Reinforcement accessories.

B. Related Sections:
   1. Section 03 10 00 - Concrete Forming and Accessories.
   2. Section 03 30 00 - Cast-In-Place Concrete.

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 318 - Building Code Requirements for Structural Concrete.

B. ASTM International:
   1. A185/A185M-07 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
   2. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

C. Concrete Reinforcing Steel Institute:
   1. CRSI - Manual of Standard Practice.
   2. CRSI - Placing Reinforcing Bars.

1.3 SUBMITTALS

A. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and welded wire fabric, bending and cutting schedules, and supporting and spacing devices

B. Certificates: Submit AWS qualification certificate for welders employed on the Work.

C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements].
   1. Submit certified copies of mill test report of reinforcement materials analysis.

D. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
   1. Provide cost data for the following products:
      a. Products with recycled material content.
      b. Regional products.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI - Manual of Standard Practice

B. Prepare shop drawings in accordance with ACI SP-66.

C. Perform wok in accordance with Standard Specifications for Road and Bridge Construction, as currently amended.

D. Maintain one copy of each document on site.

1.5 COORDINATION

A. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, 60ksi yield grade, deformed billet bars.

B. Welded Plain Wire Fabric: ASTM A185/A185M; in flat sheets.

2.2 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gage annealed type

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.3 FABRICATION

A. Fabricate concrete reinforcement in accordance with CRSI Manual of Practice

B. Form standard hooks as indicated on Drawings.

C. Form reinforcement bends with minimum diameters in accordance with CRSI Manual of Practice.

2.4 SOURCE QUALITY CONTROL

A. Make completed reinforcement available for inspection at manufacturer’s factory prior to packaging for shipment. Notify Architect/Engineer at least seven days before inspection is allowed.

B. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

PART 3 EXECUTION

3.1 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.
   1. Do not weld crossing reinforcement bars for assembly

B. Accommodate placement of formed openings.

C. Maintain concrete cover around reinforcement as follows:

Reinforcement Location		Minimum Concrete Cover
Footings and Concrete Formed Against Earth		3 inches
Concrete exposed to earth or weather	No. 6 bars and larger	2 inches
	No. 5 (16) bars and smaller	1-1/2 inches
Supported Slabs, Walls, and Joists	No. 14 bars and larger	1-1/2 inches
	No. 11 bars and smaller	3/4 inches
Beams and Columns		1-1/2 inches
Shell and Folded Plate Members	No. 6 bars and larger	3/4 inches
	No. 5 bars and smaller	1/2 inches

3.2 FIELD QUALITY CONTROL

END OF SECTION

SECTION 03 30 00.01 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete for the following:
   1. Pavement.
   2. Curbs.
   3. Drainage and Utility Structures.
   4. Foundations and equipment support slab
   5. Supported slabs.
   6. Slabs on grade.
   7. Control, expansion and contraction joint devices.
   8. Equipment pads.
   9. Thrust blocks.
   10. Manholes.

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 305 - Hot Weather Concreting.
   3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
   4. ACI 308.1 - Standard Specification for Curing Concrete.
   5. ACI 318 - Building Code Requirements for Structural Concrete.

B. ASTM International:
   1. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   2. ASTM C33 - Standard Specification for Concrete Aggregates.
   3. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   4. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
   5. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
   6. ASTM C150 - Standard Specification for Portland Cement.
   7. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
   8. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
   9. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
   10. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
   11. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
   12. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
   13. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.

14. ASTM C1218/C1218M - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
15. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
16. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
17. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

1.3 PERFORMANCE REQUIREMENTS

1.4 SUBMITTALS

A. Product Data: Submit data on joint devices, attachment accessories, and admixtures.

B. Design Data:
   1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
      a. Hot and cold weather concrete work.
      b. Air entrained concrete work.
   2. Identify mix ingredients and proportions, including admixtures.
   3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

B. Conform to ACI 305 when concreting during hot weather.

C. Conform to ACI 306.1 when concreting during cold weather.

D. Acquire cement and aggregate from one source for Work.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Maintain concrete temperature after installation at minimum 50 degrees F for minimum 7 days.

1.8 COORDINATION

A. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

A. Cement: ASTM C150, Type I Portland type

OR

B. Normal Weight Aggregates: ASTM C33
   1. Coarse Aggregate Maximum Size: 3inches

C. Water: ACI 301; potable

2.2 ADMIXTURES

A. Manufacturers:
   1. BASF Corporation-Construction Systems
   2. Cortec Corporation
   3. Euclid Chemical Company (The); an RPM company
   4. General Resource Technology
   5. Grace Construction Products; W.R. Grace & Co.--Conn.
   6. Green Umbrella
   7. Sika Corporation

B. Air Entrainment: ASTM C260.

C. Chemical: ASTM C494/C494M.
   1. Type A - Water Reducing.
   2. Type B - Retarding.
   3. Type C - Accelerating.
   4. Type D - Water Reducing and Retarding.
   5. Type E - Water Reducing and Accelerating.
   6. Type F - Water Reducing, High Range.
   7. Type G - Water Reducing, High Range and Retarding.

D. Fly Ash or Calcined Pozzolan: ASTM C618.

E. Silica Fume: ASTM C1240.

F. Plasticizing: ASTM C1017/C1017M

2.3 ACCESSORIES

2.4 JOINT DEVICES AND FILLER MATERIALS

A. Joint Filler ASTM D1751 or ASTM D994; Asphalt impregnated fiberboard

2.5 CONCRETE MIX

A. Select proportions for concrete in accordance with ACI 301 or field experience.

B. All concrete shall have a minimum compressive strength of 4,000 psi at 28 days, a maximum water/cement ratio of 0.45 and shall have 6% entrained air.

C. Admixtures: Include admixture types and quantities indicated in concrete mix designs only when approved by Architect/Engineer.
   1. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.
   2. Do not use calcium chloride or admixtures containing calcium chloride.

D. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94.

E. Site Mixed Concrete: Mix concrete in accordance with ACI 318.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify requirements for concrete cover over reinforcement.

B. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.

B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

C. Remove debris and ice from formwork, reinforcement, and concrete substrates.

D. Remove water from areas receiving concrete before concrete is placed.

3.3 PLACING CONCRETE

A. Place concrete in accordance with ACI 301

B. Notify testing laboratory minimum 24 hours prior to commencement of operations.

C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, and are not disturbed during concrete placement.

D. Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.

E. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface.

F. Deposit concrete at final position. Prevent segregation of mix.

G. Place concrete in continuous operation for each panel or section determined by predetermined joints.

H. Consolidate concrete.

I. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

J. Place concrete continuously between predetermined expansion, control, and construction joints.

K. Do not interrupt successive placement; do not permit cold joints to occur.

3.4 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
   1. Protect concrete footings from freezing for minimum 5 days.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Cure floor surfaces in accordance with ACI 301

D. Ponding: Maintain 100 percent coverage of water over floor slab areas continuously for 7 days

E. Spraying: Spray water over floor slab areas and maintain wet for 7days.

3.5 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with ACI 318

B. Provide free access to Work and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.

D. Concrete Inspections:
   1. Continuous Placement Inspection: Inspect for proper installation procedures.
   2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.

E. Strength Test Samples:
   1. Sampling Procedures: ASTM C172.
   2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, standard cured.

3. Sample concrete and make one set of three cylinders for every 75 cu yds or less concrete placed each day and for every 5,000 sf of surface area for slabs and walls.
4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
5. Make one additional cylinder during cold weather concreting, and field cure.

F. Field Testing:
1. Slump Test Method: ASTM C143/C143M.
2. Air Content Test Method: or ASTM C231.
3. Temperature Test Method: ASTM C1064/C1064M.
4. Measure slump and temperature for each compressive strength concrete sample.
5. Measure air content in air entrained concrete for each compressive strength concrete sample.

G. Cylinder Compressive Strength Testing:
1. Test Method: ASTM C39/C39M.
2. Test Acceptance: In accordance with ACI 318.
3. Test one cylinder at 7 days.
4. Test two cylinders at 28 days.

H. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.6 PATCHING

A. Allow Owner to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/Engineer upon discovery.

C. Patch imperfections as directed by Engineer

3.7 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. Repair or replacement of defective concrete will be determined by Architect/Engineer.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

END OF SECTION

SECTION 20 02 00 – MANAGEMENT OF IMPACTED SOIL AND GROUNDWATER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division1 Specification Sections, apply to this Section.

B. Related Sections include the following:

1. New Jersey Administrative Code Title 7, Chapter 26 Solid Waste at. el.

1.2 SUMMARY

A. All work shall be performed in accordance with the Contract, and if applicable, the NJDEP Technical Requirements for Site Remediation N.J.A.C. 7:26E (May 7, 2012), NJDEP Administrative Requirements for the Remediation of Contaminated Sites N.J.A.C. 7:26C (May 7, 2012) and any associated regulations, guidance and laws.

B. Importation of any fill material for backfill, of the excavation and/or construction shall be performed in accordance with the New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program (SRP) Alternative and Clean Fill Guidance for SRP Sites, Updated December 29, 2011, Version 2.0, and pre-approved by the LSRP of Record for the Site (LSRP) prior to the fill material being imported to the Site. Certified cleanfill shall be used in excavated areas where structural fill is not being used.

C. This Section includes the following:

1. Proper handling of impacted soil for disposal off-site to an approved disposal facility;

2. On-Site stabilization of the excavated soil for transport, if necessary;

3. Loading and proper disposal of the impacted soils, if necessary. Documentation shall be provided by the Contractor, for the disposal of impacted soils at an approved disposal facility to be reviewed/approved by the Owner and LSRP;

1.3 HANDLING OF IMPACTED SOIL AND GROUNDWATER

A. Remove free/residual product (if identified) in the following manner while under the oversight of the LSRP:

1. Any measurable free/residual product within any excavation during the Site work, must be securely contained, if encountered.

2. Pump the measurable free/residual product from the excavation and containerize the liquids in appropriate bulk containers (e.g., vacuum truck, drums, etc.) and properly dispose of the materials off-site at a licensed disposal facility that is pre-approved by the Owner and LSRP. Contractor must provide information on the approved disposal facility to the Owner/LSRP.

3. All liquids sent for off-site disposal must be transported by a licensed hauler and must be accompanied by appropriate disposal documentation (e.g., Bill of Lading, Non-Hazardous Waste Manifest, Hazardous Waste Manifest, etc.). Copies of the Bill of Lading shall is provided to the Owner and Consultant/LSRP within five (5) working days following disposal of the material. Contractor must provide information on the licensed hauler to the Owner/LSRP.

4. Do not mix the measurable free/residual product with any material, including soil.

B. If necessary, remove impacted soil in the following manner while under the oversight of the LSRP:

1. The Contractor shall cooperate with the LSRP's written directives regarding stockpiling of impacted soil. Soil removed from the excavation must only be disposed at a facility approved by the LSRP. The Contractor will not be compensated for the unauthorized excavation of impacted soil. The Contractor shall backfill such unauthorized excavation with certified clean fill at no additional cost to the Owner. Certifications must be provided to the LSRP prior to brining the material to the Site. Impacted soil shall be excavated and placed within the designated areas.

1.4 IMPACTED SOIL AND GROUNDWATER MANAGEMENT STRATEGY

A. Excavated soil from the Site shall be placed in lined roll off containers for immediate transport and disposal to an approved offsite disposal facility.

B. No excavated soil will be re-used on the property

C. Any soil or runoff that migrates from to unaffected areas of the site will be the Contractor's responsibility to remediate and dispose of in accordance with Construction Plans. The Contractor will solely incur these costs.

D. No separate payment will be made under this Section for the excavation, loading, transportation and/or disposal of any excess impacted Site soils in a legal manner. The contractor must include any additional testing requirements for disposal as required by the approved disposal facility. The existing subsurface soils and materials to be excavated during construction shall be considered contaminated, but not hazardous. The quantity of soils and materials shall be based on the information provided on the construction site plans. The cost for the transportation and disposal of contaminated soils and materials shall be covered under the lump sum base bid.

There shall be no additional compensation or claim due to the Contractor for delays associated with any additional testing, obtaining multiple quotes for transportation and disposal, starting or stopping work or for cost associated with protecting, maintaining or re-handling of the staged impacted excess Site soils that are encountered. If the results of the soil testing indicate an exceedance of United States Environmental Protection Agency's (USEPA) standards for Hazardous Wastes, the contractor is required to contract a USEPA licensed and secured facility for disposal of soil, and to contract an appropriately licensed waste hauler to transport soils to the USEPA licensed and secured

facility. The contractor must provide information on the licensed and secured disposal facility and licensed waste hauler to the Owner and LSRP prior to transporting any soils offsite.

The cost for the transportation and disposal of contaminated groundwater shall not be included under the lump sum base bid. Should groundwater be encountered during construction, the cost for the transportation and disposal will be negotiated between the contractor and Union County prior to any offsite removal.

PART 2 – EXECUTION

MANAGEMENT AND DISPOSAL OF IMPACTED SOIL AND/OR OTHER MATERIALS

A. The Contractor shall prepare and implement a Site specific Health and Safety Plan in accordance with OSHA requirements including standards 29 CFR 1910.120, 29 CFR 1926, and the NJ Worker & Community Right to Know Act. The Contractor will be responsible for the Health and Safety of their own employees, all their subcontractors, and all other personnel on-Site during Work activities under this Contract. The Contractor will be responsible to provide all personnel/materials/equipment necessary to implement and comply with the HASP (i.e. personal protective equipment, air monitoring equipment, etc.). The soils onsite have been determined to be impacted with volatile organics, semi-volatile organics and metals above the NJDEP SRS. In addition, Site soil may be impacted from the gasoline UST.

B. The Contractor to obtain all applicable federal, state and/or local permits. The Contractor shall call the New Jersey One-Call (1-800-272-1000) to obtain utility mark-outs prior to excavation or any other intrusive activities associated with this Contract. The Contractor shall be responsible for all utilities, and restoration to same, if necessary.

C. The Contractor shall provide to the Owner/LSRP the name, location, contact information, and permit/licenses numbers of the proposed off-Site disposal facility a minimum of ten (10) working days in advance of the proposed soil removal operations. The contractor shall provide the Owner/LSRP with confirmation of acceptance of treated ground water discharge by the City of Englewood a minimum of ten (10) working days in advance of discharging ground water.

D. The Owner and LSRP shall review the facility documentation, and provide approval to the Contractor to utilize said facility(ies). The Owner and/or Consultant/LSRP has the discretion to deny the proposed disposal facility(ies) for any reason. It is the intention of the Owner and LSRP to ensure that any proposed disposal facility is in compliance with all applicable rules, laws and regulations, included but not limited to, possessing a valid NJDEP permit. Should the facility be denied by the Owner and/or LSRP, the Contractor, at their own expense is responsible for identifying another off-Site disposal facility(ies).

E. The Contractor shall provide to the Owner and LSRP an approval acceptance letter from the proposed receiving/disposal facility, a minimum of five (5) working days in advance of the proposed soil removal operations.

F. The Owner and Consultant/LSRP shall review the facility acceptance letter, and provide approval to the Contractor to utilize said facility. The Owner and/or LSRP has the

discretion to deny the proposed disposal facility for any reason. It is the intention of the Owner and LSRP to ensure that any proposed disposal facility is in compliance with all applicable rules, laws and regulations, included but not limited to, possessing a valid NJDEP permit. Should the facility be denied by the Owner and Consultant/LSRP, the Contractor at their own expense, is responsible for identifying another off-Site disposal facility.

G. Remove and transport all impacted soil and other materials in accordance with all applicable local, state, and federal governments and other presiding agencies regulations and requirements. The trucks must also be covered with a plastic tarp prior to exiting site. The Contractor shall be responsible for the proper handling and transportation of all wastes, Non-Hazardous and Hazardous.

H. Upon the removal of the impacted soil from the Site, the Contractors shall submit all bills of lading, manifests, tickets, etc. to the Owner and Consultant/LSRP within five (5) business days. The Contractor shall ensure that all paperwork is complete and accurate.

I. The Contractor shall prepare field summary reports documenting all Site activities including photo-documentation and submit the reports to the Owner.

J. The Contractor shall provide a Certificate of Destruction/Certificate of Disposal for all material that has been disposed. The Certificate of Destruction/Certificate of Disposal shall resolve the Owner of liabilities associated with the Soil disposal.

PART 3 – SUBMITTALS

1. Health and Safety Plan (HASP)
2. Selected disposal facility permit
3. Acceptance letter from approved disposal facility
4. All material disposal documentation
5. Material test reports for all imported material
6. Certificate of Destruction/Certificate of Disposal

END OF SECTION

SECTION 231216 - FACILITY DISPENSING PUMPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Gasoline and Diesel dispensers and accessories.

1.2 DEFINITIONS

A. B20 Biodiesel Fuel: A vegetable oil- or animal fat-based diesel fuel. "B20" refers to a blend of 20 percent biodiesel and 80 percent petrodiesel.

1.3 REFERENCE STANDARDS

A. National Fire Protection Association:

1. NFPA 30A - Code for Motor Fuel Dispensing Facilities and Repair Garages.

2. NFPA 70 - National Electrical Code.

B. UL:

1. UL 87 - Power-Operated Dispensing Devices for Petroleum Products.

1.4 COORDINATION

A. Coordinate Work of this Section with Work of other Sections.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's information regarding materials of construction and fabrication, wiring diagrams, performance charts, and other details.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Manufacturer's Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

D. Source Quality-Control Submittals: Indicate results of shop tests and inspections.

E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

F. Manufacturer Reports:

1. Certify that equipment has been installed according to manufacturer's instructions.

2. Indicate activities on Site, adverse findings, and recommendations.

G. Qualifications Statements:

1. Submit qualifications for manufacturer and installer.

2. Submit manufacturer's approval of installer.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of gasoline dispensers and appurtenances.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts:

1. Furnish one set of manufacturer's recommended spare parts.

B. Tools: Furnish special wrenches and other devices required for Owner to maintain and calibrate gasoline dispensers and accessories.

1.8 QUALITY ASSURANCE

A. Perform Work according to State standards.

1.9 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer’s original packaging and inspect for damage.

B. Store materials according to manufacturer's instructions.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

2. Provide additional protection according to manufacturer's instructions.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.

2. Indicate field measurements on Shop Drawings.

1.12 WARRANTY

A. Furnish one-year manufacturer's warranty for gasoline dispensers.

PART 2 - PRODUCTS

2.1 GASOLINE DISPENSERS

A. Manufacturers:

1. Gasboy

2. Approved Equal

B. Model:

1. Atlas Electronic Fleet Products 9800K

C. Description:

1. Product

a. Fleet non computing – Electronic register

2. Type

   a. Pump – integrated suction pump and motor

   b. Dispenser (“X”) – for use with remote pumping unit

3. Flowrate – capable of delivery in typical installations

   a. High Flow = 22 gpm/83 lpm

4. Models

   a. Single product twin hose (TW1) – one product unit with two hoses

5. Hardware Requirements (Or as identified on Construction Plans).

   a. Display
      1) Electronic Fleet: Volume only (gallons or liters) displays. 1” (2.5 cm) back lighted LCD displays. Maximum 999.000 gallons or 0000.00 liters (9850 models: 9999.00 gallons or 9999.00 liters). Displays both front and back of cabinet, except models with front load nozzle boot option only display on side with corresponding nozzle boot. Last transaction maintained for more than 15 minutes by on board capacitor. Backlight by 6 Super-brite LEDs for long life.

   b. Pulser (Electronic type)
      1) Dual phase 10000:1 with error detection.

   c. Meter
      1) Four-piston, positive displacement flow-through CFT meter bolsters resistance to fuel contamination with self-cleaning central chamber.
      2) 9840: Two (2) parallel four-piston, positive displacement flow-through CFT meters manifolded to a single hose position. The CFT meter bolsters resistance to fuel contamination with self-cleaning central chamber.
      3) 9850K Series: six-step, rotary motion, positive displacement meter.

   d. Filter
      1) Internal Filter: Spin on filter canister before meter and valve to ensure product purity and protect critical components from contamination. Available in 10-micron or 30-micron particulate or water alert filtration with 1-1/2” opening.

2) Internal Strainer: 80-mesh removable strainer included in filter adapter housing.

e. Valves
1) 1” solenoid valve that may be cleaned for replaced without breaking down pipe work – standard on dispensers and pumps.

f. Piping
1) 1” brazed copper feedline and 1” black iron threaded discharge pipe.

g. Junction Box
1) Explosion-proof field wiring junction box for AC wiring. Include two 1” NPT field wiring openings and one ¾” NPT opening for DC control interface wiring.

h. Totalizer
1) Electronic: Displayed on LCD by magnetic switch activation. Displays up to 999,999. Electronically backed up.

6. Frame and Panels (Or as identified on Construction Plans).

a. Frame
1) Hot dip 13 gauge G90 galvanized steel (0.093”) with welded corners for rigidity and added strength.

b. Cosmetic panels – Hot dip G60 painted galvanized steel or stainless steel.
1) Replaceable top and sides in black or stainless steel, with lower panels painted white or optional specified color or stainless steel.
2) Lower panels locked to prevent tampering.
3) Finish – High quality polyester power coat over e-coat primer. Gas, oil, and UV resistant.
4) Stainless Steel: Type 304 Kooline SSt with embossed brush finish.

c. Bezel and Dialface Graphics
1) Bezel: High strength structural foam for improved rigidity painted black with one-piece clear polycarbonate window. Gas, oil and UV resistant.
2) Dialface: Back screened one-piece polycarbonate overlay (black print on white background per customer spec) with cutouts as needed for displays. Gas, oil and UV resistant.

3) Brand: Replaceable polycarbonate back screened brand panel. Gas, oil and UV resistant. Backlighted by fluorescent bulb.

7. Unit of Measure

   a. US Gallons

8. Performance/Ratings

   a. Working pressure = 50 psi rated working pressure.

   b. Meter accuracy = +/- 0.25%

   c. Flow Rating: Delivery rating is max test rates at the dispenser discharge.

   d. Temperature Rating: Ambient – 30°C (-22°F) to +55°C (+131°F)

   e. Relative Humidity: 20% to 95% non-condensing.

9. Fuel Compatibility

   a. Suitable for use with conventional motor fuels, oxygenated fuel blends up to 15% ethanol, and bio-diesel blends up to 20% (B20).

10. Power Requirements

    a. 115VAC/60Hz

11. System Interface

    a. Gasboy CFN RS485 interface for direct connection to control systems.

    b. Pulse Output: Selectable pulse/gallon outputs for Gasboy Series 1000, FleetKey and other fuel control systems.

12. Inlet connection:

    a. 1’1/2” (3.8 cm) NPT

13. Discharge:

    a. 1” NPT, convert to ¾” with customer supplied NPT reducer.

14. Regulatory Approvals

a. Safety: UL or cUL approved (File# MH1941)

b. Weights & Measures: Meter accuracy meets requirements for retail custody transfer, sealable by local officials.

1) National Conference of Weights & Measures certified.

c. FCC part 15 Compliant

15. Warranty

a. 12 month parts and labor

16. Options

a. Stainless Steel Panels: Provide durable finish. Type 304 Kooline SSt with embossed brush finish. All stainless steel panels ("SS")

b. Light ("L"): Illuminates products panels and register areas. Two fluorescent bulbs.

c. Submersible Pump Direct Drive Relay: For the direct drive of submersible pumps up to ¾ hp at 115VAC or 1-1/2 hp at 230VAC. Rated 40 amps. Alternative to external relay box.

d. Pulse Output (Electronic units only) – Selectable pulse/gallon outputs for Gasboy Series 1000, FleetKey and other fuel control systems.

e. Filter Kits, External – Help ensure product purity. Single or Dual filter kits include adapter, element, and pipe fittings. Available in 10-micron particulate or water alert filtration with 1-1/2" opening, 5" diameter by 11" long. Specify standard or hydrosorb element.

17. Accessories

a. Hose

b. Breakaway

c. Swivel

d. Nozzle

2.2 FUEL MANAGEMENT SYSTEM

A. Manufacturers:

1. Gasboy

2. Approved equal.

B. Model:

1. Gasboy Plus System

C. Description:

1. Product:

a. System shall be Gasboy PLUS System or approved equal

b. The proposed system must conform to ISO 9001:2000 standards for quality management systems. System shall be UL and cUL approved.

2. Fueling Procedure

a. The system shall allow automated and manual fueling.

b. In the fully automated mode, all control, authorization and accounting operations will be conducted automatically by the fuel management system with no manual input required by the operator using the fuel facility.

The automated fueling procedure shall be as follows:

The system shall automatically identify the vehicle when the fuel nozzle is inserted into the vehicle's fuel inlet.

c. The system shall turn on the corresponding fuel dispenser only if the vehicle is authorized for fueling as determined by the site controller set of conditions as described hereafter.

d. The system shall automatically suspend fueling if the nozzle is removed from the vehicle fuel inlet or no pulses are detected from the fueling pump. The system shall append to the same transaction if the nozzle is re-inserted into the same vehicle within a specified period of time. The transaction shall be terminated if the specified period of time elapses or if the dispenser is turned off.

When vehicle data modules are installed, the controller shall store the fuel transactions, odometer reading and engine hour.

e. The system shall also have the capability to capture other vehicle data such as idle time, speeding, distance, PTO, oil level and pressure, two auxiliary engine hour timers, engine temperature, tire pressure, fuel consumption and fuel level, a sudden drop in fuel level, and other On-Board Diagnostic (OBD) vehicle error codes into a centralized management and reporting system.

f. In manual fueling, a contactless Mifare tag or Mifare card and/or Magnetic stripe card and a keypad shall be available as alternative method for initiating a fueling transaction.

g. A two stage authorization process shall be provided by identifying both the vehicle and the driver prior to refueling. Both driver and vehicles IDs should be stored in the transaction. The two stage authorization process should be flexible enough to link the vehicle device either to a specific driver or to a list of drivers.

3. System Description

a. <u>System Configuration</u>

The site controller shall be a stand-alone unit comprising all required peripherals including the central processing unit, display panel, pump control module, communication modules, and optional receipt printer.

The site controller shall be web enabled to allow independent real-time control, monitoring and reporting via the web using user ID with password and SSL protected link (https://).

In the automated mode, the passive fuel ring installed in the vehicle shall be used for automated fuel authorization.

The site controller shall have a wireless gateway terminal to communicate to all forecourt devices including the wireless nozzle readers and vehicle data modules.

The wireless nozzle reader shall communicate with the passive fuel ring for fuel authorization

The wireless gateway shall communicate with the wireless vehicle data modules to retrieve data such as odometer reading, engine hours, and other OBD codes.

The site controller shall communicate with a central high performance server or dedicated host PC computer for the purpose of centralized control and monitoring of multiple sites.

Refueling shall take place regardless of the connectivity to the host computer. Refueling limits and restrictions shall be 'pushed' from the host computer to all fuel site controllers enabling off-line refueling with limits and restrictions also when communication is not available. A time limit should be provided for off-line activity to block possible 'break' of the limits by refueling in several sites through the off-line mode.

b. System Operation

Upon insertion of the nozzle into the vehicle fuel inlet the wireless nozzle reader shall communicate with the passive fuel ring, retrieve data for fuel authorization, and transmit the data to the wireless gateway.

If the vehicle has a vehicle data module installed, the wireless gateway shall detect the vehicle within 45 ft. and retrieve data such as an odometer reading, engine hours, and OBD codes from the vehicle data module.

The wireless gateway shall append the fuel ring data to the vehicle module data and transfer it to the site controller.

The site controller shall authenticate the data retrieved from the vehicle and check it against the existing set of limits and restrictions.

If all conditions are met, the site controller shall authorize immediate refueling.

If the nozzle is removed during the refueling process, the wireless nozzle reader shall detect the removal and shall send an indication through the wireless gateway to suspend refueling. When the nozzle is reinserted within a specified (configurable) period of time, refueling shall resume.

The site controller shall authenticate the data retrieved from the vehicle and check it against the existing set of limits and restrictions.

If all conditions are met, the site controller shall authorize immediate refueling.

If the nozzle is removed during the refueling process, the wireless nozzle reader shall detect the removal and shall send an indication through the wireless gateway to suspend refueling. When the nozzle is reinserted within a specified (configurable) period of time, refueling shall resume.

At the end of the refueling process, the nozzle is reinserted into the dispenser cradle and the transaction data is sent from the site controller to the host computer.

Vehicle not installed with passive fuel ring shall have the possibility to use manual authorizing devices including Mifare cards or tags, Magnetic cards, keypad entry, and optional HID cards and Gasboy Fleet Keys.

4. Site Controller - Islander PLUS/CFN PLUS (Or as identified on Construction Plans).

a. The site controller shall control up to 8 mechanical hoses in one terminal. Hose extension controls shall be available in modules of 4 hoses. The site controller must be capable of controlling up to 32 hoses at a single site and through one single terminal, either mechanical or electronic registration.

The site controller shall store up to 25,000 transactions and 50,000 vehicles/devices with the ability to set limitations and restrictions.

The site controller shall be available for refueling 24/7.

Site controller shall work in online and off-line modes, in case of communication failures with the FHO software. When communication is established again, the system shall synchronize data automatically.

The site controller shall have an embedded hardware platform designed to survive the harsh fueling depot environment.

The site controller shall use a solid state Flash disk and RTC (Real Time Clock) with back up, along with surge suppressors for transient and noise immunity.

The system shall include a power fail recovery mechanism.

The CPU shall have no edge connectors and no hard disk (no moving parts)

The site controller shall have a high level data protection through two separate isolated TCP/IP Ethernet network ports. One port shall be used for site peripherals interface and the second port for external communication to the network (Remote access, host computer and 3rd party systems) protected by SSL security. The outside link could use a local modem connection through PPP protocol for TCP/IP communication, cellular, or dial-in type modems.

The site controller shall have the following additional capabilities:

- Secured remote capabilities for monitoring, management and maintenance activities
- Flexible with all types of communication including TCP/IP, wireless Ethernet bridge modems, satellite communications, and dial-up analog modem.
- Web enabled reporting and alarms for Tank Level Sensing (TLS) systems (Veeder Root-350 and VR-450 protocols)
- Fuel management software for reconciliation reports
- Accessible via Internet browser to control and monitor the system. No requirement to install dedicated software.
- Real time web-based dynamic graphical monitoring and control of dispensers
- Remotely open a pump and limit the quantity to a specific transaction
- Able to update fuel price at a specific time
- Remote maintenance, remote troubleshoot and remote software upgrades of the various components of the system

The following physical, electrical and environmental specifications shall be provided:

- Supply voltage: 100 – 240 VAC
- Power consumption: 2A max.
- Operating temperature: -22 F to +158 F (-30 C to +70 C)
- Communication interface: RS-485–9600 bps, Half-Duplex, RS-232, Ethernet RJ-45-10 Mbps, EIA 802.15.4

b. The site controller shall support Veeder Root TLS 350 plus protocols

The TLS will be connected to the site controller via TCP/IP communication port or the RS-232 port to allow fuel management capabilities

The site controller shall have the possibility to define the following communication parameters; Baud rate, Parity, Data bit, Stop bit, Flow control

The site controller shall collect the following data from TLS equipment:

- 12:00 midnight shift inventory volume for tanks
- Tank inventory level ; CSLD (Leak Detection) status – Pass/Fail
- Fuel delivery information; Water Level
- Water levels, Temperature, Alarms (Leak, Overfill, Sump, Sensor, etc.)
- Alarms shall flash continuously on the main screen and could be sent via email

c. The pedestal shall be a slim (9.5”x9.5”x61”) powder coated metal designed for easy installation and service. The paint application for the entire pedestal terminal shall consist of a positive/negative charged ionization process for superior bonding. All materials shall be tested to sustain Oil, Fuel, Sun, Water and Salt.

The pedestal shall allow front door access for maintenance and wiring and shall enable flexible installation on the fueling island.

The pedestal display panel shall consist of:

- Top illumination utilizing an array of high intensity blue LED’s
- 5” wide x 1.6” high display window
- 4 lines, 20 characters (1/4” height) each, or optional graphic LCD
- LCD operates well in all lightening conditions
- 16 functional keys. The keys shall be rugged and made of metal for higher reliability and longer life (flexible plastic key caps will not be acceptable).
- The key’s sensors shall use piezoelectric technology for highest reliability
- Magnetic Card Reader
- Mifare Card/Tag Reader

d. The system shall be based on web server technology and enable easy secured (SSL) remote access through the network using a standard PC with an internet browser, without the need for any other software application.

The browser interface shall allow control and monitoring, maintenance activities, report generation with advanced filters and templates, graphical monitoring of fuel levels, on-line pump monitoring and more.

The system shall provide flexibility when searching for data within the system without the need for prior knowledge in SQL or other query languages.

The site controller shall support mechanical and electronic dispensers. All links shall be protected and isolated for maximum reliability.

The system shall store transaction data as well as driver and vehicle records into its database using FLASH disk. Other critical data such as fueling limits and restrictions shall also be stored in the database.

The system shall use the following authorization devices:

- Passive fuel rings
- Vehicle data modules
- Mifare cards or tags
- Mag. Cards (track 2 and 3)
- Keyboard entry authorization

Authorization schemes shall include the following scenarios:

- Single device authorization
- Two stage authorization (based on two authorization devices)
- Add-on keyboard entries: PIN code, vehicle ID, odometer reading, engine hours

The system shall have the option to collect data from driver before refueling, such as: PIN, Odometer, vehicle ID, etc.

The system shall provide odometer reasonability checks
The site controller shall allow the possibility to work offline with all limits and restrictions

The site controller and the Fleet Head Office software shall allow heritage Gasboy Series 1000 Magnetic cards and Gasboy Fleetkey devices from existing systems to be read and fully integrated into the database of the site controller and FHO software. The 1000 series card and Fleetkey device data – for example, card or key format, fuel limits, fuel authorizations, System ID, PIN key, etc.-

shall be read at first use and placed into a Negative list. When the site controller automatically uploads the transaction to the database, a new Positive device list table will be created in the site controller's and FHO's database. Once the device list is created then all future refueling will be fully automatic based upon the Positive list of accepted devices.

System shall have the option to approve or decline refueling according to pre-defined limits and restrictions for the specific unit. Such limitations shall include:

- Limit of daily, weekly and monthly refueling volume or sales amount.
- Enable or disable vehicle refueling on specific days (weekdays for example) and/or specific time slots within a day (night time for example)
- Limit the maximum refueling sessions for a specific vehicle per day, week or month.
- Block specific stations for a specific vehicle (if vehicle is restricted for operation in a specific zone).
- Restriction of specific fuel types for refueling of a specific vehicle.

5. Wireless Gateway - WGT

The wireless gateway shall be installed in the site controller.

The wireless gateway shall retrieve data from the passive fuel ring and the vehicle data modules.

The wireless gateway shall decrypt the protected data and send the complete vehicle information to the site controller using a TCP/IP Ethernet link.

The wireless gateway shall include two wireless channels (802.15.4) with two antennas that work simultaneously to overcome possible blocking of the RF or channel

The wireless gateway shall communicate with the wireless nozzle reader and the vehicle data modules using a short range 2.4 GHz wireless communication.

The wireless gateway shall identify the vehicle within 45 feet

6. Wireless Nozzle Reader - WNR

The wireless nozzle reader shall not have any wires

The wireless nozzle reader shall read the data off the passive fuel ring (mounted around the vehicle fuel inlet) and transmit the encrypted data over wireless link to the wireless gateway

The wireless nozzle reader shall read the passive fuel ring using contact-less technology with anti-spoofing mechanism to protect against cloning of vehicle devices (recording the pattern that is transmitted by a specific vehicle and creating a clone).

The wireless nozzle reader shall transmit the encrypted fuel ring data to the wireless gateway installed in the fuel island using a 2.4 GHz encrypted wireless network communication

The wireless nozzle reader shall be a self-contained unit installed on the nozzle. No wires shall be connected to the wireless nozzle reader.

The wireless nozzle reader shall have a customized design for most common nozzle types. A special version shall be available to fit high speed nozzles such as Posilock and Wiggins.

The wireless nozzle reader shall fit onto existing fueling nozzles and cradles of most common dispensers.

The wireless nozzle reader shall be designed from glass-reinforced nylon enabling it to survive harsh fuel environment, mechanical impacts and to withstand ozone, UV and strokes.

The wireless nozzle reader shall survive multiple 4 feet drop test on concrete, fuel and oil materials, IP-54 rain and solar radiation.

The wireless nozzle reader shall have a green LED light to indicate:

- The wireless nozzle reader has detected a passive fuel ring
- The wireless nozzle reader is in operation

7. Passive Fuel Ring - FuelOpass

The passive fuel ring shall be mounted around the vehicle fuel inlet.

The passive fuel ring encrypted data shall be read by the wireless nozzle reader using RFID contact-less technology.

The passive fuel ring shall be a low cost device designed for vehicle identification and fuel transaction recording only.

The fuel ring shall be made of an electrical coil encased in a molded plastic and attached to an ID chip.

The fuel ring shall have the following characteristics:

- Does not require a hard-wire connection to vehicle module
- Passive transponder (No power source required)
- No wiring
- No RF interferences.
- Easy to install (No professional man power shall be required)
- Install within a few minutes
- Available in various sizes to meet most vehicle requirements
- The ID chip shall have an anti-theft and tamper resistant design that will destroy the ID chip when it is removed from the vehicle

The passive fuel ring shall have the following environmental specifications:

- Operating temperature range: -40C to +85C
- Bounce and vibration to meet automotive requirements

8. Vehicle Data Modules - DataPass+

The following vehicle data modules shall be available:

a. Vehicle data module for OBDII – DataPass+

The following types shall be available:

Type 1: Plug-in vehicle data bus module for CAN/OBD interface
Type 2: Plug-in vehicle data bus module for K-Line/OBD interface

Type 1 and Type 2 shall be miniature plug-in wireless devices requiring no external power connection. The micro modules shall plug in into the vehicle diagnostic connector (OBD) intended for light duty vehicles.

Software updates to the vehicle data bus modules shall be accomplished through the site controller.

The vehicle module shall be capable to be installed on any vehicle type

The vehicle data bus modules shall be easily installed by non-technical personnel.

b. Vehicle data module for J1708 and J1939 – DataPass+

The vehicle module shall be a miniature wireless device. The module shall be wired to the vehicle diagnostic connector (J1708 or J1939) intended for heavy vehicles and trucks and will also be able to connect to older vehicle which have vehicle speed sensor (VSS) for odometer reading and engine hour reading.

9. Wireless Programmer

Only one wireless programmer shall be required to program all the system devices.

Shall be capable of programming the wireless nozzle reader, passive fuel ring and vehicle data modules.

The Programmer shall have a menu driven alphanumeric and character keypad with display.
The Programmer shall be powered by rechargeable batteries with power supply

Shall be able to check, in easy English text, correct information transmitted from the various devices.

10. Host Software

a. General

The software shall support multiple fuel site controllers and allow data consolidation.

The software shall support multiple fleets and multiple departments.

The software shall synchronize data with all sites.

The software shall be used as a centralized issuing and programming facility for passive fuel rings, vehicle data modules and Mifare tags.

The software shall be installed on the host computer running Windows operating system and SQL database that supports ODBC connectivity.

The system shall be a centralized web server communicating with all sites to provide centralized data base and on-line network access for fleet managers, key personnel and remote maintenance entities.

The software shall communicate with all sites to provide 24/7 on-line access through the network.

The software shall create and control several fleets and departments and support different privilege levels for limited access for different users (for example, a specific Fleet manager shall only be able to manage only his fleet vehicles).

The software shall provide advanced on-line services for multiple sites and multiple fleets in a region.

The host software web interface shall use SSL security.

The software shall provide secure log-in through the Web for each fleet manager, for monitoring & control and report generation including exception reports.

The host software application can interface to other applications via Web Services, import and export of files to FTP and ODBC standard.

The software shall allow Exporting data to different file formats (using a dropdown menu) such as CSV, TXT, and XML.

The user interface for all software components shall be a web browser.

Mifare tags, fuel ring and vehicle modules shall be defined and associated with unique numbers to the fleet vehicles.

b. Host software shall allow limits and restrictions to be configured either by an authorized user or imported from a different external system (using the import/export).

The rules shall be transferred to every site controller to enable off-line activity in case of communication failure; hence a fuel site will be able to refuel a vehicle within its set of limits and restrictions, when communication is down.

The limits shall be ‘pushed’ into the site controller at a predefined time or for a predefined period of time. Site controllers can also use the limits in an off-line mode (in case of communication failure).

There shall be a graceful period of time (parametric) for this off-line mode since the vehicle could refuel also in other sites (above its limits) while the sites are disconnected from the host computer.

Customizable vehicle and driver limits and restrictions shall include:

- Limit of daily, weekly and monthly refueling volume in gallons as well as in currency.
- Enable or disable vehicle refueling on specific days (weekdays for example) and / or specific time slots within a day (night time for example)
- Limit the maximum refueling sessions for a specific vehicle per transaction, per day, week or month.
- Limit the maximum refueling sessions for a specific vehicle per transaction, per day, week or month.
- Block specific stations for a specific vehicle (if vehicle is restricted for operation in a specific zone).
- Block specific stations for a specific vehicle (if vehicle is restricted for operation in a specific zone).
- Restriction of specific fuel types for refueling of a specific vehicle

c. The host computer shall collect the transactions and TLS information from all fuel sites for centralized fuel management activities including required deliveries, forecasting, reconciliation and more for optimal usage of fuel.

The system shall provide the following capabilities:

- Reports regarding fuel consumption with filters of sites, dates, volumes and more
- Customized templates for specific reports
- History of fuel consumption from every product with graphical representation
- Forecasting consumption for every product based on the consumption history with graphical representation
- Reconciliation
- Manual entry or editing of fueling transactions
- Provide unified view of ALL stations with regards to fuel level status

- Provide consolidated view of each specific fuel tank, per station
- Provide a centralized system for maintenance reporting and reporting of different system alarms, per station
- Provide an interface for managing of manual stations (without Fuel Controllers)

Tanks status screen from TLS system per site with graphical representation of the tanks

Alarms (High/Low tanks level, Leak detection, No communication, Etc.)

Export capabilities to other systems (ERP)

d. Consolidate data from multiple stations and generate reports, including exception reports, reconciliation reports, trends, forecast, consumption, tank capacity and more. There shall be two types of Reports:

- Custom Reports
- Fuel Management System Reports (built-in)

e. The software shall provide a highly flexible custom reporting utility. Data elements can be selected and put in any order by the user to create their own custom report.

This report shall have the ability to be saved as a template for later use.

Must have advanced customized reporting capabilities with filters and templates (Web based).

The custom reports feature shall enable report generation of transactions performed in the fuel station in various profiles.

The following field names shall be used to generate custom reports tables:

Station, Date, Time, Fleet, Transaction Type, Vehicle #, Product, Quantity, Total Sale, Receipt No., Fleet Code, Pay Mode, Transaction Id, Authorized By, Department, PPV, Odometer, Engine Hour, Pump, Tank, Nozzle, Density, Temperature, Vehicle Type, Ref/Slip No., Driver name, Dept. code, Card number, Device name.

The custom report shall allow summary by the following fields (Break by):

Date, Plate, Pump, Product, Pay Mode, Station name, Fleet code, Authorized by, driver name, Dept. code, or a selection of any of the above fields

The custom reports shall allow sorting by the following fields (Sort by):

Date & Time (Ascending/Descending), Pump, Transaction ID, Product, Amount (Ascending/Descending), Qty., Plate, Pay mode, Station name, fleet code, Receipt ID, Driver name, Dept. code or a selection of any of the above fields.

The above powerful capabilities shall allow flexible reporting such as:

Summary Report – summarizing all transactions of a specific fleet of vehicles.

Vehicle Report – offering the Fleet Manager a detailed transaction report of vehicles pertaining to his fleet, in three cross sections:

Transactions - providing information regarding each transaction, including the vehicles license plate number, odometer reading, engine hours, fuel type, fuel volume and the transaction ID.

Consumption - listing information regarding each vehicle (device) providing a summation of data (volume consumption, fuel cost, other costs) for each vehicle in a specified time frame.

OBD Vehicle Data – provide OBD statistics report which displays On-Board Diagnostics error codes from vehicles equipped with DataPass+ components. The report will present statistics for the selected period (Distance, EH, PTO, idle time, over speeding, fuel level, etc.) and the latest error codes from the vehicle. Data from both light duty vehicles with OBD11 and heavy duty vehicles with J1708/J1939/J1587 protocol will be supported in the reports.

f. Exception Reports

The software shall provide Exception Reports for the Fleet Manager. It must provide the ability to spot any abnormal incidents that

occurred within his fleet. The following exception reports are required for each fleet:

Volume Exception Report – shall list noted exceptions relating to the fuel volume consumed in the transactions compared with the related vehicle's fuel tank volume.
Mileage Exception Report – shall list the exceptions related to the elapsed distance of the vehicles, according to odometer readings.
OBD Exception Report – shall list the vehicles which crossed the over speed, RPM or idling limits specified for the device, according to OBD readings.
Consumption Exception Report – shall list the exceptions related to the fuel consumption of the vehicles, according to odometer readings and the specified fuel consumption ratio of the vehicle.
Mileage Exception Report – shall list the exceptions related to the elapsed distance of the vehicles, according to odometer readings.
Consumption Exception Report – shall list the exceptions related to the fuel consumption of the vehicles, according to odometer readings and the specified fuel consumption ratio of the vehicle.
Mileage Exception Report – shall list the exceptions related to the elapsed distance of the vehicles, according to odometer readings.
Consumption Exception Report – shall list the exceptions related to the fuel consumption of the vehicles, according to odometer readings and the specified fuel consumption ratio of the vehicle.
Not Used Exception Report – shall list the vehicles which did not carry out any transaction in a specified time frame. The report should include the license plate number, the odometer reading and the date and time of the last transaction performed by the vehicle.

Fuel Management System Reports (Built-in)

Sales Reports:
- Sales by Tanks Report
- Local Account Transactions
- Pump-wise Delivery Report
- Trends
- Product-wise Dispenser Delivery
- Fuel Sales Trends Graph
- Fuel Volume Forecast Report

Reconciliation Reports:
- Shift Report
- Environmental Report
- Tank Reconciliation

Maintenance Reports:
Exception Log Reports
Alarm Duration Reports

Stock Data Reports:
Tanks by Sites
Tanks Trends Graph
Total Wet Stock Report

g. The system shall provide several back-up mechanisms for maximal data protection as follows:

The database is transmitted periodically to a remote server. The backup can be for the entire database or differential.

Built-in data base back-up mechanism (Customer FTP).

All transactions are exported to a Customer FTP site through an Export Module.

RAID mechanism at the host computer

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that Site concrete and electrical work are ready to receive dispensers.

B. Verify that dimensions and elevations are as indicated on Drawings.

3.2 INSTALLATION

A. Install gasoline dispenser according to manufacturer's instructions.

3.3 FIELD QUALITY CONTROL

A. Manufacturer Services: Furnish services of manufacturer’s representative experienced in installation of products furnished under this Section for not less than two days on Site for installation, inspection, startup, field testing, and instructing Owner’s personnel in maintenance of equipment.

B. Equipment Acceptance:

1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.

2. Make final adjustments to equipment under direction of manufacturer's representative.

C. Furnish installation certificate from manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

3.4 DEMONSTRATION

A. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

3.5 MAINTENANCE

A. Provide service and maintenance of dispensers for one year from date of Substantial Completion.

END OF SECTION 231216

SECTION 231300 - FACILITY FUEL-STORAGE TANKS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Underground fuel storage tanks.
2. Aboveground fuel storage tanks.
3. Aboveground steel secondary containment dike tank.
4. Leak detection and location system.

B. Related Sections:

1. Section 033000 - Cast-In-Place Concrete: Product requirements for concrete ballast and fill pads for underground tank for placement by this section.
2. Section 312316 - Excavation: Product and execution requirements for excavation and backfill required by this section.
3. Section 312323 - Fill: Requirements for backfill to be placed by this section.

1.2 REFERENCES

A. American Petroleum Institute:

1. API 12P - Fiberglass Reinforced Plastic Tanks.
2. API 650 - Welded Steel Tanks for Oil Storage.
3. API 1615 - Installation of Underground Petroleum Storage Systems.
4. API 1632 - Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems.
5. API 2000 - Venting Atmospheric and Low-Pressure Storage Tanks: Nonrefrigerated and Refrigerated.

B. NACE International:

1. NACE RP-02-85 - Corrosion Control of Underground Storage Tank Systems by Cathodic Protection.

C. National Electrical Manufacturers Association:

1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

D. National Fire Protection Association:

1. NFPA 30 - Flammable and Combustible Liquids Code.
2. NFPA 31 - Standard for the Installation of Oil-Burning Equipment.

E. Petroleum Equipment Institute:

1. PEI 100 - Recommended Practices for Installation of Underground Liquid Storage Systems.

F. Steel Tank Institute:

1. STI ACT-100 - Specification for External Corrosion Protection of FRP Composite Steel Underground Storage Tanks.

G. Underwriters Laboratories Inc.:

1. UL 58 - Steel Underground Tanks for Flammable and Combustible Liquids.
2. UL 142 - Steel Aboveground Tanks for Flammable and Combustible Liquids.
3. UL 567 - Pipe Connectors for Flammable Liquids and Combustible Liquids and LP-Gas.
4. UL 913 - Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous Locations.
5. UL 1316 - Glass Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures.
6. UL 2085 - Standard for Safety for Insulated Aboveground Tanks Flammable and Combustible Liquids.

1.3 SYSTEM DESCRIPTION

A. Provide underground storage tank of double wall of fiberglass construction.
1. Tank Capacity:

a. Volume: 15000 gallons.
b. Diameter: 124 inches.
c. Overall Length: 353.75 inches.

1.4 SUBMITTALS

A. Shop Drawings:

1. Tanks: Indicate for fuel oil tanks dimensions; number, size, and location of openings; number, size, and location of manholes; number and location of hold down straps, and accessories. Indicate dimensions, reinforcing steel size, and reinforcing steel location of deadmen system

B. Product Data:

1. Tanks: Submit manufacturer's catalog information including capacity.
2. Leak Detection and Location System: Submit manufacturer's catalog information for controller, alarm unit, and cable type.

C. Test Reports: Submit written test results for tank pressure test.

D. Manufacturer's Installation Instructions: Submit tanks, and leak detection and location system data.

E. Manufacturer's Certificate:

1. Certify Products meet or exceed specified requirements.
2. Submit certificate of evaluation of leak detection and location system by independent third party.

F. Manufacturer's Field Reports: Submit report of each visit of manufacturer's representative to provide technical assistance during installation.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of manholes, tanks, and leak detection and location system.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

C. Operation and Maintenance Data: Submit spare parts lists for tanks.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with NFPA 31.

B. Perform Work in accordance with New Jersey, Township of Scotch Plains Public Work's standards.

C. Perform work in accordance with NJDEP.

D. Evaluate leak detection and location system by independent third party according to Third Party Procedures developed according to US EPS's "Standard Test Procedure for Evaluating Leak Detection Methods: Liquid-Phase Out-of-Tank Product Detectors." Evaluation results to verify system manufacturer's claim regarding sensitivity, range and other performance data.

E. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' documented experience.

B. Above Ground Fuel Storage Tanks: Company specializing in manufacturing products specified in this section with minimum three years' documented experience.

C. Leak Detection Systems: Company specializing in manufacturing products specified in this section with minimum three years' documented experience.

D. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.8 PRE-INSTALLATION MEETINGS

A. Convene minimum one week prior to commencing work of this section.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Do not install underground tank when bedding is wet or frozen.

B. Do not install tank foundations when bedding is wet or frozen.

1.10 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.11 COORDINATION

A. Coordinate excavating, bedding, and backfilling of underground tanks with requirements of Section 02 65 00.

1.12 WARRANTY

A. Furnish 5-year manufacturer's warranty for tanks.

B. Furnish 5-year manufacturer's warranty for leak detection and location system.

PART 2 - PRODUCTS

2.1 UNDERGROUND FUEL STORAGE TANKS

A. Manufacturers:

1. Xerxes
2. Approved Equal

B. Tank: [STI ACT-100] [API 12P] [UL 1316], UL listed and labeled, closed double wall type. Reinforced glass fiber polyester, capable of storage of liquid with specific gravity of 1: 1 and temperatures up to 150 degrees F.

C. Furnish tank with the following:

1. Anchor straps and attachments.
2. Lifting lugs.
3. Fittings and taps for accessories.
4. 42 inch diameter fiberglass manhole with 4 inch fittings in cover.
5. 4 inch shell wall service fitting.
6. 4 inch monitor fitting.

7. Fiberglass Reservoir.

D. Filler Cap: 3 inch watertight brass with lock.

E. Gage: Remote reading, electronic, for two wire, 24 volt power, with wall mounted direct reading gage.

F. Cathodic Protection: [API 1632,] Galvanic type with sacrificial magnesium anodes welded to tank [, to NACE RP-02-85] [, to STI ACT-100].

G. Capacity:

1. Volume: 15,000 gallons.
2. Diameter: 124 inches.
3. Overall Length: 353.75 inches.
4. Tank Fittings: See Manufacture's specifications
5. Leak Detector System: See Manufacture's specifications.

2.2 LEAK DETECTION AND LOCATION SYSTEM

A. Manufacturers:

1. Veeder Root
2. Approved Equal
3. Furnish materials in accordance with New Jersey Department of Environment Protection (NJDEP)

B. Product Description: Microprocessor based monitoring unit, sensor cable, probes, system layout map, and auxiliary equipment to provide continuous monitoring of sensing strings for leaks, shorts, breaks, and probe activation. When any of these conditions occur at any point along cable, alarm sounds, type of condition is identified and location displayed. System monitors interstitial space of double contained tanks. Construct system to meet requirements of UL 913.

C. Performance:

1. Detect and identify location of first leak within [0.1] [0.2] percent of sensor string length or 5 feet, whichever is greater. Identify type of alarm.
2. Sensing String Length: Monitor up to [15,000] [10,000] [5,000] [2,000] feet of cable for each sensor string from single monitoring unit.
3. Multiple Leaks: Detect and locate multiple leaks or additional liquid on sensor cable.
4. Breaks and Shorts: Identify location of breaks and shorts on cable. When faults occur, sound alarm, and display on front of monitoring unit type of fault and location of fault.
5. Liquids Detected: [Detect liquids, including aqueous, hydrocarbon, conductive, and nonconductive liquids.] [Furnish two cables to detect and differentiate between hydrocarbons or solvents and aqueous liquids.] [Only hydrocarbons are to be detected.]
6. Remote Annunciation: Furnish relays for remote indication of alarm conditions. Relays indicate no alarm conditions exist, alarm condition exists but has not yet been acknowledged, and alarm condition exists and has been acknowledged. Communications available via RS-232 and ASCII communication protocols to allow central point monitoring and control via remote computer.

7. Archives: Record significant events in nonvolatile memory with capacity of 900 events. When memory becomes full, recorded events are deleted from memory on first-in-first-out basis. Each recorded event includes time and date event occurred. Archives retrievable through RS-232 and ASCII communication protocols.
8. System Status: Continuously give positive indication of monitoring sensing string and status of sensing string. System clock indicates time and date on LCD of monitoring panel. System clock is programmable. Include time and date indication for events recorded in memory.
9. Security: Assignable password security for varying levels of system access. Minimum of 20 passwords available within system. System to not allow unauthorized modifications to sensing string to be made without causing alarm condition.
10. Sensor Types: Capable of monitoring sensor cables, probe sensors, and switch sensors such as float switches, and pressure switches, from same monitoring panel. English language displays indicate status of sensors.
11. Sensitivity: System to not detect incidental liquid contact. Sensitivity field adjustable to increase or decrease amount of wetted cable needed to cause alarm.

D. Components:

1. Monitoring Unit:

a. Indicates when liquid comes in contact with sensor cable by sounding alarm, actuating output relays, displaying message leak has been detected and giving location of leak on sensing string.
b. Unit furnished with green LED on panel front indicates unit is powered. Furnish two line by forty character backlit LCD visible from front of unit to provide system data. Red LED on panel front indicates alarm condition has occurred. Unit power requirements: 120/240 VAC, 100 VA, 50/60 Hz, single phase. Equip with RS-232 communication port and minimum of one common and one SPDT output relay for each cable, rated for 250 VAC, 10 amp.
c. Enclose in modified NEMA 250 Type [12] [4X] [7] enclosure. UL listed to provide connections for intrinsically safe sensor circuits for use in hazardous locations. Ability to locate leak does not depend on battery backed up functions. In event of power failure, store system conditions and parameters in nonvolatile memory allowing unit to automatically resume monitoring, without resetting, upon restoration of power. Furnish on-off switch in panel.

2. Sensor Cable: Coaxial construction consisting of insulated copper center conductor, spacer material, and outer braid. Center conductors not less than 20 AWG for mechanical strength. Cables field repairable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify excavations are to required grade, dry, and not over-excavated.

B. Verify foundation is ready for tank installation.

3.2 INSTALLATION - UNDERGROUND TANKS

A. Install underground tanks in accordance with NFPA 31.

B. Check factory installed equipment and accessories for loosening during transit.

C. Clean and flush tanks. Seal until pipe connections are made.

D. Install underground tanks on concrete ballast pad with mass equal to tank capacity. Refer to Plans. Secure with hold-down straps and turnbuckles.

E. Install piping connections to tanks with unions and swing joints. Provide venting in accordance with API 2000.

F. Seal unused tank openings using threaded pipe plugs, flanges, or caps.

G. Extend fill line and cover to grade and provide minimum 24 x 24 x 6 inches concrete pad. Refer to plans.

H. Tank Accessories:
   1. Install tank accessories as indicated on Drawings.

I. Install underground tanks with minimum 24” of inches cover.

J. Backfill steel tanks in accordance with NFPA 30 and NFPA 31.

K. Backfill glass fiber tanks with granular fill specified in Section 312323

L. Do not bed on timbers, beams, or cradles.

M. Adjust liquid level gages before initial start-up and after filling of tank.

N. Fill tanks completely at Project turnover with appropriate fuel.

3.3 INSTALLATION - LEAK DETECTION AND LOCATION SYSTEM

A. Install cable on flat surfaces with hold down clips every 8 feet and cable tags every 50 feet.

B. Graphic Locator Map: Provide location map with system reflecting actual installation showing system configuration and sensing string layout. Furnish length along cable as references to locate leaks. Base footage on calibration points.

C. Calibration Points: Record calibration points along sensing string in accordance with manufacturer's procedures. Provide sensor cables with cable tags every 50 feet.

D. Direct Buried of Hydrocarbon Sensing Cable:

   1. Replace cable damaged during installation.
   2. Seal cable ends to prevent moisture ingress.
   3. Install cable so connectors are accessible in junction boxes at grade or in manholes, valve pits or other locations.

4. Install cable from underground to grade using PVC pipe.
5. Install on prepared bedding.
6. Backfill cable with 6 inches of sand placed on top of cable and compacted prior to pipe installation.
7. Where cable is to be covered by concrete or other structures, install sensor cable in slotted PVC pipe. Install with access points to allow replacing and servicing.

3.4 FIELD QUALITY CONTROL

A. Pressure test underground tanks in accordance with the following:
   1. Pressure test underground tanks in accordance with NFPA 31.

B. Field Testing Leak Detection System:

   1. Perform tests to demonstrate ability of system to detect and locate breaks, shorts and probes on sensor string.
   2. Perform leak testing in accordance with the following procedure to verify operation and ability to work with condensation pools or other static moisture:

      a. Wet sensor cable near start of sensor string and acknowledge detection or location alarm and recheck system.
      b. Wet sensor cable near end of sensor string with first location still wetted and acknowledge detection or location alarm and recheck system.
      c. Wet sensor cable in three additional locations between first and second leak locations with each detection or location alarm being acknowledged and prior leak locations still wetted.

   3. Prepare and submit report verifying each leak location and detection accuracy. Furnish history print out of test results from panel. Submit TDR traces for each test run to allow verification of wet locations.

3.5 MANUFACTURER'S FIELD SERVICES

A. Furnish factory trained representative 8 hours of on-site time during underground tanks installation.

B. Furnish factory trained representative of system supplier for 8 hours of on-site time during leak detection and location system sensor and electronics installation.

C. Furnish factory trained representative 8 hours of on-site time during final checkout of underground tanks installation.

D. Furnish factory trained representative of system supplier for 8 hours of on-site time during final checkout of leak detection and location system.

END OF SECTION 231300

SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes portable mobile equipment enclosure wire and cable; nonmetallic-sheathed cable; direct burial cable; service entrance cable; armored cable; metal clad cable; and wiring connectors and connections.

1.2 REFERENCES

A. International Electrical Testing Association:
   1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

B. National Fire Protection Association:
   1. NFPA 70 - National Electrical Code.
   2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

C. Underwriters Laboratories, Inc.:
   1. UL 1277 - Standard for Safety for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

1.3 SYSTEM DESCRIPTION

A. Product Requirements: Provide products as follows:
   1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
   2. Stranded conductors for control circuits.
   3. Conductor not smaller than 12 AWG for power and lighting circuits.
   4. Conductor not smaller than 16 AWG for control circuits.
   5. Increase wire size in branch circuits to limit voltage drop to a maximum of 3 percent.

B. Wiring Methods: Provide the following wiring methods:
   1. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway, armored cable or metal clad cable.
   2. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
   3. Above Accessible Ceilings: Use only building wire, Type THHN/THWN insulation, in raceway, armored cable or metal clad cable.
   4. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway, armored cable or metal clad cable.
   5. Exterior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
   6. Underground Locations: Use only building wire, Type THHN/THWN (XHHW for services) insulation, in raceway.
   7. Cable Tray Locations: Use only Tray cable Type TC.

1.4 DESIGN REQUIREMENTS

A. Conductor sizes are based on copper unless indicated as aluminum or "AL".

B. When aluminum conductor is substituted for copper conductor, size to match circuit requirements, terminations, conductor ampacity and voltage drop.

1.5 SUBMITTALS

A. Product Data: Submit for building wire and each cable assembly type.

B. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors.

C. Test Reports: Indicate procedures and values obtained.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of components and circuits.

1.7 QUALITY ASSURANCE

A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5 m) when tested in accordance with NFPA 262.

B. Maintain one copy of each document on site.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.

1.9 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on Drawings.

1.10 COORDINATION

A. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.

B. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 PRODUCTS

2.1 PORTABLE MOBILE EQUIPMENT ENCLOSURE WIRE AND CABLE

A. Product Description: Single or multi- conductor insulated wire.

B. Conductor: Copper.

C. Insulation Voltage Rating: 600 volts.

D. Insulation Temperature Rating: 75 degrees C unless otherwise noted.

2.2 ARMORED OR METAL CLAD CABLE

A. Conductor: Copper.

B. Insulation Voltage Rating: 600 volts.

C. Insulation Temperature Rating: 75 degrees C.

D. Armor Material: Steel except where Aluminum is noted on Drawings.

E. Armor Design: Interlocked metal tape.

F. Jacket: PVC where required.

2.3 TRAY CABLE

A. Product Description: Multiconductor power and control cable NFPA 70 Type TC.

B. Conductor: Copper.

C. Insulation: Flame-retardant cross-linked polyethylene.

D. Overall Jacket: Polyvinyl Chlorine (PVC) in accordance with UL 1277.

E. Insulation Voltage Rating: 600 volts.

F. Insulation Temperature Rating: 90 degrees C.

G. Listings: Finished cable UL listed as Type TC, and sunlight resistant.

2.4 TERMINATIONS

A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.

B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify interior of portable mobile equipment enclosure has been protected from weather.

B. Verify mechanical work likely to damage wire and cable has been completed.

C. Verify raceway installation is complete and supported.

3.2 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

3.3 EXISTING WORK

A. Remove exposed abandoned wire and cable , including abandoned wire and cable above accessible ceiling finishes. Patch surfaces where removed cables pass through building finishes.

B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.

C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.

D. Extend existing circuits using materials and methods compatible with existing electrical installations, or as specified.

E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

3.4 INSTALLATION

A. Route wire and cable to meet Project conditions.

B. Neatly train and lace wiring inside boxes, equipment, and panelboards.

C. Identify and color code wire and cable. Identify each conductor with its circuit number or other designation indicated.

D. Special Techniques--Building Wire in Raceway:
   1. Pull conductors into raceway at same time.
   2. Install building wire 4 AWG and larger with pulling equipment.

E. Special Techniques - Cable:
   1. Protect exposed cable from damage.
   2. Support cables above accessible ceiling, using spring metal clips or cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels.
   3. Use suitable cable fittings and connectors.

F. Special Techniques - Wiring Connections:
   1. Clean conductor surfaces before installing lugs and connectors.
   2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
4. Install split bolt connectors for copper conductor splices and taps, 6 AWG and larger.
5. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
6. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
7. Terminate aluminum conductors with tin-plated, aluminum-bodied compression connectors only. Fill with anti-oxidant compound before installing conductor.
8. Install suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.

G. Install stranded conductors for branch circuits 10 AWG and smaller. Install crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.

H. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.

I. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.

J. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

3.5 WIRE COLOR

A. General:
   1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:
      a. Black and red for single phase circuits at 120/240 volts.
      b. Black, red, and blue for circuits at 120/208 volts single or three phase.
      c. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
   2. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Colors are as follows:
      a. Black and red for single phase circuits at 120/240 volts.
      b. Black, red, and blue for circuits at 120/208 volts single or three phase.
      c. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.

B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.

C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.

D. Feeder Circuit Conductors: Uniquely color code each phase.

E. Ground Conductors:
   1. For 6 AWG and smaller: Green.

2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

3.6 FIELD QUALITY CONTROL

A. Balance single phase branches and feeders in panels to the Engineer's satisfaction.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION

SECTION 26 05 33
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.

1.2 REFERENCES

A. American National Standards Institute:
   1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
   2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
   3. ANSI C80.5 - Aluminum Rigid Conduit - (ARC).

B. National Electrical Manufacturers Association:
   1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
   2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
   3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
   4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
   5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
   6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
   7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.3 SYSTEM DESCRIPTION

A. Raceway and boxes as indicated on Drawings and as required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.

1.4 DESIGN REQUIREMENTS

A. Minimum Raceway Size: 3/4 inch unless otherwise specified.

1.5 SUBMITTALS

A. Product Data: Submit for the following:
   1. Flexible metal conduit.
   2. Liquidtight flexible metal conduit.
   3. Nonmetallic conduit.
   4. Flexible nonmetallic conduit.
   5. Nonmetallic tubing.
   6. Raceway fittings.
   7. Conduit bodies.

8. Surface raceway.
9. Wireway.
10. Pull and junction boxes.
11. Handholes.

B. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents:
1. Record actual routing of conduits larger than 2 inch.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

B. Protect PVC conduit from sunlight.

1.8 COORDINATION

A. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

PART 2 PRODUCTS

2.1 METAL CONDUIT

A. Rigid Steel Conduit: ANSI C80.1.

B. Rigid Aluminum Conduit: ANSI C80.5.

C. Intermediate Metal Conduit (IMC): Rigid steel.

D. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.2 PVC COATED METAL CONDUIT

A. Product Description: NEMA RN 1; rigid steel conduit with external PVC coating, 40 mil thick.

B. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.

2.3 FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction.

B. Fittings: NEMA FB 1.

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction with PVC jacket.

B. Fittings: NEMA FB 1.

2.5 ELECTRICAL METALLIC TUBING (EMT)

A. Product Description: ANSI C80.3; galvanized tubing.

B. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron compression type.

2.6 NONMETALLIC CONDUIT

A. Product Description: NEMA TC 2; Schedule 40 or 80 PVC as noted on the Drawings.

B. Fittings and Conduit Bodies: NEMA TC 3.

2.7 NONMETALLIC TUBING

A. Product Description: NEMA TC 2.

B. Fittings and Conduit Bodies: NEMA TC 3.

2.8 WIREWAY

A. Product Description: General purpose indoors, raintight outdoors type wireway.

B. Knockouts: Manufacturer's standard.

C. Cover: Screw cover.

D. Connector: Slip-in.

E. Finish: Rust inhibiting primer coating with gray enamel finish.

2.9 OUTLET BOXES

A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
   1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required.
   2. Concrete Ceiling Boxes: Concrete type.

B. Nonmetallic Outlet Boxes: NEMA OS 2.

C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.

D. Wall Plates for Finished Areas: Stainless Steel

E. Wall Plates for Unfinished Areas: Furnish gasketed cover.

2.10 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

B. Hinged Enclosures: As specified in Section 26 27 16.

C. Surface Mounted Cast Metal Box: NEMA 250, Type 4X; flat-flanged, surface mounted junction box:
   1. Material: Cast aluminum.
   2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

D. In-Ground Cast Metal Box: NEMA 250, Type 6, inside flanged, recessed cover box for flush mounting:
   1. Material: Galvanized cast iron.
   2. Cover: Nonskid cover with neoprene gasket and stainless steel cover screws.
   3. Cover Legend: "ELECTRIC"

E. Fiberglass Concrete composite Handholes: Die-molded, glass-fiber concrete composite hand holes:
   1. Cover: Glass-fiber concrete composite, weatherproof cover with nonskid finish.
   2. Cover Legend: "ELECTRIC"

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.2 EXISTING WORK

A. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, and patch surfaces.

B. Remove concealed abandoned raceway to its source.

C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.

D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.

E. Extend existing raceway and box installations using materials and methods compatible with existing electrical installations, or as specified.

F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

3.3 INSTALLATION

A. Ground and bond raceway and boxes.

B. Fasten raceway and box supports to structure and finishes.

C. Identify raceway and boxes.

D. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.4 INSTALLATION - RACEWAY

A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.

B. Arrange raceway supports to prevent misalignment during wiring installation.

C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

D. Group related raceway; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional raceways.

E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports

F. Do not attach raceway to ceiling support wires or other piping systems.

G. Construct wireway supports from steel channel.

H. Route exposed raceway parallel and perpendicular to walls.

I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.

J. Route conduit in and under slab from point-to-point.

K. Maximum Size Conduit in Slab Above Grade: 3/4 inch. Do not cross conduits in slab.

L. Maintain clearance between raceway and piping for maintenance purposes.

M. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.

N. Cut conduit square using saw or pipe cutter; de-burr cut ends.

O. Bring conduit to shoulder of fittings; fasten securely.

P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.

Q. Install conduit hubs to fasten conduit to cast boxes.

R. Install no more than equivalent of three 90 degree bends between boxes except where noted on Drawings. Install conduit bodies to make sharp changes in direction, as around beams. Install factory elbows for bends in metal conduit larger than 2 inch size.

S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

T. Install fittings to accommodate expansion and deflection where raceway crosses seismic, control and expansion joints.

U. Install suitable pull string or cord in each empty raceway except sleeves and nipples.

V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.

W. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.

X. Close ends and unused openings in wireway.

3.5 INSTALLATION - BOXES

A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings.

B. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.

C. Orient boxes to accommodate wiring devices oriented as specified on the Drawings.

D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.

F. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

G. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.

H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

I. Install stamped steel bridges to fasten flush mounting outlet box between studs.

J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

K. Install adjustable steel channel fasteners for hung ceiling outlet box.

L. Do not fasten boxes to ceiling support wires or other piping systems.

M. Support boxes independently of conduit.

N. Install gang box where more than one device is mounted together. Do not use sectional box.

O. Install gang box with plaster ring for single device outlets.

3.6 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements.

B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.

C. Locate outlet boxes to allow luminaires positioned as indicated on Drawings.

D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.7 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material.

B. Install knockout closures in unused openings in boxes.

3.8 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 31 05 16 - AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section includes structural fill, coarse aggregate No. 57 & 67, and DGA

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:
   1. AASHTO M147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
   2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:
   1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   4. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
   5. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.3 SUBMITTALS

A. Samples: Submit, in air-tight containers, 10 lb. sample of each type of fill to testing laboratory.

B. Materials Source: Submit name of imported materials suppliers.

C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

D. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
   1. Provide cost data for the following products:
      a. Regional products.
      b. Products with recycled material content.

1.4 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

B. Perform Work in accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 901, as currently amended.

C. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 STRUCTURAL FILL MATERIAL

A. Structural Fill shall conform to Aggregate Type I-5 in accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 901.11, as currently amended.

B. Where I-5 soil aggregate is specified, the Contractor may substitute DGA with the approval of the Owner.

2.2 COARSE AGGREGATE NO. 57 & 67 MATERIAL

A. Coarse Aggregate No. 57 & 67 shall be in accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 901.03, as currently amended.

2.3 DGA MATERIAL

A. DGA Material shall conform to virgin DGA in accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 901.10, as currently amended.

2.4 SOURCE QUALITY CONTROL

A. Testing and Analysis: Perform in accordance ASTM D1557. ASTM D4318.ASTM C136.

B. When tests indicate materials do not meet specified requirements, change material and retest.

2.5 STOCKPILING

A. Stockpile in sufficient quantities to meet Project schedule and requirements.

B. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.

C. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

2.6 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

SECTION 31 10 00 - SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
Demolition of canopy, and removing surface debris, designated paving, designated curbs, designated sidewalks, removing abandoned utilities, and designated structures.

1.2 SUBMITTALS

A. Product Data: Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

1.3 QUALITY ASSURANCE

A. Conform to applicable code for environmental requirements, disposal of debris.

B. Perform Work in accordance with the New Jersey Soil Erosion and Sediment Control Standards, latest edition.

C. Maintain one copy of each document on site.

PART 2 EXECUTION

2.1 EXAMINATION

A. Verify existing plant life designated to remain is tagged or identified.

B. Identify waste area for placing removed materials.

2.2 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

2.3 PROTECTION

A. Locate, identify, and protect utilities indicated to remain, from damage.

B. Protect bench marks, survey control points, and existing structures from damage or displacement.

2.4 REMOVAL

A. Remove demolished materials in accordance with state and local regulations.

B. Remove debris, rock, and extracted plant life from site.

C. Partially remove paving, curbs, and, other existing features identified on the site plans. Neatly saw cut edges at right angle to surface.

D. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.

E. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.

F. Do not burn or bury materials on site. Leave site in clean condition.

END OF SECTION

SECTION 31 22 13 - ROUGH GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cutting, grading, filling, rough contouring, compacting, and grading for structures, concrete pads, equipment pads, walks and other site improvements.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:
   1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   3. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
   4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
   6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
   7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).
   8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.4 QUALITY ASSURANCE

A. Maintain one copy of each document on site.

PART 2 EXECUTION

2.1 EXAMINATION

A. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.

2.2 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Notify utility company to remove and relocate utilities.

D. Protect utilities indicated to remain from damage.

E. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

2.3 SUBSOIL EXCAVATION

A. Excavate subsoil from areas as need to achieve the lines, grading and layout as shown on the plans.

B. Do not excavate or perform grading operations while the subsoil is wet.

C. The contractor shall not stockpile concrete debris on site but rather deposit concrete in approved enclosed containers. Concrete shall be tested for contamination and reviewed by the county and site lsrp prior to recycling and offsite disposal. Concrete shall be sampled per NJDEP characterization of concrete and clean fill certification guidance.

D. Remove excess subsoil not intended for reuse, from site to an area as directed by the Owner.

E. Benching Slopes: Horizontally bench existing slopes greater than 1: 3 to key placed fill material to slope to provide firm bearing.

2.4 FILLING

A. The in areas that will support structures, equipment pads, asphalt or concrete paving, sidewalks, stone pavers, or other similar items shall be proof rolled and densified to a density of 95% Modified Proctor density before placement of any fill. Any soft areas shall be removed and replaced with a fill meeting the requirements of Section 31 05 16 Aggregates for Earthwork. All fill in these areas shall be placed in layers not exceeding 8” in depth. Each layer of fill shall be compacted to 95% Modified Proctor Density. .

B. Ares that will be landscaped, lawns, inside islands, water quality swales or other open unpaved areas should not be proof rolled. Fill placed in these areas should be compacted with light equipment to provide a stable surface that will not settle in the future. Over compaction of these areas is not desirable.

C. Maintain optimum moisture content of fill materials to attain required compaction density.

D. Fill areas to contours and elevations with unfrozen materials.

E. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.

F. Make grade changes gradual. Blend slope into level areas.

G. Repair or replace items indicated to remain damaged by excavation or filling.

2.5 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation..

2.6 FIELD QUALITY CONTROL

A. Perform laboratory material tests in accordance with ASTM D1557 and ASTM D698

B. Perform in place compaction tests in accordance with the following:
   1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
   2. Moisture Tests: ASTM D3017.

C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

END OF SECTION

SECTION 31 23 16 - EXCAVATION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes excavating for building foundations, paving, roads, parking areas, slabs-on-grade, site structures and landscaping.

1.2 SUBMITTALS

A. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

B. Shop Drawings: Indicate soil densification grid for each size and configuration footing requiring soils densification.

1.3 QUALITY ASSURANCE

A. Maintain one copy of each document on site.

1.4 QUALIFICATIONS

A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of New Jersey.

PART 2 EXECUTION

2.1 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Notify utility company to remove and relocate utilities.

D. Protect utilities indicated to remain from damage.

E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

2.2 EXCAVATION

A. Underpin adjacent structures which may be damaged by excavation work.

B. Excavate subsoil to accommodate building foundations, slabs-on-grade, paving, and site structures, and construction operations.

C. Excavate to working elevation for piling work.

D. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity. Remove soft materials and replace with fill in accordance with Section 31 05 16. Compact to 95 % Modified Proctor Density.

E. Slope banks with machine to angle of repose or less until shored.

F. Do not interfere with 45 degree bearing splay of foundations.

G. Grade top perimeter of excavation to prevent surface water from draining into excavation.

H. Trim excavation. Remove loose matter.

I. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. Remove larger material as specified in Section 31 23 23.

J. Notify Owner of unexpected subsurface conditions.

K. Remove excess and unsuitable material from site.

L. Stockpile excavated material in area designated on site.

M. Repair or replace items indicated to remain damaged by excavation.

2.3 FIELD QUALITY CONTROL

A. Request inspection of excavation and controlled fill operations in accordance with applicable code.

B. Request visual inspection of bearing surfaces by inspection agency before installing subsequent work.

2.4 PROTECTION

A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

SECTION 31 23 17 - TRENCHING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes excavating and backfill trenches for utilities.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:
   1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
   3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
   5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

A. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

B. Product Data: Submit data for geotextile fabric indicating fabric and construction.

C. Samples: Submit, in air-tight containers, 10 lb sample of each type of fill to testing laboratory.

D. Materials Source: Submit name of imported fill materials suppliers.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements

1.4 QUALITY ASSURANCE

A. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of New Jersey

1.6 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.7 COORDINATION

A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Structural Fill : as specified in Section 31 05 16

PART 3 EXECUTION

3.1 LINES AND GRADES

A. Lay pipes to lines and grades indicated on Drawings.

3.2 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum locations.

C. Protect plant life, lawns, rock outcropping, and other features remaining as portion of final landscaping.

D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities indicated to remain.

F. Establish temporary traffic control and detour when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

3.3 TRENCHING

A. Excavate subsoil required for utilities to utility service.

B. Remove lumped subsoil, boulders, and rock up of 1/6 cubic yard, measured by volume.

C. Perform excavation within 24 inches of existing utility service in accordance with utility's requirements.

D. Do not advance open trench more than 200 feet ahead of installed pipe.

E. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.

F. Excavate bottom of trenches maximum 2 feet wider than outside diameter of pipe.

G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe utilities

H. Do not interfere with 45 degree bearing splay of foundations.

I. When Project conditions permit, slope side walls of excavation starting 2 feet above top of pipe. When side walls can not be sloped, provide sheeting and shoring to protect excavation as specified in this section.

J. Cut out soft areas of subgrade not capable of compaction in place. Backfill and compact to density equal to or greater than requirements for subsequent backfill material.

K. Trim excavation. Hand trim for bell Remove loose matter.

L. Remove excess subsoil not intended for reuse, from site.

M. Stockpile excavated material in area designated on site.

3.4 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.

B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

C. Design sheeting and shoring to be removed at completion of excavation work.

D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Place geotextile fabric over Fill Type prior to placing subsequent fill materials.

D. Place material in continuous layers not to exceed 8 inches compacted depth.

E. Employ placement method that does not disturb or damage foundation perimeter drainage utilities in trench.

F. Maintain optimum moisture content of fill materials to attain required compaction density.

G. Do not leave more than 50 feet of trench open at end of working day.

H. Protect open trench to prevent danger to the public.

3.6 TOLERANCES

A. Top Surface of Backfilling [Under Paved Areas]: Plus or minus 0.5 inches, 0.04 feet from required elevations.

B. Top Surface of General Backfilling: Plus or minus 1 inch, 0.8feet from required elevations.

3.7 FIELD QUALITY CONTROL

A. Perform laboratory material tests in accordance with ASTM D1557.

B. Perform in place compaction tests in accordance with the following:
   1. Density Tests: ASTM D1556, ASTM D2167,or ASTM D2922.
   2. Moisture Tests: ASTM D3017.

C. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

3.8 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

SECTION 31 23 23 - FILL

PART 1 GENERAL

1.1 SUMMARY

A. Section includes backfilling site structures to subgrade elevations, fill under slabs-on-grade, fill under paving, fill for over-excavation.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:
   1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
   3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
   5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

A. Materials Source: Submit name of imported fill materials suppliers.

B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements

C. The contractor shall not stockpile excavated soils on site but rather deposit excavated soil in approved enclosed containers. Existing excavated soils and pea gravel to be removed offsite to a pre-approved facility. The contractor shall provide clean fill certifications to the site LSRP for imported fill and pea gravel. Alternatively, imported quarry stone can be utilized, but shall be virgin, non-contaminated material from a licensed mining quarry. The contractor shall provide the site LSRP applicable quarry test certifications prior to delivery on-site. Containers shall be lined to prevent water runoff. Contractor shall provide proof of approval before transporting soil. LSRP has final approval on all backfill material for excavated area.

1.4 QUALITY ASSURANCE

A. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Structural Fill: as specified in 31 05 16.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.

B. Verify underground tanks are anchored to their own foundations to avoid flotation after backfilling.

C. Verify structural ability of unsupported walls to support loads imposed by fill.

3.2 PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural fill and compact to density equal to or greater than requirements for subsequent fill material.

C. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Place geotextile fabric over fill prior to placing next lift of fill.

D. Place material in continuous layers maximum 8 inches compacted depth.

E. Employ placement method that does not disturb or damage other work.

F. Maintain optimum moisture content of backfill materials to attain required compaction density.

G. Backfill against supported foundation walls and do not backfill against unsupported foundation walls.

H. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

I. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.

J. Make gradual grade changes. Blend slope into level areas.

K. Remove surplus backfill materials from site.

L. Leave fill material stockpile areas free of excess fill materials.

3.4 FIELD QUALITY CONTROL

A. Perform laboratory material tests in accordance with ASTM D1557.

B. Perform in place compaction tests in accordance with the following:
   1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
   2. Moisture Tests: ASTM D3017.

C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

D. Proof roll compacted fill surfaces under slabs-on-grade, pavers, and paving.

3.5 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 32 11 23 - AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes aggregate base course for use under concrete and asphalt paving.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:
   1. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.

B. ASTM International:
   1. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
   2. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
   3. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   4. ASTM D2940 - Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.
   5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

A. Product Data:
   1. Submit data for geotextile fabric and herbicide.

B. Samples: Submit, in air-tight containers, 10 lb sample of each type of aggregate fill to testing laboratory.

C. Materials Source: Submit name of aggregate materials suppliers.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

B. Perform Work in accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 302, as currently amended.

C. Maintain once copy of each document on site.

PART 2 PRODUCTS

2.1 AGGREGATE MATERIALS

A. Base Aggregate shall comply with stone aggregate Type I-5 of the NJDOT Standard Specification for Road and Bridge Construction, Section 901.10 & 901.11, as currently amended.

B. Where I-5 soil aggregate is specified, the Contractor may substitute DGA with the approval of the Owner or as shown on the construction plans.

2.2 ACCESSORIES

A. Geotextile Fabric: AASHTO M288; non-woven, polypropylene.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted substrate is dry and ready to support paving and imposed loads.
   1. Proof roll substrate in minimum two perpendicular passes to identify soft spots.
   2. Remove soft substrate and replace with compacted fill as specified in Section 31 23 23.

B. Verify substrate has been inspected, gradients and elevations are correct.

3.2 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place fill on soft, muddy, or frozen surfaces.

3.3 AGGREGATE PLACEMENT

A. Install geotextile fabric over subgrade in accordance with manufacturer's instructions.
   1. Lap ends and edges minimum 6 inches.
   2. Anchor fabric to subgrade when required to prevent displacement until aggregate is installed.

B. Place aggregate equal thickness layers to total compacted thickness indicated on Drawings.
   1. Maximum Layer Compacted Thickness: 8 inches.
   2. Minimum Layer Compacted Thickness: 4 inches.

C. Roller compact aggregate to 95 percent maximum density

D. Level and contour surfaces to elevations, profiles, and gradients indicated.

E. Add small quantities of fine aggregate to coarse aggregate when required to assist compaction.

F. Maintain optimum moisture content of fill materials to attain specified compaction density.

G. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 TOLERANCES

A. Maximum Variation from Flat Surface: ½ inch measured with 10 foot straight edge.

B. Maximum Variation From Thickness: ¼ inch.

C. Maximum Variation from Elevation: ½ inch.

3.5 FIELD QUALITY CONTROL

A. Compaction testing will be performed in accordance with ASTM D1556.ASTM D1557. ASTM D2167, ASTM D2922. ASTM D3017.

B. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Frequency of Tests: One test for every 1000 square yards of each layer compacted aggregate.

3.6 COMPACTION

A. Compact materials to 98 percent of maximum density as determined from test strip, in accordance with ASTM D2940.

END OF SECTION

SECTION 32 12 16 - ASPHALT PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Asphalt materials.
   2. Aggregate materials.
   3. Aggregate subbase.
   4. Asphalt paving base course, binder course, and wearing course.
   5. Asphalt paving overlay for existing paving.
   6. Surface slurry.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:
   1. AASHTO M17 - Standard Specification for Mineral Filler for Bituminous Paving Mixtures.
   2. AASHTO M29 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
   3. AASHTO M140 - Standard Specification for Emulsified Asphalt.
   4. AASHTO M208 - Standard Specification for Cationic Emulsified Asphalt.
   5. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.
   6. AASHTO M320 - Standard Specification for Performance-Graded Asphalt Binder.
   7. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
   8. AASHTO MP1a - Standard Specification for Performance-Graded Asphalt Binder.

B. Asphalt Institute:
   1. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot- Mix Types.
   2. AI MS-19 - Basic Asphalt Emulsion Manual.
   3. AI SP-2 - Superpave Mix Design.

C. ASTM International:
   1. ASTM C1371[-2004a] - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
   2. ASTM C1549[-2004] - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
   3. ASTM D242 - Standard Specification for Mineral Filler For Bituminous Paving Mixtures.
   4. ASTM D692 - Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
   5. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
   6. ASTM D977 - Standard Specification for Emulsified Asphalt.
   7. ASTM D1073 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
   8. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples

9. ASTM D2027 - Standard Specification for Cutback Asphalt (Medium-Curing Type).
10. ASTM D2397 - Standard Specification for Cationic Emulsified Asphalt.
11. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.
12. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
13. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
14. ASTM D3515 - Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
15. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
16. ASTM D3910 - Standard Practices for Design, Testing, and Construction of Slurry Seal.
17. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
18. ASTM E408[-1971(1996)e1] - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
19. ASTM E903[-1996] - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
20. ASTM E1918[-1997] - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
21. ASTM E1980[-2001] - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

1.3 SUBMITTALS

A. Product Data:
   1. Submit product information for asphalt and aggregate materials.
   2. Submit mix design with laboratory test results supporting design.

B. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Mixing Plant: In accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 1009.01, as currently amended.

B. Obtain materials from same source throughout.

C. Perform Work in accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 401, as currently amended.

D. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Installer: Company specializing in performing work of this section with minimum 3 years documented experience

1.6 AMBIENT CONDITIONS

A. Do not place asphalt mixture between November 1 and March 1

B. Do not place asphalt mixture when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

C. Place asphalt mixture when temperature is not more than 15 degrees F less than initial mixing temperature.

D. Do not place asphalt if it is precipitating. Do not allow trucks to leave the plan when precipitation is imminent. The contractor may resume operations when the precipitation has stopped and the surface is free of water.

PART 2 PRODUCT

2.1 ASPHALT PAVING

A. Asphalt Materials:
   1. Asphalt: In accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 901, as currently amended or as shown on the construction plans.
   2. Primer: [ASTM D2027, [MC-30] [MC-70] [MC-250]; medium curing, cutback asphalt. In accordance with NJDOT Standard Specifications for Road and Bridge Construction, as currently amended.
   3. Tack Coat: In accordance with NJDOT Standard Specifications for Road and Bridge Construction, as currently amended.
   4. Reclaimed Asphalt Pavement (RAP): Processed material obtained by milling or full depth removal of existing asphalt paving.
   5. Oil: In accordance with NJDOT Standard Specifications for Road and Bridge Construction, as currently amended.

B. Aggregate Materials:
   1. Coarse Aggregate: Specified in Section 32 11 23.
   2. Fine Aggregate: In accordance with NJDOT Standard Specifications for Road and Bridge Construction, as currently amended or as shown on the construction plans.
   3. Mineral Filler: [ASTM D242] [or] [AASHTO M17]; finely ground mineral particles, free of foreign matter.

C. Aggregate Subbase: Specified in Section 32 11 23

2.2 MIXES

A. Use dry material to avoid foaming. Mix uniformly.

B. Asphalt Paving Mixtures: Designed in accordance with NJDOT Standard Specifications for Road and Bridge Construction, as currently amended.

C. Surface Slurry: ASTM D3910, emulsified asphalt slurry.

2.3 ACCESSORIES

A. Geotextile Fabric: AASHTO M288; non-woven, polypropylene.

B. Sealant: [ASTM D6690] [AASHTO M324], hot applied type.

2.4 SOURCE QUALITY CONTROL

A. Submit proposed mix design of each class of mix for review prior to beginning of Work.

B. Test samples in accordance with AI MS-2

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.

B. Verify compacted subgrade subbase is dry and ready to support paving and imposed loads.
   1. Proof roll subbase with minimum two perpendicular passes to identify soft spots.
   2. Remove soft subbase and replace with compacted fill as specified in Section 31 23 23.

C. Verify gradients and elevations of base are correct.

D. Verify manhole frames are installed in correct position and elevation.

3.2 PREPARATION

A. Prepare paving plane in accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 401.03.03, as currently amended.

3.3 DEMOLITION

A. Saw cut and notch existing paving as indicted on Drawings.

B. Clean existing paving to remove foreign material, excess joint sealant and crack filler from paving surface.

C. Repair surface defects in existing paving to provide uniform surface to receive new paving.

D. Asphalt to be removed in accordance with NJDOT Standard Specifications for Road and Bridge Construction, as currently amended.

3.4 INSTALLATION

A. Subbase:
   1. Aggregate Subbase: Install as specified in Section 32 11 23.

B. Primer:
   1. Apply primer in accordance with AI MS-2.

C. Tack Coat:
   1. Apply tack coat in accordance with AI MS-19
      a. New Surfaces: 1/2 gal/sq yd.
      b. Existing Surfaces: 1/2 gal/sq yd.
   2. Apply tack coat to contact surfaces of curbs, and gutters.
   3. Coat surfaces of manhole frames with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

D. Single Course Asphalt Paving:
   1. Install Work in accordance with NJDOT Standard Specifications for Road and Bridge Construction, Section 401, as currently amended or as shown on the construction plans.
   2. Place asphalt within 24 hours of applying primer or tack coat.
   3. Place asphalt wearing course to thickness indicated on Drawings.
   4. Compact paving by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
   5. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

E. Double Course Asphalt Paving:
   1. Place asphalt binder course within 24 hours of applying primer or tack coat.
   2. Place binder course to thickness indicated on Drawings.
   3. Place wearing course within 24 hours of placing and compacting binder course. When binder course is placed more than 24 hours before placing wearing course, clean surface and apply tack coat before placing wearing course.
   4. Place wearing course to thickness indicated on Drawings.
   5. Compact each course by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
   6. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

F. Asphalt Paving Overlay
   1. Apply tack coat to existing paving surface at rate recommended by geotextile fabric manufacturer.
   2. Install geotextile fabric in accordance with manufacturer's instructions to permit asphalt saturation of fabric. Lap fabric edge and end joints 4 inches.
   3. Place wearing course to thickness indicated on Drawings.
   4. Compact overlay by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
   5. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

G. Surface Slurry
   1. Install uniform thickness surface slurry over existing paving in accordance with ASTM D3910.
   2. Allow slurry to cure.
   3. Roll paving to achieve uniform surface.

3.5 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from Indicated Elevation: Within 1/2 inch.

3.6 FIELD QUALITY CONTROL

A. Take samples and perform tests including mat density tests in accordance with State and local Public Work's Standards.

B. Asphalt Paving Mix Temperature: Measure temperature at time of placement.

C. Asphalt Paving Thickness: ASTM D3549; test one core sample from every 1000 square yards compacted paving.

D. Asphalt Paving Density: ASTM D2950 nuclear method; test one location for every 1000 square yards compacted paving.

3.7 PROTECTION

A. Immediately after placement, protect paving from mechanical injury for 24 hours or until surface temperature is less than 140 degrees F.

3.8 ATTACHMENTS

A. Paving at Truck Ramp and Garbage Area: Single course of 3-1/2 inch compacted thickness, with surface slurry.

B. Paving at Parking Areas: Two courses; binder course of 2-1/2 inch compacted thickness and wearing course of 1 inch compacted thickness.

C. Paving at Rear Bus Loading Area: Thickness and compaction of subbase to support vehicles up to 30,000 lb.

D. Paving Front Sidewalks: Thickness and compaction of subbase to support moderate pedestrian traffic.

END OF SECTION

SECTION 32 13 13 - CONCRETE PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes concrete paving for sidewalks, step placed in sidewalks, exterior ramps, aprons, curbs, and concrete slabs in parking areas and roads.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:
   1. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

B. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

C. ASTM International:
   1. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
   2. ASTM A185/A185M - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
   3. ASTM A497/A497M - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
   4. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
   5. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
   6. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
   7. ASTM A775/A775M - S Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
   8. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
   9. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.
   10. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   11. ASTM C33 - Standard Specification for Concrete Aggregates.
   12. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   13. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
   14. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
   15. ASTM C150 - Standard Specification for Portland Cement.
   16. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
   17. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

18. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
19. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
20. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
21. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
22. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
23. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
24. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
25. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
26. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
27. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
28. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
29. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
30. ASTM C1371[-2004a] - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
31. ASTM C1549[-2004] - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
32. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
33. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
34. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
35. ASTM E408[-1971(1996)e1] - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
36. ASTM E903[-1996] - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
37. ASTM E1918[-1997] - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
38. ASTM E1980[-2001] - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

1.3 SUBMITTALS

A. Product Data:
   1. Submit data on concrete materials, joint filler, admixtures, and curing compounds.

B. Design Data:
   1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
      a. Hot and cold weather concrete work.
   2. Identify mix ingredients and proportions, including admixtures.

3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.

C. Source Quality Control Submittals: Indicate results of factory tests and inspections.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

B. Obtain cementitious materials from same source throughout.

C. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum 5 years documented experience.

PART 2 PRODUCTS

2.1 AGGREGATE BASE COURSE

A. Aggregate Base Course: As specified in Section 32 11 23

2.2 CONCRETE PAVING

A. Form Materials:
   1. Form Materials: Conform to ACI 301.

B. Reinforcement:
   1. Welded Plain Wire Fabric: ASTM A185/A185M; in flat sheets; epoxy coated finish.
   2. Dowels: ASTM A615/A615M; 40 ksi yield strength, plain steel bars; cut to length indicated on Drawings, square ends with burrs removed; epoxy coated finish.
   3. Tie Wire: Minimum 16 gage annealed type, epoxy coated.
   4. Epoxy Coating Patching Material: Type as recommended by coating manufacturer.

C. Concrete Materials:
   1. Concrete Materials: Provide in accordance with NJDOT Standard Specifications for Road and Bridge Construction, as currently amended or as shown on the construction plans.
   2. Chemical Admixture: ASTM C494/C494M.
      a. Type D - Water Reducing and Retarding.
   3. Fly Ash: ASTM C618.
   4. Slag: ASTM C989; ground granulated blast furnace slag.
   5. Plasticizing: ASTM C1017/C1017M [Type I, plasticizing]
   6. Color Pigment: ASTM C979; mineral oxides, alkali and fade resistant.

2.3 FABRICATION

A. Form standard hooks for 180 degree bends, 90 degree bend, and seismic hooks as indicated on Drawings.

2.4 MIXES

A. Concrete Mix - By Performance Criteria:
   1. Mix and deliver concrete in accordance with ASTM C94/C94M, Option [a] [C].

B. Concrete Mix - By Prescriptive Criteria:
   1. Mix and deliver concrete in accordance with ASTM C94/C94M, Option B.

2.5 FINISHES

A. Shop Finishing - Reinforcement:
   1. Galvanized Finish for Steel Bars: ASTM A767/A767M, hot dip galvanized after fabrication.
   2. Epoxy Coated Finish for Steel Bars: ASTM A775/A775M, ASTM A934/A934M.

B. Epoxy Coated Finish for Steel Wire: ASTM A884/A884M; Class A, using ASTM A775/A775M, ASTM A934/A934M.

2.6 ACCESSORIES

A. Curing Compound: ASTM C309

B. Joint Sealers: ASTM D6690, AASHTO M324 hot applied type.

2.7 SOURCE QUALITY CONTROL

A. Submit proposed mix design of each class of concrete to appointed firm for review prior to commencement of Work.

B. Tests on cement, aggregates, and mixes will be performed to ensure conformance with specified requirements.

C. Test samples in accordance ACI 301.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted subgrade subbase is dry and ready to support paving and imposed loads.
   1. Proof roll subbase with minimum two perpendicular passes to identify soft spots.
   2. Remove soft subbase and replace with compacted fill as specified in Section 31 23 23.

B. Verify gradients and elevations of base are correct.

3.2 PREPARATION

A. Moisten substrate to minimize absorption of water from fresh concrete.

B. Coat surfaces of manhole frames with oil to prevent bond with concrete paving.

C. Notify Architect/Engineer minimum 24 hours prior to commencement of concreting operations.

3.3 INSTALLATION

A. Base Course:
   1. Aggregate Base Course: Install as specified in Section 32 11 23.

B. Forms:
   1. Place and secure forms and screeds to correct location, dimension, profile, and gradient.
   2. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Reinforcement:

   1. Place reinforcing as indicated on Drawings.

D. Placing Concrete:
   1. Coordinate installation of snow melting components.
   2. Place concrete in accordance with ACI 301.
   3. Curbing and Sidewalk shall not be a homogeneous pour, unless directed by the township engineer or his representative.

E. Joints
   1. Place joints at 20 foot intervals. Align curb, gutter, and sidewalk joints.
   2. Place joint filler between paving components and building or other appurtenances.
   3. Provide joints at 3 feet intervals between sidewalks and curbs, between curbs and paving.
   4. Provide keyed joints as indicated.

F. Exposed Aggregate:
   1. Apply surface retarder where exposed aggregate finish is required.
   2. Wash exposed aggregate surface with clean water and scrub with stiff bristle brush exposing aggregate to match sample panel.

G. Finishing:
   1. Paving: Light broom.
   2. Sidewalk Paving: Light broom.
   3. Median Barrier: Light broom.
   4. Direction of Texturing: Transverse to paving direction.
   5. Inclined Vehicular Ramps: Broomed perpendicular to slope.
   6. Place curing compound on exposed concrete surfaces immediately after finishing.

H. Curing and Protection
   1. Cure floor surfaces in accordance with ACI 301

3.4 TOLERANCES

A. Maximum Variation of Surface Flatness: 1/2 in 10 ft.

B. Maximum Variation From True Position: 1/4 inch.

3.5 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with ASTM C94/C94M

B. Inspect reinforcing placement for size, spacing, location, support.

C. Testing firm will take cylinders and perform slump and air entrainment tests in accordance with ACI 301.

D. Strength Test Samples:
   1. Sampling Procedures: ASTM C172.
   2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, standard cured.
   3. Sample concrete and make one set of three cylinders for every 75 cu yds or less of each class of concrete placed each day and for every 5,000 sf of surface area paving.
   4. Make one additional cylinder during cold weather concreting, and field cure.

E. Field Testing:
   1. Slump Test Method: ASTM C143/C143M.
   2. Air Content Test Method: [ASTM C173/C173M] [ASTM C231].
   3. Temperature Test Method: ASTM C1064/C1064M.
   4. Measure slump and temperature for each compressive strength concrete sample.
   5. Measure air content in air entrained concrete for each compressive strength concrete sample.

F. Cylinder Compressive Strength Testing:
   1. Test Method: ASTM C39/C39M.
   2. Test Acceptance: in accordance with State and local Public Work's standards.
   3. Test one cylinder at 7 days.
   4. Test two cylinders at 28 days.
   5. Retain one cylinder for testing when requested by Architect/Engineer.
   6. Dispose remaining cylinders when testing is not required.

G. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.6 PROTECTION

A. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over paving for 7 days minimum after finishing.

END OF SECTION

SECTION 33 42 13 -PIPE CULVERTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes concrete pipe, culverts joints and accessories, bedding and lope protection at pipe end.

1.2 REFERENCES

A. ASTM International:
   1. ASTM A929/A929M - Standard Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe.
   2. ASTM C14 - Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
   3. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
   4. ASTM C507 - Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.
   5. ASTM C507M - Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe (Metric).
   6. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   7. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   8. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

A. Product Data: Submit data on pipe, fittings and accessories.

B. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.

1.4 QUALITY ASSURANCE

A. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 CONCRETE PIPE

A. Reinforced Circular Concrete Pipe: ASTM C76, Class III unless otherwise shown on the plans installed with flexible plastic AASHTO M-198 751, Type B, or rubber ASTM C-443 gaskets.

2.2 CORRUGATED POLYETHLENE PIPE (CPP)

A. Corrugated Polyethylene Pipe (CPP) Smooth Interior and Slotted Pipe with Nylon Drain Guard: Only permitted when specifically indicated on Drawings and shall conform with AASHTO Designation M294 and M252. Pipe must be installed in accordance with pipe manufacturers installation Guidelines for Culvert and Other Heavy-Duty Drainage Applications. Acceptable manufacturers: Advanced Drainage Systems, Inc. (ADS) N-12 & HANCOR, INC. (Hi-Q smooth interior), United States Plastic Corporation, or approved equal.

2.3 BEDDING AND COVER MATERIALS

A. Bedding and Cover Fill coarse aggregate #57 as specified in Section 31 05 16.

2.4 ACCESSORIES

A. Manufacturers: Geotextile Fabric: Non-biodegradable, [woven]
   1. Bonar Inc.; Low & Bonar Company
   2. Huesker Inc.
   3. Propex Fabrics, Inc.
   4. Tenax Corporation- USA
   5. TenCate Geosynthetics
   6. Tensar Earth Technologies, Inc.

B. Fill at Pipe Ends: Concrete grout fill

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

3.2 PREPARATION

A. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 EXCAVATION AND BEDDING

A. Excavate trench to 12 inches below pipe invert. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 8 inches compacted depth, compact to 95% Modified Proctor Density.

C. Maintain optimum moisture content of bedding material to attain required compaction density.

D. Place filter fabric over compacted bedding.

3.4 INSTALLATION - PIPE

A. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.

B. Shore pipe to required position; retain in place until after compaction of adjacent fills. Ensure pipe remains in correct position and to required slope.

C. Repair surface damage to pipe protective coating with two coats of compatible bituminous paint coating.

D. Install cover at sides Install top cover to minimum compacted thickness of 12 inches

E. Maintain optimum moisture content of bedding material to attain required compaction density.

F. Place filter fabric over compacted cover.

G. Install culvert end gratings.

H. Refer to Section 31 23 23 and 31 23 17 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.

3.5 PIPE ENDS

A. Place fill at pipe ends at embankment slopes construction.

3.6 ERECTION TOLERANCES

A. Lay pipe to alignment and slope gradients noted on Drawings; with maximum variation from indicated slope of 1/8 inch in 10 feet.

B. Maximum Variation From Intended Elevation of Invert: 1/2 inch.

C. Maximum Offset of Pipe From Indicated Alignment: 1 inch.

D. Maximum Variation in Profile of Structure From Intended Position: 1 percent.

3.7 FIELD QUALITY CONTROL

A. Request inspection prior to and immediately after placing aggregate cover over pipe.

B. Compaction Testing: In accordance with ASTM D1557, ASTM D2922, ASTM D3017.

C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Protect pipe and bedding from damage or displacement until backfilling operation is in progress.

END OF SECTION

APPENDIX A

FRENCH & PARRELLO ASSOCIATES

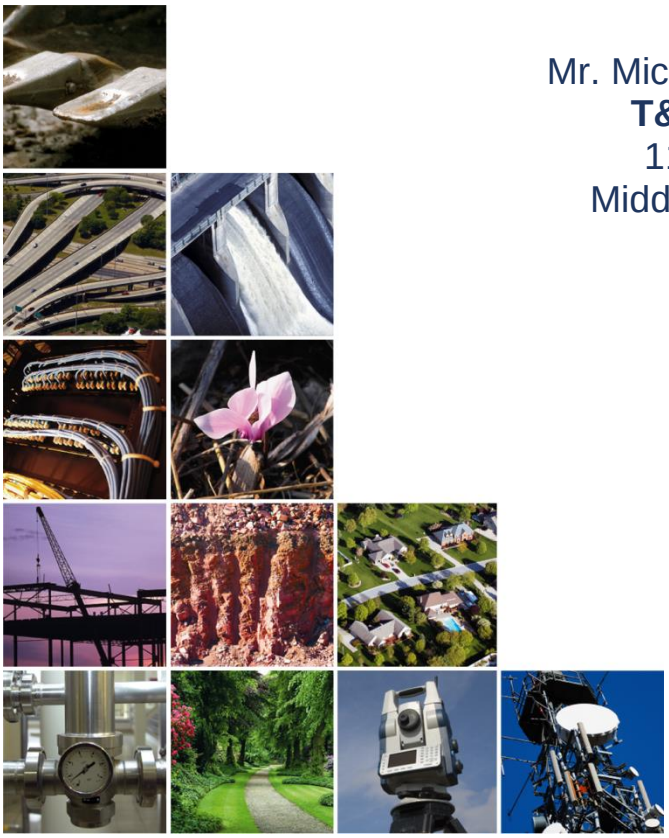
EXPERIENCE YOU CAN BUILD ON

New Jersey Veteran Owned Business

Report of Subsurface Exploration & Geotechnical Engineering Assessment

Union County Department of Public Works Improvements

Scotch Plains, Union County, New Jersey



Submitted to:

Mr. Michael R. Thomas, PE
T&M Associates
11 Tindall Road
Middletown, NJ 07748

February 24, 2016
FPA No. 10944.001R1

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HACKETTSTOWN, NJ • NEW YORK, NY
WWW.FPAENGINEERS.COM

FRENCH & PARRELLO ASSOCIATES

Corporate Office
1800 Route 34, Suite 101
Wall, NJ 07719

Regional Offices
Hackettstown, NJ
New York, NY

February 24, 2016

Mr. Michael R. Thomas, PE
T&M Associates
11 Tindall Road
Middletown, NJ 07748

Re: Report of Subsurface Exploration &
Geotechnical Engineering Evaluation
Union County Department of Public Works Improvements
Scotch Plains, Union County, New Jersey
FPA No. 10944.001R1

Dear Mr. Thomas:

INTRODUCTION

This report presents the results of our Subsurface Exploration and Geotechnical Engineering Evaluation performed in connection with the proposed improvements at the Union County Department of Public Works (DPW) Facility located in Scotch Plains, Union County, New Jersey. The project site is designated as Block 8302, Lot 1 on the Union County Tax Map. The regional location of the project site is presented on Drawing No. 1, "Regional Location Plan."

It is our understanding that the proposed improvements to the DPW Facility will include the replacement of two underground storage tanks and construction of a gas filling station canopy. The existing site grades vary from approximately +155 feet to +158 feet. The proposed site grades were unavailable at the time of this report. However, we anticipate minimal site grading will be required to attain final grades.

The purpose for our involvement on the project at this time was to perform a subsurface exploration program, an engineering evaluation of the acquired data and to prepare a geotechnical report to facilitate the planning, design and construction of the proposed gas filling station canopy foundations. Our scope of work included the technical observation of 2 test borings, engineering evaluation of the encountered subsurface conditions and the preparation of this geotechnical report. This work has been performed in accordance with our revised proposal dated February 16th, 2016.

SUBSURFACE EXPLORATION

French & Parrello Associates (FPA) observed the performance of 3 test borings on February 22nd, 2016 to characterize the subsurface soil and groundwater conditions in the vicinity of the proposed gas filling station canopy. The field work was performed by a test boring subcontractor while under the full-time technical observation by a representative of FPA. The approximate as-drilled test boring locations are presented on Drawing No. 2, "Test Boring Location Plan."

The test borings, designated as B-1, B-1A and B-2, were advanced to depths ranging from approximately 7.2 feet to 27 feet below the existing ground surface using hollow stem auger drilling techniques. Test boring B-1A was offset approximately 5 feet south from B-1 due to auger refusal. Soil samples were obtained from within the boreholes by advancing a standard 2-inch diameter split-spoon sampler in accordance with ASTM Test Method D-1586, The Standard Penetration Test. All soil samples were classified in the field using the Burmister Soil Classification System. The soil samples were returned to our in-house soils laboratory for further review and selected testing and will be stored for a period of 60 days from the date of this report.

The depth to groundwater was estimated based on the relative moisture content of the retrieved soil samples. Details of the drilling procedures, soil classifications, groundwater depths and Standard Penetration Test results are presented on the test boring logs in Appendix A.

SITE CONDITIONS

Regional Geology

Based upon our review of published geologic data and our previous experience pertaining to the project region, the native soils should consist of unstratified glacial ground moraine deposited during the Wisconsin glaciation. The glacial soils reportedly consist of silts and silty sands. Cobbles and boulders may be present throughout the soil profile. The glacial soils are underlain by Shale, Sandstone and Mudstone bedrock at depths greater than 5 feet in the project vicinity.

Subsurface Conditions

The test borings generally encountered granular fill underlain by cohesive glacial deposits, granular glacial deposits and Mudstone bedrock. The fill material was encountered from the existing grade to depths ranging from approximately 6 feet to 8 feet and consisted of coarse to fine sand intermixed with significant amounts of coarse to fine gravel and varying amounts of clay and silt. Few concrete pieces were encountered throughout the fill layer. The fill material was underlain by cohesive glacial deposits consisting of silt and clay intermixed with moderate to significant amounts of coarse to fine sand and gravel. The cohesive glacial soils were underlain by sandy Mudstone bedrock in test borings B-1 and B-1A at depths of approximately 7.5 feet and 7 feet below the existing grade, respectively. The cohesive glacial soils were

underlain by predominately granular glacial soils in test boring B-2 and consisted of medium to fine sand and silt intermixed with minor amounts of medium to fine gravel. Based upon the results of the Standard Penetration Testing, the relative density of the fill varied from very loose to medium-dense. The consistency of the cohesive glacial soil may be described as soft. The relative density of the granular glacial soils and Mudstone may be described as medium dense to dense and very dense, respectively.

Groundwater was encountered within the test borings at depths ranging from approximately 7 feet to 8 feet below existing grade, corresponding to elevations +149 feet to +149.5 feet. Seasonal fluctuations in the groundwater level, as well as the potential presence of perched groundwater, should be anticipated. For a more detailed description of the subsurface soil and groundwater conditions encountered, please refer to the test boring logs presented in Appendix A.

Seismicity

We have reviewed the guidelines presented in the New Jersey Edition of the 2015 International Building Code (IBC) regarding seismic design. Based upon our review, we offer the following site characterization parameters:

Short Period Spectral Acceleration (S_s).....0.266g
Spectral Acceleration @ 1 Second (S_1) 0.070g
Site Class.....C

DISCUSSION & RECOMMENDATIONS

General

Based upon the results of our subsurface exploration program and our geotechnical engineering evaluation, it is our opinion that the proposed gas filling station canopy may be founded on conventional shallow foundations provided that the loose fills and soft cohesive glacial soils are removed and replaced with compacted structural fills. If the loose fills and soft cohesive glacial soils are left in-place, we estimate that total settlements of shallow foundations would be on the order of 2 inches or greater.

Commentary on Removal and Replacement

We recommend that the loose fills and soft cohesive glacial soils be excavated and replaced with structural grade fill to allow for the proposed canopy to be constructed on shallow foundations. The excavation should extend downward to the underlying medium-dense granular glacial soils and a minimum lateral distance of 5 feet beyond the foundation limits. We anticipate that the vertical limits of removal and replacement will extend to depths ranging from 6 feet within the vicinity of test boring B-1 to 12 feet within the vicinity of test boring B-2.

Groundwater was encountered within the test borings at depths ranging from approximately 7 feet to 8 feet below existing grade, corresponding to elevations +149 feet to +149.5 feet. Due to the relatively shallow groundwater level with respect to the depth of the anticipated soil removal, the wet excavation and backfill method will be required. The backfill below the groundwater level may be end-dumped to such an elevation that permits the use of compaction equipment. The designer may need to consider the use of excavation bracing for adjacent structures, pavements and utilities.

We recommend that fills placed from the submerged subgrade to approximately 2 feet above the groundwater level consist of open graded fills conforming to the gradational requirements of NJDOT I-11 fill. Type "G" fills should be placed over the I-11 fills to the proposed final elevations. Type "G" fills should be placed in maximum 12 inch lifts and compacted to a minimum 95 percent of their maximum dry density as determined by ASTM Test Method D-1557, the Modified Proctor. The gradational requirements for NJDOT I-11 and Type "G" fills are presented in Appendix B. We recommend that the removal and replacement efforts be performed under the technical observation of a representative of FPA.

Shallow Foundations

Provided that the removal and replacement recommendations presented herein are implemented, shallow foundations may be designed for an allowable bearing pressure of 4,000 psf. It is noted the recommended allowable bearing pressure may be increased by one-third when considering temporary loadings. We recommend that continuous wall footings and individual column footings be designed with minimum widths of 24 inches and 36 inches, respectively. In accordance with the IBC regulations for frost protection, we recommend that the bottom of all foundations exposed to outside ambient temperatures extend to a minimum depth of 42 inches below adjacent finished grades.

Our analyses indicate that settlements of less than one inch will occur due to the applied canopy loads. We estimate that differential settlements across the proposed foundations will be less than ½ inch.

Foundation Excavation

We anticipate that the Contractor may utilize conventional earth excavating equipment for performing excavations within the fill and in-situ soil deposits. We recommend that all excavations for foundations be hand trimmed, in a workmanlike manner, and that the footing and slab subgrades be compacted using an in-trench smooth drum, vibratory roller to densify the subsoils and to delineate soft regions. Any areas exhibiting excessive yielding should be over-excavated and backfilled using approved, readily compactable, on-site soils or imported Type "G" fill. Fills should be placed in maximum 12 inch thick lifts and compacted to a minimum of 95 percent of their maximum dry density as determined by ASTM Test Method D-1557, The Modified Proctor Test. Should foundation excavations be left open overnight or performed during inclement weather, we recommend that the foundation subgrades be over-excavated to

allow for the placement of a 6-inch thick layer of NJDOT No. 57 coarse graded aggregate. The coarse graded aggregate will serve as a work mat to mitigate disturbance of the subgrade due to construction and inclement weather and will facilitate in-trench dewatering, if necessary. The gradation requirements for Type "G" fill and NJDOT No. 57 coarse graded aggregate are presented in Appendix B.

Concrete Slabs

Provided that the required earthwork is accomplished in accordance with the recommendations contained in this report, we recommend that a modulus of subgrade reaction of 175 pci be utilized in the structural design of the concrete slabs.

Lateral Earth Pressure

To facilitate the design of the canopy foundation and/or excavation bracing, we offer the following soil parameters:

Total Unit Weight of Soil (γ) ..... 120 pcf
Angle of Soil Internal Friction (Φ) ..... 30°
Active Earth Pressure Coefficient (K_a) 0.33
At-Rest Earth Pressure Coefficient ($K_{o)}$ 0.50
Passive Earth Pressure Coefficient (K_p) 3.00

Coefficient of Base Friction:
- In-Situ Soils (μ) 0.45
- Coarse Graded Aggregate (μ) 0.60

CLOSING & LIMITATIONS

The recommendations contained herein are contingent upon subsurface conditions remaining consistent with those encountered during our subsurface exploration. They are also contingent upon the basis that all foundation related aspects of construction, including stripping, controlled fill operation, foundation excavation, and subgrade preparation, be observed by a representative of FPA. This is to observe compliance with the design concepts and specifications and to allow design changes in the event that subsurface conditions differ from those anticipated prior to construction.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or biologically toxic materials in the soil, surface water, groundwater or air, on or below or around this site.

Services performed by FPA during this project have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the

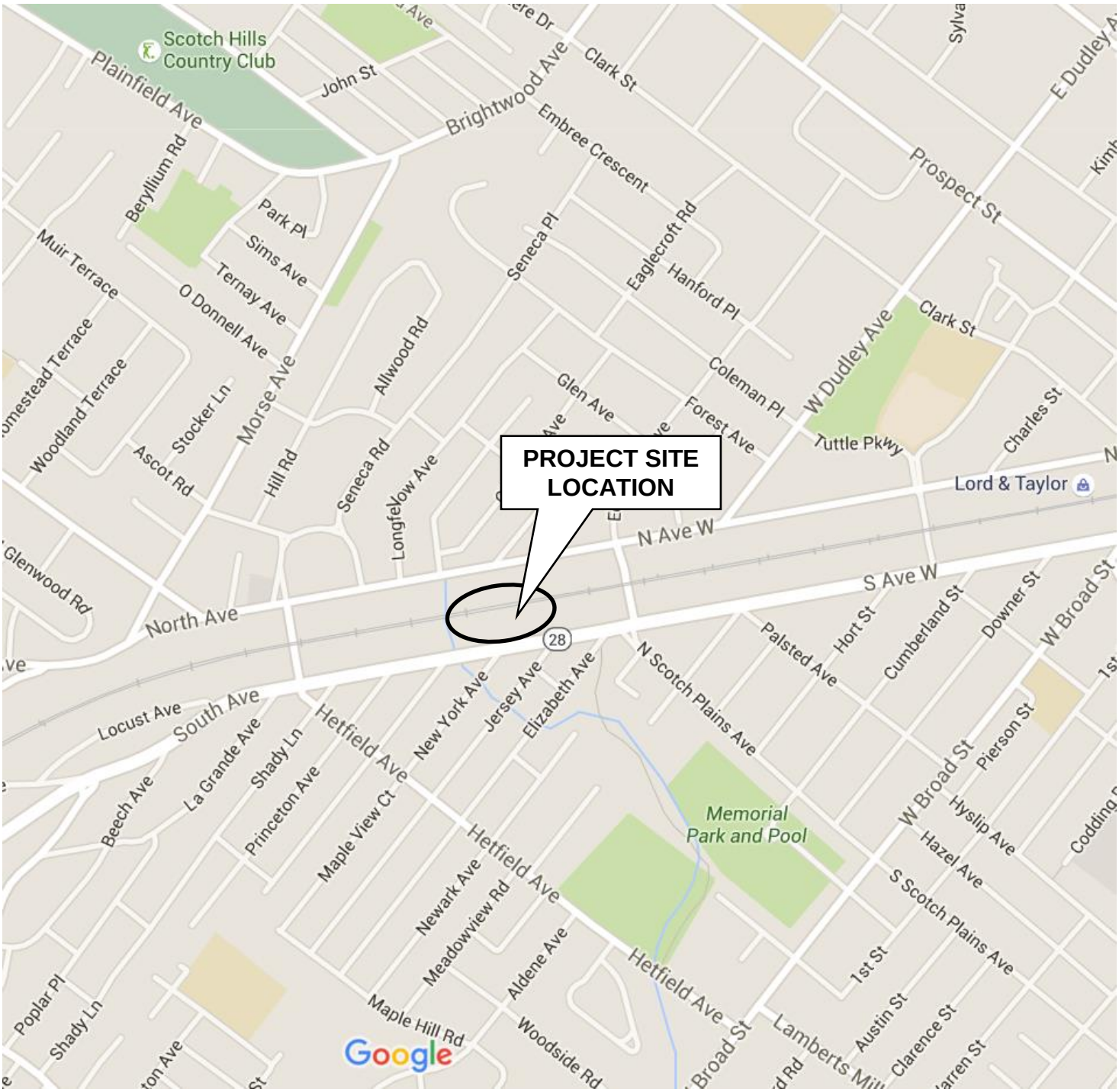
same locality under similar conditions. No other representation, expressed or implied, and no warranty, guarantee, or fiduciary responsibility is included or intended in the services provided.

Should you have any questions or if we can be of service to you in the future, please feel free to contact us.

Sincerely,

FRENCH & PARRELLO ASSOCIATES

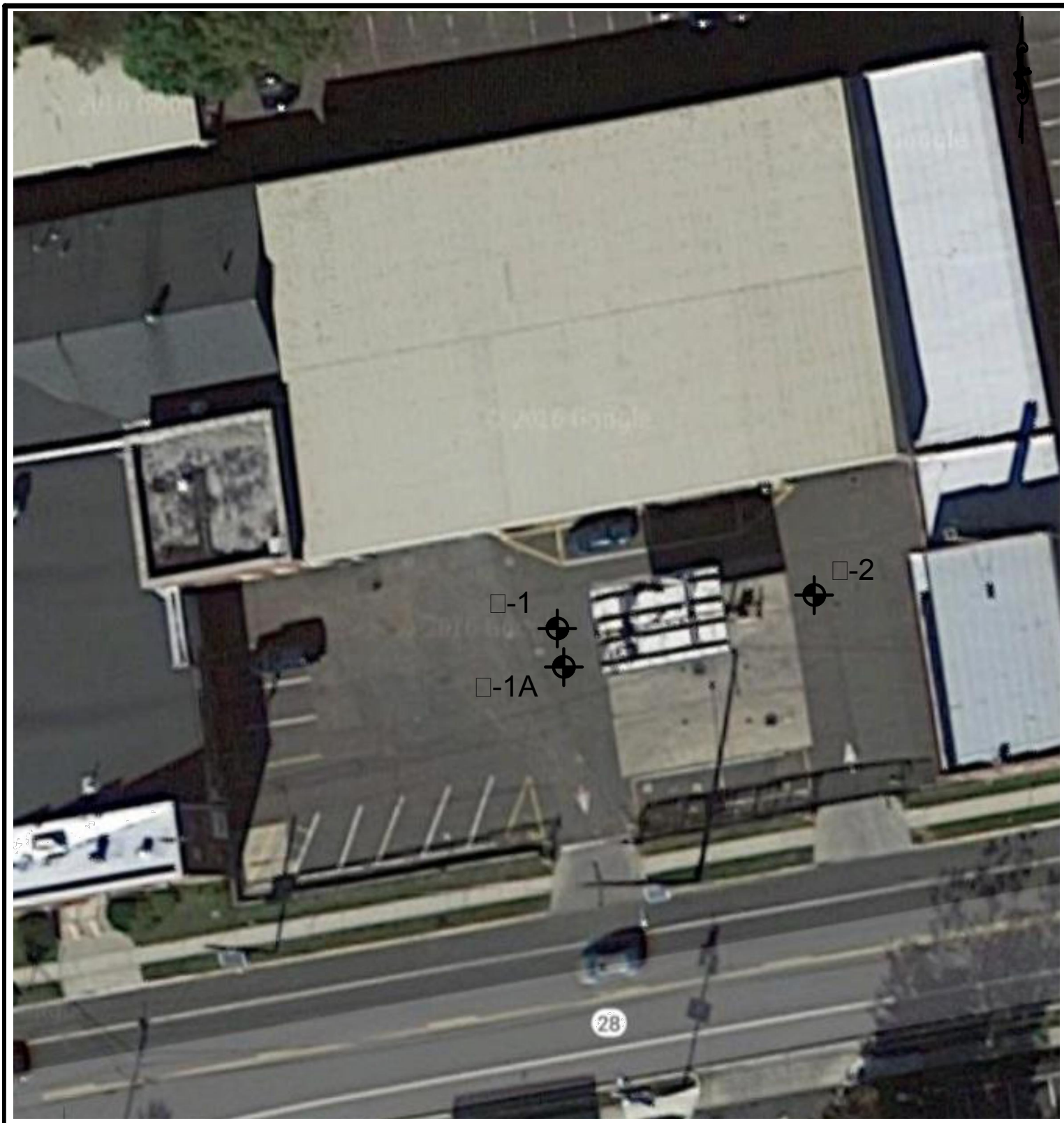
Robert D. Knotz, PE
Senior Project Manager, Geotechnical Services
RDK/DMR



REGIONAL LOCATION PLAN

UNION COUNTY DEPARTMENT OF PUBLIC WORKS IMPROVEMENTS
SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

SCALE:	DATE:	JOB NO.:	DRAWING NO.:
NTS	February 2016	10944.001	1



LEGEND:

TEST BORING LOCATION

FRENCH & PARRELLO ASSOCIATES

Corporate Office
1800 Route 34, Suite 101
Wa NJ 07719
732.312.9800
Regional Offices
Hac ettstown, NJ
New Yor , NY

TEST ORING LOCATION PLAN

UNION COUNTY DPW IMPROVEMENTS

SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

SCALE:	DATE:	PROJECT NUMBER:	DRAWING NO.:
APPROX. 1" = 50'	FEBRUARY 2016	10944.001	2

APPENDIX A
Test Boring Logs

BURMISTER SOIL CLASSIFICATION SYSTEM

A. Cohesionless Soils: Particle Size Definitions

Soil	Fraction	U.S. Standard Sieve	Actual Sizes
Gravel	coarse	3 in. to 1 in.	76 mm to 25 mm
	medium	1 in. to 3/8 in.	25 mm to 9.5 mm
	fine	3/8 in. to No. 10	9.5 mm to 2.0 mm
Sand	coarse	No. 10 to No. 30	2.0 mm to 0.6 mm
	medium	No. 30 to No. 60	0.6 mm to 0.25 mm
	fine	No. 60 to No. 200	0.25 mm to 0.75 mm
Silt		< No. 200	< 0.075 mm

B. Terms Describing Gradation of Cohesionless Soils

Written Description	Symbol/Designation	Defining Proportions
coarse, medium to fine	cmf	all fractions > 10%
coarse to medium	cm	< 10% fine
medium to fine	mf	< 10% coarse
coarse	c	< 10% medium and fine
medium	m	< 10% coarse and fine
fine	f	< 10% coarse and medium

Note: Use (+) for upper limit and (-) for lower limit.

C. Cohesive Soils: Terms Describing Plasticity

Soil	Plasticity Index	Workability	Plasticity Description
SILT	0	--	Non-Plastic
Clayey SILT	1 to 5	1/4 in. thread	Slightly Plastic
SILT & CLAY	5 to 10	1/8 in. thread	Low Plasticity
CLAY & SILT	10 to 20	1/16 in. thread	Medium Plasticity
Silty CLAY	20 to 40	1/32 in. thread	High Plasticity
CLAY	>40	1/64 in. thread	Very High Plasticity

D. Terms Describing Overall Composition of Soil

Written Proportion	Proportion Symbol	Proportion Percent by Weight
and	a	35 to 50
some	s	20 to 35
little	l	10 to 20
trace	t	1 to 10

Note: Use (+) for upper limit and (-) for lower limit.

TEST BORING LOG

UNION COUNTY DEPARTMENT OF PUBLIC WORKS IMPROVEMENTS
SCOTCH PLAINS, UNION COUNTY, NJ (FPA NO. 10944.001)

BORING NO.: B-1
SHEET 1 OF 1

DATE STARTED: 2/22/2016
DATE FINISHED: 2/22/2016
DEPTH OF WATER: 7'±
LOCATION: See Plan
GROUND ELEVATION: +156.5'±
GROUND WATER ELEV.: +149.5'±

DRILLING TECHNIQUE: Hollow Stem Augers
HAMMER TYPE: 140 lb. Safety Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – X – 4 – 3		S-1 TOP 7.5": Asphalt. MID 4": Grey-Brown cm^{+}f **GRAVEL**, some^{-} mf Sand, little^{+} Silt. (fill)
	S-2 2-4'	6 – 2 – 1 – 4		BOT 12.5": Light Brown cm^{+}f **SAND**, little Silt, trace f Gravel. (fill)
--- 5'---	S-3 4-6'	3 – 2 – 1 – 2		S-2 Dark Brown mf^{+} **SAND**, some^{+} Silt, some^{-} mf^{+} Gravel. (fill w/ few pieces of concrete)
	S-4 6-8'	22 – 15 – 50/3" – X		S-3 Light Grey-Brown cmf **SAND**, little^{+} Clayey Silt, little mf Gravel. (fill)
	S-5	50/2" – X – X – X		S-4 Red-Brown **SILT & CLAY**, and mf^{+} Sand, some^{-} cmf Gravel.
---10'---	8-10'			S-5 Red-Brown c^{+}mf **GRAVEL**, little^{-} Silt. (highly weathered Sandy Mudstone)
---15'---				END OF BORING @ 8.2' (Auger Refusal)
---20'---				*Offset boring 5' South to B-1A.*
---25'---				
---30'---				
---35'---				
---40'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: D. ROHMEYER, EIT

CONTRACTOR: EAST COAST DRILLING
DRILLER: S. FOSTER

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

UNION COUNTY DEPARTMENT OF PUBLIC WORKS IMPROVEMENTS
SCOTCH PLAINS, UNION COUNTY, NJ (FPA NO. 10944.001)

BORING NO.: B-1A
SHEET 1 OF 1

DATE STARTED: 2/22/2016
DATE FINISHED: 2/22/2016
DEPTH OF WATER: Not Observed
LOCATION: See Plan
GROUND ELEVATION: +156'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Hollow Stem Augers
HAMMER TYPE: 140 lb. Safety Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
				Direct drill to 7'
--- 5'---				
	S-1 7-9'	50/2" – X – X – X		S-1 Red-Brown c **GRAVEL**. (highly weathered Sandy Mudstone)
---10'---				END OF BORING @ 7.2' (Auger Refusal)
---15'---				
---20'---				
---25'---				
---30'---				
---35'---				
---40'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: D. ROHMEYER, EIT

CONTRACTOR: EAST COAST DRILLING
DRILLER: S. FOSTER

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

UNION COUNTY DEPARTMENT OF PUBLIC WORKS IMPROVEMENTS
SCOTCH PLAINS, UNION COUNTY, NJ (FPA NO. 10944.001)

BORING NO.: B-2
SHEET 1 OF 1

DATE STARTED: 2/22/2016
DATE FINISHED: 2/22/2016
DEPTH OF WATER: 8'±
LOCATION: See Plan
GROUND ELEVATION: +157'±
GROUND WATER ELEV.: +149'±

DRILLING TECHNIQUE: Hollow Stem Augers
HAMMER TYPE: 140 lb. Safety Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – X – X – X		S-1 TOP 8": Asphalt. MID 6": Concrete. BOT 10": Dark Grey-Brown **SILT**, and^{-} c^{+}mf Gravel, little^{+} mf^{+} Sand. (fill w/ many pieces of concrete)
	S-2 2-4'	16 – 10 – 11 – 6		
--- 5'---	S-3 4-6'	25 – 12 – 8 – 3		S-2 Grey-Brown cm^{+}f **GRAVEL**, some^{-} mf Sand, little Clayey Silt. (fill)
	S-4 6-8'	12 – 3 – 5 – 3		S-3 Red-Brown & Grey-Brown mf^{+} **GRAVEL**, and^{-} Clayey Silt, little^{+} mf Sand. (fill)
	S-5 8-10'	1 – 2 – 1 – 1		S-4 Same as **S-3**.
---10'---	S-6 10-12'	1 – 1 – 1 – 5		S-5 Red-Brown **SILT & CLAY**, little^{+} mf^{+} Gravel, little f Sand.
				S-6 Red-Brown **Clayey SILT**, some^{-} mf Gravel, little^{+} f Sand.
---15'---	S-7 15-17'	8 – 6 – 11 – 10		S-7 Red-Brown mf^{+} **SAND**, and^{-} Silt, little f Gravel. *Possible Cobble 17'(Difficult Drilling)*
	S-8 17-19'	4 – 4 – 6 – 7		S-8 Red-Brown f **SAND**, and Silt.
---20'---	S-9 20-22'	9 – 31 – 14 – 16		S-9 Red-Brown **Clayey SILT**, and^{+} f Sand, trace^{+} cf^{+} Gravel.
---25'---	S-10 25-27'	7 – 9 – 13 – 13		S-10 Red-Brown f **SAND**, and^{-} Silt, little^{+} mf Gravel. (w/ few pieces of highly weathered Sandy Mudstone)
				END OF BORING @ 27'
---30'---				
---35'---				
---40'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: D. ROHMEYER, EIT

CONTRACTOR: EAST COAST DRILLING
DRILLER: S. FOSTER

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

APPENDIX B
Gradational Requirements

NEW JERSEY INTERAGENCY ENGINEERING COMMITTEE

Standard Soil Aggregate

Gradation Designation I-11

U.S. Standard Sieve Size	Percent Finer by Weight
4”	100
2”	80 - 100
¾”	60 - 100
No. 4	40 - 100
No. 50	0 - 75
No. 200	0 – 9

Allowable Gradational Envelope

Type “G” Fill

GRANULAR FILL

U.S. Standard Sieve Size	Percent Finer By Weight
2”	100
1”	80 – 100
3/8”	70 – 100
No. 10	50 – 100
No. 30	30 – 85
No. 60	15 – 65
No. 200	5 - 15

Allowable Gradational Envelope

AASHTO M43

Standard Sizes of Coarse Aggregate Size No. 57

U.S. Standard Sieve Size	Percent Finer by Weight
1 ½”	100
1”	95 - 100
½”	25 - 60
No. 4	0 - 10
No. 8	0 - 5

APPENDIX B

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SITE REMEDIATION PROGRAM
UST REGISTRATION & BILLING UNIT
P.O. BOX 420 Mail Code 401-05H
TRENTON, NEW JERSEY 08625-0420
Phone: (609) 292-2943

UNDERGROUND STORAGE TANK SYSTEMS
REGISTRATION CERTIFICATE

The Department of Environmental Protection hereby grants this registration to operate and maintain the Underground Storage Tank System(s) described below in accordance with the laws and regulations of the State of New Jersey. This registration is revocable with due cause and is subject to the limitations, terms and conditions pursuant to N.J.A.C. 7:14B.

Approval Date:
12/22/2015

Expiration Date:
12/14/2016

Facility ID:
004895

Registration Activity ID:
UST150002

Facility Contact (Operator):
CHRIS MEEHAN
(908)659-7470

Total Number of Tanks:
2

Total Capacity (Gallons):
30000

Facility Address:

UNION COUNTY RD DEPT COMPLEX
2371 South Ave

SCOTCH PLAINS TWP, NJ 07076

Owner:

ALFRED FAELLA
COUNTY OF UNION
10 ELIZABETH PL
ELIZABETH, NJ 07207

Approved Tanks and Products Stored:

TANK No.	TANK CAPACITY	TANK CONTENTS
12	15000	Medium Diesel Fuel (No. 2-D)
13	15000	Medium Diesel Fuel (No. 2-D) – OUT OF SERVICE 12/14/15

This Registration Must Be Available for Inspection at the Facility AT ALL TIMES

APPENDIX C

GASBOY

Atlas® Fuel Systems

Installation Manual

MDE-4331M

Computer Programs and Documentation

All Gasboy computer programs (including software on diskettes and within memory chips) and documentation are copyrighted by, and shall remain the property of, Gasboy. Such computer programs and documents may also contain trade secret information. The duplication, disclosure, modification, or unauthorized use of computer programs or documentation is strictly prohibited, unless otherwise licensed by Gasboy.

Federal Communications Commission (FCC) Warning

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Approvals

Gasboy, Greensboro, is an ISO 9001:2000 registered facility.

Underwriters Laboratories (UL):

UL File#	Products listed with UL
MH4314	All dispensers and self-contained pumping units
MH10581	Key control unit, Model GKE-B Series
	Card reader terminals, Models 1000, 1000P
	Site Controller, Model 2000S CFN Series
	Data entry terminals, Model TPK-900 Series
	Fuel Point Reader System

California Air Resources Board (CARB):

Executive Order #	Product
G-70-52-AM	Balance Vapor Recovery
G-70-150-AE	VaporVac

National Conference of Weights and Measures (NCWM) - Certificate of Compliance (CoC):

Gasboy pumps and dispensers are evaluated by NCWM under the National Type Evaluation Program (NTEP). NCWM has issued the following CoC:

CoC#	Product	Model #	CoC#	Product	Model #	CoC#	Product	Model #
95-179	Dispenser	9100 Retail Series, 8700 Series, 9700 Series	91-019	Dispenser	9100 Commercial Series	05-002	Atlas	8700K, 8800K, 9100K, 9200K, 9800K
95-136	Dispenser	9800 Series	91-057	Controller	1000 Series FMS, 2000S-CFN Series			

Trademarks

Non-registered trademarks

Consola™
Infinity™
TopKAT™

Registered trademarks

ASTRA®
Atlas®
Fuel Point®
Gasboy®
Keytrol®
Slimline®

Additional US and foreign trademarks pending.

Other brand or product names shown may be trademarks or registered trademarks of their respective holders.

This document is subject to change without notice.
E-mail: literature@gasboy.com · Internet: http://www.gasboy.com

PEI PETROLEUM EQUIPMENT INSTITUTE

Table of Contents

1 – Introduction

Purpose

This manual provides step-by-step instructions for installing Atlas® pumps and dispensers. This manual does not include site preparation instructions. For site preparation instructions, refer to *MDE-4333 Atlas Fuel Systems Site Preparation Manual*.

CAUTION

Certain special alternative fuels, such as E85 and additives, can degrade pump/dispenser performance or integrity if the dispensers are not designed for use with such fuels. Additionally, converting to certain standard fuels (gasoline, diesel, kerosene, and so on) from alternative fuels, such as those with ethanol (E85), methanol, or biodiesel, or from alternative fuels to standard fuels can degrade dispenser performance or integrity. Similar effects can also occur when converting units to different standard fuel types. As per Underwriters Laboratories (UL®) 87A requirements, nozzles dispensing E85 fuel and Diesel Exhaust Fluid (DEF) must not be used to dispense any other type of fuel such as gasoline.

Leaks and potential environmental hazards can result or components may fail prematurely.

To avoid these issues, follow the guidelines provided for dispensing E85 fuel and DEF in this manual.

Intended Users

This manual is intended for Authorized Service Contractors (ASCs) who will be involved in the installation of Atlas pumps and dispensers.

CAUTION

The unit is shipped with the hose elbow facing upward. Ensure to install the unit with the hose elbow facing downward.

General Description

Atlas Commercial Electronic Series

Gasboy® Atlas dispensing units are UL-listed and are available in a self-contained (suction pump) or remote-controlled (dispenser) package. Both packages offer a variety of models that are available as single-hose outlets or dual-hose outlets (with single or dual product capability). Following self-contained models are available:

- Standard Flow (SF) models up to 15 GPM, 56 LPM, 12 IPM
- High Flow (HF) models up to 22 GPM, 83 LPM, 18 IPM
- Single-hose Super-Hi™ Flow (SHF) models up to 40 GPM, 151 LPM, 33 IPM
- Single-hose Ultra-Hi™ Flow (UHF) models up to 50 GPM, 189 LPM, 42 IPM

The rate of delivery for remote-controlled packages varies based on the size of the submersible pump, as well as the choice of the hanging hardware, including the nozzle type. The delivery rate of both packages also varies depending on installation conditions and additional accessories.

The difference between commercial and retail pumps/dispensers can be visually identified. Commercial pumps/dispensers have only one visual port for gallons/liters on a side(s), while retail pumps/dispensers have visual ports for both gallons/liters and cost per gallon/liter.

The Atlas series pumps/dispensers offer the following features:

Models	Suction Pumps	Remote Dispensers	Features
SF Mechanical Commercial SF Electronic Commercial	9152K, 9152KTW1, 9152KTW2 9852K, 9852KTW1, 9852KTW2	9152KX, 9152KXTW1, 9152KXTW2 9852KX, 9852KXTW1, 9852KXTW2	• Inlet: 1-1/2-inch National Pipe Taper (NPT) female threads • Discharge: 1-inch NPT female threads (can be reduced to 3/4-inch with bushing) • Motor: (self-contained) 3/4 HP continuous duty
SF Mechanical Retail	8752K, 8752KTW1, 8752KTW2	8752KX, 8752KXTW1, 8752KXTW2	
SF Electronic Retail	8852K, 8852KTW1, 8852KTW2	8852KX, 8852KXTW1, 8852KXTW2	
HF Mechanical Commercial	9153K, 9153KTW2	9153KX, 9153KXTW2	• Inlet: 1-1/2-inch NPT female threads • Discharge: 1-inch NPT female threads • Motor: (self-contained) 3/4 HP continuous duty
HF Electronic Commercial	9853K, 9853KTW2	9853KX, 9853KXTW2	
HF Mechanical Retail	8753K, 8753KTW2	8753KX, 8753KXTW2	
HF Electronic Retail	8853K, 8853KTW2	8853KX, 8853KXTW2	
SHF Mechanical Commercial SHF Electronic Commercial	9140K 9840K	9140KX 9840KX	• Inlet: 2-inch NPT female threads • Discharge: 1-inch NPT female threads • Motor: (self-contained) (2) 3/4 HP continuous duty
UHF Electronic Commercial	9850K	9850KX, 9850KXTW2	• Inlet: 2-inch NPT female threads • Discharge: 1-inch NPT female threads • Motor: (self-contained) 1-1/2 HP continuous duty
SF Electronic Commercial E85 Unit		9872KX, 9872KXTW1	• Inlet: 1-1/2-inch NPT female threads • Discharge: 3/4-inch NPT female threads
DEF Electronic Commercial DEF Unit		9862KX	• Bottom Inlet: 1-inch British Standard Pipe Parallel (BSPP) female threads • Side Inlet: 1-inch BSPP male threads • Discharge: 1-inch BSPP male threads

Note: All Atlas 9800K commercial electronic series can have the D5 option with the TopKAT™ PLUS option factory mounted on top of the unit.

Atlas Commercial Mechanical Series

Atlas commercial mechanical series dispensing units are UL-listed and are available in a self-contained (suction pump) package or remote-controlled (dispenser) package. Both packages offer a variety of models that are available as single-hose outlets or dual-hose outlets (with single or dual product capability). Following self-contained models are available:

- Standard speed, up to 15 GPM/56 LPM
- High speed, up to 22 GPM/83 LPM
- As a single-hose model with high capacity speed up to 26 GPM/99 LPM.

Note: DEF unit is a standard speed unit.

The rate of delivery for remote-controlled packages varies based on the size of the submersible pump and plumbing to the dispenser. The delivery rate of both packages also varies depending on installation conditions and additional accessories.

All models of the Atlas commercial mechanical series offer mechanical non-computers, complete with electric resets. Mechanical pump registers display the total volume for a delivery. All non-computers read up to 999.9 gallons/liters.

Atlas Model Codes

Atlas Model Codes						
Digit	**1 and 2**	**3**	**4**	**5**	**6**	**Pumps 6-8 or Dispenser 7-9**
	Product Series	**Model Type**	**Flow Rates**	**Atlas**	**Pump/Dispenser**	**Hydraulic Configuration**
Product Series						
Retail Mechanical	87					
Retail Electronic	88					
Commercial Mechanical	91					
Commercial Electronic	98					
Model Type						
Super-Hi		4				
Standard, High-Flow, Ultra-Hi		5				
DEF Dispenser		6				
E85 Dispenser		7				
Flow Rates						
Super-Hi (40 GPM)/Ultra-Hi (50 GPM)			0			
Standard-Flow (10-15 GPM)			2			
High-Flow (18-22 GPM)			3			
Atlas Model Designation				K		
Pump/dispenser						
Self-contained Pump					Blank	
Dispenser					X	
Hydraulic Configuration						
1-Grade, 1-Hose						Blank
1-Grade, 2-Hose						TW1
2-Grade, 2-Hose						TW2
Combo (Ultra-Hi only)						TW3

Shipping Weight

The Atlas shipping weights listed below are approximate values, as shipping weights vary for different models:

- Standard, Hi, and Super-Hi Dispenser: 315 lbs
- Standard, Hi, and Super-Hi Pump: 325 lbs
- Ultra-Hi Combo Pump with Satellite Piping: 503 lbs
- Ultra-Hi Dual Dispenser with Satellite Piping: 414 lbs
- TopKAT PLUS with Receipt printer: 41 lbs
- Atlas DEF 9872KXTW1 Dispenser: 361 lbs
- Atlas DEF 9872KXWWTWI Dispenser: 355 lbs

Operating Environment

Environment	Range
Relative Humidity	20 to 95% non-condensing
Minimum Ambient Temperature	-22 °F (-30 °C)
Maximum Ambient Temperature	131 °F (55 °C)

Operating Environment - Special Considerations for DEF Dispensers

CAUTION

DEF freezes at approximately 11 °F (-11.5 °C). Power to the dispenser and heater must always remain ON in cold weather. If power is lost and the temperature drops below this point within the DEF cabinet, the system must be inspected for freeze damage before restart.

Operating Environment for DEF Unit

Unit	Range
Cold Weather Unit	-22 °F (-30 °C) to 131 °F (55 °C)
Warm Weather Unit	15 °F (-9.4 °C) to 131 °F (55 °C)

Load Table Reference Locations

Model	Unit	Field Wiring Diagram
Atlas	Dispenser	FE-356 Field Wiring Diagram Atlas Retail, Commercial, E85, and DEF Dispensers with Electronic and Mechanical Displays
Atlas	Pump	FE-357 Field Wiring Diagram Atlas Retail/Commercial Pumps Electronic and Mechanical Units

Related Documents

Document Number	Title	GOLD℠ Library
C36600	Gasboy Series 9800Q Pumps and Dispensers Diagnostic Manual	Gasboy Q, A&E Series Pumps/Dispensers
FE-356	Field Wiring Diagram Atlas Retail, Commercial, E85, and DEF Dispensers with Electronic and Mechanical Displays	Gasboy Parts List & Wiring Diagrams
FE-357	Field Wiring Diagram Atlas Retail/Commercial Pumps Electronic and Mechanical Units	Gasboy Parts List & Wiring Diagrams
MDE-4255	Gasboy Warranty Policy Statement for USA and Canada	• Domestic Warranty and Owners Manuals • Gasboy Safety & Warranty Docs • Gasboy Policy Documents
MDE-4333	Atlas Fuel Systems Site Preparation Manual	Gasboy Atlas Pumps/Dispensers
MDE-4334	Commercial and Retail Series Atlas Start-up/Service Manual	Gasboy Atlas Pumps/Dispensers
MDE-4363	Atlas Fuel Systems Owner's Manual	Gasboy Atlas Pumps/Dispensers
MDE-5013	TopKAT PLUS Installation Manual	Gasboy Series 1000/ Fleetkey & Topkat
PT-1949	Commercial and Retail Series Atlas Pump and Dispenser Illustrated Parts Manual	Gasboy Atlas Pumps/Dispensers
PT-1950	Atlas Recommended Spare Parts List	Gasboy Atlas Pumps/Dispensers
PT-1960	Gasboy Fleet Plus Recommended Spare Parts	Gasboy Fleet PLUS System
PT-1963	Gasboy Illustrated Spare Parts Manual	Gasboy Fleet PLUS System

Abbreviations and Acronyms

Term	Description
ASC	Authorized Service Contractor
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
BSPP	British Standard Pipe Parallel
CFN	Cash Flow Network
CPU	Central Processing Unit
D-Box	Distribution Box
DEF	Diesel Exhaust Fluid
DIP	Dual In-line Package
E-CAL	Electronic Calibration
FMS	Fuel Management System
GFI	Ground Fault Interrupter
GOLD	Gilbarco® Online Documentation
GPM	Gallons per Minute
HDPE	High Density Polyethylene
HF	High Flow
J-box	Junction Box
LAN	Local Area Network
LPM	Liters per Minute

Term	Description
LSD	Least Significant Digit
MSD	Most Significant Digit
NCWM	National Conference on Weights and Measures
NEC®	National Electrical Code
NFPA	National Fire Protection Association
NPT	National Pipe Taper
NTEP	National Type Evaluation Program
PCB	Printed Circuit Board
SF	Standard Flow
SHF	Super-Hi Flow
STP	Submersible Turbine Pump
TFR-ISO	Top Front Right Isometric
UHF	Ultra-Hi Flow
UL	Underwriters Laboratories
UST	Underground Storage Tank
W&M	Weights and Measures
WAN	Wide Area Network

Common Terms Used

Term	Description
Combo	This unit is configured as master on one side and satellite on the other.
Dispenser	A dispensing device that receives fuel under pressure from the Underground Storage Tank [UST (if underground)] through a Submersible Turbine Pump (STP) or from an Aboveground Storage Tank (AST) using an aboveground pump located at the tank.
Grade	Fuel that is dispensed and has an assigned price.
Listed	Products bearing the authorized listing mark of UL as the manufacturer's declaration, which implies that the product complies with UL's requirements and is in accordance with terms of the UL's Listing and Follow-Up Service agreement.
Master	This unit dispenses fuel to one saddle tank and to a second saddle tank through a satellite unit.
Pump	A dispensing device that utilizes a self-contained pumping unit and motor to move fuel from a storage tank using suction.
Product	Fuel in the storage tank.
Satellite	A dispensing unit that receives the product from a master unit and registers at the master unit, allowing both saddle tanks on a vehicle to be filled at the same time.
Urea	Urea is a non-flammable liquid chemical from a separate tank that chemically interacts with exhaust to reduce emissions to nitrogen and water. Urea is used in DEF.

Warranty

For information on warranty, refer to *MDE-4255 Gasboy Warranty Policy Statement for USA and Canada*. If you have any warranty related questions, contact Gasboy's Warranty Department at its Greensboro, N.C. location.

2 – Important Safety Information

Notes: 1) Save this Important Safety Information section in a readily accessible location.

2) Although DEF is non-flammable, diesel is flammable. Therefore, for DEF cabinets that are attached to diesel dispensers, follow all the notes in this section that pertain to flammable fuels.

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

Preliminary Precautions
You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.

Emergency Total Electrical Shut-Off
The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

⚠ WARNING

The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.

You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

Total Electrical Shut-Off Before Access
Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gasboy equipment.

Evacuating, Barricading and Shutting Off
Any procedure that requires access to the pump/dispenser or STPs requires the following actions:

- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones or barricades at the affected unit(s)
- A total electrical shut-off of the affected unit(s)

Read the Manual
Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call a Gasboy Authorized Service Contractor or call the Gasboy Support Center at 1-800-444-5529. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations
Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code (NEC)*, Occupational Safety and Health Administration (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain or service this equipment in accordance with these codes, regulations and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Replacement Parts
Use only genuine Gasboy replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gasboy replacement parts could create a safety hazard and violate local regulations.

Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

Alert Symbol

This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

Signal Words
These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury or damage to the equipment:

DANGER: Alerts you to a hazard or unsafe practice which will result in death or serious injury.

WARNING: Alerts you to a hazard or unsafe practice that could result in death or serious injury.

CAUTION with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

CAUTION without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage.

Working With Fuels and Electrical Energy

Prevent Explosions and Fires
Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

DEF is non-flammable. Therefore, explosion and fire safety warnings do not apply to DEF fluid lines.

No Open Fire

Open flames from matches, lighters, welding torches or other sources can ignite fuels and their vapors.

No Sparks - No Smoking

Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual and OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

⚠ WARNING

The pump/dispenser contains a chemical known to the State of California to cause cancer.

⚠ WARNING

The pump/dispenser contains a chemical known to the State of California to cause birth defects or other reproductive harm.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

⚠ WARNING

Gasoline/DEF ingested may cause unconsciousness and burns to internal organs.
Do not induce vomiting. Keep airway open.
Oxygen may be needed at scene. Seek medical advice immediately.

⚠ WARNING

DEF generates ammonia gas at higher temperatures.
When opening enclosed panels, allow the unit to air out to avoid breathing vapors.
If respiratory difficulties develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention.

⚠ WARNING

Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs.
Keep airway open.
Seek medical advice immediately.

⚠ WARNING

Gasoline/DEF spilled in eyes may cause burns to eye tissue.
Irrigate eyes with water for approximately 15 minutes.
Seek medical advice immediately.

⚠ WARNING

Gasoline/DEF spilled on skin may cause burns.
Wash area thoroughly with clear water.
Seek medical advice immediately.

⚠ WARNING

DEF is mildly corrosive. Avoid contact with eyes, skin, and clothing. Ensure that eyewash stations and safety showers are close to the work location. Seek medical advice/recommended treatment if DEF spills into eyes.

IMPORTANT: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

Lockout/Tagout

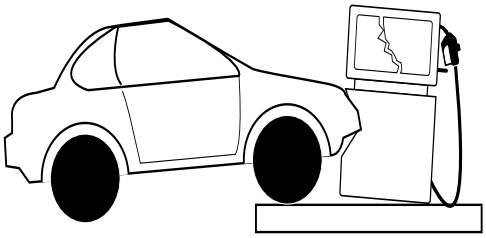
Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical, or other energy, but does not cover electrical hazards. Subpart S of 29 CFR Part 1910 - Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/Tagout provision for electrical hazards.

Hazards and Actions

WARNING

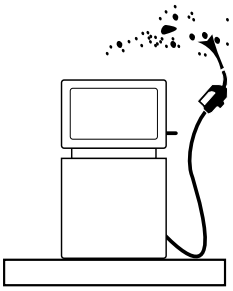
Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow create a serious hazard.
Fire or explosion may result, causing serious injury or death.
Follow established emergency procedures.
DEF is non-flammable. However it can create a slip hazard. Clean up spills promptly.

The following actions are recommended regarding these hazards:



Collision of a Vehicle with Unit

Fire at Island



Fuel Spill

- Do not go near a fuel spill or allow anyone else in the area.
- Use station EMERGENCY CUTOFF immediately. Turn off all system circuit breakers to the island(s).
- Do not use console E-STOP, ALL STOP, and PUMP STOP to shut off power. These keys do not remove AC power and do not always stop product flow.
- Take precautions to avoid igniting fuel. Do not allow starting of vehicles in the area. Do not allow open flames, smoking or power tools in the area.
- Do not expose yourself to hazardous conditions such as fire, spilled fuel or exposed wiring.
- Call emergency numbers.

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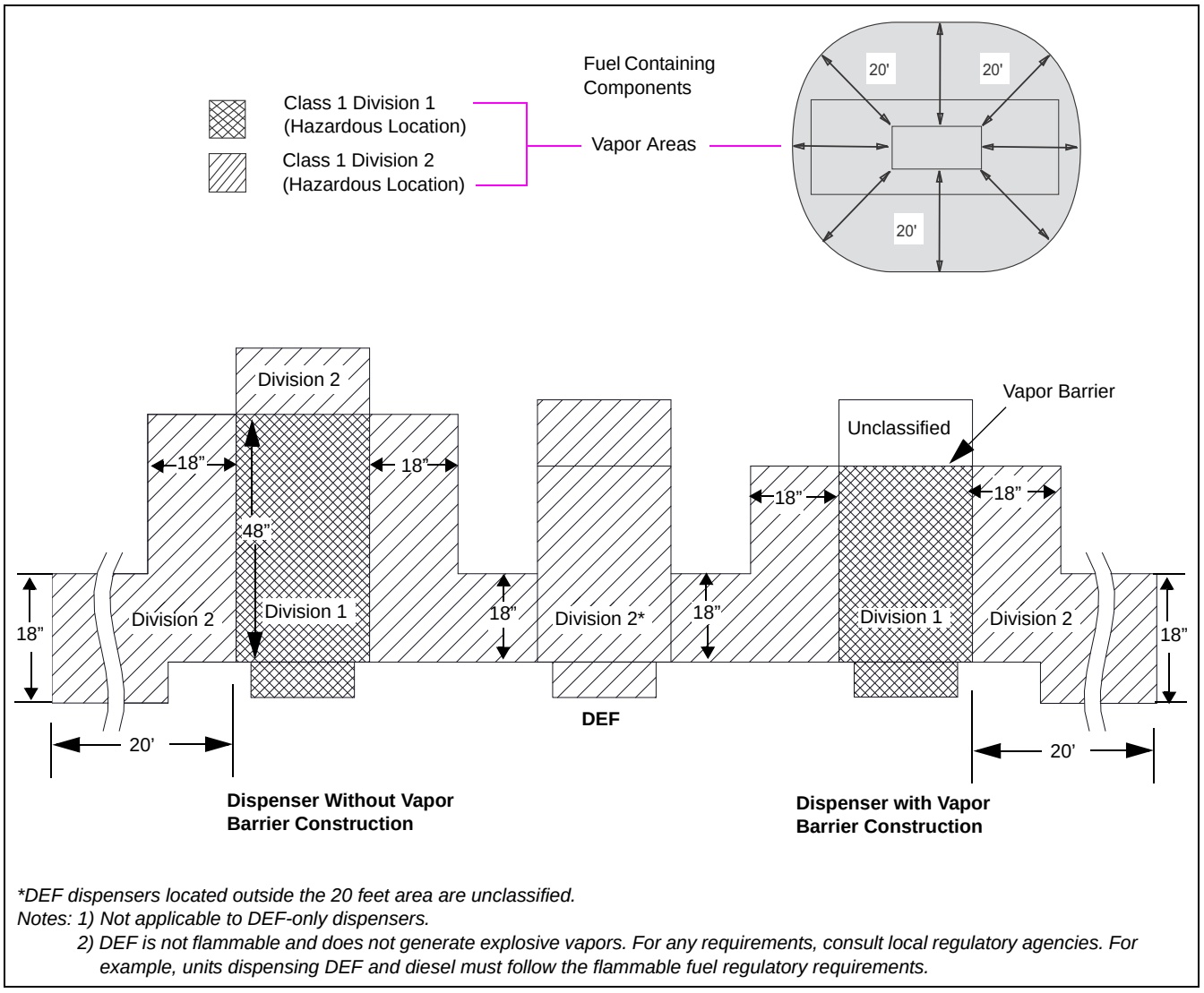
3 – Hazardous Locations

Classifying Hazardous Locations

Any activity (such as smoking or drilling) that can cause an explosion must be done well outside the vapor area.

Figure 3-1 is based on National Fire Protection Association (NFPA) 30A and NFPA 70®.

Figure 3-1: Hazardous Locations Diagram



**DEF dispensers located outside the 20 feet area are unclassified.*
Notes: 1) Not applicable to DEF-only dispensers.
2) DEF is not flammable and does not generate explosive vapors. For any requirements, consult local regulatory agencies. For example, units dispensing DEF and diesel must follow the flammable fuel regulatory requirements.

Important Considerations for DEF Dispensers

CAUTION

Applicable during installation and operation of the dispenser: DEF freezes at approximately 11 °F (-11.5 °C). Power to the dispenser and heater must always remain ON in cold weather. If power is lost and the temperature drops below this point, the system must be inspected for freeze damage before restart. For sites that experience occasional power losses or for sites that are located in very cold climates, it is recommended that a backup power generator be used to maintain constant power to the dispenser. Do not use any additives to lower the freezing point of DEF. Additives of any type must not be used in DEF.

Prolonged storage at temperatures above 77 °F (25 °C) can impair the quality of DEF and reduce its shelf life.

CAUTION

DEF is mildly corrosive. It can corrode components that are made from incompatible material(s) and reduce their integrity. The use of incompatible material(s) may lead to leaks and spills, and can contaminate and degrade the DEF. When dispensing DEF, verify with the manufacturer if the material of all plumbing components are compatible with the DEF being dispensed.

CAUTION

Do not use prover cans meant for engine fuel with DEF or vice versa. Use stainless steel prover cans for DEF. DEF and engine fuel must not be mixed with each other or be contaminated by each other. Otherwise, damage to a vehicle's engine or pollution control devices can occur. DEF crystallizes as its water base evaporates. Pouring out liquid will not guarantee that no corrosive DEF remains in the prover can. DEF must not be contaminated with diesel fuel, contaminants, or other fluids or materials. Such contamination can cause serious damage to vehicle catalytic converters.

- Conventional fluid handling precautions are also applicable to DEF.
- Avoid contact with eyes, skin, and clothing. Ensure that eyewash stations and safety showers are close to the work location.
- DEF is mildly corrosive and non-flammable.
- Clean the DEF spill with water and dry the area with clean rags, especially areas that contain metallic parts. Spilt DEF can be slippery and will corrode certain types of metallic parts. Wear eye protection and rubber gloves during any cleanup activity.
- DEF is heavier than gasoline. Be aware that prover cans, containers filled with DEF, and so on, will be considerably heavier than gasoline.

4 – Control Lines for Atlas Electronic Series

Purpose

This section is provided to familiarize the installer with control inputs and outputs that are available for the Atlas electronic series dispensing unit. It is recommended that installers read these descriptions to obtain a better working knowledge of the unit to guide them in planning the site wiring. For specific wiring diagrams and installation notes, refer to "Installation" on page 6-1.

Atlas electronic series units may be provided for use with 230 VAC power for international applications. The operating voltage for control lines to these units is shown in parentheses as (230 VAC International).

If you are connecting the Atlas electronic series unit to a Gasboy Fuel Management System (FMS), refer to the following documents:

Document Number	Title	GOLD Library
MDE-4298	CFN Series Site Controller III Installation Manual	Gasboy CFN Series
MDE-4319	TopKAT Fuel Management System Installation Manual	Gasboy Series 1000/Fleetkey & TopKAT
MDE-4811	Islander PLUS and ICR PLUS Installation Manual	Gasboy Fleet PLUS System
MDE-4813	CFN Plus Installation Manual	Gasboy Fleet PLUS System
MDE-5013	TopKAT PLUS Installation Manual	N/A

Grounding

To ensure proper operation of the equipment and required safety factors, a good ground line must be provided. A ground wire (preferably green) must be connected between the ground wire of the system and the main electrical service panel. One earth ground connection is required per unit. The ground rod must be a solid, corrosion-resistant conductor and must be installed at the main electrical panel as per the National Electrical Code (NEC). It must be properly tied into the ground bus strip of the panel. It is recommended that neutral and ground bus strips be bonded together (unless prohibited by local codes).

Ground Fault Interrupter (GFI) breakers are required for DEF only units installed on and with a skid tank platform because of no underground piping, AC power in potentially wet area, and a potential for earth ground to become broken if skid tank moves.

A GFI works by having a sensor that detects changes in current to the load, by comparing the current owing to and from the load. A drop off in the current equivalent to about 5 mA, turns off all power by tripping a relay within the GFI within a few hundredths of a second.

When powering a dispenser with a GFI, any device that the dispenser supplies power must have its return to the same neutral as the dispenser. For example, the STP control relay.

Micro Feed

The micro feed is a 115 VAC (230 VAC international) input required to power the microprocessor of the register's electronics. This power must always remain on and must be on a separate breaker from control lines (control/pump motor feed or control/submersible feed - side 1, side 2). It must also be on a separate breaker from fluorescent lights to reduce electrical noise and allow separate control of lights. In a site configuration using multiple dispensing units, the power for microprocessors of up to eight units can be supplied by one breaker (except cold weather DEF units). This line also supplies power to the optional TopKAT PLUS. If this unit is equipped with a TopKAT PLUS option, for wiring requirements and information, refer to *MDE-5013 TopKAT PLUS Installation Manual*.

The cold weather DEF unit's internal heater can share the micro feed AC line and neutral circuit. These units must not share breakers with other dispenser.

Micro Neutral

The micro neutral is a return line for AC from the microprocessor of the dispensing unit to the breaker panel. This line also serves as the return for the optional TopKAT PLUS.

Auth/Pump Motor Feed (Self-contained Pumping Units)

The auth/pump motor feed is a 115 VAC (230 VAC international) input that is required to power and authorize the auth control line. This line is used to provide authorization for the self-contained pumping unit (when enabled, refer to *MDE-4334 Atlas Start-up/Service Manual*). If this line is controlled by an FMS using solid state relays, a resistor assembly must be installed between the auth feed line and feed neutral to prevent false triggering of the authorization input. The resistor assembly is 8.2 K Ohm, 10 W (part number C05818) for 115/230 VAC domestic; and 30 K Ohm, 10 W (part number C06683) for 230 VAC international wiring. Two auth/pump motor feed lines are provided for twins.
Note: The auth/pump motor feed is not required for the TopKAT PLUS system.

The auth/pump motor feed line is used to power slow flow and fast flow valves (when installed). The power used to control the pump is also provided by this line. It is possible to combine control lines for twins and supply them from one breaker. However, the gauge of the wire must be adjusted to handle the load of two motors. The reset complete signal used for external monitoring of the pump also originates from the auth/pump motor feed line.

External Valve

The external valve line is used to directly power an anti-siphon valve mounted on top of an AST. The valve must operate at the same voltage as the pump motor and the current draw must not exceed 1 A, or the valve must be switched through an external relay controlled by the external valve line. Do not connect two or more external valve lines together. If more than one pump is drawing from the tank, separate anti-siphon valves must be installed, or each external valve line must operate an external relay, which then operates the valve.

Neutral Feed

The neutral feed is the AC current return line back to the breaker panel for all attached devices (pump motor, reset motor, and solenoid valves).

Auth Input Dispensers

The auth input is a 115 VAC (230 VAC international) input that is required to power and authorize the auth control line. This line is used to provide authorization for the dispensing unit (when enabled, refer to *MDE-4334 Atlas Start-up/Service Manual*). If this line is controlled by an FMS using solid state relays, a resistor assembly must be installed between the auth feed line and feed neutral to prevent false triggering of the authorization input. The resistor assembly is 8.2 K Ohm, 10 W (part number C05818) for 115/230 VAC domestic and 30 K Ohm, 10 W (part number C06683) for 230 VAC international wiring. Cash Flow Network (CFN) systems require the resistor assembly only when they are used with the Atlas commercial electronic pump/dispenser operating in standalone mode. Operating the Atlas commercial electronic unit in standalone mode with a CFN system requires an optional mechanical pump control unit. This line also supplies power, which is switched to slow flow and fast flow valves along with the switch detect signal. Two lines are provided for twins.

If the Atlas commercial electronic unit is to be controlled through the authorization of this line, special care must be taken in the wiring of submersible control lines when a common submersible is used for more than 1-hose outlet. For more information, refer to “Submersible Starter Drive (Subm Starter Drive)” and “Submersible Pump Drive (Subm Pump Drive)” on page 4-4.

Units with Standard Submersible Starter Drive (Subm Starter Drive)

Power for the submersible start drive line originates from the AUTH input. The submersible starter relay line in standard remote dispensers is not capable of directly powering a submersible pump. A starter relay must be used. Control lines for twin remote dispensers can be combined together and powered by one breaker if individual control of each side is not required. In site configuration using multiple remote dispensers, power for control lines of up to 8-hose outlets (eight singles or eight twins) can be supplied from one breaker.

Units with Submersible Pump Drive Relay Option

Power for the submersible pump drive line originates from the motor feed input. Units equipped with optional relays for direct submersible pump drive can be connected directly to submersible pumps up to 3/4 HP at 115 VAC, or 1-1/2 HP at 230 VAC. The gauge of this wire must be determined according to the size of the motor, the voltage at which the motor will be powered, and the distance from the breaker panel to the pump.

Submersible Starter Drive (Subm Starter Drive)

The submersible starter drive is a 115 VAC (230 VAC International) output used to control a submersible starter relay. Two lines are provided for twins. This line is capable of supplying 300 mA of AC current to control the coil of the submersible motor contactor (starter relay). This is sufficient for directly connecting to popular models, but if in doubt, check the contactor (relay) manufacturer's data sheet for the sealed VA rating. Divide the sealed VA by the coil voltage to determine the current. This line must not be connected directly to the submersible pump, shorted to any conduit or chassis metal, or incorrectly wired; otherwise, the Central Processing Unit (CPU) Printed Circuit Board (PCB) will be instantly damaged. This line must be left capped when not in use. To avoid accidental damage, follow checks before applying power.

Note: When multiple dispensers are used to control a common submersible starter relay or pump, and the Atlas commercial electronic unit is controlled (authorized) through the auth/pump motor feed line (as in the case of some FMSs), it is important that lines from the Atlas commercial electronic unit to the submersible equipment be isolated from each other. This can be accomplished by running submersible control lines through a secondary set of relay contacts in the FMS. If a secondary set of contacts is not available, external control relays must be used between the Atlas commercial electronic unit and the submersible starter relay or pump. Another option is to provide a separate submersible starter relay for each hose outlet. In no case must the submersible drive lines from the Atlas commercial electronic unit be tied together.

Submersible Pump Drive (Subm Pump Drive)

The submersible pump drive is not available on all Atlas models for remote dispensers, and is active only when submersible drive relays are supplied. The submersible drive is a 115/230 VAC (230 VAC international) output used to control the submersible starter relay or submersible pump. When connected directly to the submersible pump, the motor size cannot exceed 3/4 HP at 115 VAC, or 1-1/2 HP at 230 VAC. Two lines are provided for twins. In cases where both lines control the same starter relay or pump, they can be combined. This line is also used to control an external valve used on AST installations.

Note: For situations where more than one-hose outlet uses the same submersible pump, refer to the note in "Submersible Starter Drive (Subm Starter Drive)".

Reset Complete (Switch Detect)/Slow Flow

The reset complete/slow flow is a 115 VAC (230 VAC international) output used to indicate that the reset process is complete and the unit is ready to dispense the product. It may be required when used with an FMS. It may also be used to control a remote (satellite) slow flow valve. Two lines are provided for twins.

In addition to the internal load of the slow flow valve, this line is capable of supplying a maximum of 170 mA AC to the satellite valve and FMS. When you are connecting it to a non-Gasboy satellite or FMS, ensure that this limit is not exceeded. This line must not be shorted to any conduit or chassis metal, incorrectly wired, used to control both stages of a satellite valve, or be connected to equipment requiring more than 170 mA AC from this line to operate; otherwise, the CPU PCB will be instantly damaged. This line must be left capped when not in use. To avoid accidental damage, follow checks before applying power.

Fast Flow Valve

The fast flow valve is a 115 VAC (230 VAC International) line that can be used to control a remote (satellite) fast flow valve. Two lines are provided for twins. In addition to the internal load of the fast flow valve, this line is capable of supplying 170 mA AC to the satellite valve. When connected to a non-Gasboy satellite, ensure that this limit is not exceeded. This line must not be shorted to any conduit or chassis metal, incorrectly wired, used to control both stages of a satellite valve, or be connected to equipment requiring more than 170 mA from this line to operate; otherwise, the CPU PCB will be instantly damaged. This line must be left capped when not in use. To avoid accidental damage, follow checks before applying power.

Phase 2 Feed

The phase 2 feed is a hot feed, which is the opposite phase of pump motor feed. This line and pump motor feed are used for 230 VAC domestic motor applications. If connected to equipment requiring control of the authorization input, phase 2 feed must be switched through a separate relay to prevent false triggering of the authorization signal.

Slow/Fast Satellite Return

The slow/fast satellite return lines are used only in units that come equipped with satellite piping. They are used in applications where the remote dispenser and satellite may not dispense the product at the same time. These lines are not connected internally as they leave the factory. Four lines are provided for twins. These lines must not be shorted to any conduit or chassis metal, or be connected to equipment requiring more than 170 mA from each line to operate; otherwise, the CPU PCB will be damaged instantly. These lines must be left capped when not in use. To avoid accidental damage, follow checks before applying power.

Light Feed

The light feed is a 115 VAC input required to power fluorescent lights. In a site configuration using multiple remote dispensers (or pumps), the power for lights of up to eight units can be supplied by one breaker. It is recommended that this be on a separate breaker from the micro/heater feed to reduce electrical noise and allow separate control of lights.

Light Neutral

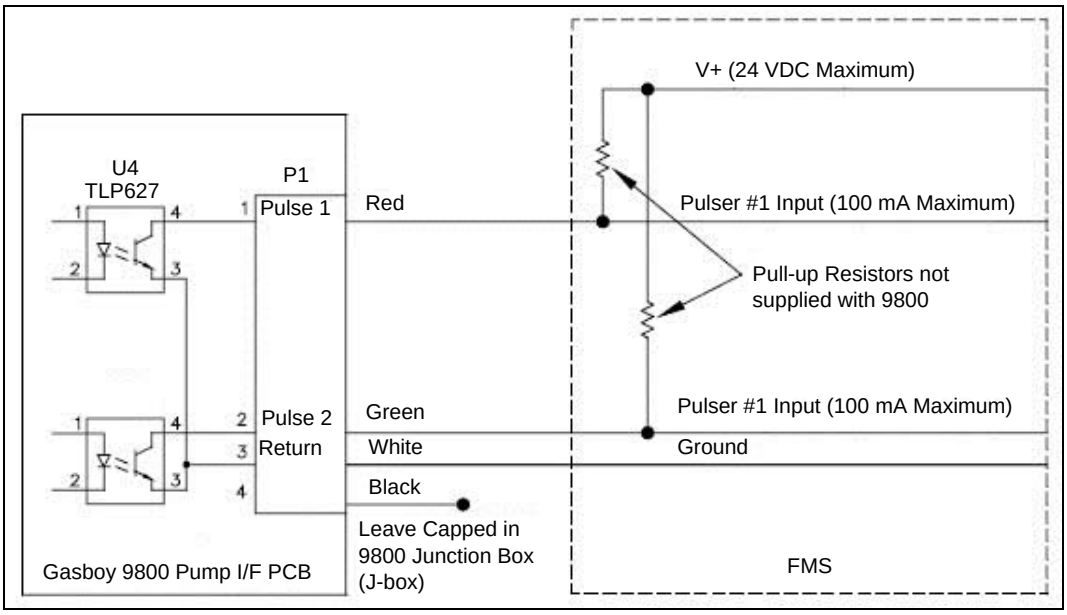
The light neutral is a return line for AC current from lights to the breaker panel. When a separate breaker is not used to control lights, the light neutral is attached to the micro neutral.

Pulser

When the dispensing unit includes the optional pulser interface, a pulser output is provided. This pulser output provides a DC output that indicates the quantity of product dispensed. The pulse rate can be configured by a sealable Dual In-line Package (DIP) switch for rates of 1, 10, 100, 250, or 500 pulses per gallon, or 1, 10, 100, or 250 pulses per liter. For the Atlas commercial electronic pump, pulse rates are 1, 10, 100, 250, or 500 pulses per gallon, or 1, 10, or 100 pulses per liter.

The output is an open collector transistor capable of sinking up to 100 mA DC at voltages up to 24 VDC. The DC ground for the circuit comes from the FMS. Since the transistor switches between ground and high impedence, the installer must provide a voltage reference when the transistor is in the high impedence state. This reference voltage is provided by a pull-up resistor installed at the FMS between the pulser input and reference voltage. The value of this resistor is calculated based on the voltage and current requirements of the FMS pulser circuit.

Figure 4-1: Pulsers



In the main J-box, the optional pulser interface is supplied with eight wires. On Ultra-Hi units, a separate DC J-box with six wires is supplied. The unused wires in the J-box must be individually capped.

RS-485

When the dispensing unit includes the optional RS-485 interface, RS-485 lines are provided. This interface allows you to connect a Gasboy CFN series system directly to the Atlas commercial electronic series dispensing unit. These lines must be capped individually when not in use. The RS-485 interface is included with the TopKAT PLUS option.

Local Area Network (LAN)/Wide Area Network (WAN)

When the dispensing unit includes the optional TopKAT PLUS, lines for communication to the TopKAT PLUS are provided. These lines allow you to communicate directly to the TopKAT PLUS through a LAN/WAN connection. For more information on LAN/WAN wiring, refer to *MDE-5013 TopKAT PLUS Installation Manual*.

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5 – Control Lines for Atlas Mechanical Series

Purpose

This section is provided to familiarize the installer with control inputs and outputs that are available for the Atlas mechanical series dispensing unit. It is recommended that installers read these descriptions to obtain a better working knowledge of the unit to guide them in planning the site wiring. For specific wiring diagrams and installation notes, refer to "Installation" on page 6-1.

The Atlas mechanical series may be provided for use with 230 VAC power for international applications. The operating voltage for control lines to these units is shown in parentheses as (230 VAC international).

If you are connecting the Atlas mechanical unit to a Gasboy FMS, refer to the following documents:

Document Number	Title	GOLD Library
MDE-4298	CFN Series Site Controller III Installation Manual	Gasboy CFN Series
MDE-4319	TopKAT Fuel Management System Installation Manual	Gasboy Series 1000/Fleetkey & TopKAT
MDE-4811	Islander PLUS and ICR PLUS Installation Manual	Gasboy Fleet PLUS System
MDE-4813	CFN Plus Installation Manual	Gasboy Fleet PLUS System
MDE-5013	TopKAT PLUS installation Manual	Gasboy Series 1000/Fleetkey & TopKAT

Grounding

To ensure proper operation of the equipment and required safety factors, a good ground line must be provided. A ground wire (preferably green) must be connected between the unit's AC J-box ground lug and main electrical service panel. One earth ground connection is required per unit. The ground rod must be a solid, corrosion-resistant conductor that must be installed at the main electrical panel as per the NEC. It must be properly tied into the ground bus strip of the panel. It is recommended that the neutral and ground bus strips be bonded together (unless prohibited by local codes).

GFI breakers are required for DEF only units installed on and with a skid tank platform because of no underground piping, AC power in potentially wet area, and a potential for earth ground to become broken if skid tank moves.

A GFI works by having a sensor that detects changes in current to the load, by comparing the current owing to and from the load. A drop off in the current equivalent to about 5 mA, turns off all power by tripping a relay within the GFI within a few hundredths of a second.

When powering a dispenser with a GFI, any device that the dispenser supplies power must have its return to the same neutral as the dispenser (for example, the STP control relay).

Reset Motor Feed

The reset motor feed is a 115 VAC (230 VAC international) input supplied through the pump handle switch to activate the reset motor. Without power being supplied to this line, the unit will not reset when the pump handle is turned on. Two feed lines are provided for twins. This feed is also connected to the input of one of the internal switches of the electric reset. When the reset finishes its cycle, the 115 VAC (230 VAC international) input to the switch will be passed through as an output, causing the solenoid valve (optional in some models) to open and the reset complete line to indicate 115 VAC (230 VAC international).

Pump Motor Feed

The pump motor feed is a 115 VAC (230 VAC international) input supplied to the input side of one of the internal switches of the electric reset. When the reset finishes its cycle, the 115 VAC (230 VAC international) input to the switch is passed through as an output, causing the pump motor to receive power and begin operation. Without power to this line, the unit will reset and will be unable to fuel. Two feed lines are provided in twins that contain two motors. The gauge of this wire (and its neutral wire) must be determined according to the size of the motor, the voltage at which the motor will be powered (115 VAC or 230 VAC), and the distance from the breaker panel to the pump. It is possible to combine pump motor feeds for twins and supply them from one breaker. However, the gauge of the wire must be adjusted to handle the load of two motors.

Return (Neutral)

The return is the AC current return line back to the breaker panel for all attached devices (pump motor, reset motor, and solenoid valves). The gauge of this wire must be equal to that of the pump motor feed (suction pumps) or submersible feed (remote dispensers). This wire is commonly referred to as the neutral wire.

Submersible Feed, Submersible Drive

The submersible feed is a 115 VAC (230 VAC international) input supplied to the input side of one of the internal switches of the electric reset. When the reset finishes its cycle, the 115 VAC (230 VAC international) input to the switch is passed through as an output (submersible drive) to drive a starter relay or to directly drive a submersible motor up to one HP at 115 VAC/230 VAC. Any submersible motor exceeding this limitation must use a starter relay.

Reset Complete (Switch Detect)/Slow Flow

The reset complete is a 115 VAC (230 VAC international) output used to indicate that the reset is complete and the dispensing unit is ready to dispense the product. Two lines are provided for twins. Use this line only when monitoring a dispensing unit that is connected to a FMS. This line must be capped when not in use, and is connected to the slow-flow stage of the solenoid in the pump.

Fast Flow

The fast flow is a 115 VAC (230 VAC international) input that controls the fast flow valve of the pump/remote dispenser (when a slow/fast flow valve is available). If slow/fast-flow control is not required, this line must be tied to reset the complete/slow-flow line. The line must be switched through the FMS and be turned on only when the pump/remote dispenser is authorized and in the fast-flow mode. This line will be switched on when the pump/remote dispenser is in the manual mode.

Light Feed

The light feed is a 115 VAC (230 VAC international) input required to power fluorescent lights. In a site configuration using multiple remote dispensers (or pumps), power for lights for up to eight units can be supplied by one breaker. If separate control of lights is not required, the light feed for each dispensing unit may be taken from its reset motor feed, provided the unit is not connected to a FMS.

Light Neutral

The light neutral is a return line for AC from lights to the breaker panel. When a separate breaker is not used to control lights, the light neutral is attached to the neutral, which is connected to the reset motor.

Phase 2 Feed

The phase 2 feed is a hot feed, which is the opposite phase of pump motor feed. This line and pump motor feed are used for domestic 230 VAC motor applications.

Pulser

The pulser supplies a DC output that indicates the quantity of product dispensed. Pulsers are optional and are used only when monitoring the dispensing unit that is connected to a FMS. The pulser wiring must run in a separate conduit away from AC power control lines.

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6 – Installation

Purpose

This section provides information specific to the installation of Atlas pumps/dispensers.

Required Equipment and Materials

DEF is not flammable or explosive. Therefore, installation requirements for DEF units differ from units that handle hazardous fuels. However, electrical safety requirements are applicable. When installing a DEF unit in a hazard zone defined by the location of another pump/dispenser handling hazardous fuels, the area of the DEF dispenser within the hazard zone must conform to requirements for units handling hazardous fuels.

Following items are required for the installation of the equipment:

- Anchor bolts
- UL-approved sealant (for use with fuels being encountered)
- Pit box cover plates (for use when it is required to adapt the unit to pre-existing pit boxes)
- Lifting device (forklift) to move and lift pumps/dispensers
- Breakaways, hoses, nozzles, and swivels
- Approved wire nuts
- Barricades
- Potting compound and fiber dam material (to allow potting of conduit as per class I, division II locations, as specified in the NEC)

Important Requirements for E85 Units

Following equipment and materials are required to properly install E85 units:

UL-listed E85 Hose (Q13486)

- Veyance℠ Flexsteel™ Futura® Ethan-All for E85
- Veyance Flexsteel Futura for E25

Note: Extended reach hoses are not available for the E85 applications.

UL-listed E85 Nozzle (M11298)

OPW® 21GE

Note: Approved for use with the E85 dispensers, as required under UL 87A.

UL-listed E85 Swivel (N23748-04)

OPW 241 TPS-0492

Note: Approved for use with E85 dispensers, as required under UL 87A.

UL-listed E85 Shear Valve (T19695-23)
OPW 10P-0152E85
Note: Approved for use with E85 dispensers, as required under UL 87A.

UL-listed E85 Breakaway (N23010-10)
OPW 66V-0492
Note: Approved for use with E85 dispensers, as required under UL 87A.

Filter
Use only filters specifically marked for use with E85.

UL-listed Pipe Sealant
Use only UL-listed TPS PTFE pipe sealant manufactured by SAF-T-LOC International Corp.

UL-listed Teflon® Tape
Use only UL-listed Taega Technologies Inc. Teflon tape.
*Note: Teflon tape must be used **only** at the inlet pipe connection.*

IMPORTANT INFORMATION

For E85 front load units, side B is the side with the J-box. For more information on nozzle boot positioning for the different models, refer to "Foundation Diagrams" on page A-3.

Important Considerations when Changing Fuel Types

⚠ WARNING

Certain special alternative fuels, such as E85 and additives, can degrade pump/dispenser performance or integrity if the dispensers are not designed for use with such fuels. Additionally, converting to certain standard fuels (gasoline, diesel, kerosene, and so on) from alternative fuels, such as those with ethanol (E85), methanol, or biodiesel, or from alternative fuels to standard fuels can degrade dispenser performance or integrity. Similar effects can also occur when converting units to different standard fuel types.
As per UL 87A requirements, nozzles dispensing E85 fuel must not be used to dispense any other type of fuel such as Gasoline.

Leaks and potential environmental hazards can result or components may fail prematurely.

To avoid these issues, follow the guidelines in this section.

Follow the guidelines given below when changing fuel types for a pump/dispenser or using alternative fuels or fluids:

- Verify with your Gasboy ASC or distributor if the fuel you will be using is compatible with the pumps/dispensers dispensing the fuel.
- For flexible fuel dispensers, do not use standard hydraulic parts used in other Gasboy pumps/dispensers for service parts in these units. Standard dispenser parts may not be compatible with fluids.

- Biodiesel fuels must conform to American Society for Testing and Materials (ASTM) standards for biodiesel fuels. Mixes of diesel with cooking oils, other plant or animal derived oils, and so on, are not considered biodiesel. Use of such mixes may void warranty on the hydraulic components of the unit.
- Review the latest copy of the unit's warranty statement regarding the use of fuel.
- Certain fuels (especially fuels enhanced with alcohol) when first used in tanks previously containing a different fuel may clean out the tanks and force a large amount of contaminant into the dispenser. Other than abnormally clogging filters, this large quantity of contaminant may damage certain dispenser components. Do not run units without filters at such times. It is normally required that tanks and lines be cleaned of all water, sediment, and contaminant before such conversions to minimize potential pump/dispenser downtime or damage. Damage to hydraulic components from contamination when not using filters is not covered by warranty. For recommendations, consult your ASC or Gasboy distributor.
- Do not use any equipment that was formerly used to store or dispense any other fuel or liquid with DEF. Dispensers designed for use with DEF must only be used with DEF.
- Do not use prover cans meant for engine fuel with DEF or vice versa.
- Although conversions from one fuel to an equivalent fuel (say from another supplier) generally do not create issues, it is recommended that after making any fuel type conversions (including those to alternative fuels such as E85 or back), all units be visually inspected for leaks, two days, one week, and one month after fuel conversion. Have your ASC repair any leaks found. This must also be performed for standard fuels when significant new additives are incorporated.

IMPORTANT INFORMATION
The above guideline does not apply to flexible fuel model dispensers.

- Whenever non-equivalent fuel conversions are performed, it is recommended that all units be checked for calibration within one month of fuel conversion.
- Some non-equivalent fuel conversions will necessitate the requirement to change the pump/dispenser filter type previously used. For any changes required, consult your ASC or Gasboy distributor.
- In flexible fuel dispensers, Gasboy recommends the use of 10 micron filters for gasoline-based flexible fuels. Although the use of finer filtration is allowable, filters will tend to clog prematurely, causing excessive filter maintenance cost.
- Use only meters and registration devices for DEF that have a National Type Evaluation Program (NTEP) Certificate of Compliance issued by the National Conference on Weights and Measures (NCWM).
- Non-metallic piping and components used in aboveground DEF service must have high melting points and adequate strength and durability. Some plastic compounds that are suitable for DEF may not be compatible with petroleum products. They must be avoided at locations where they can come in contact with petroleum from a routine operation or a spill.
- An anti-siphon valve must be installed on AST where the DEF level can be at a higher elevation than the supply piping or the dispenser. The valve will prevent a potential leak in the piping from creating a siphon that can cause a product release.

Read NFPA 30A and NFPA 70

DEF is not flammable or explosive. Therefore, installation requirements for DEF units differ from units that handle hazardous fuels. However, electrical safety requirements are applicable. When installing a DEF unit in a hazard zone defined by the location of another pump/dispenser handling hazardous fuels, the area of the DEF dispenser within the hazard zone must conform to requirements for units handling hazardous fuels.

⚠ WARNING

You are working in a dangerous environment of gasoline, gasoline vapor, and electricity. Failure to install this equipment in accordance with NFPA 30A and NFPA 70 can result in severe injury or death. Read, understand, and follow NFPA 30A and NFPA 70.

Before installing the equipment, read, understand, and follow:

- The NEC (NFPA 70)
- The Automotive and Marine Service Code (NFPA 30A)
- Any national, state, and local codes that may apply

⚠ CAUTION

Failure to install the equipment as per the NFPA 30A and NFPA 70 may adversely affect the safe **use** and **operation** of the system.

Accurate, sound installations reduce service calls. Use experienced, licensed contractors that practice accurate, safe installation techniques. Careful installation can eliminate potential problems.

The equipment manufacturer must provide instructions for other equipment such as STPs, shear valves, and underground tanks. Complete installation instructions for other manufacturer's equipment are not provided.

Preparing for Installation

To prepare for the installation, proceed as follows:

1. Read all instructions before beginning the installation.
2. Follow all safety precautions:

- Barricade the area.
- Do not allow vehicles or unauthorized people in the work area.
- Do not smoke or allow open flames in the work area.
- Do not use power tools in the work area.
- Wear eye protection during the installation.
- Use circuit breakers to turn off all power to pumps/dispensers and STPs. Multiple disconnects may be required.

3 Check the following for proper installation, as per the criteria specified in *MDE-4333 Atlas Fuel Systems Site Preparation Manual*, and other manufacturer's recommendations that apply:
- Emergency Power Cut-off Switch
- Circuit Breakers
- STP Control Relay Boxes - Dispensers only (see Notes)
- Isolation Relays - Dispensers only (see Notes)
- Breakaways, hoses, nozzles, and swivels (refer to "Installing Breakaways, Hoses, Swivels, and Nozzles" on page 6-18)
- Conduit and Wiring (see Notes)
- Grounding
- Shear Valves - Dispensers only (see Notes)
- Piping and Fittings
- Fuel Storage Tanks
- Pressure Regulating Valves (aboveground tanks only)
- STP - Dispensers only
- Tank and/or Line Leak Detectors
- Pit Boxes

Notes: 1) A shear valve is an NFPA 30A recommended safety device required for every product line at each dispenser. For installation instructions, refer to MDE-4333 Atlas Fuel Systems Site Preparation Manual. Shear valves may also be required for aboveground tank installations and other situations with pumps. Consult local and state requirements.

2) Refer to MDE-4334 Commercial and Retail Series Atlas Start-up/Service Manual.

3) Some locations require shear valves for vapor lines. Consult local and state regulations.

4) The 9862 Atlas DEF units uses a special stainless steel shear valve made by OPW.

4 Inspect the pump/dispenser cartons and contents for shipping damage. Gasboy does not cover shipping damage under its warranty policy. Notify the shipper of any damage.

5 Remove the bezel and lower panels (doors) of the pump/dispenser, refer to *MDE-4334 Commercial and Retail Series Atlas Start-up/Service Manual*.

6 Ensure that the fuel grade for product lines matches the pump/dispenser brand panels and foundation layout. Product lines from the island pit box must have labels.

Before Placing Unit on Fuel Island

⚠ WARNING

High alcohol percentage fuels such as E85 or fluids such as DEF may be incompatible with certain plumbing materials and hydraulic components.

Use of incompatible materials or components with E85 or DEF can result in leaks. For E85, unexpected failures of components may also occur resulting in fire or explosion or environmental damage. When installing components in E85 units, refer to "Important Requirements for E85 Units" on page 6-1.

When dispensing alternative fuels such as E85 or fluids such as DEF, verify with the manufacturer if the material of all plumbing components are compatible with the fuel (E85) or fluid being dispensed.

Note: Before mounting the unit on to the fuel island, read and understand this section completely. This information is essential to avoid installation errors.

Verifying and Determining Plumbing Requirements

Before placing the unit on an island, determine the correct location of piping and orientation of the unit involved. A common installation error is to install the unit backwards, which results in expensive modification for reinstallation later. This section contains information regarding plumbing requirements for various models.

IMPORTANT INFORMATION

Do not make assumptions about configurations based on previous experience, hose positions, or layout of the unit being replaced, whether replacing a Gasboy unit or that of any other manufacturer.

Determining the Unit Orientation

To ensure proper unit orientation, perform the following:

- Mount the unit using the mounting bolt locations specified. Seal the base as required.
- Fill in any openings to the potentially larger pit box opening. Seal as required.
- DEF cold weather units are front load units. Ensure that the hose can be used at only 180 degrees from the front of the unit. That is, the hose is not used at a position directly behind the unit. Reorientation of the unit may be required to avoid operation in this manner.

Determining the Unit Side and Type

Before lifting units on to the island, ensure the following:

- To determine the unit type, refer to the unit's model sticker.
  Note: The model sticker is located at particular places and can be viewed by removing the bezel. In mechanical units, it is on the inside, left side of the top housing. In electronic computer units, it is on the electronics base plate in the front of the top housing.
- To locate the appropriate configuration for your unit, refer to "Foundation Diagrams" on page A-3.
- DEF cold weather units are front load only units. DEF warm weather units can be side load or front load units.

Adapting Pit Box

For installation using an existing pit box, some modifications may be required. Following list highlights the changes that may be required. These installation considerations may also apply when replacing competitive units.

To adapt plumbing/conduit to stub-up locations, ensure the following:

- Use flexible piping in the pit box for plumbing adaptation.
- When adapting a unit to an existing pit box or one that is not specifically designed for the unit, the rain lip may require modification or removal. If the rain lip is removed, then the entire base of the dispenser must be sealed to the island. Study foundation layouts and the existing pit box to determine if modifications are required, before mounting the unit on the island.
- When adapting for an Atlas model 9850KXTW1, refer to "Model 9850KXTW1 Shear Valve Configuration" on page 6-10.
- For working in this area, refer to the following warning:

⚠ WARNING

Applicable for fluids other than DEF. You are working in a potentially hazardous environment where fuels and their vapors may be present and can be ignited with sparks from grinding and cutting tools. Ensure that sparks or open flames are not generated when you modify a rain lip where fuel or fuel vapors may be present.

Lifting Units

⚠ WARNING

Lifting heavy equipment can be hazardous. Equipment can fall, and cause severe injury or death. Use lifting equipment of proper capacity and factor of safety when moving or positioning the unit. Stand clear from the pump/dispenser when lifting, lowering, or transporting.

Before mounting the unit to the island, ensure that the pit box and unit base are compatible. Some pit box plates have rain lips that require modification before placing the unit on plate.

Lifting Units with Forklift

To lift units with a forklift, proceed as follows:

1. Ensure that the weight of the pump/dispenser is equally distributed on the tines to the forklift.
2. Lift and guide the unit, positioning it on to the island.

Connecting Pump/Dispenser Inlet Pipes

To aid in the alignment and positioning of piping, it is always recommended that the unit is not anchored securely to the island until the piping is completely aligned and tightened.

⚠ WARNING

Use of incompatible materials or components with E85 or DEF can result in leaks. For E85, unexpected failures of components may also occur resulting in fire or explosion or environmental damage. When installing components in E85 units, refer to "Important Requirements for E85 Units" on page 6-1.

When dispensing alternative fuels such as E85 or fluids such as DEF, verify with the manufacturer if the material of all plumbing components are compatible with the fuel (E85) or fluid being dispensed.

Do not replace the dispenser or pump parts with those incompatible with the fuel involved.

WARNING

Shear valves must be installed correctly. Improperly or insufficiently anchored shear valves can lead to fire or explosion. Fire/explosion can result in severe injury or death. For DEF units product spills may occur. Anchor all shear valves as per the manufacturer's instructions. AST installations require a pressure regulating valve at the base of the pump.

Shear valves are not required in pumps, except in special circumstances. Following procedure for a pump is identical to that of a dispenser, except that a shear valve may not be used. The contractor must provide and install pipe unions, irrespective of whether shear valves are used or not.

CAUTION

Applicable to Dispensers Rated for E85 Use:

Do not use tape at the very end of the pipe nipple to avoid tape entering the dispenser hydraulics. Tape in the hydraulics can cause failures of valves, nozzles, or other significant problems.

Use only UL-listed TPS PTFE pipe sealant manufactured by SAF-T-LOC International Corp.

Use only UL-listed Taega Technologies Inc. Teflon tape.
*Note: Teflon tape must be used **only** at the inlet pipe connection.*

For units with shear valves, the contractor-provided union must be installed on the shear valve. For proper tightening of the union to the shear valve, refer to the "shear valve manufacturer's instructions". For units without shear valves, the contractor-provided union must be installed on the ground stub pipe.

For model 9850KXTW1, refer to "Model 9850KXTW1 Shear Valve Configuration" on page 6-10.

For more information, refer to "Shear Valves" on page 7-10.

CAUTION

Shear valves or other dispenser components can be damaged or broken if improper wrench techniques are used. The installer must use two wrenches, so that stress is not applied to the shear portion of the valve during tightening.

To connect pump/dispenser inlet pipes, proceed as follows:

1 To maximize the installation versatility, units are shipped without the inlet piping. The installer provides and installs the plumbing in the lower hydraulics cabinet. Where required, use the UL-approved sealant suitable for the applicable fuel type.

Note: For hazardous fuel applications, flexible or non-metallic pipes or hoses must not be used within the hydraulics cabinet or the shear valve may not operate correctly during an accident. Flexible or non-metallic pipes or hoses must not be connected directly to the Shear Valve for DEF applications.

2 Ensure that you remove any shipping plugs or caps that may be present in pipes, shear valves, and unions. Leaving the mounting bolts a little loose at this point will require adjustment when you install the piping.

Notes: 1) The contractor-supplied pipe and fittings must be a 1-1/2-inch NPT Schedule 40 black iron. Flexible or non-metallic pipes or hoses must not be used within the dispenser.

2) For Super-Hi and Ultra-Hi units, the contractor-supplied pipe and fittings must be a 2-inch NPT schedule 40 black iron. Flexible or non-metallic pipes or hoses must not be used within the dispenser.

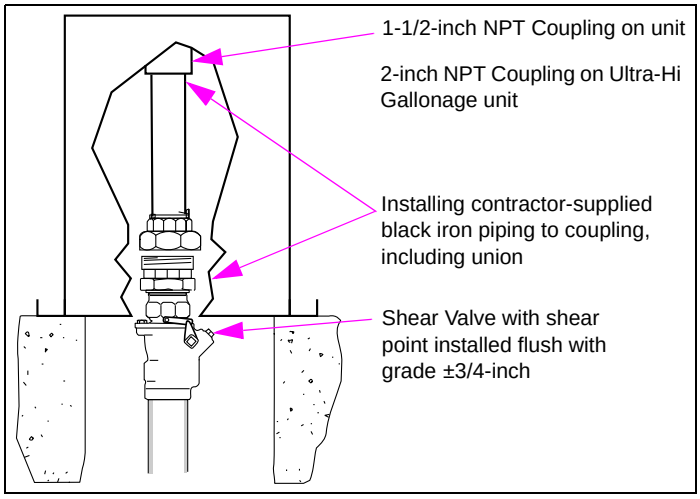
3 Loosely connect the union halves together (see Figure 6-1 on page 6-10).

CAUTION

Do not use a pry (crow) bar to position the pump/dispenser over the conduit or pipes. This can damage valves, conduit, or other parts of the unit. Do not stress the unit's hydraulics, mounting frame, mechanical computer, and so on, by attempting to connect parts that are vertically too short.

4 Double-check the alignment of pipes, conduit, and frame (see Figure 6-1).
Note: Misaligned piping can result in a leak.

Figure 6-1: Shear Valve at Grade



Note: It is a mandatory code requirement that the shear section of the shear valve be within +/- 3/4-inch (or to the shear valve manufacturer's requirement, whichever is tighter) from the plane of the bottom of the base of a dispenser.

5 Connect and tighten the union halves (see Figure 6-1).

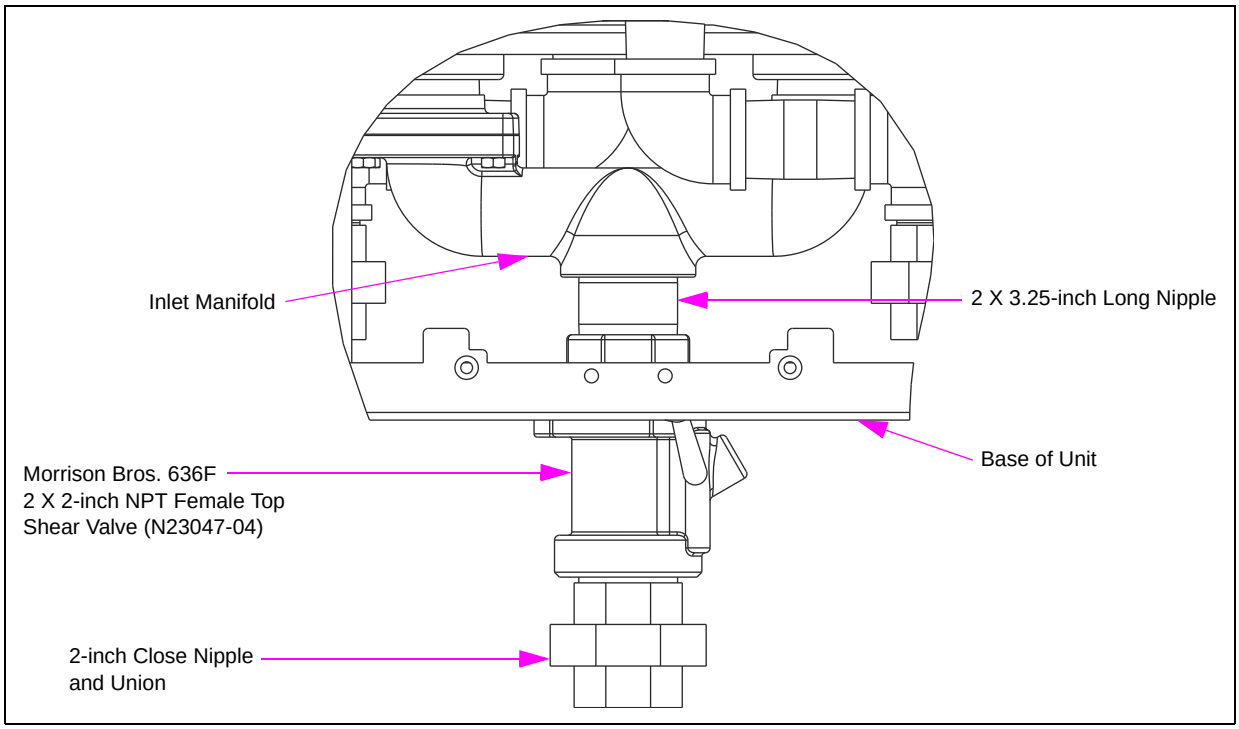
6 Tighten the anchor bolts. Ensure that the shear valves are properly tightened to the pit box or the shear valve anchor bracket.

Model 9850KXTW1 Shear Valve Configuration

The Atlas Ultra-Hi with twin inlet manifold requires a special inlet configuration because of the limited base to manifold distance. Gasboy recommends the Marrison Bros. 2-inch 636F shear valve with a union attached at the bottom of the valve, to connect to the service system piping.
Note: This configuration is for the Atlas Model 9850KXTW1 only. All other Atlas models must use a standard inlet configuration.

All shear valve anchoring requirements noted in this section apply.

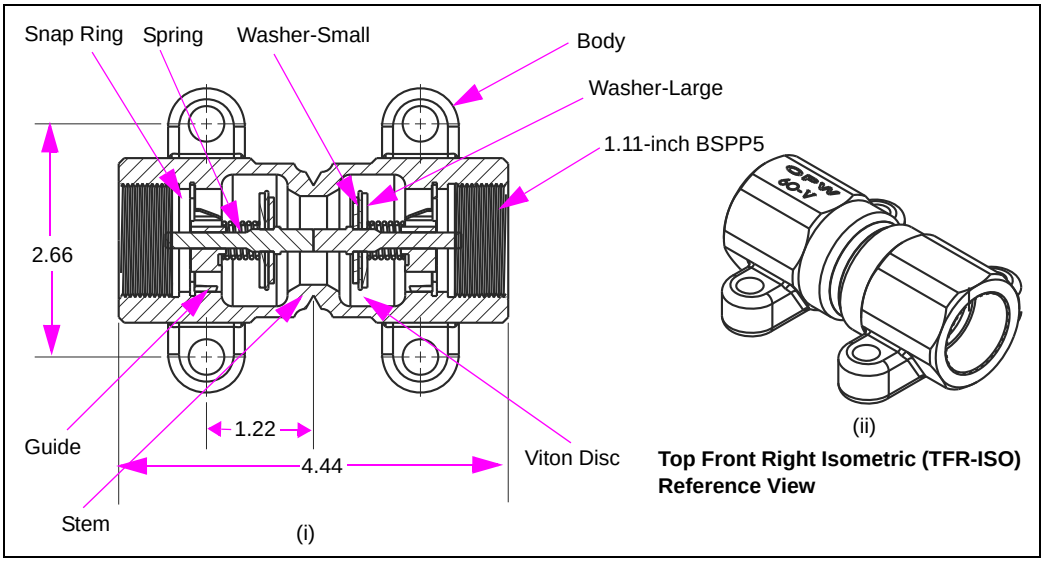
Figure 6-2: Atlas 9850KXTW1 Model Recommended Inlet Configuration



OPW Shear Valve for 9862KXTW1 DEF Unit

Note: For more information on configuring the shear valve, refer to the manufacturer's recommendations.

Figure 6-3: OPW Shear Valve



Anchoring Pump/Dispenser to Island

⚠ WARNING

Improper anchoring of units can cause damage, severe injury, or death resulting from the unit tipping over from the impact or drive-off. Also, the hose breakaways may not function properly if the unit is not anchored. NFPA 30A requires you to anchor pumps/dispensers. Securely install anchor bolts at all anchoring locations as shown on "Foundation Diagrams" on page A-3, for safe operation of shear valves and hose breakaways. Also refer to "shear valve manufacturer's instructions".

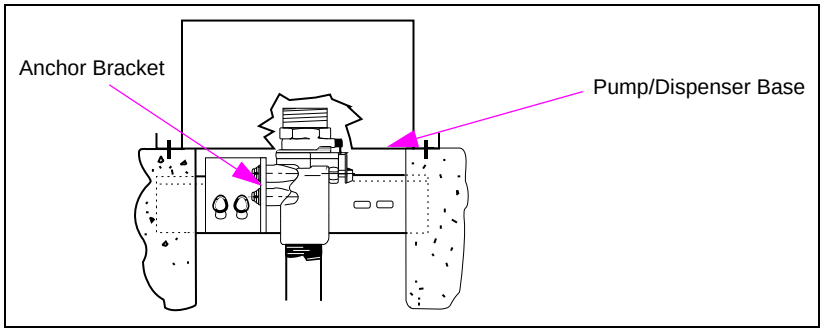
Note: Ground tank installations require a pressure regulating valve at the base of the pump. Gasboy provides the 52 valve for this purpose.

To anchor a pump/dispenser to the island, proceed as follows:

1 Ensure that the shear valves are firmly anchored to the island form [concrete or pit box (see Figure 6-4)].

Note: If the shear valve is not anchored properly, it may not operate correctly during a severe impact. Refer to "shear valve manufacturer's instructions".

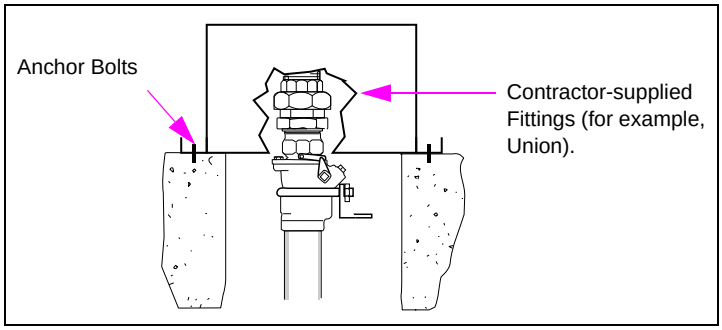
Figure 6-4: Anchoring Shear Valve Using Anchor Brackets



2 Loosely anchor the pump/dispenser to the island as per the foundation layout locations using all the required anchoring points, according to the following:

- Use 1/2-inch anchor studs with large heavy duty washers (slot designed for that size).
- Use bolts or studs that are of grade 5 steel.
- Use hardware that is corrosion-protected or resistant.
  Note: Do not use plastic or low strength bolts, or pallet bolts.
- Studs/bolts must be anchored securely to the island or pit box (see Figure 6-5).
- See the anchor or pit box manufacturer's instructions for important information.

Figure 6-5: Anchors for Pump/Dispenser

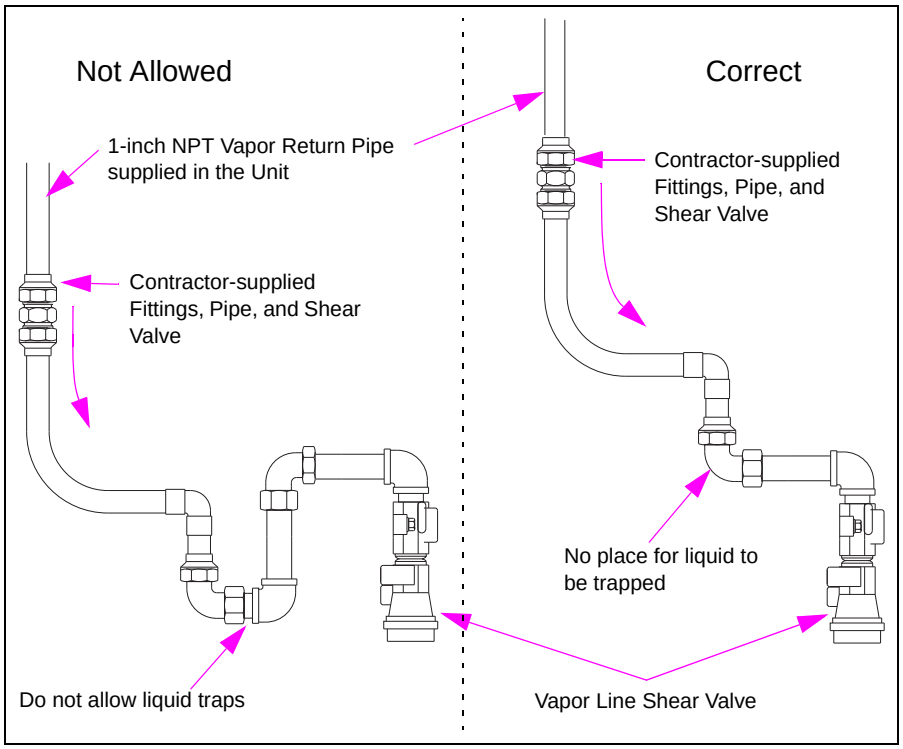


Connecting Vapor Return Line to Vapor Shear Valve

Do not create any liquid traps when connecting the vapor return line to the vapor line shear valve (see Figure 6-6). A liquid trap is a low place in the vapor return line that can accumulate fuel and cause blockage, which can cause the system to fail the vapor recovery certification tests.

Note: The contractor must provide and install the pipe union for connecting to the 1-inch NPT coupling in the unit. Some regulatory agencies require shear valves or shear sections on the vapor piping. Follow the guidelines and installation instructions from the vapor shear valve manufacturer.

Figure 6-6: Correct Vapor Line Connection Method



Wiring Dispenser (STP-supplied Unit) for All Models

The electrician will be routing the conduit to a factory-installed J-box. For pump wiring, refer to "Wiring Pump (Self-contained Unit) for All Models" on page 6-16.

Preparing Field Wiring

To prepare for field wiring, proceed as follows:

1. Open the side 1 lower door. For instructions, refer to *MDE-4334 Commercial and Retail Series Atlas Start-up/Service Manual*.

2. Remove the box cover and retain for re-assembly.

3. Ensure that the seal-off "Y" fitting has been installed and sealed as a first connection, where the conduit leaves the ground. This fitting must be in place and sealed before proceeding further. For more information, refer to *MDE-4333 Atlas Fuel Systems Site Preparation Manual*.

4. Run a 1-inch rigid conduit to the J-box. Run the field wiring to the main J-box through a 1-inch J-box conduit. Make connections to the 1-inch conduit with class 1, division 1, explosion-proof conduit union.

5. Wiring must be gas- and oil-resistant, color coded or tagged for identification purposes, and rated for 300 V or later. Data wires for new installations (of electronic retain units) must be a twisted-pair (unshielded) with 10 to 12 twists per foot. For complete wiring information, refer to *FE-356 Field Wiring Diagram Atlas Retail, Commercial, E85, and DEF Dispensers with Electronic and Mechanical Displays* and *FE-357 Field Wiring Diagram Atlas Retail/Commercial Pumps Electronic and Mechanical Units*.

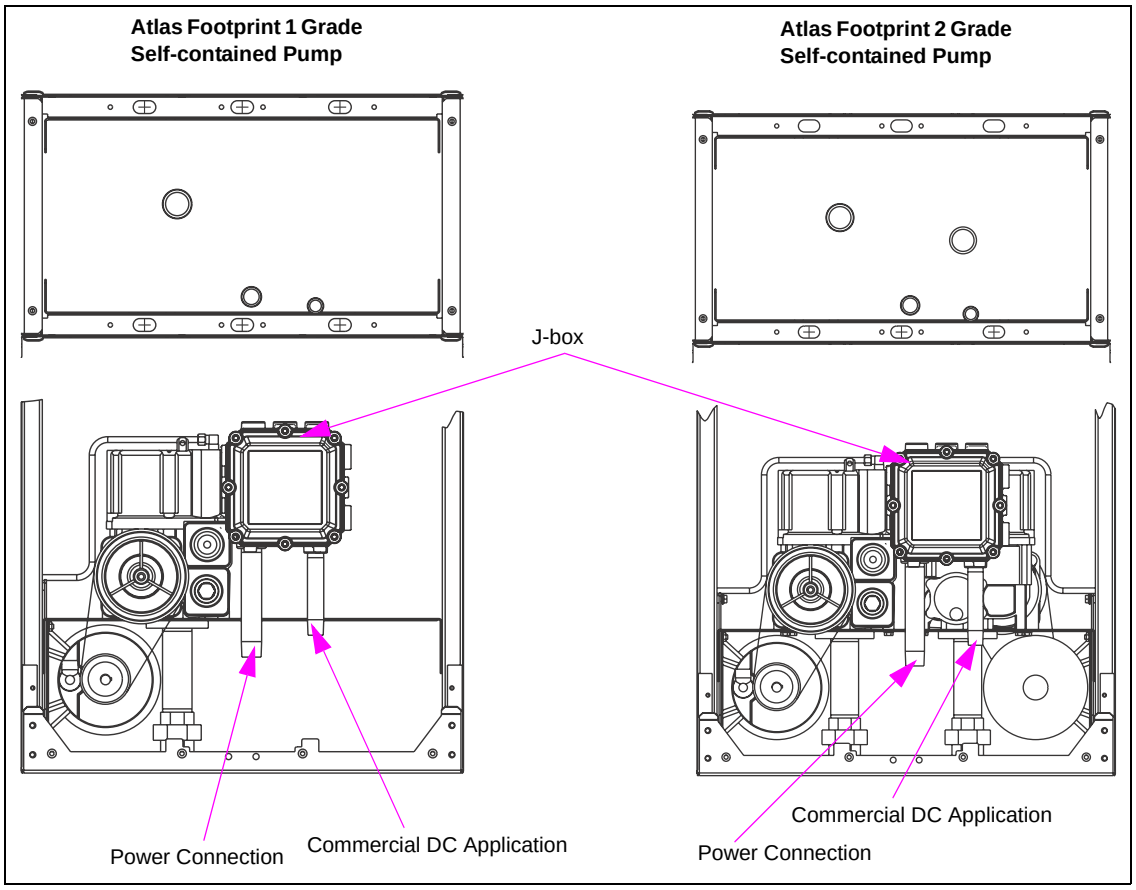
Wiring Pump (Self-contained Unit) for All Models

For dispenser wiring, refer to "Wiring Dispenser (STP-supplied Unit) for All Models" on page 6-15.

Preparing Field Wiring

Self-contained factory units have the factory-installed J-box on side 1 of the unit. For information on identifying side 1 of the unit, refer to "Foundation Diagrams" on page A-3.

Figure 6-7: J-box Conduit Layout - Standard Models



Note: The motor and ground wiring must be sized to match the load and distance (length of the wire). Wiring must be gas- and oil-resistant, color coded, or tagged for identification purposes, and rated for 300 V or later. It is recommended that data wires be a twisted-pair with 10 to 12 twists per foot (applicable only for electronic retail units).

To prepare for field wiring, proceed as follows:

1 Open the lower panel door (on the side with the J-box, side 1 inlet will be to the left).

2 Remove the box cover and retain for reassembly.
Note: For Atlas units replacing older units, if the existing wire is too short to reach the installed J-box, a splice must be made. The contractor must provide and use a class 1, division 1, explosion-proof J-box in which connections are to be made as per the code. Refer to "Before Placing Unit on Fuel Island" on page 6-6.

3 For all units, ensure that a seal-off "Y" fitting has been installed and sealed as a first connection, where the conduit leaves the ground. This fitting must be in place and sealed before proceeding further. For more information, refer to *MDE-4333 Atlas Fuel Systems Site Preparation Manual*. Install an adaptive 1-inch metal conduit and union to the J-box conduit.

Testing New Field Wiring

⚠ WARNING

Sparks can ignite fuel/vapors. Fire/explosion can result in severe injury or death.

Exercise care when testing wires. Do not test when exposed fuel and vapors are present. Only use a Megger® tester on new field wiring. For existing wiring, use a digital multimeter to test for continuity/resistance.

Test the insulation of new wiring from the station and to the electronics cabinet before connecting wires. Refer to the warning above. This checks for damage that can occur when pulling wires through the conduit.

To test the new field wiring, proceed as follows:

1 Disconnect wires at both ends. If you do not disconnect wires at both ends, you may damage the pump/dispenser electronics.

2 Test the conduit wiring ends by using an insulation/Megger tester or digital multimeter as described in the warning above.

3 Connect one tester lead to the wire under test.

4 Connect the other tester lead to the ground.

5 Measure the resistance. Follow the test equipment manufacturer's instructions. Insulation resistance greater than 50 Megaohms is satisfactory. Check the local authority requirements.

6 Repeat steps 1 to 5 for all wires.

7 Repeat the test between all wires.

8 When all wiring tests are successful, pot the conduit.
Note: Ensure that enough wire is retained to connect to the wiring within the J-box of the unit being installed.

Completing Field Wiring

Field power connections are made at the J-box. To complete the field wiring, proceed as follows:

1. Remove the cover of the J-box. For cover removal, refer to "Preparing for Installation" on page 6-4.
2. Use pipe plugs to seal unused openings in all J-boxes. Make electrical connections as per the field engineering diagrams in *FE-356 Field Wiring Diagram Atlas Retail, Commercial, E85, and DEF Dispensers with Electronic and Mechanical Displays* and *FE-357 Field Wiring Diagram Atlas Retail/Commercial Pumps Electronic and Mechanical Units*.
3. Double-check all wiring connections for wire nuts, lugs, caps, and so on. Reinstall the J-box cover. Ensure that you do not pinch any wires. All J-box bolts must be used when you replace the cover.
4. Remove all tie-wraps securing pulsers to the unit and ensure that pulsers are free to float during the operation.
5. Replace the bezel and lower doors.

Installing Breakaways, Hoses, Swivels, and Nozzles

Teflon tape must not be used for hanging hardware. Sealant must not be used for sealing connections unless the threads involved are pipe threads. O-ring seals do not require sealant. However, a small amount of silicone sealant can be used to avoid rolling or damaging of the O-ring during assembly.

When installing components in E85 units, refer to "Important Requirements for E85 Units" on page 6-1.

⚠ WARNING

Hose pulled away from the pump/dispenser exposes fuel, or the hose can pull the unit over during a drive-off. Explosion and fire or pull-off of the dispenser during a drive-off can result in severe injury or death. Installation of breakaways is required as per NFPA 30A.

⚠ WARNING

Use of incompatible materials or components with alternative fuels such as E85 can result in leaks or unexpected failures of components resulting in fire, explosion, or environmental damage. When installing components in E85 units, refer to "Important Requirements for E85 Units" on page 6-1.

⚠ WARNING

Use of hoses that are not of standard lengths may create a tripping hazard. Tripping can result in severe injury or death. Do not use excessively long hoses without a hose retractor.

Note: It is important that Teflon tape is not used on threaded connections. Use a UL-approved sealant suitable for the fuel involved, only where sealing is required (not used for O-rings). Castings may fracture during assembly or later, if Teflon tape is used.

CAUTION

Applicable to Dispensers Rated for E85 Use:

Use only UL-listed TPS PTFE pipe sealant manufactured by SAF-T-LOC International Corp.

Teflon tape must be used **only** at the inlet pipe connection.

⚠ WARNING

Hose fittings and attachments that are improperly grounded can lead to a spark that may ignite fuel or its vapors. Explosion or fire can result in severe injury or death. Check hoses, breakaways, and fittings for proper conductivity after assembly. Consult the manufacturer's instructions.

⚠ WARNING

DEF Hose Torque
Recommended torque when installing hoses is 40-50 N.m (30-35 ft-lbs). DO NOT OVER TIGHTEN or damage to the nozzle can occur. Applicable when connecting hoses to the skid tank, during internal repairs, and nozzle replacement.

To install breakaways, hoses, swivels, and nozzles, proceed as follows:

1. Attach the swivel (if used) to the nozzle. Follow the swivel manufacturer's instructions.
2. Assemble and attach the breakaway whip hose to the swivel or nozzle. Follow the hose manufacturer's instructions. For units with hose retrievers, refer to "Units with Hose Retrievers".
3. Assemble the breakaway to whip the hose. Follow the breakaway manufacturer's instructions.
4. Assemble the hose to the breakaway, followed by the unit outlet casting. Follow the breakaway manufacturer's instructions. The hose clamp must connect between the breakaway coupling and pump/dispenser outlet.

Units with Hose Retrievers

For units with hose retrievers, attach the retriever clamp to a long hose that is positioned to allow maximum extension of the hose, yet prevent a trip hazard. Use hose breakaway couplings that are installed as per the manufacturer's instructions.

⚠ WARNING

Failure to position hose clamps correctly may prevent the operation of the breakaway coupling, resulting in the unit being pulled off an island during a drive-off, with fuel being spilled. This can result in serious injury or death. Ensure that the hose clamp is installed between the breakaway coupling and unit outlet casting. This ensures that the breakaway functions properly.

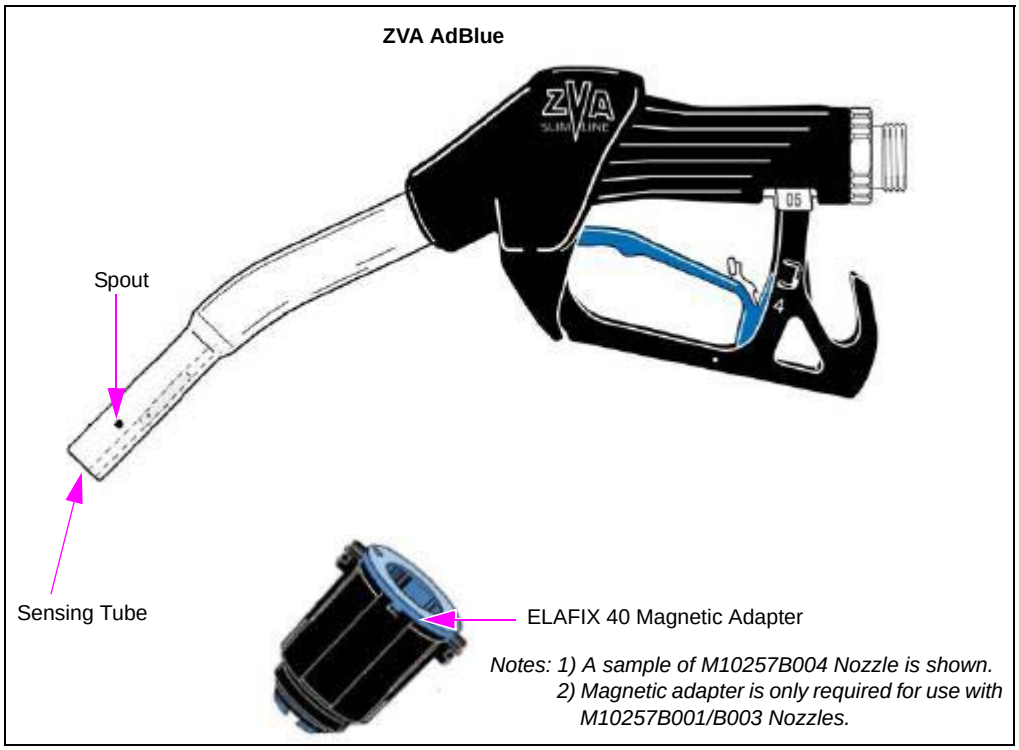
DEF Dispensers - ZVA™ DEF Nozzle

A Magnetic Nozzle Adapter (M10656B001) is required for each technician servicing the DEF units.

Note: The magnetic nozzle adapter is required only for M10257B001/B003 Nozzles (blue guard). M10257B002/B004 Nozzles (black guard) do not require this ring.

DEF Nozzle (M10257B001, M10257B002, M10257B003, and M10257B004)

Figure 6-8: DEF Dispensers with ZVA DEF Nozzle



The DEF nozzle is designed to dispense DEF. No other nozzle type is currently approved. The DEF nozzle is manufactured by Elaflex/OPW (Elaflex Slimline ZVA).

- The nozzle is a non-vapor recovery nozzle. Conventional performance and troubleshooting procedures for non-vapor recovery nozzles are also applicable to the DEF nozzle.
- In addition to fluid compatibility, some nozzles require a magnetic nozzle adapter to be slipped over the spout to dispense DEF. Normally this magnetic adapter is part of the construction of the vehicle DEF tanks. It helps to prevent DEF from being dispensed into the diesel tank that will result in severe damage to the engine. The technician must have a magnetic nozzle adapter or its equivalent to dispense DEF through the nozzle during tests. The Magnetic Nozzle Adapter (M10656B001) is available from Gasboy.
- The nozzle handle also contains the activation magnet that is part of the pump handle system.
- The nozzle can freeze if the cabinet heater fails, power is lost, or the nozzle door does not drop down completely during cold weather. The nozzle must be checked for leaks and operation after thawing.

Check Valve Assembly (M10170B001)

The M10170B001 Check Valve is compatible with DEF. Conventional troubleshooting procedures for other check valves are also applicable to the DEF check valve.

Dispenser DEF Strainer (M10820B001)

Filtration is required to protect nozzles and valves. The earlier versions of the dispenser relied completely on a filter tank system. The later versions of the dispenser have a strainer. The 100-micron strainer and assembly is compatible with DEF. The strainer must be cleaned after performing the purging operation, refer to "Purging Air in DEF Systems" on page 6-22.

Hose Breakaway/Swivel (M10258B001)

The M10258B001 Swivel is compatible with DEF. If the swivel freezes in very cold weather with no heat in the cabinet, the breakaway can pop. It is resettable as per the manufacturer's instructions. Check for leaks and proper retention after repair. Follow any manufacturer's recommendations on repair procedure and the maximum number of times the breakaway can be reset.

Do Not Turn on AC Power

⚠ WARNING

It can be hazardous to apply power before electrical and mechanical inspections are complete. Hazardous high voltage, fuel, and fuel vapors may be present or equipment may be damaged.

Serious fires, explosions, electrical shocks, injuries or deaths can result. Power must not be applied to the unit and associated STPs when installing, servicing, or making electrical wiring connections or replacing any electrical components, including light bulbs. Multiple disconnects may be required.

Only a Gasboy ASC must apply power during or after installation to check for leaks, verify operation, assure sealing of all enclosures, and replacement of all covers, skins, and sheathing. Failure to comply with this mandate can result in the loss of unit warranty.

When all installation procedures are complete up to this point, the system must be purged by the installing contractor, with a Gasboy ASC on site to apply the power required to perform this procedure. For start-up instructions, refer to *MDE-4334 Commercial and Retail Series Atlas Start-up/Service Manual*. Proceed to and complete the "Installation Checklists" on page 6-24 irrespective of whether purging is performed now or later.

Purging Air from System

For New Dispensers (Purging Through Shear Valve)

Programming changes in electronic dispensers must be complete before purging can be started.

To prepare for purging, perform the following procedure for each shear valve in all units. Be observant during purging and check for plumbing leaks as you move toward the tank. Ensure that prices are set (by the ASC) before you begin purging for electronic units.

To purge air in new dispensers, proceed as follows:

1. Turn off all power to the STPs involved.
2. Start with the unit farthest from the tank.
3. Use a UL-approved sealant to connect a “gasoline-suitable, conductive hose” to the shear valve test port.
4. Install the mechanical valve (petcock) to the hose. Ensure that it is closed at this point.
5. Place the drain end of the closed valve in an approved metallic container. Clean up any spills promptly.
6. Return power to the STPs. Activate the STP for the line being purged.
7. Slowly open the mechanical valve until you obtain a slow, constant stream of fuel flow, while maintaining contact between the metallic valve and the can.

Purging Air in DEF Systems

Air passing through a DEF meter will trigger an immediate error code. Therefore, you must temporarily replace the meter pulser outlet to the Atlas 9800 CPU board with a standard Gasboy Atlas pulser, to properly purge the air from the system. To install a standard Atlas pulser, proceed as follows:

1. Remove power to the unit.
2. Remove the pulser data connection at the Atlas 9800 CPU board and replace with a standard Atlas pulser.
3. Restore power and activate the dispensing position.
4. Slowly hand spin the pulser to allow air to be purged through the system with the nozzle activated.
5. Purge the air, following the normal procedures, until DEF with minimal air is being dispensed.
6. Remove power to the unit.
7. Remove the temporary pulser and replace with the data connector from the coriolis meter.

8 Restore power.

9 Complete the purging operation as per standard practice.

Note: The strainer must be cleaned after performing the purging operation.

⚠ WARNING

Do not substitute the pulser while power is being supplied to the unit. Lethal voltages exist within the dispenser and damage to the unit can occur if certain critical steps are not followed. It is recommended that only Gasboy-certified ASCs, who are trained in the service and operation of Atlas dispensers perform this procedure.

For New and Existing Pumps and Dispensers with Fuel in Lines (Purging Through Nozzle)

CAUTION

Purging air at high flow rates through the meter can permanently damage them. Noise is not an indication of over-speed in many cases. Meter damage due to over-speeding is not covered by warranty. Follow all instructions carefully.

To purge air in new and existing pumps and dispensers, proceed as follows:

1 Lift the nozzle handle for the hose that is being purged.

2 Place the nozzle in an approved container.

3 Slowly open the nozzle until you obtain a slow, constant stream of fuel flow.

4 Purge the system with the amount of fuel as specified in the following table.

For	Pumping Quantity
Start-ups (installing new systems)	35 gallons (130 liters) per hose

Note: Improper purging of air can cause subsequent errors in calibration testing or setting. Do not purge less than the quantity shown.

5 Return the nozzle to the nozzle boot.

6 Empty the approved container into the appropriate product tank.

7 Repeat steps 1 to 6 for each affected hose in every meter.

Installation Checklists

To ensure proper and safe operation of all equipment, and to maintain warranty coverage, the following checklists must be completed at this time. Many of the items on the list must already have been checked by the electrician as covered earlier. Follow instructions in checklists and perform all the required inspections. After the inspection is complete, insert forms (less your copy) in the dispenser's electronic cabinet and ensure that there is no contact with any of the electronic component(s). Forms must be provided with each unit; if not, contact the Gasboy distributor.

Note: Always make copies of checklists for actual use. This way, you will always have an original to copy and use in the future.

Mechanical and Hydraulic Related Items

Item	Procedure	Refer To	Checked
1	Shear valves must be installed as per the valve manufacturer's recommendations. Shear point is ±3/4-inch of grade and properly mounted.	"Shear Valves" on page 7-10	
2	Flexible pipes must not be used within the dispenser. However, flexible pipes meeting local and state codes can be used below the pump/dispenser, as allowed by regulatory authorities.	*MDE-4333 Atlas Fuel Systems Site Preparation Manual*	
3	Pumps (self-contained units) must have a vacuum-actuated pressure regulating valve to prevent positive pressure at the pump base, when used with aboveground tanks.	*MDE-4333 Atlas Fuel Systems Site Preparation Manual*	
4	Pumps require a check valve.	*MDE-4333 Atlas Fuel Systems Site Preparation Manual*	
5	Hose breakaways must be used and installed as per the manufacturer's recommendations.	Manufacturer's specifications	
6	The unit must be properly anchored to the island.	"Model 9850KXTW1 Shear Valve Configuration" on page 6-10	
7	Vapor recovery piping at the pump/dispenser must have no traps or sags.	"Connecting Vapor Return Line to Vapor Shear Valve" on page 6-14	
8	Ensure that the correct nozzles, hoses, and brand panels are associated with the product being dispensed.	Specific to the unit order	
9	All code, regulatory agency, or customer-specified safety warning signs, labels, or decals have been installed.	As provided with and for the unit	
10	Long hose lengths beyond Gasboy recommendations must not be used without special retrievers. For Balance Vapor Recovery, no portion of the hose may be on the ground.	NFPA 30A	
11	Unit mounted using proper quantity, size, and strength mounting hardware.	"Model 9850KXTW1 Shear Valve Configuration" on page 6-10	
12	Wiring color coded or tagged, sized for distance and application, and resistant to gas and oil.	"Preparing Field Wiring" on page 6-15	

Electrical Related Items

Item	Procedure	Refer To	Checked
1	Equipment must be installed in conjunction with an emergency power cut-off to remove all power from the equipment in case of an emergency.	*MDE-4333 Atlas Fuel Systems Site Preparation Manual*	
2	STP isolation relays are required for all dispensers.		
3	Retail electronic only: Use twisted-pair wires as specified for new installations, or where new wires are pulled. Do not use shielded wires.	*FE-356 and FE-357 Field Wiring Diagrams*	
4	All wiring must be stranded with copper of specified gauge and insulation casing.		
5	All grounds must be properly connected as per the installation manual requirements as well as state, local, and national codes.	• "Grounding" on page 7-6	
6	Conduit must be approved for hazardous locations and properly sized for the wiring involved.	• NFPA 30A • NFPA 70 • UL 87 • NEC	
7	Properly size all circuit breakers for the units/unit options involved.	NEC and local codes	
8	All electronic unit pump/dispenser wiring must be properly spaced and isolated from wiring for electrically noisy devices such as variable speed STPs, station equipment motors, and other devices.	*MDE-4333 Atlas Fuel Systems Site Preparation Manual*	
9	All power wiring and circuit breakers to Gasboy equipment must be dedicated and not shared with other equipment.		
10	All circuit breakers to Gasboy equipment must be clearly labeled and readily accessible.		
11	Isolation relays must be used for dispensers to ensure that the power is completely removed from a dispenser during service power down.		
12	All pumps/dispensers must be wired to the same phase of electrical power.		
13	New site wiring must be Megger-tested. Old site wiring must be continuity and short-tested with a digital meter.	"Testing New Field Wiring" on page 6-17	
14	Remove all tie-wraps that secure pulsers and ensure that the pulser is able to float (in pumps).	"Completing Field Wiring" on page 6-18	
15	For units with optional TopKAT PLUS, verify if power supplied to the micro feed matches the setting of the power supply setup jumpers in the TopKAT PLUS or damage may occur.	For information on setting these jumpers, refer to *MDE-5013 TopKAT PLUS Installation Manual*.	

Calibration

Though all units are calibrated at the factory, all units must be checked for calibration and recalibrated as required, before their use by customers.

Note: Units must be properly purged before calibration or calibration verification. Incomplete purging of air can result in inaccurate calibration or errors in calibration verification testing.

Calibration is accomplished by first pumping the product into a correctly sized prover can to determine the accuracy of the unit. The size of the prover can is established by Weights and Measures (W&M), depending on the flow rate of the unit.

Adjusting Calibration for Standard, Hi-Flow, and Super-Hi Models

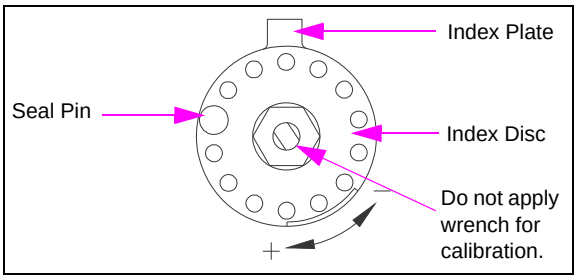
If calibration is required, remove the restraint (seal-wire from locking pin) on the calibration wheel located on each meter. Each pin hole represents one cubic inch of fluid. Moving the calibration wheel counter-clockwise, one pin hole creates a negative of one cubic inch of fuel; when turning the calibration wheel clockwise, one pin hole adds one cubic inch of fuel to the total flow. To calibrate the meter, the pin must first be removed and the wheel turned in the required direction to retard or add to the rate of product flow. Reinsert the pin into the hole in the wheel and test the new setting. After the correct flow of the product has been established, the pin and wheel must be wired and a seal put in place (if required, it is the owner's responsibility to report this device to the local W&M officials for their inspection before the unit is put into service).

Atlas (Gallon Unit of Measure)

For electronic retail units, temporary pricing must have already been entered into the unit to allow dispensing and calibration. Refer to "Calibration Adjustment for Ultra-Hi Models" on page 6-27.

Currently produced Atlas pumps/dispensers are precalibrated to US gallons (calibration verification is still required) and programmed to default programming values. They may be operated and purged in normal mode after entering the prices. When the unit is in gallon mode, purging can be done for units eventually to be converted to metric mode.

Figure 6-9: Calibration Wheel



Calibration Adjustment for Ultra-Hi Models

To adjust the calibration for Ultra-Hi models, proceed as follows:

1 Check the meter registration by delivering the product to a reliable, accurate, 50 or 100 gallon (or metric equivalent) prover can.

Figure 6-10: Ultra-Hi Models

2 Convert the amount of error to gallons per 100 (provides a percent figure) or gallons per thousand (provides one-tenths of a percent figure).

3 Read the setting indicated on the adjuster. The amount of error is added to or subtracted from this setting. The adjuster is shown in graduated divisions of 1%, 0.1%, 0.02%.

4 Reset the adjuster by loosening the clamp.

To decrease the amount delivered, turn the thimble in, on the barrel.

To increase the amount delivered, turn the thimble out (unscrew it). After resetting the adjuster, tighten the clamp.

Note: Always make the final adjustment by turning the thimble in. If the new setting is a higher number than the original, turn it back beyond the required figure and come back to it.

For example: Assume that the adjuster setting at the start of the test reads 2.05. The product is run through the meter into a prover can until the counter registers 100 gallons. Assume that the prover can shows a volume of 98.7 gallons (1.3 gallons short). Since the adjuster graduations are in percent readings, this 1.3 can be added directly to the adjuster reading (2.05 plus 1.3 equals 3.35 on the adjuster). A rerun through the meter must then show 100 gallons both on the meter counter and on the prover can.

If you are measuring in increments of less than 100 gallons, use this simple formula to determine the percentage by which the adjuster must be adjusted:

(P - M) / M = A%

where **P** is the prover measurement, **M** is the meter reading, and **A%** is the percent adjustment for the adjuster.

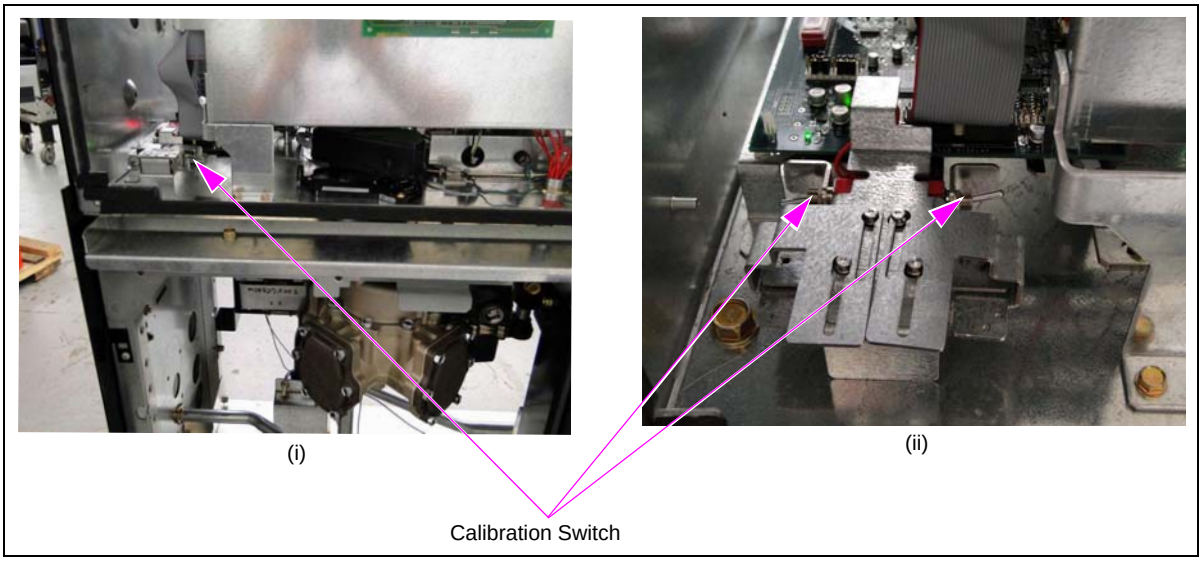
Calibration Adjustment for E85/DEF Units [Electronic Calibration (E-CAL)]

The E85/DEF unit must be calibrated electronically. To calibrate the unit, proceed as follows:

Notes: 1) If the unit is two-sided, then the calibration procedure must be performed individually on each side.

2) The calibration switch is located on the J-box side of all three E85 unit types (see Figure 6-11).

Figure 6-11: Calibration Switch and J-box



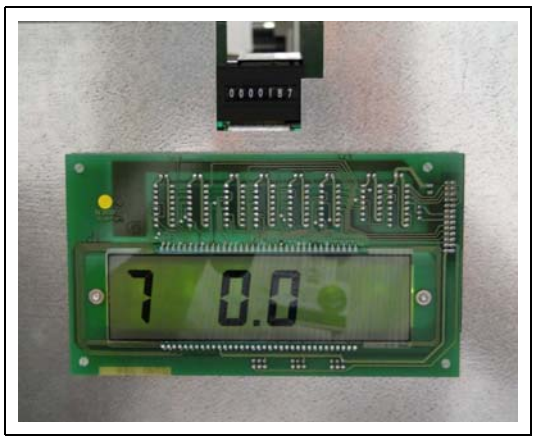
1 Slide the back cover and turn the calibration switch to "Calibrate" position (up).

a Locate the calibration assembly, slide the W&M seal metal cover toward the exterior of the unit.

b Locate the inside switch for side B, or the outside switch for side A. Place the switch in the up position to activate the calibration procedure.

The number "7" appears in the Most Significant Digit (MSD), left most digit of the pump display and will remain throughout the procedure (see Figure 6-12).

Figure 6-12: Turning on Calibration Switch



After five seconds, a can size appears in the two Least Significant Digits (LSD), digits to the far right of the pump display (see Figure 6-13). The can size will appear for 5 seconds before advancing to the next can size. The display will continue to scroll through can sizes until the nozzle is removed and the pump handle is switched on.

Note: If the nozzle is not removed within 10 minutes of turning the switch to "Calibrate" position, error code 574 appears (57 indicates time out, and 4 indicates calibration mode error). Turn the calibration switch to "Off" position (down), to clear the error.

Figure 6-13: Displaying Prover Can Size

2 **After the required can size appears on the display, remove the nozzle and switch on the pump handle**. This selects the can size for calibration.

Note: If the pump handle is switched on for an inappropriate can size and if the dispensing has not started, switch off the pump handle. Scrolling will resume. If dispensing has begun, switch off the pump handle, turn the calibration switch to "Off" position, and restart calibration from step 1 on page 6-28.

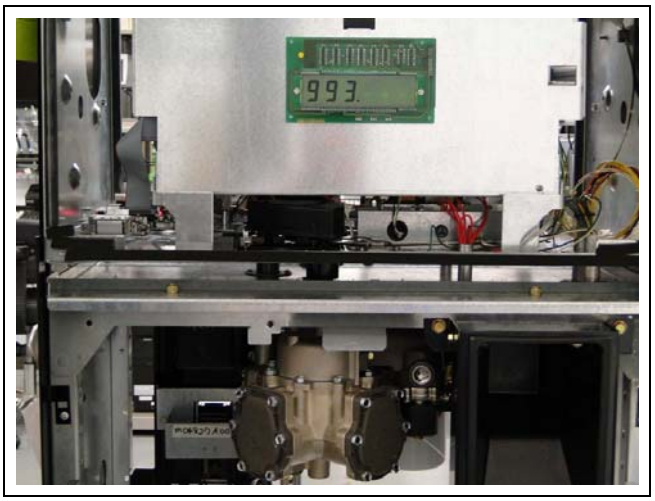
3 **Dispense fuel into the prover can exactly to the zero mark**. The uncalibrated volume appears.

IMPORTANT INFORMATION
DEF fluid tends to dissipate air much slower than for gasoline or diesel fuel. Wait for three minutes and gently tap the prover can with a rubber mallet to ensure entrapped air is dissipated and an accurate reading can be taken.

Notes: 1) If the fuel/DEF is not dispensed within four minutes (approximately) of switching on the pump handle (or within the time period set by the controller for pulser time out), the error code 574 appears indicating that the pump handle must be switched off to clear the error. Scrolling will resume after you replace the nozzle.

2) If the fuel/DEF dispensing has started but stopped and the pump times out, the calibration switch must be turned to "Off" position. Otherwise, error code 993 appears as shown in Figure 6-14 (99 indicates that the product is not available, and 3 indicates the product is not calibrated). The procedure must then be restarted from step 1 on page 6-28.

Figure 6-14: Displaying Error Code



4 **Switch off the pump handle and return the nozzle to the boot**. After three seconds, the calibration factor appears on the display for three seconds and then zeros are displayed indicating that the meter is now calibrated. No further transactions will be allowed until the calibration switch is turned to "Off" position.

Note: If an additional transaction is attempted, error code 994 appears (99 indicates product not available, and 4 indicates calibration mode error). Turn the calibration switch to "Off" position and switch off the pump handle to clear the error. The error code 993 appears indicating that the calibration procedure must be restarted from step 1 on page 6-28.

5 **Turn the calibration switch to "Off" position and slide the switch cover back over the switch**.

Calibration and Accuracy Checks - DEF Dispensers

IMPORTANT INFORMATION

The settling time for freshly dispensed DEF is longer than for gasoline or diesel. Therefore, a three-minute wait time between dispensing the DEF into the prover can and taking the reading from the sight glass is recommended.

IMPORTANT INFORMATION

Units must be properly purged before calibration or calibration verification. Incomplete purging of air can result in inaccurate calibration or errors in calibration verification testing.

CAUTION

A stainless steel prover can must be used to calibrate DEF. Do not use a can that has been used for other fluids. Contaminated DEF can cause damage to vehicle engines, or contaminated fuel can corrode dispenser material(s), vehicle catalytic converter(s), or damage vehicle engines.

A ELAFIX 40 Magnetic Adapter (M10656B001) must be pushed over the spout when you dispense DEF into the prover can during calibration or service. For details, refer to “DEF Dispensers - ZVA™ DEF Nozzle” on page 6-20.

Each time a meter is calibrated, a volume of DEF is generated. This DEF must be properly managed and cannot be discarded into the storm sewer or where it can possibly reach surface water or groundwater. If the DEF is to be returned to the supplier, store it in a closed, leak-free container.

Avoid dispersal of spilled material and runoff. Ensure that DEF does not come in contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil, or air).

DEF poured back into the tank must be kept clean. Do not allow DEF to become contaminated during handling.

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7 – Reference Information

This section contains reference information for the contractor. The contractor may or may not be required by individual contract to perform all or any of the requirements outlined. However, all installations must conform to the requirements in this section. The information in this section can be found in detail in *MDE-4333 Atlas Fuel Systems Site Preparation Manual*.

Note: The information in this section is not to be used exclusively in lieu of MDE-4333 Atlas Fuel Systems Site Preparation Manual, as not all information contained in that manual is found here.

Reference Contents

Electrical Requirements

Following are electrical requirements for installing the unit:

- Sites must be prepared in accordance with NFPA 30A, NFPA 70, and the applicable national, state, and local codes/regulations.
- All circuit breaker panels and relay boxes must be mounted securely to the wall.
- Only UL-recognized/approved components and/or systems may be used.
- Licensed electricians who are experienced with pump and dispenser installations must be used to make all electrical connections.
- Installation requires a dedicated circuit-phase system. All electronic units must be wired to the same power leg.
- An earth ground is required for all circuits.

Emergency Power Cut-off Switch

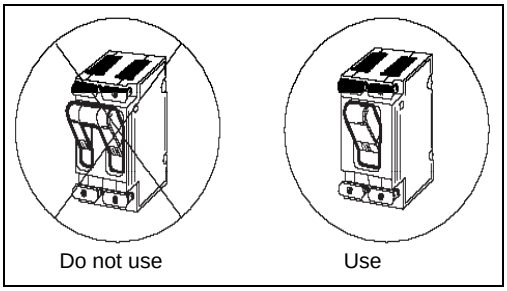
Following are the emergency power cut-off switch requirements for the unit:

- NFPA 30A and Gasboy require the installation of one or more emergency power cut-off switches.
- An emergency power cut-off switch is a single control that removes AC power to all island equipment (pumps/dispensers, STPs, canopies, lights, and so on).
- The emergency power cut-off switch must be accessible, labeled clearly, and installed away from any hazard that may occur at pumps/dispensers. Cut-off switches must not be located more than 100 feet away from pumps/dispensers.

Circuit Breakers

Following are the circuit breaker requirements for the unit:

Figure 7-1: Switched Neutral Circuit Breaker



- A dedicated UL/CUL/CSA-listed switched neutral breaker is required for each circuit leading to a pump/dispenser or dispenser and STPs. It must be able to disconnect hot and neutral conductors simultaneously. Canada does not allow neutral ground switching. Single-pole breakers with handle ties cannot be used.
- Only UL/CUL/CSA-listed circuit breaker panels are permitted for use.
- Circuit breakers must be installed away from pumps/dispensers, readily accessible, and clearly marked.
- A separate circuit breaker is required for each STP (dispenser models) or each pump motor (self-contained models).
- One circuit breaker is required for each pump/dispenser to allow isolation of the pump/dispenser.

STP Control Relay Boxes for Dispensers

Following are the STP control relay box requirements for the unit:

- Gasboy requires the installation of STP isolation relays in addition to STP control relays. Combined STP control relay/isolation relay boxes are recommended.
- Each STP requires a separate control relay.
- Dispenser relay must not be used to power the STP.

STP Isolation Relays for Electronic Dispensers

STP isolation relays provide electrical isolation between dispensers and prevent damage from cross phasing. For more information, refer to *MDE-4334 Commercial and Retail Series Atlas Start-up/Service Manual* and *FE-357 Field Wiring Diagram Atlas Retail/Commercial Pumps Electronic and Mechanical Units*.

Note: For a three-phase STP, use isolation relay at the input of the three-phase STP control box.

- Gasboy requires the installation of STP isolation relays in addition to STP control relays. Combined STP control relay/isolation relay boxes are recommended.
- Isolation relays must be installed for each STP control line at every dispenser or dispenser grouping on a single circuit breaker.
- A neutral wire must be routed to control relays from the dispenser circuit breaker. For more information, refer to *FE-356 Field Wiring Diagram Atlas Retail, Commercial, E85, and DEF Dispensers with Electronic and Mechanical Displays*.

Conduit

It is recommended that a spare conduit must be run for future high-speed communications.

- Use a minimum 1-inch conduit for all Gasboy pumps/dispensers.
- Run all power and light wires in a threaded, rigid metal conduit, or a rigid non-metallic conduit. The conduit must conform to national and local electrical codes. If a non-metallic conduit is used, it must be at least 2 feet underground. The last 2 feet of the underground run to the J-box must be a rigid metal conduit or threaded steel intermediate metal conduit.
- Never share the conduit or wire troughs with any other manufacturer's equipment (that is, speaker wires, and so on).
  Note: The same conduit may be used for routing power to the pump/dispenser and retail two-wire data loop. The two-wire data loop is a class 1 circuit.
- A metal conduit is not sufficient to provide an equipment ground. A separate ground wire must be used.
- Knock-out boxes or flexible conduits are not permitted for installation.
  Note: Extra J-boxes that are added to the pump/dispenser must be listed class 1, division 1, group C and D explosion-proof.
- All electrical fittings must be listed for class 1, group C and D hazardous locations as required by NFPA 30A and NFPA 70.
- A seal-off 'Y' fitting (for example, Killark® Type EY) must be installed on all units as the first connection where the conduit leaves the ground.

Wiring

Following are the wiring requirements for the unit:

- All pumps/dispensers must be wired as per NFPA 30A, NFPA 70 and the applicable national, state, and local codes/regulations.
- All circuits must be NEC class 1 wired [except for the speaker (intercom) circuit, which must be NEC class 2]. The speaker (intercom) circuit requires a separate 1-inch conduit.
- Only stranded, gas- and oil-resistant copper wires rated for 300 V (up to 240 VAC source) and 176 °F (80 °C) must be used.
- In the main conduit for retail units (communication), only twisted-pair or two-wire data pairs must be used for the retail two-wire data loop.
- All dispensers must be wired on the same phase.
  Note: If a Gasboy isolation relay box is installed, dispensers are not required to be on the same phase.
- Only listed wire nuts must be used for connections. Tape is not permitted.
- Seal-off 'Y' fitting(s) must be potted after all wires are run and tested to termination points.

Wire Size

Following table lists the wire size requirements:

115 V Wire Gauge Sizes per Feet/Meters of Run

Feet/Meters	25 feet 8 m	50 feet 15 m	100 feet 31 m	150 feet 46 m	200 feet 61 m	250 feet 76 m	300 feet 91 m	Over 300 feet (91 m), use relay at motor location
Motor HP								
					115 V			
1/2	14	12	10	8	8	8	8	
3/4	14	12	10	8	6	6	6	
					230 V			
1/2	14	12	12	12	10	10	10	
3/4	14	12	12	12	10	10	10	
1-1/2	12	12	10	10	8	8	6	

Wiring

When wiring the Atlas pump/dispenser, it must be noted that there are two types of systems:

- Retail
- Commercial

Atlas Commercial

The Atlas commercial pump/dispenser utilizes two conduits, one for AC power and the other for DC signals. The two conduits must be kept away from each other to reduce signal interference. The AC conduit carries the AC power line and supplies power to valves and motors, whereas the DC conduit delivers the RS-485 or pulse output signals when the pump communicates with a FMS. In a standalone operation, they will not use either the RS-485 or pulse outputs.

Atlas Retail

The Atlas retail pump/dispenser utilizes only one main conduit as it does not require a DC conduit. The AC conduit is used to carry the AC wire and the two-wire interface twisted-pair.

The distinction between commercial and retail pumps/dispensers units is that the commercial unit uses a separate conduit arrangement to keep signals from interfering with one another or other noise generating devices, whereas in the retail unit it is not critical.

When installed in a separate DC conduit, 18 AWG wires are required for the installation. Although it is recommended that DC commercial pump interface wires (RS-485 or pulse output) be run in a conduit away from AC wires, they can be combined in the same conduit with AC wires, provided that a UL-listed cable with the following specifications is used:

Specification	Setting
Conductor	18 AWG stranded wire. Number of conductors to be determined by pulser requirements.
Shield	Foil-wrapped 100% coverage and/or tinned copper braid 90% coverage.
Drain Wire	Stranded, tinned copper, 20 AWG or larger/or braided shield.
Voltage Rating	Maximum operating voltage of 600 V.
Environmental	Gas- and oil-resistant; suitable for wet or dry locations.

Gasboy can supply Belden® 1063A (part number C09655), which is a UL-listed, four-conductor cable that meets the requirements listed above.
Note: Belden 1063A is UL-listed but not CSA-listed.

Retail Data Wire Lengths

Use the following table to determine the maximum length of the data wire:

For This Distribution Box (D-Box)	Distance Between the D-Box and Dispenser	Distance Between the D-Box and Console/Controller
PA0133, PA0187 G-SITE®	"Total" data wire system run no more than 2600 feet with 14 AWG	
PA0242 Transac System 1000™	No more than 2600 feet with 14 AWG	No more than 2600 feet with 14 AWG
PA0261 Universal D-Box	No more than 2600 feet with 14 AWG	No more than 2600 feet with 14 AWG
PA0306 D-Box	No more than 2600 feet with 14 AWG	No more than 2600 feet with 14 AWG

Commercial Data Wire Lengths

Use the following table to determine maximum data wire lengths:

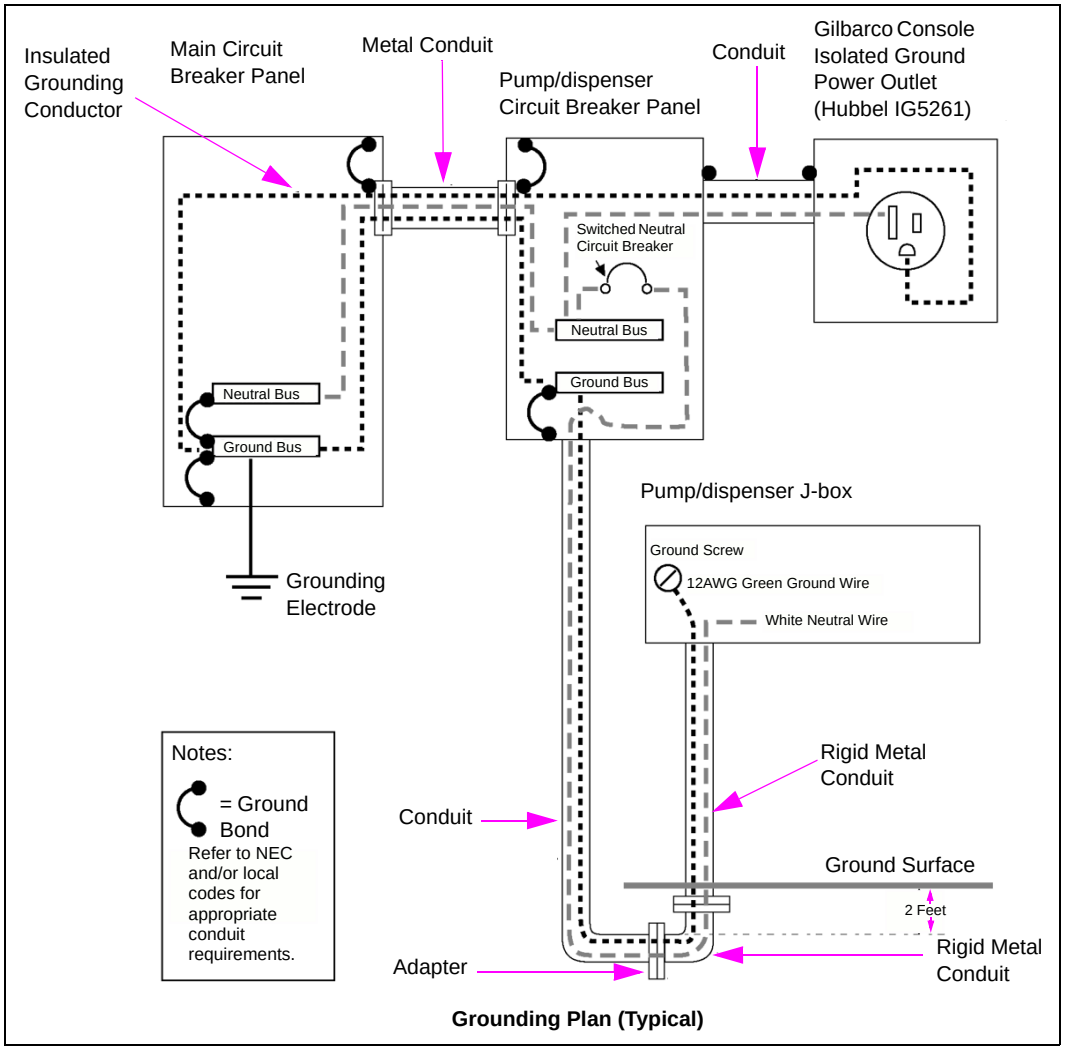
For This D-Box	Distance Between the D-Box and Dispenser	Distance Between the D-Box and Console/Controller
RS-485 Cable	No more than 1000 feet from the J-box to the farthest CFN component	No more than 1500 feet between all CFN components
LAN Communication	No more than 333 inches from Islander to LAN jack	

Grounding

Following are the grounding requirements for the unit:

- NFPA 70 requires connecting the following to the system ground:
  - Consoles
  - Relay control boxes
  - Pumps and dispensers
  - Circuit breaker panel
  - STPs
  - Electronic leak detectors
- Gasboy requires connecting each pump/dispenser to an equipment-grounding conductor (see Figure 7-2) located in the conduit, as per NFPA 70, Article 250. Following applies to the ground conductor:
  - Use a wire that is not smaller than 12 AWG.
  - Use a wire with green or green and yellow striped insulation.
  - Connect to the green grounding screw in the J-box.
  - Ground the providing power under NFPA 70, Article 250.
  - Bond the neutral bus to an approved grounding electrode.

Figure 7-2: Grounding Plan



CPU Switch Settings

For CPU switch settings, refer to the latest version of *MDE-4363 Atlas Fuel Systems Owner's Manual*.

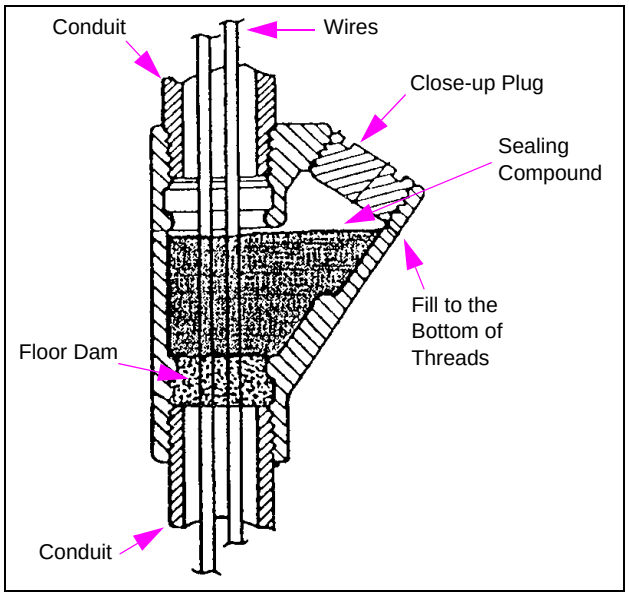
Sealing 'Y' Fittings

'Y' seals installed in a conduit run to minimize the passage of vapors, gases, or flames from one portion of the electrical installation to another through the conduit. Fittings must be installed as per articles 501-5 and 502-5 of the NEC and the manufacturer's instructions.

Gasboy uses Killark type EY fittings and recommends them or their equivalent for vertical conduit runs. Following sealing directions are for Killark fittings only, and instructions may vary for other manufacturer's fittings. Read through all instructions completely before you begin.

1 Remove the close-up plug (see Figure 7-3).

Figure 7-3: Typical 'Y' Sealing



2 Separate the conductors and fill the conduit in and around the conductors using Killark type "PF" packing fiber to make a floor dam to hold the fluid-sealing compound.

Note: The floor dam must be even with the conduit stop in the lower hub of the fitting. Ensure that you do not damage the conductor insulation. Force pack between conductors and hubs and push any shreds of packing fiber away from conductors to block the leakage path.

3 Use only Killark type "SC" sealing compound with Killark fittings, and perform the following:

- Use a clean mixing vessel for every batch of sealant.
- Mix the compound at a rate of three parts compound to one part water by volume.
- Sprinkle the compound in water while stirring, until a thick paste is formed.
- Do not mix more compound than what can be used in 15 minutes.
- Continue mixing for at least three minutes, until the consistency is just fluid enough to pour slowly.

4 Slowly pour the fluid compound into the sealing fitting, up to a level below the threads in the close-up plug.
Note: Pour the fluid slowly to avoid trapping air bubbles in the seal.

5 Immediately wipe off any spilt compound and close the seal with a close-up plug.
Notes: 1) The initial setting of the sealing compound will occur within 30 minutes. The compound requires a minimum of eight hours at a temperature above 32 °F (0 °C) to develop sufficient strength to withstand explosion pressures.
2) If the pump/dispenser has a factory mounted TopKAT PLUS, for LAN/WAN wiring requirements and sealing CAT-5 cable, refer to MDE-5013 TopKAT PLUS Installation Manual.

Plumbing Requirements

⚠ WARNING

High alcohol percentage fuels such as E85 may be incompatible with certain plumbing materials and hydraulic components.

Use of incompatible materials or components with E85 or DEF can result in leaks or unexpected failures of components resulting in fire or explosion or environmental damage. When installing components in E85 units, refer to "Important Requirements for E85 Units" on page 6-1.

When dispensing alternative fuels such as E85, verify with the manufacturer if the material of all plumbing components are compatible with the fuel (E85) or fluid being dispensed.

Pipe Installation

Refer to "PEI Publication RP100 Recommended Practices for Installation of Underground Liquid Storage Systems (Chapter 9)" and "PEI Publication RP200 Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling". Product inlet pipes and vapor pipes for Gasboy pumps/dispensers vary in location between models. See the model-specific footprint.

- Check national, state, and local regulations for the installation of the pipe system.
- Use the containment system as required by national, state, and local regulations.
- Use a new black iron pipe constructed of UL-approved pipe material and UL-approved fittings.
- Use a 1-1/2-inch pipe for the riser-to-pump or dispenser.
- Use 2-inch risers on high-volume units that use a 2-inch shear valve.

Pipe Size

The required pipe size depends on the number of sharing lines that the unit contains, size of STPs (dispensers only), and length of the run.

Pumps (Standard Flow)

Use a new 2-, 2-1/2-, or 3-inch pipe. Use a 2-inch pipe for runs up to 50 feet to a single pump. Increase to a 2-1/2- or 3-inch pipe for longer runs up to 75 feet to a single pump with maximum lift condition. To supply every self-contained pump, a dedicated line is recommended.

Pumps (High Flow, Super-Hi, Ultra-Hi)

Except for the riser, use a new 3-, 3-1/2- or 4-inch pipe. Use a 3-inch pipe for runs up to 50 feet to a single pump. Increase to a 3-1/2- or 4-inch pipe for longer runs up to 75 feet to a single pump with maximum lift condition. To supply every self-contained pump, a dedicated line is recommended.

Piping and Plumbing Components (DEF)

Piping and plumbing components must be compatible with DEF. Typical piping used is either stainless steel or High Density Polyethylene (HDPE). In environments where temperatures drop below 15 °F (-9.4 °C), external components must be insulated and heated as required to prevent freezing. Thermostatic control of the heater circuit is recommended where heating commences above 15 °F (-9.4 °C).

Dispensers (Standard Flow)

Use a new 2-, 2-1/2-, or 3-inch pipe. If the distance from the STP to the farthest dispenser is 200 feet or less, use a 2-inch pipe. If the distance exceeds 200 feet, use a 2-1/2- or 3-inch pipe to the first dispenser and a 2-inch pipe for the rest of the way.

Dispensers (High Flow, Super-Hi, and Ultra-Hi)

Except for the riser, use a new 3-, 3-1/2-, or 4-inch pipe. If the distance from the STP to the farthest dispenser is 200 feet or less, use a 3-inch pipe. If the distance exceeds 200 feet, use a 3-1/2- or 4-inch pipe to the first dispenser and a 3-inch pipe for the rest of the way.

Check Valves

(Used on Pumps Only)

See the “PEI publication RP100 and manufacturer’s installation instructions” for information on the installation of the check valve. Install the check valve as close as it is practical to the suction unit. It must be gravity-activated with minimal or no spring load. Check valves are available from Gasboy as an order entry item for internal use to the pumping unit.

Ensure that there is only one check valve in each dedicated line. Use of multiple check valves can restrict the flow and cause cavitation resulting in significant reduction in the flow rate. If multiple units are used on a single-line, check valves are required at each pumping unit.

For DEF units, the OPW-60 (M10170B002) is specifically designed to be used with the DEF being dispensed.

Shear Valves

(Generally Used on Dispensers Only)

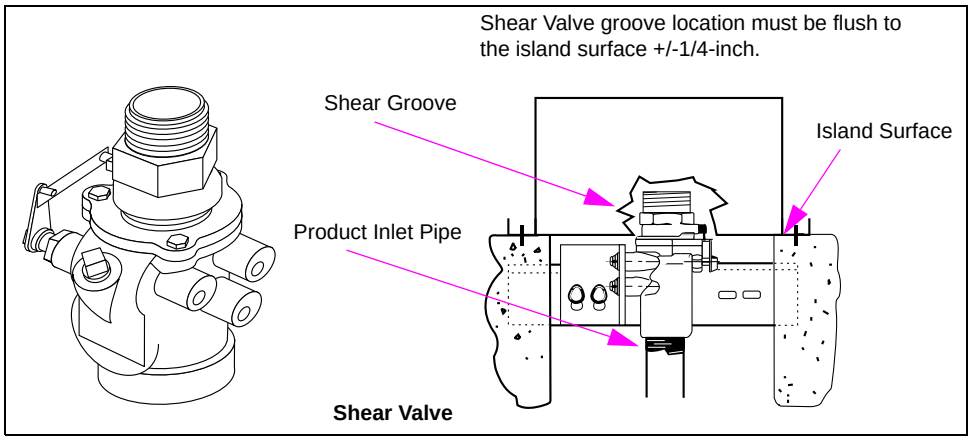
Note: Shear valves are not required on pumps but installation is discretionary.

See "PEI Publication RP100 Recommended Practices for Installation of Underground Liquid Storage Systems (Chapter 9)" and "PEI Publication RP200 Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling". A shear valve (see Figure 7-4) is an NFPA 30A required safety device. It closes automatically to stop the product flow during a fire or if the dispenser gets knocked off the island. It also provides a means of manually closing inlet pipes.

Follow the shear valve manufacturer's instructions for installation procedures and testing. Install a shear valve on each product inlet pipe.

- Install a shear valve on a master dispenser satellite outlet and at satellite inlet.
- Do not mount the shear valve upside down.
- Ensure that the valve linkage is accessible and displays no interference while opening or closing, from other piping, structure, or components.
  Note: The dispenser product inlet pipes has to be aligned with the shear valve. Do not restrict the shear valve linkage with pipes, braces, and so on.
- Test the shear valve operation.
- Close the shear valve until the startup of the equipment. Cap the inlet pipe. This prevents dirt and other particles from entering the product line. It also prevents fuel spillage.

Figure 7-4: Shear Valve



Note: For model 9850KXTW1, refer to "Model 9850KXTW1 Shear Valve Configuration" on page 6-10. Follow manufacturer's installation instructions. Anchoring requirements noted within this section apply.

8 – Start-up and Test for Atlas Electronic Series

Installation Completion Checklist

Review the information below to verify proper installation of the Atlas electronic series dispensing unit. If the installation does not meet the criteria listed, correct the problem before the start-up is performed.

To complete the installation, proceed as follows:

1. To avoid damage to the CPU PC board, ensure that the reset is complete, fast flow, submersible starter drive, and slow and fast satellite return wires are not shorted to the conduit or chassis.

2. The unit must be properly secured to the island.

3. All plumbing must be complete and tight. All liquid-carrying lines must be checked for leaks.

4. When the DC pulser, RS-485, or LAN lines are used in the pump for connecting to Gasboy FMSs, the AC and DC wires must not share any conduits, J-boxes, or troughs, except as noted in the conduit and pulse output or RS-485 wiring and the *MDE-5013 TopKAT PLUS Installation Manual*, communication requirements.

5. All conduit work must be complete. All J-box covers must be secured. Conduits must not be sealed until the wiring is verified through proper operation.

6. The unit must be properly grounded.

7. Before testing begins, remove any water in the tank through a fill opening, using a suitable pump.

CAUTION

Do not use the Gasboy pump or remote dispenser and submersible pump to remove water. Serious damage may occur.

8. A sufficient volume of fuel must be present in the tank to ensure that the liquid level is above the bottom of the suction pipe (suction pumps) or is high enough to allow the submersible pump to operate efficiently (remote dispensers).

9. Precautions for heating and insulation must be taken for DEF units that are installed in locations that may experience 15 °F (-9.4 °C) or lower. For wiring details, refer to *FE-356 Field Wiring Diagram Atlas Retail, Commercial, E85, and DEF Dispensers with Electronic and Mechanical Displays*.

10 All external piping must be protected against freezing of the DEF fluid that can cause severe damage to piping components or the dispenser with accompanying leaks. It is recommended to use reflective or light color insulation for insulation exposed to direct sunlight.

CAUTION

Applicable during installation and operation of the dispenser: DEF freezes at approximately 11.5 °C (11 °F). Power to the dispenser and heater must always remain ON in cold weather. If power is lost and the temperature drops below this point, the system must be inspected for freeze damage before restart. For sites that experience occasional power losses or for sites that are located in very cold climates, it is recommended that a backup power generator be used to maintain constant power to the dispenser. Do not use any additives to lower the freezing point of DEF. Additives of any type must not be used in DEF. Freezing can cause damaged or inoperative hose breakaways, fluid lines or components, valves, nozzles, and meters.

Prolonged storage at temperatures above 25 °C (77 °F) can impair the quality of DEF and reduce its shelf life.

Start-up

After successfully verifying the installation against the completion checklist, the unit is ready for start-up.

To perform an orderly start-up of the Atlas electronic series unit, proceed as follows:

1 Ensure that all switches and jump jacks on the CPU PCB are set properly to various operating conditions.

2 Turn on circuit breakers for the microprocessor and fluorescent lights. Ensure that both lights are lit.

3 Authorize the hose for side 1 through the FMS, if available.

4 Remove the nozzle for side 1 from its holder and turn on the pump handle. Ensure that the display goes through a proper reset sequence.

5 Dispense the fuel. Ensure that the high flow valve opens, if equipped. Check all plumbing for leaks at this time.

6 Turn the pump handle off. Open the nozzle. No fuel must be dispensed at this time.

7 Ensure that the correct quantity is recorded by the FMS, if available.

8 If applicable, repeat steps 3 through 7 for side 2.

9 Run the unit through all standard calibration procedures.

10 Reset the electronic totalizers.

9 – Start-up for Atlas Mechanical Series

Installation Completion Checklist

Review the information below to verify proper installation of the Atlas mechanical series dispensing unit. If the installation does not meet the criteria listed, correct the problem before the start-up is performed.

To complete the installation, proceed as follows:

1. The unit must be properly secured to the island.
2. All plumbing must be complete and tight. All liquid-carrying lines must be checked for leaks.
3. When DC pulsers are used in the pump for connecting to Gasboy FMSs, AC and DC wires must not share any conduits, J-boxes, or troughs unless the conditions outlined in “Pulser” on page 5-3 and “Wiring” on page 7-4 are satisfied.
4. All conduit work must be complete. All J-box covers must be secured. Conduits must not be sealed until the wiring is verified through proper operation.
5. The unit must be properly grounded.
6. Before testing begins, remove any water in the tank through a fill opening, using a suitable pump. Do not use the Gasboy pump or remote dispenser and submersible pump to remove water. Serious damage may occur.
7. A sufficient volume of fuel must be present in the tank to ensure that the liquid level is above the bottom of the suction pipe (suction pumps) or is high enough to allow the submersible pump to operate efficiently (remote dispensers).

Start-up

After successfully verifying the installation against the completion checklist, the unit is ready for start-up.

To perform an orderly start-up of the Atlas mechanical series dispensing unit, proceed as follows:

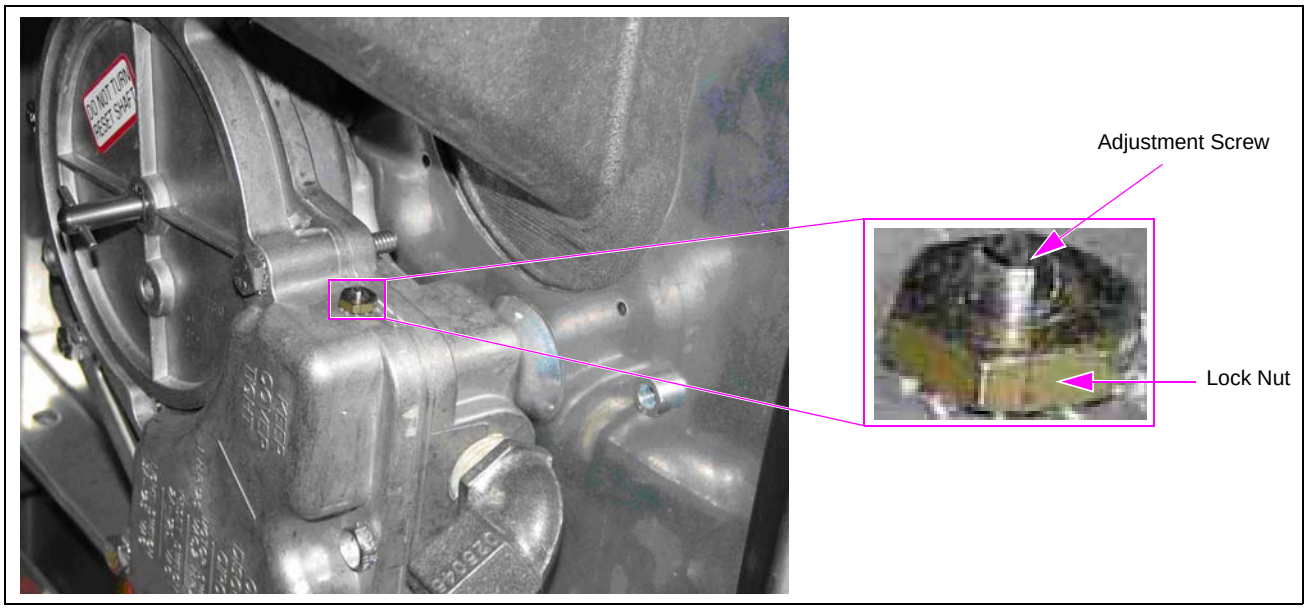
1. Turn on the circuit breaker(s) for various control lines to the unit.
2. Remove the nozzle for side 1 from its holder and turn on the pump handle. Ensure that the non-computer register goes through its reset sequence, which consists of resetting the total volume wheels to zero.
3. Dispense the fuel. If the unit contains a slow/fast flow valve, ensure that it opens. Check all plumbing for leaks at this time.
4. Turn off the pump handle and open the nozzle. No fuel must be dispensed.

Power Reset External Adjustment

If the pump or remote dispenser unit fails to reset or shut off properly, the reset motor must be adjusted. To adjust the reset motor, proceed as follows:

1. Loosen the lock nut on the adjusting screw and back the screw out until it stops.
2. Move the reset lever to the ON position.
3. Turn the adjustment screw in until the reset motor starts.
4. Advance the adjustment screw an additional 1/2 to 3/4 turn. Hold the screw in this position and tighten the lock nut.
5. Move the reset lever to the OFF position, and then back to the ON position to ensure that the reset motor operates properly. The reset coupling must make one revolution and stop.

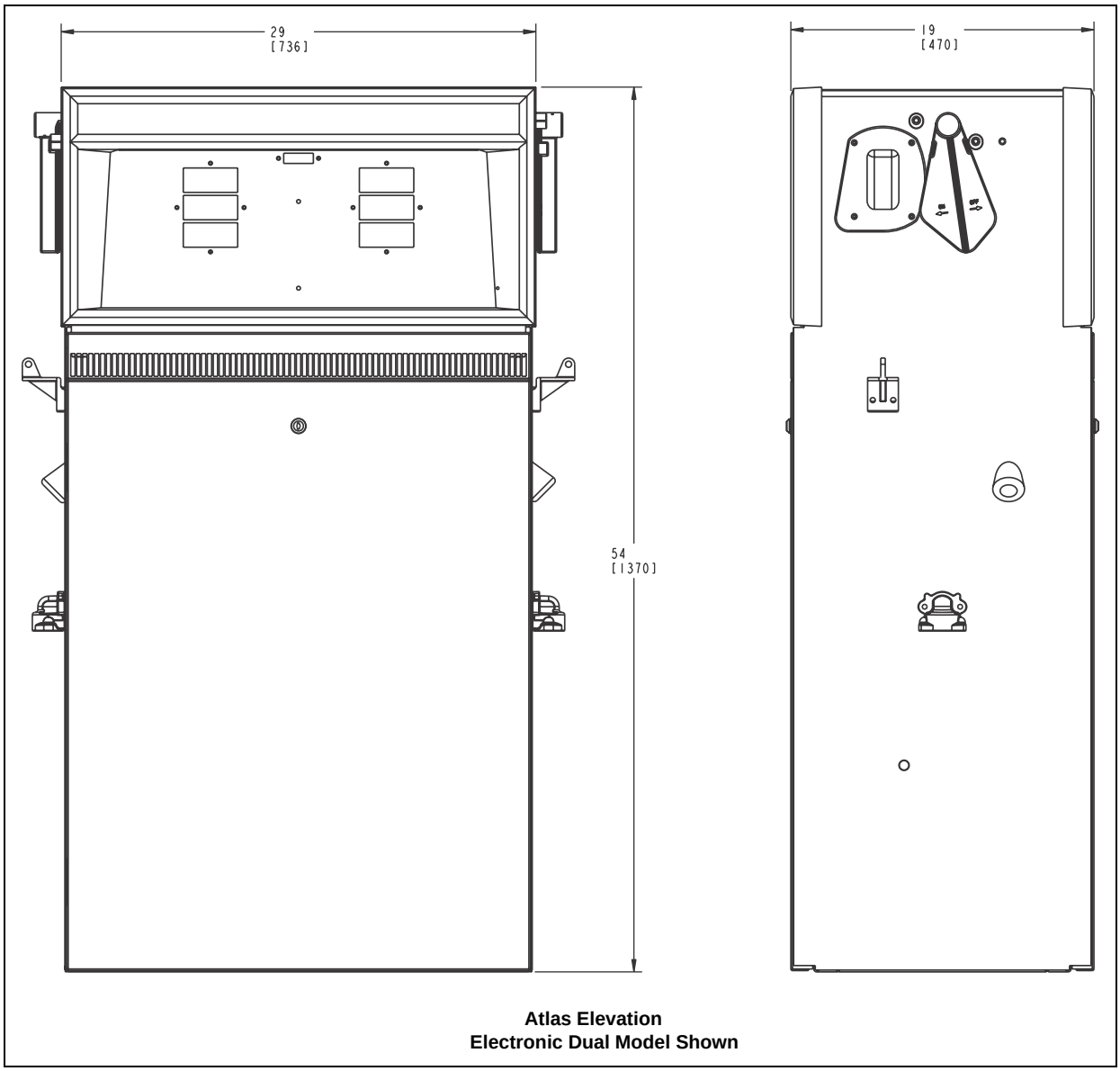
Figure 9-1: Power Reset for Pump or Remote Dispenser Unit



Appendix: Atlas Diagrams

Elevation Diagrams

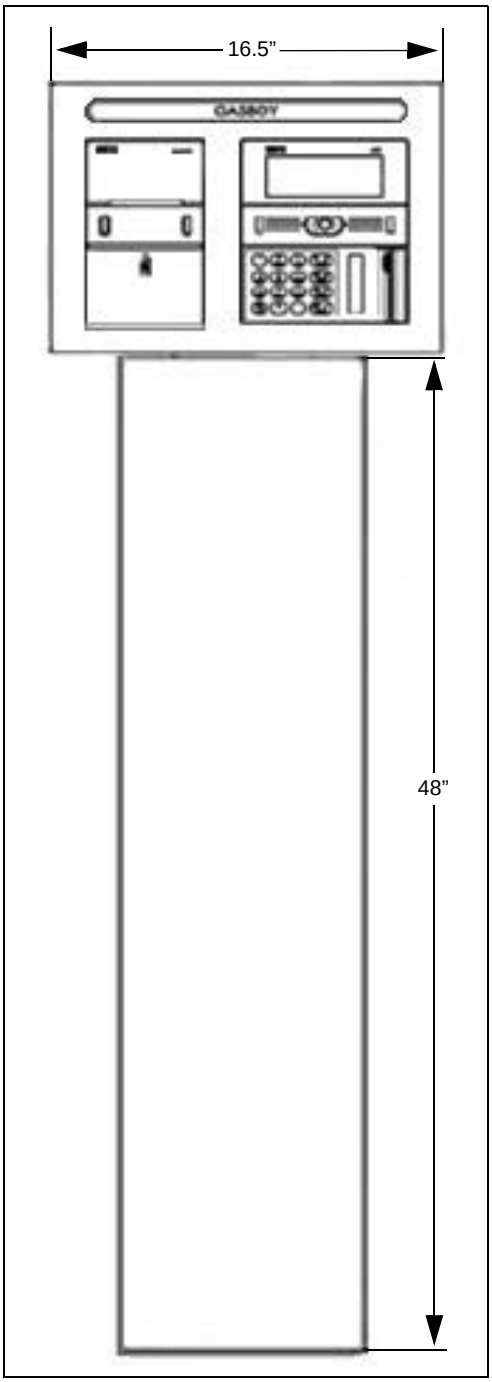
Figure A-1: Atlas Elevation Electronic Dual Model



Atlas Elevation
Electronic Dual Model Shown

Note: Unless noted differently, all dimensions are in inches first and then in millimeters.

Figure A-2: TopKAT PLUS on Pedestal



Foundation Diagrams

This section lists the details of the foundation diagrams:

Register	Flow Rating	Pump/Disp	Type	Atlas Commercial Model	Atlas Retail Model	MDE-4331 Foundation Figure Basic	MDE-4331 Foundation Figure with Satellite Piping (S)
Mech	SF	Disp	Single	9152KX	8752KX	Figure A-3	Figure A-7
Mech	SF	Disp	TW1	9152KXTW1	8752KXTW1	Figure A-3	Figure A-10
Mech	SF	Disp	TW2	9152KXTW2	8752KXTW2	Figure A-4	Figure A-8
Mech	SF	Pump	Single	9152K	8752K	Figure A-5	N/A
Mech	SF	Pump	TW1	9152KTW1	8752KTW1	Figure A-5	N/A
Mech	SF	Pump	TW2	9152KTW2	8752KTW2	Figure A-6	N/A
Mech	HF	Disp	Single	9153KX	8753KX	Figure A-3	Figure A-7
Mech	HF	Disp	TW1	9153KXTW1	8753KXTW1	Figure A-3	Figure A-10
Mech	HF	Disp	TW2	9153KXTW2	8753KXTW2	Figure A-4	Figure A-8
Mech	HF	Pump	Single	9153K	8753K	Figure A-5	N/A
Mech	HF	Pump	TW1	9153KTW1M	8753KTW1M	Figure A-9	N/A
Mech	HF	Pump	TW2	9153KTW2	8753KTW2	Figure A-6	N/A
Mech	SHF	Disp	Single	9140KX	N/A	Figure A-12	Figure A-12
Mech	SHF	Pump	Single	9140K	N/A	Figure A-11	Figure A-11
Elec	SF	Disp	Single	9852KX	8852KX	Figure A-3	Figure A-7
Elec	SF	Disp	TW1	9852KXTW1	8852KXTW1	Figure A-3	Figure A-10
Elec	SF	Disp	TW2	9852KXTW2	8852KXTW2	Figure A-4	Figure A-8
Elec	SF	Pump	Single	9852K	8852K	Figure A-5	N/A
Elec	SF	Pump	TW1	9852KTW1	8852KTW1	Figure A-5	N/A
Elec	SF	Pump	TW2	9852KTW2	8852KTW2	Figure A-6	N/A
Elec	HF	Disp	Single	9853KX	8853KX	Figure A-3	Figure A-7
Elec	HF	Disp	TW1	9853KXTW1	8853KXTW1	Figure A-3	Figure A-10
Elec	HF	Disp	TW2	9853KXTW2	8853KXTW2	Figure A-4	Figure A-8
Elec	HF	Pump	Single	9853K	8853K	Figure A-5	N/A
Elec	HF	Pump	TW1	9853KTW1M	8853KTW1M	Figure A-9	N/A
Elec	HF	Pump	TW2	9853KTW2	8853KTW2	Figure A-6	N/A
Elec	SHF	Disp	Single	9840KX	N/A	Figure A-12	Figure A-12
Elec	SHF	Pump	Single	9840K	N/A	Figure A-11	Figure A-11
Elec	UHF	Disp	Single	9850KX	N/A	Figure A-15	Figure A-15
Elec	UHF	Disp	TW1	9850KXTW1	N/A	Figure A-18	Figure A-18
Elec	UHF	Disp	TW2	9850KXTW2	N/A	Figure A-17	Figure A-17
Elec	UHF	Disp	TW3	9850KXTW3	N/A	Figure A-16	Figure A-16
Elec	UHF	Pump	Single	9850K	N/A	Figure A-13	Figure A-13
Elec	UHF	Pump	TW3	9850KTW3	N/A	Figure A-14	Figure A-14
Elec	SF	Disp (E85)	TW1	9872KX, 9872KXTW1	N/A	Figure A-19	Figure A-19
Elec	SF	Disp (DEF)	TW1	9862KX	N/A	Figure A-20	N/A
Elec	SF	Disp (DEF)	TW1	9862KX-WW	N/A	Figure A-21	N/A

Figure A-3: 1 Grade Single and TW1 Dispenser - SF and HF

Model Numbers			
8752KX	**9152KX**	**8752KXTW1**	**9152KXTW1**
8753KX	**9153KX**	**8753KXTW1**	**9153KXTW1**
8852KX	**9852KX**	**8852KXTW1**	**9852KXTW1**
8853KX	**9853KX**	**8853KXTW1**	**9853KXTW1**

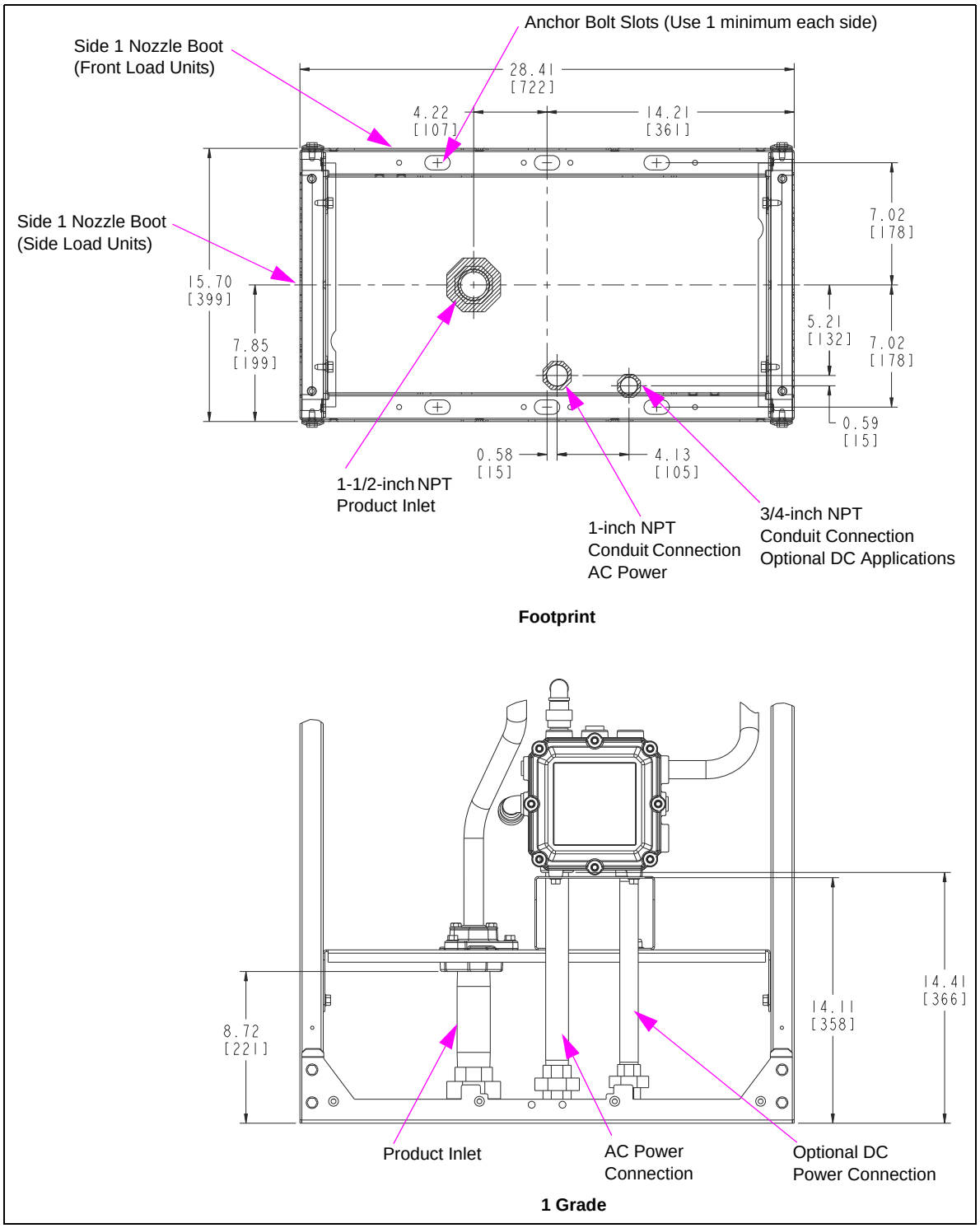


Figure A-4: 2 Grade TW2 Dispenser - SF and HF

Model Numbers	
8752KXTW2	**9152KXTW2**
8753KXTW2	**9153KXTW2**
8852KXTW2	**9852KXTW2**
8853KXTW2	**9853KXTW2**

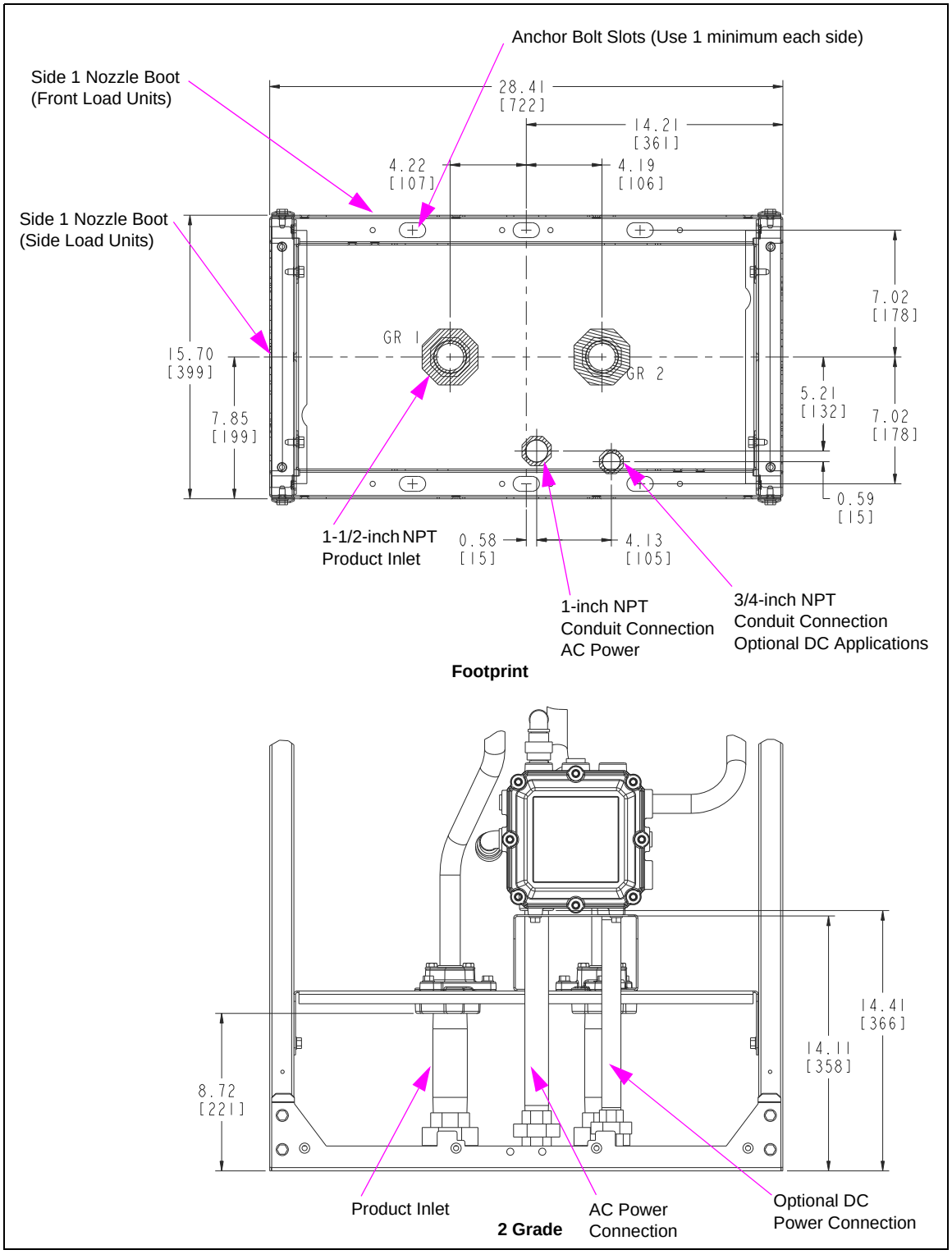


Figure A-5: 1 Grade Single and TW1 Self-contained Pump - SF and HF

Model Numbers		
8752K	**9152K**	**8752KTW1**
8753K	**9153K**	**8852KTW1**
8852K	**9852K**	**9152KTW1**
8853K	**9853K**	**9852KTW1**

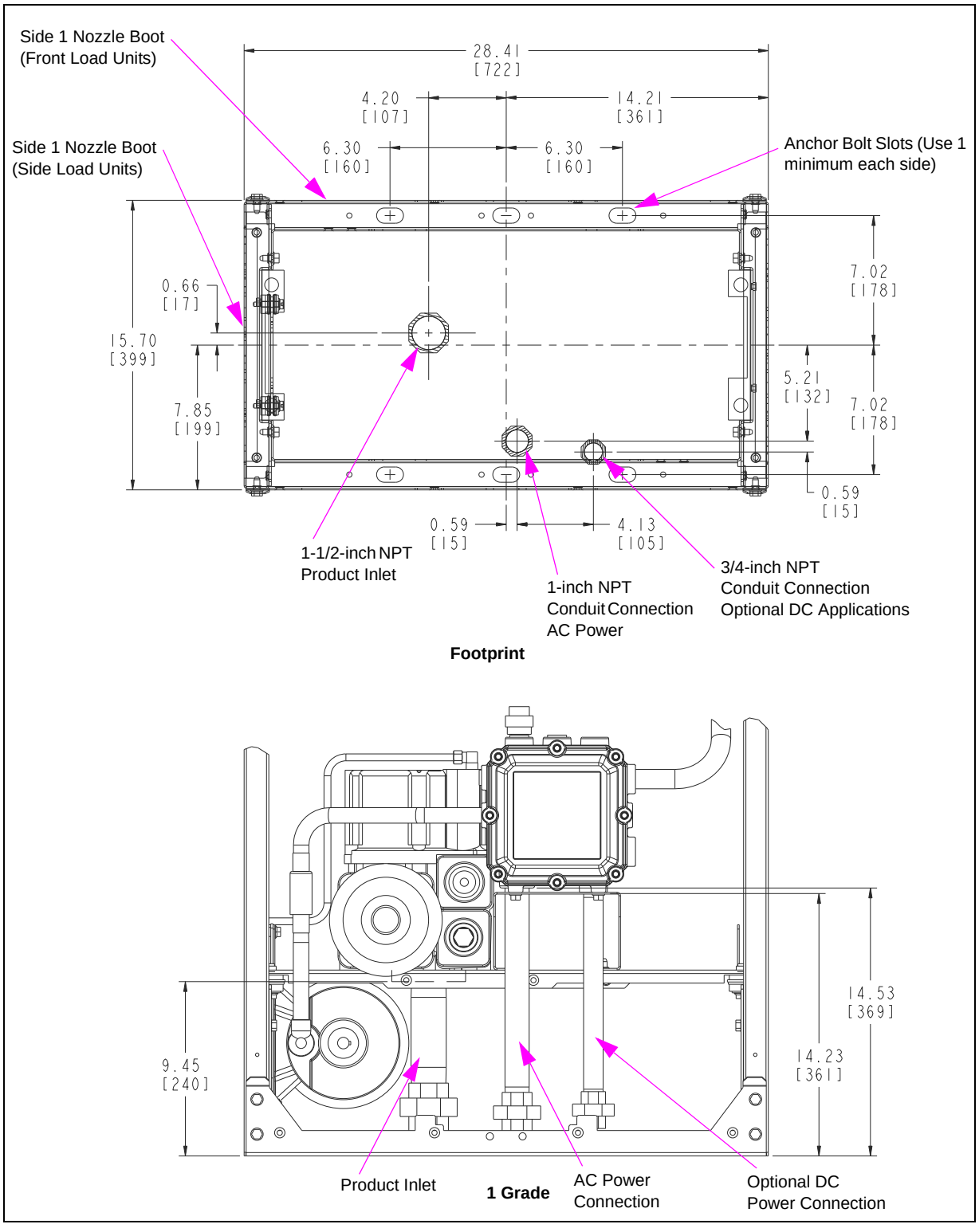


Figure A-6: 2 Grade TW2 Self-contained Pump - SF and HF

Model Numbers	
8752KTW2	**9152KTW2**
8753KTW2	**9153KTW2**
8852KTW2	**9852KTW2**
8853KTW2	**9853KTW2**

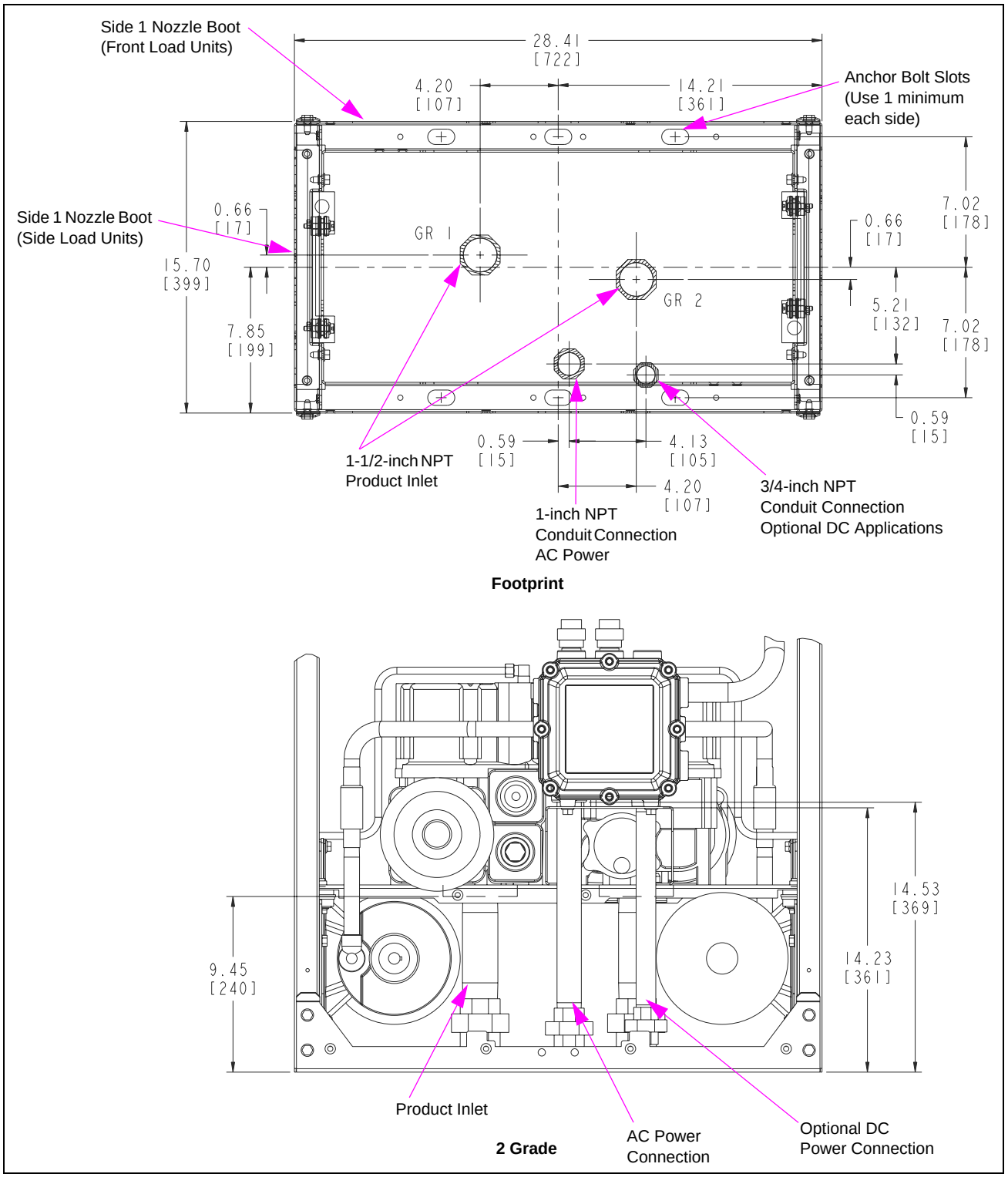


Figure A-7: 1 Grade Single Dispenser - HF with Satellite Outlet

Model Numbers
8753KX-S
8853KX-S
9153KX-S
9853KX-S

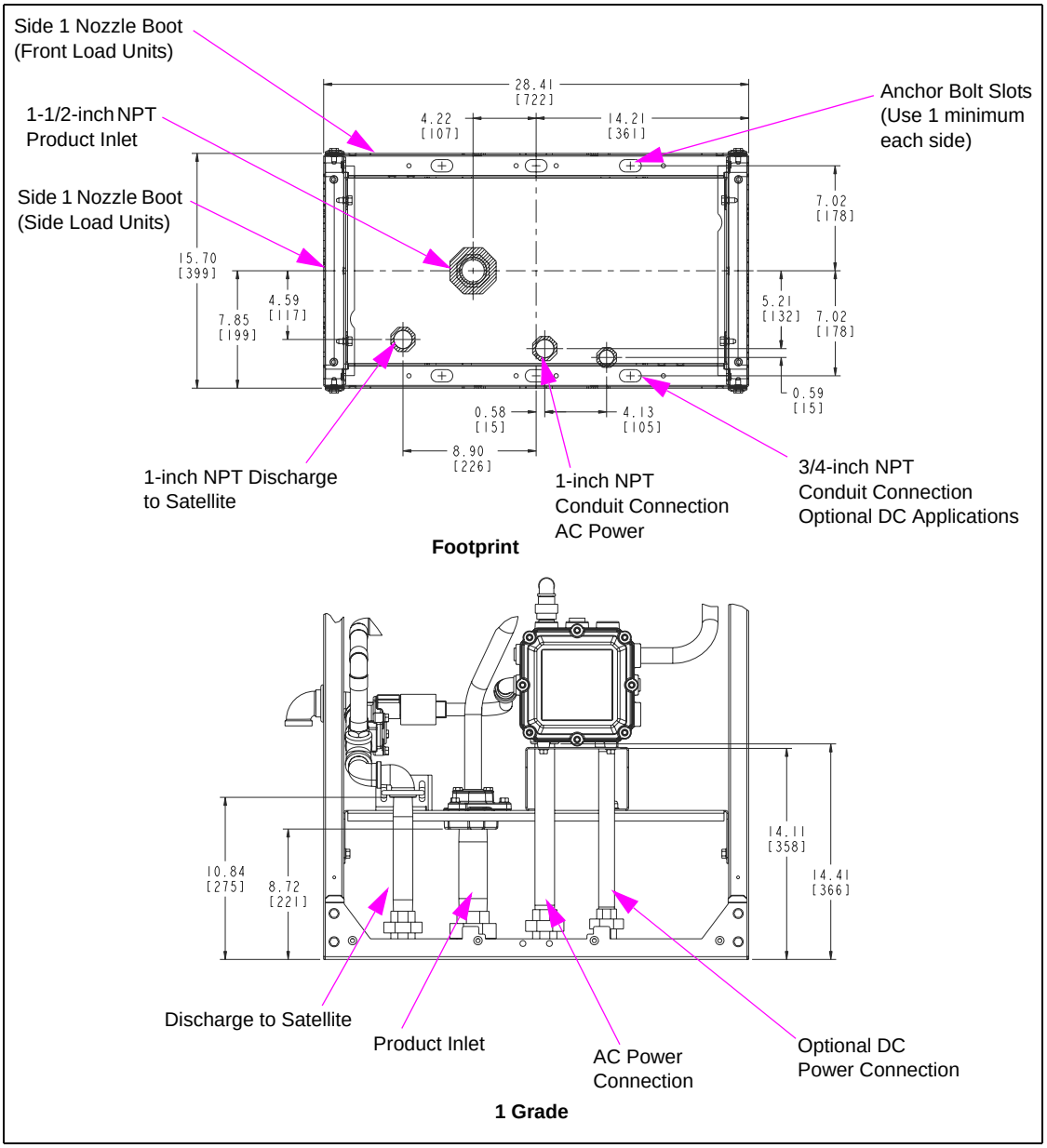


Figure A-8: 2 Grade TW2 Dispenser - HF with Satellite Outlet

Model Numbers
8753KXTW2-S
8853KXTW2-S
9153KXTW2-S
9853KXTW2-S

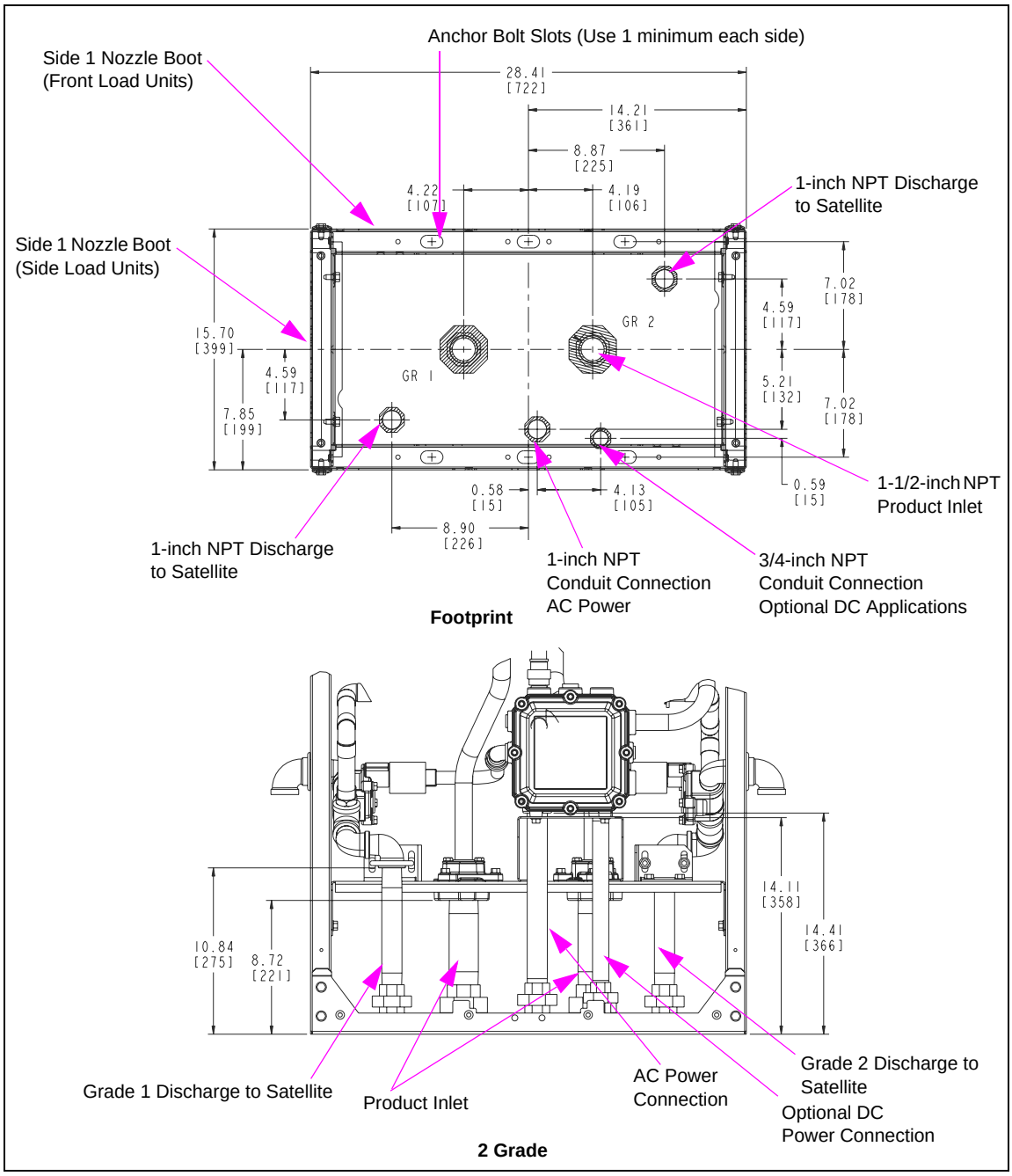
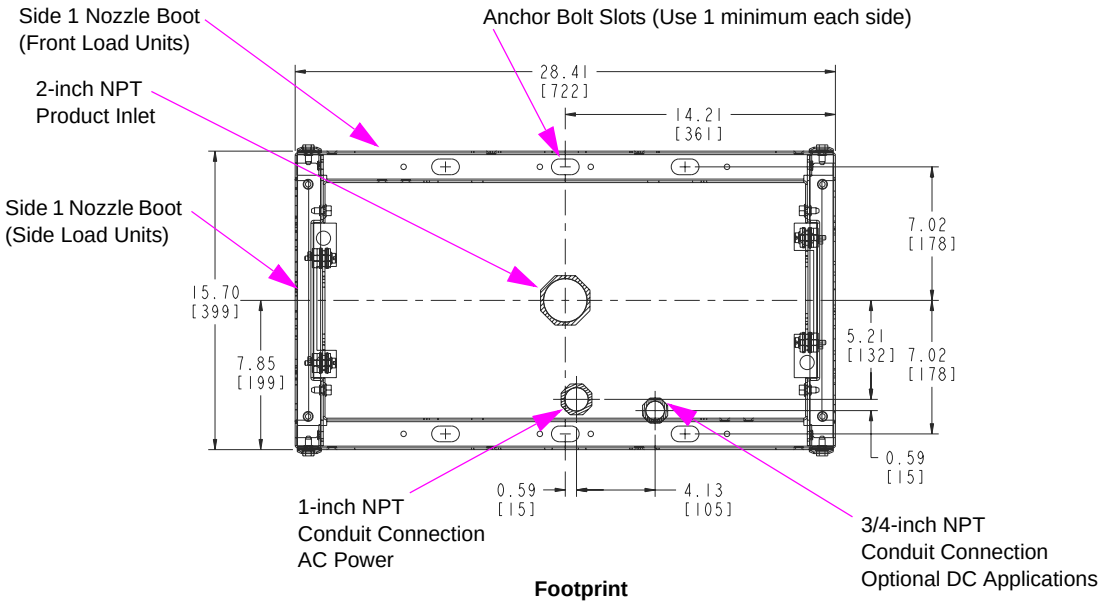
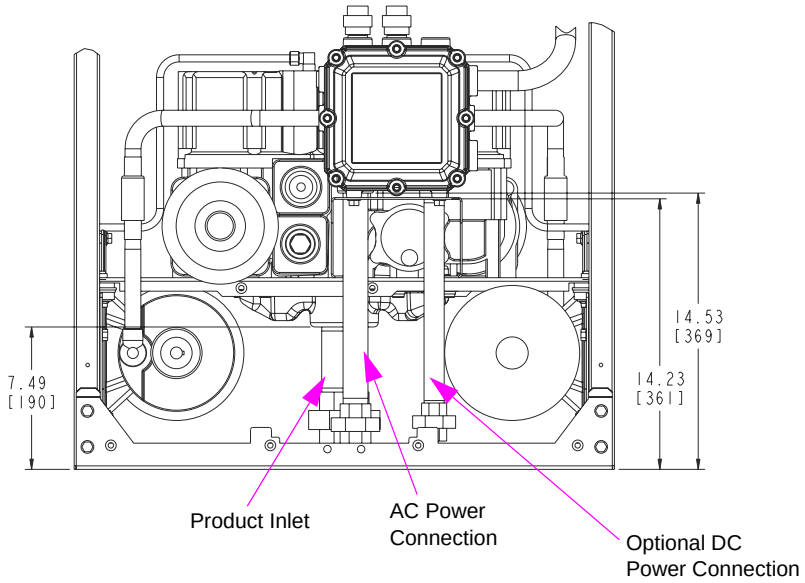


Figure A-9: Self-contained Pump - Twin Inlet Manifold (TW1-M) Model

Model Numbers
8753KTW1M
8853KTW1M
9153KTW1M
9853KTW1M



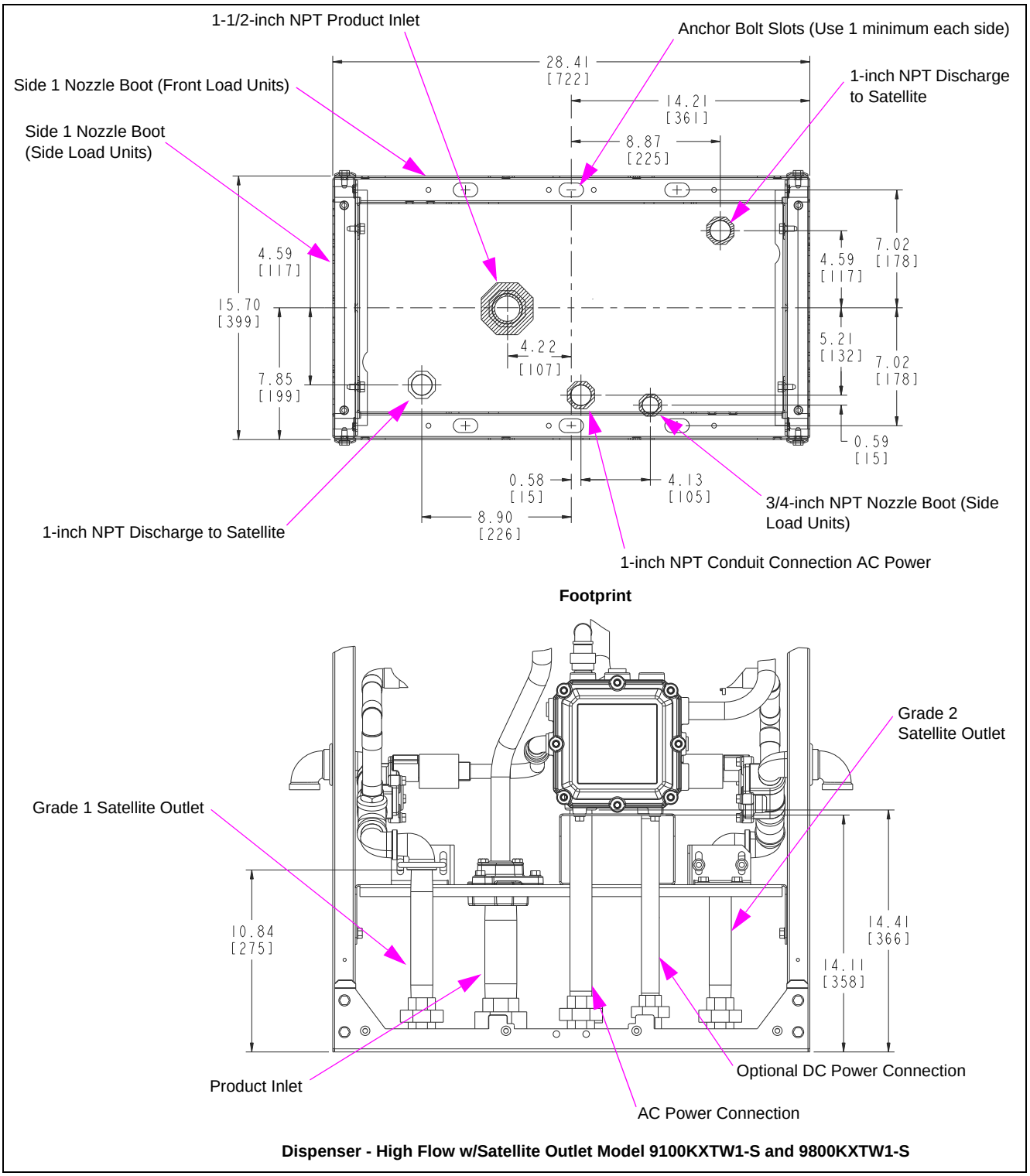
Footprint



Self-contained Pump - Twin Inlet Manifold (TW1-M) Model

Figure A-10: Dispenser - HF with Satellite Outlet-TW1-Model

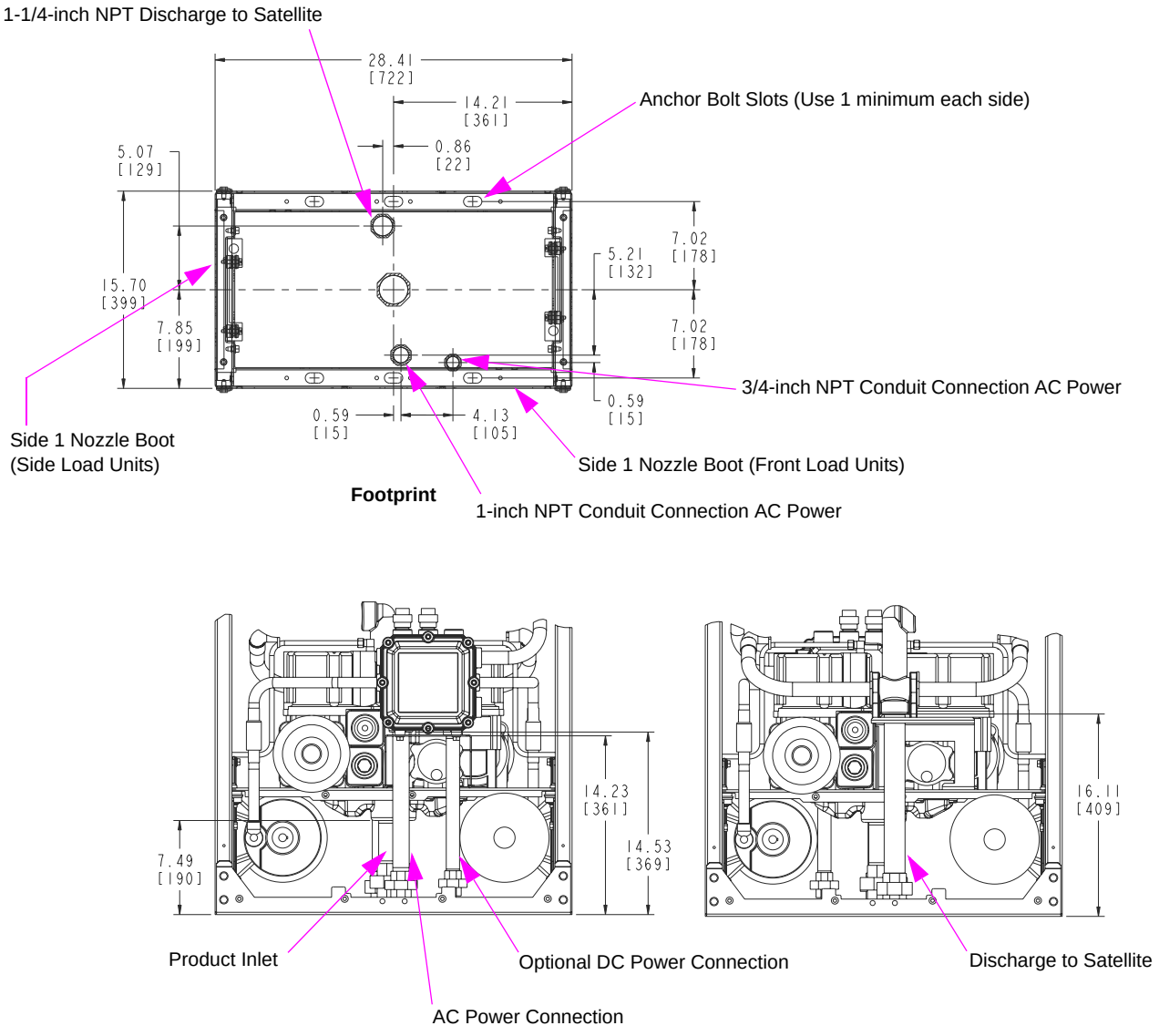
Model Numbers	
8753KXTW1-S	**9153KXTW1-S**
8853KXTW1-S	**9853KXTW1-S**



Dispenser - High Flow w/Satellite Outlet Model 9100KXTW1-S and 9800KXTW1-S

Figure A-11: Self-contained Pump - SHF Model

Model Numbers
9140K/9140K-S
9840K/9840K-S



Self-contained Pump - SHF Models

Figure A-12: Dispenser - SHF Model

Model Numbers
9140KX/9140KX-S
9840KX/9840KX-S

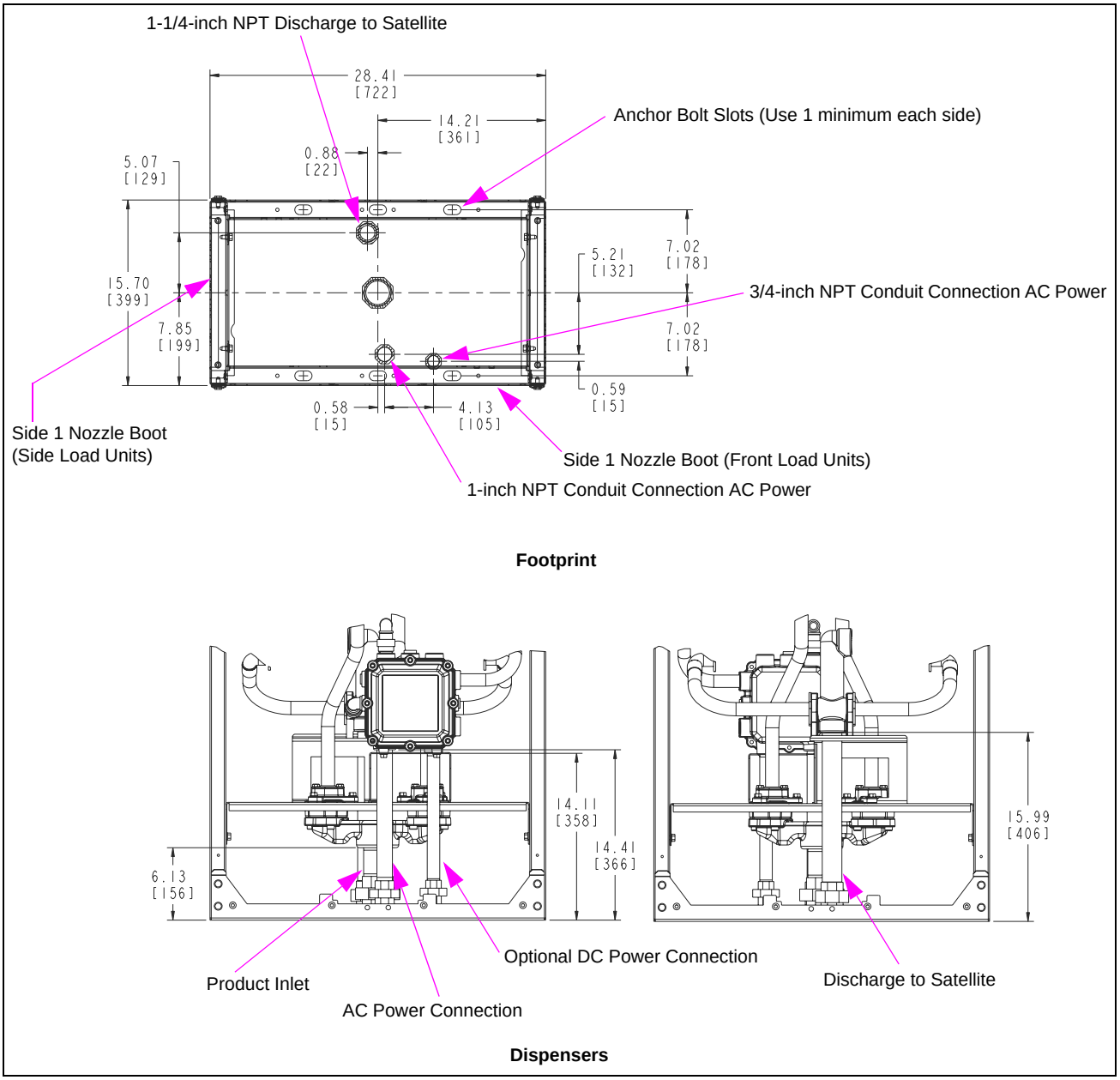


Figure A-13: Model 9850K - UHF Self-contained Pump

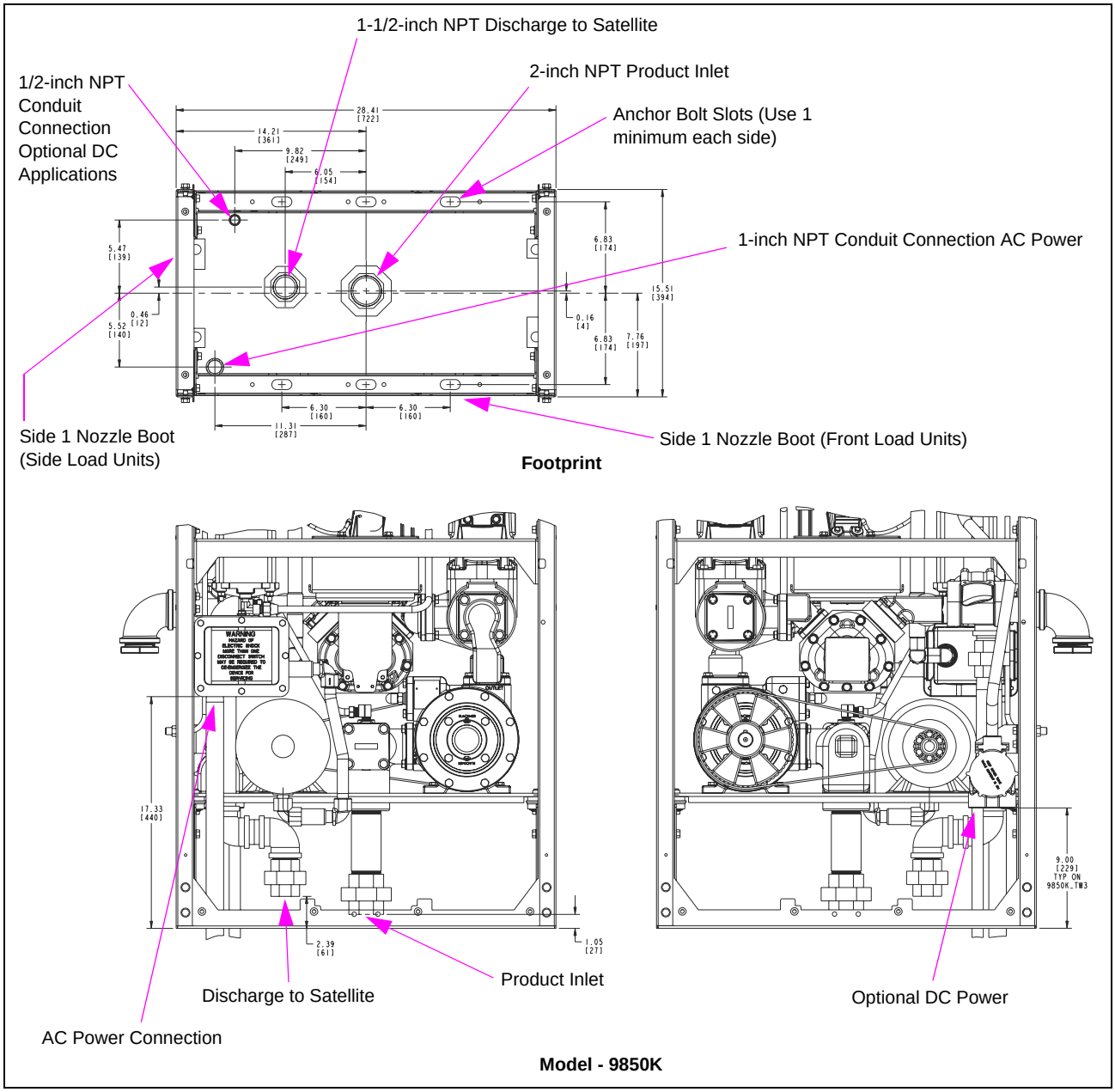
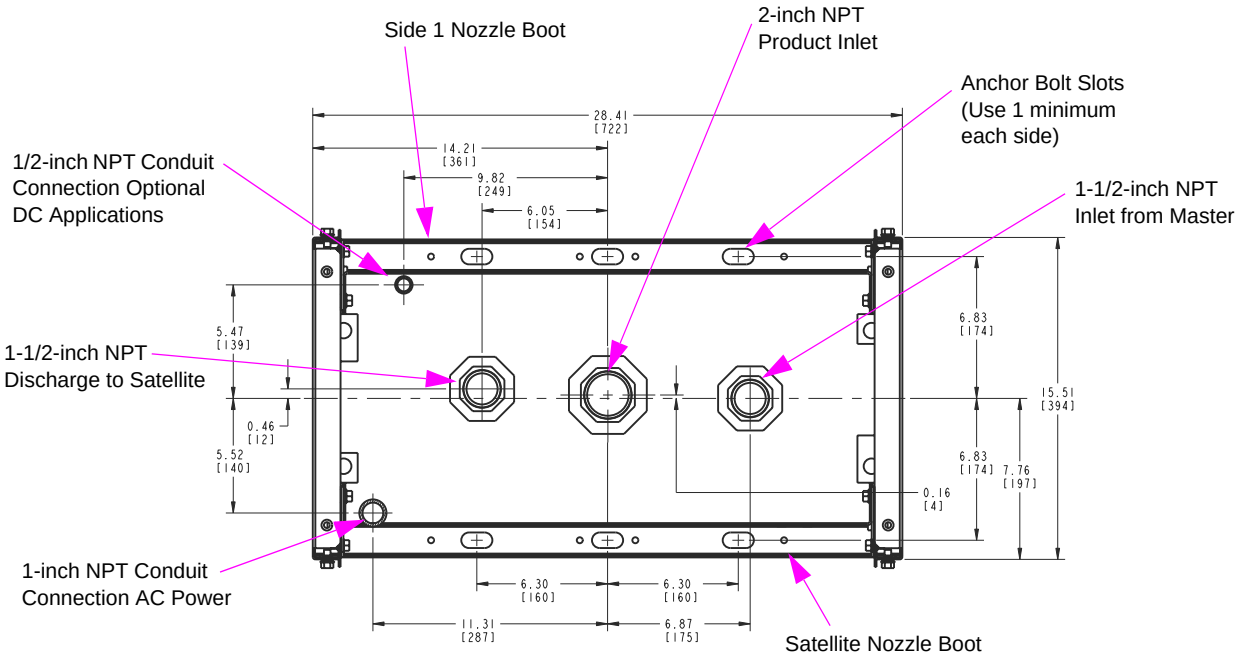


Figure A-14: Model 9850K-TW3 - UHF Self-contained Pump Combo



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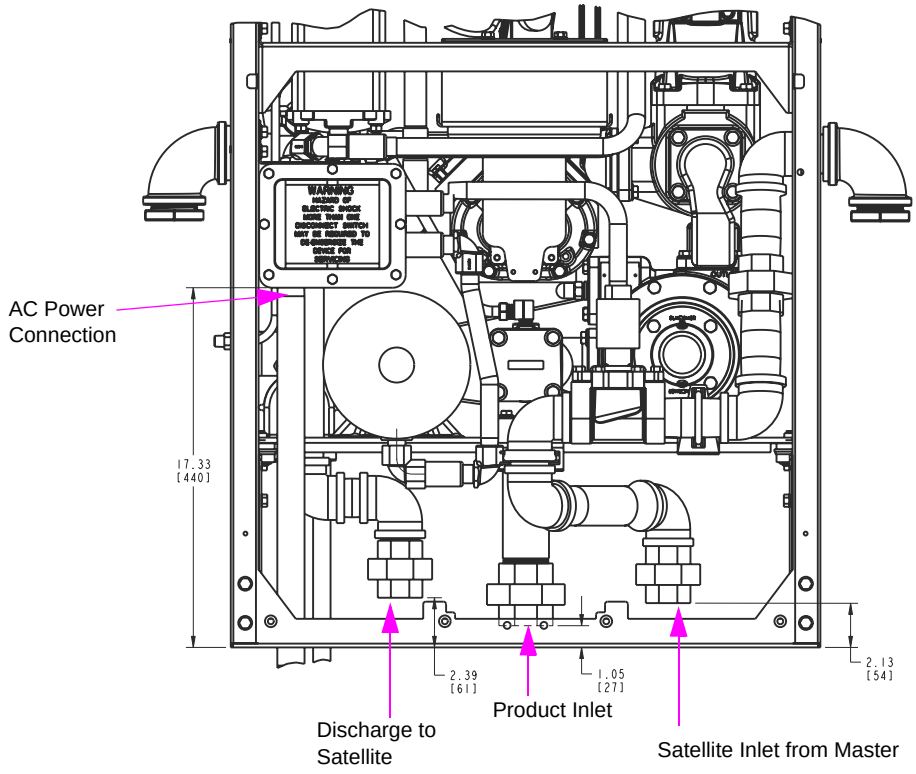


Model 9850K TW3

Figure A-15: Model 9850KX - UHF Dispenser

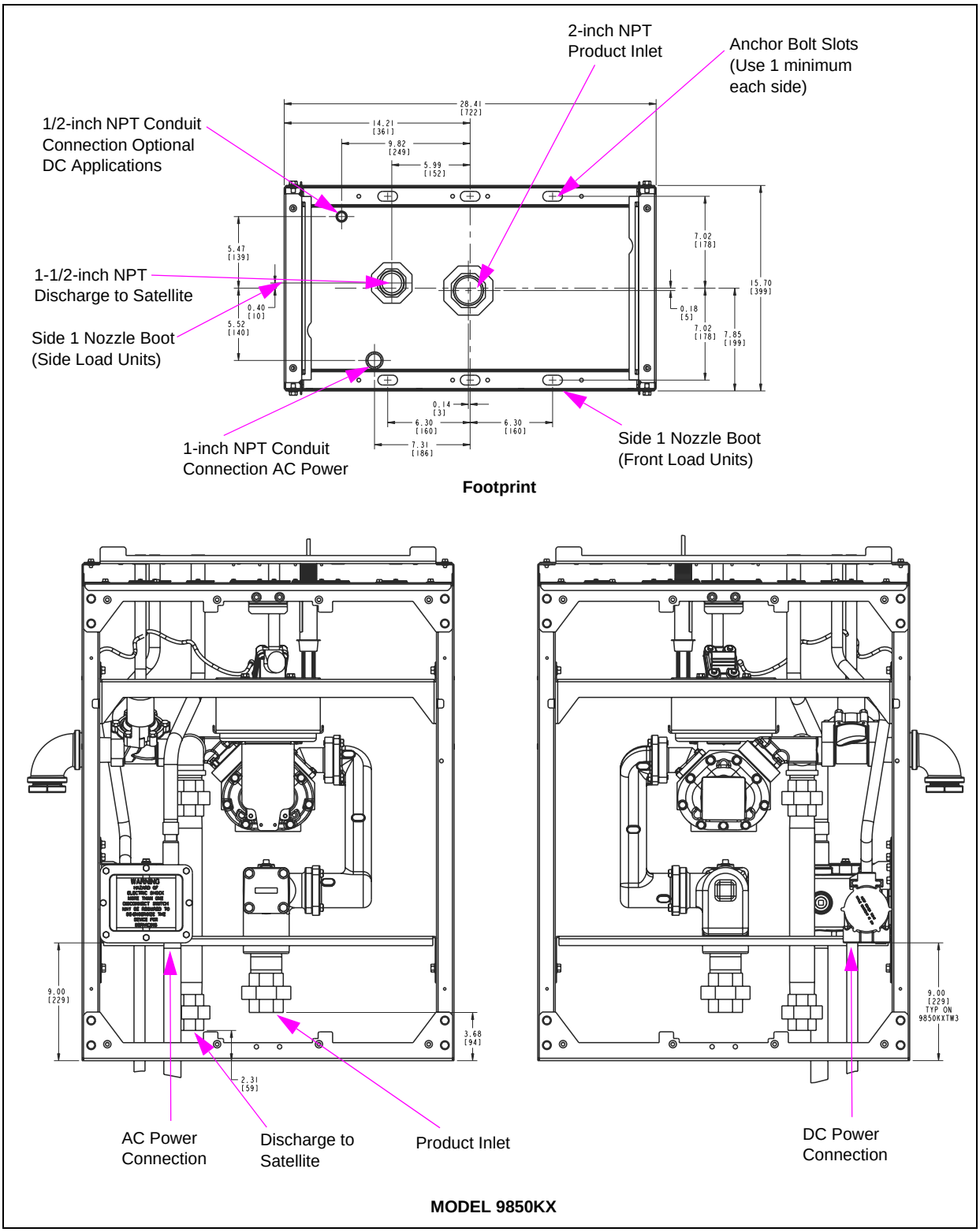


Figure A-16: Model 9850KXTW3 - UHF Dispenser Combo

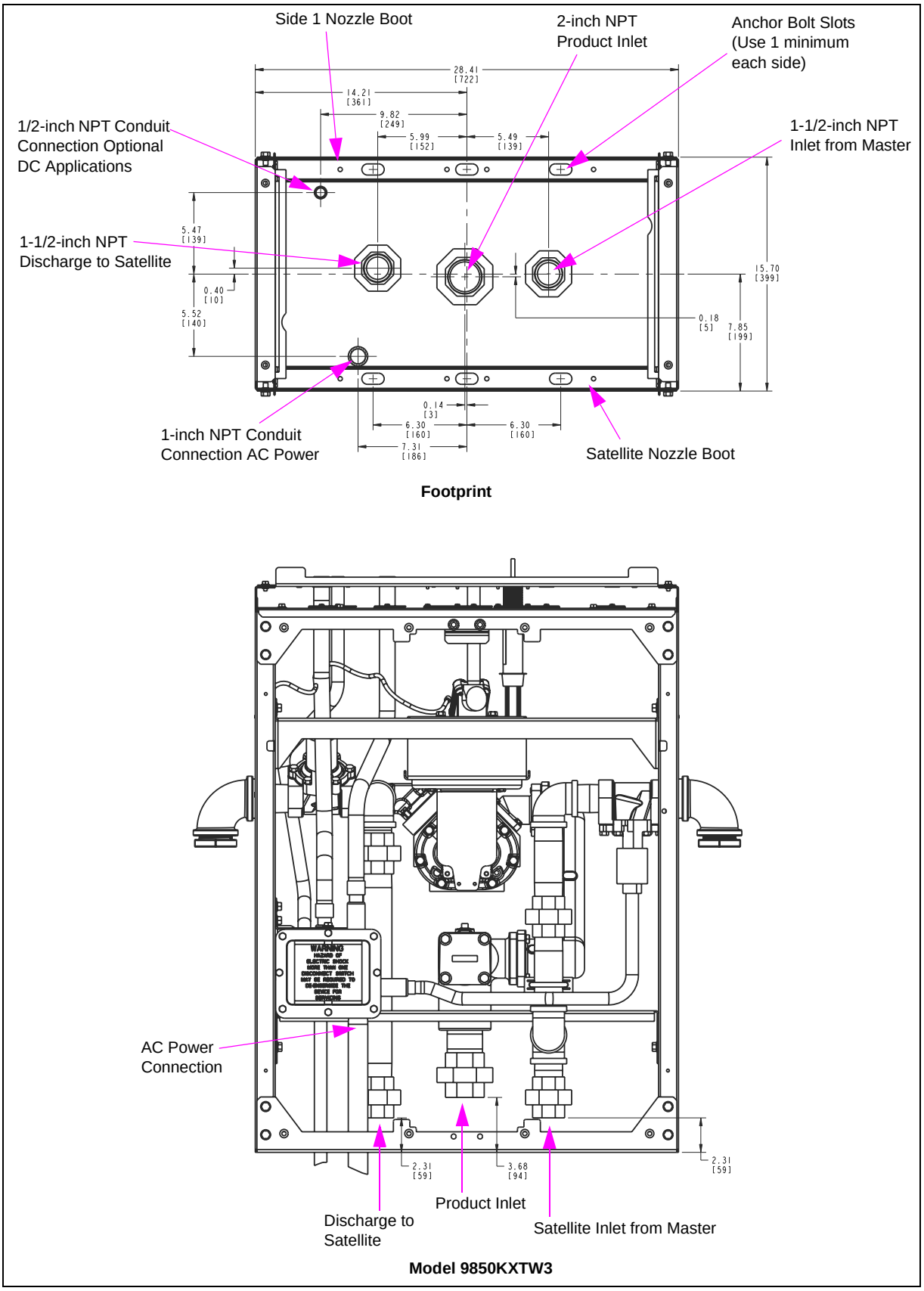


Figure A-17: Model 9850KXTW2 - UHF Dispenser (Dual)

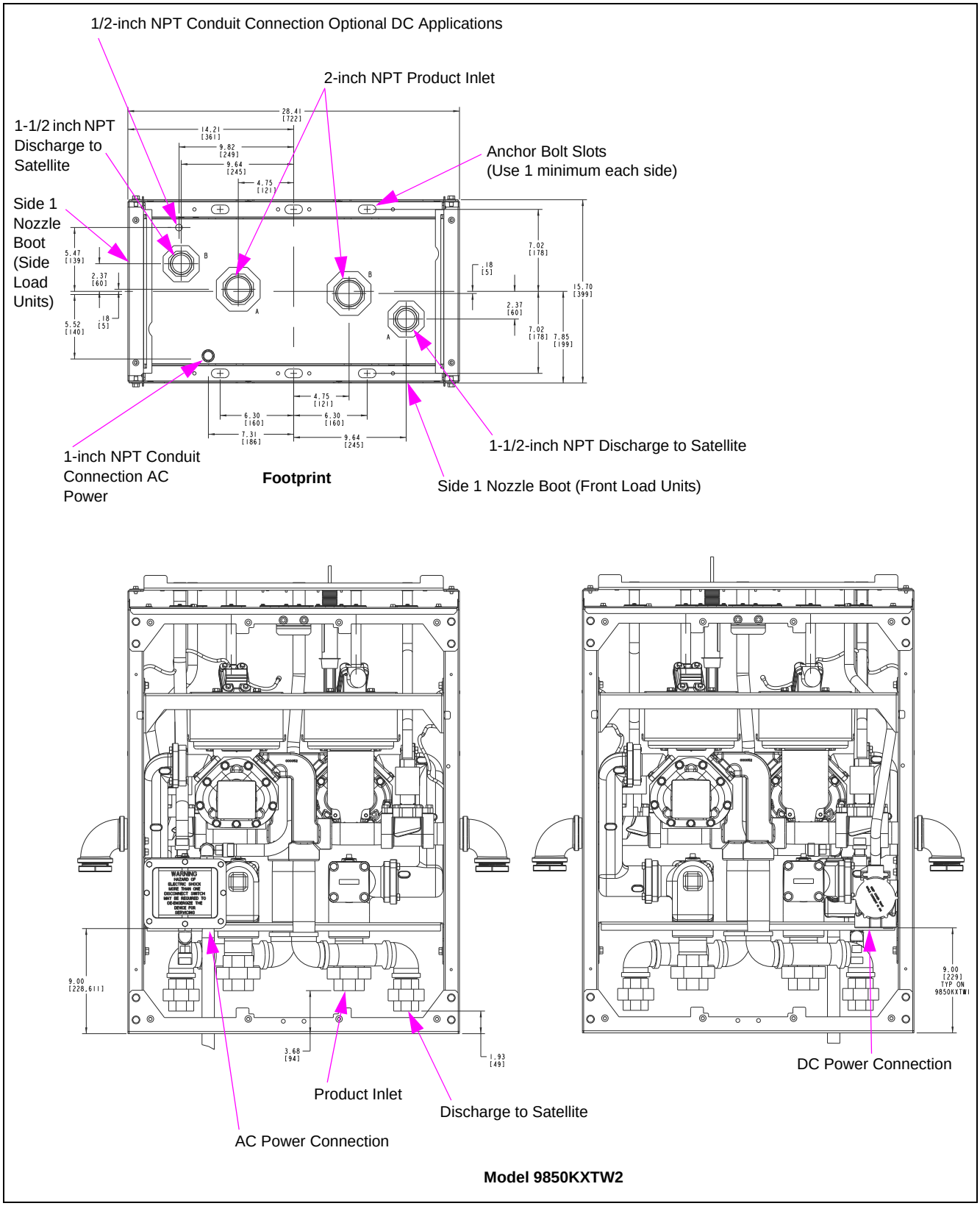


Figure A-18: Model 9850KXTW1 - UHF Dispenser (TWIN 1)

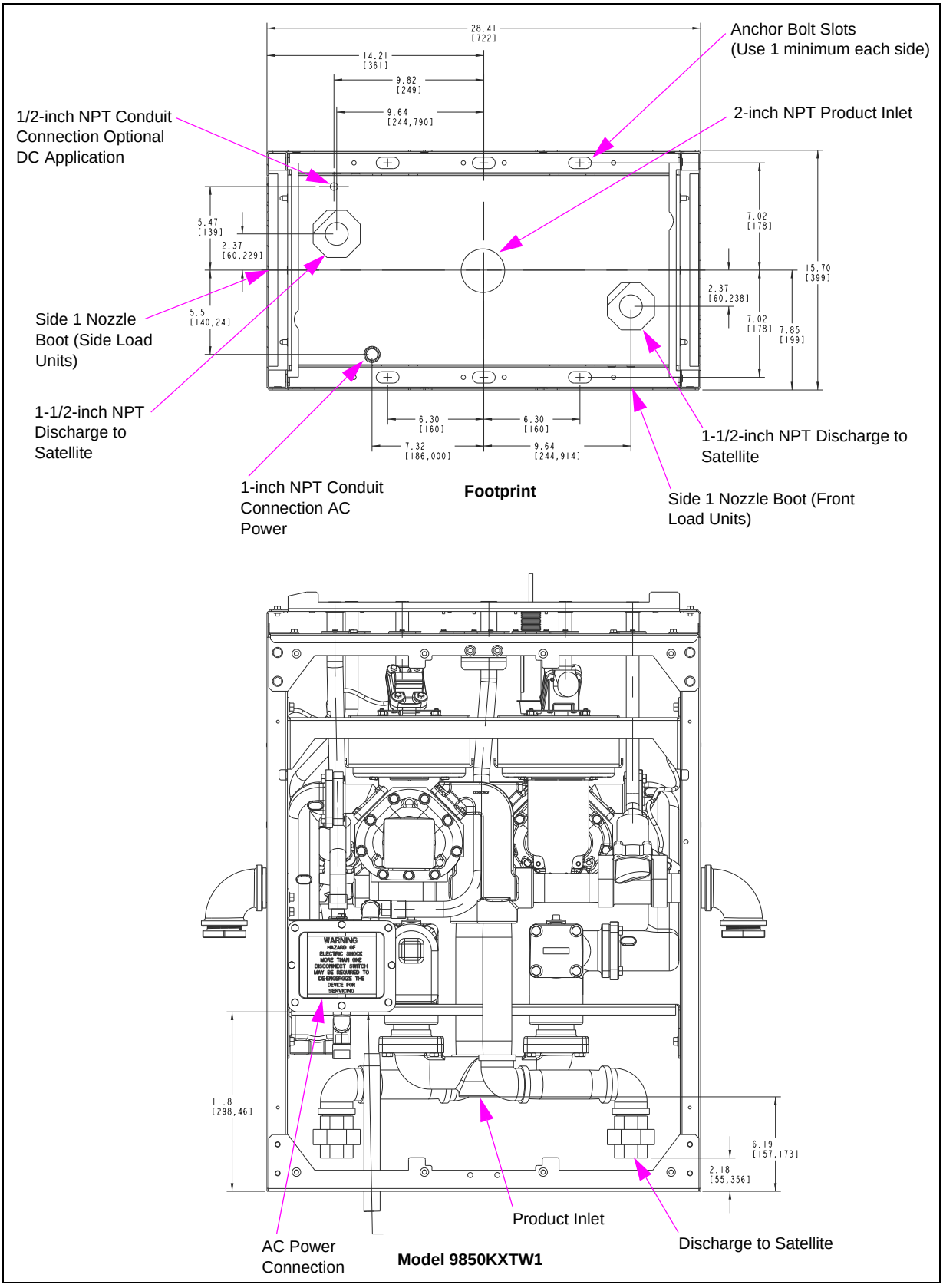
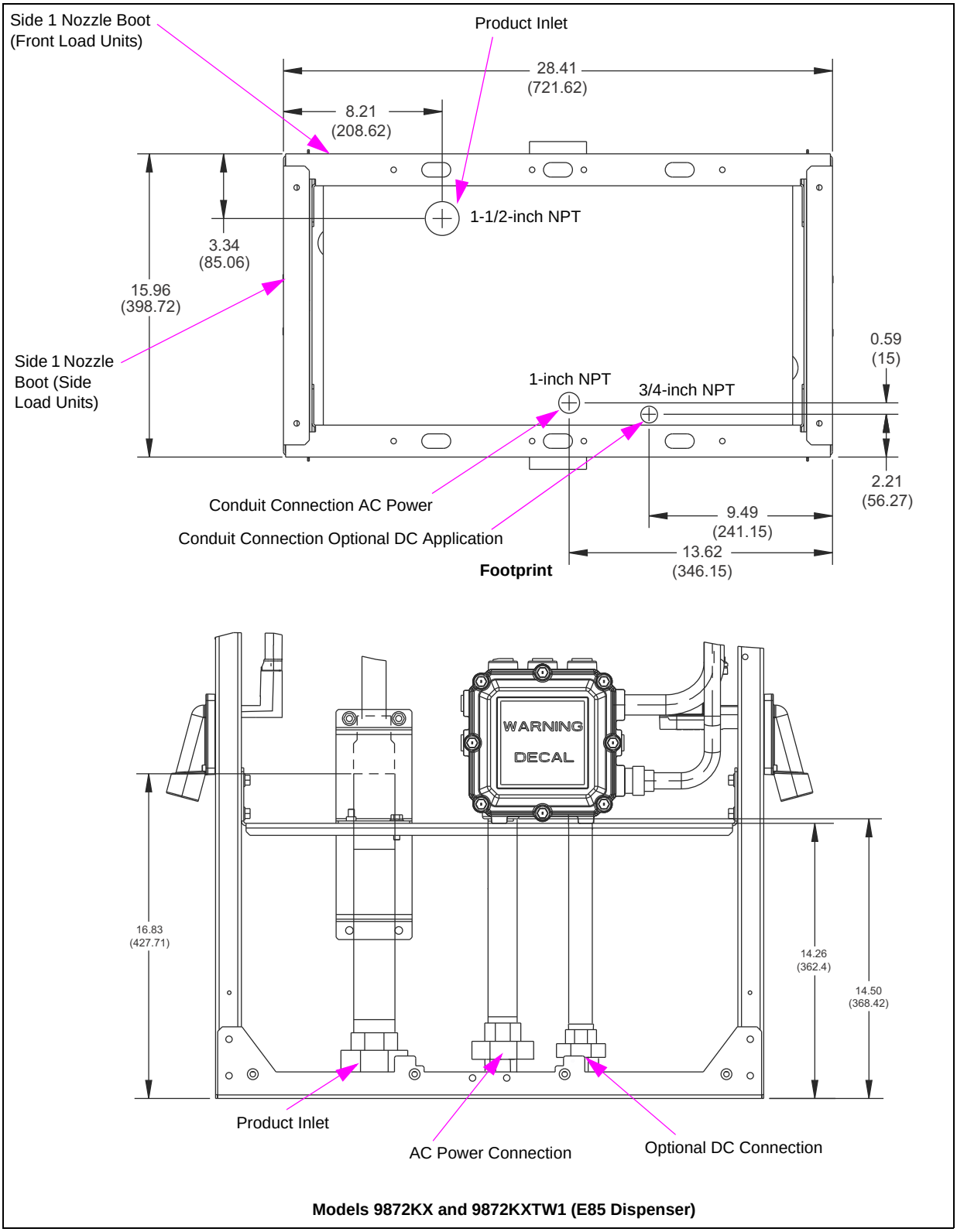


Figure A-19: Model 9872KX, 9872KXTW1 (E85 Dispenser)



Models 9872KX and 9872KXTW1 (E85 Dispenser)

Figure A-20: Model 9862KX-Z (DEF Cold Weather Dispenser)

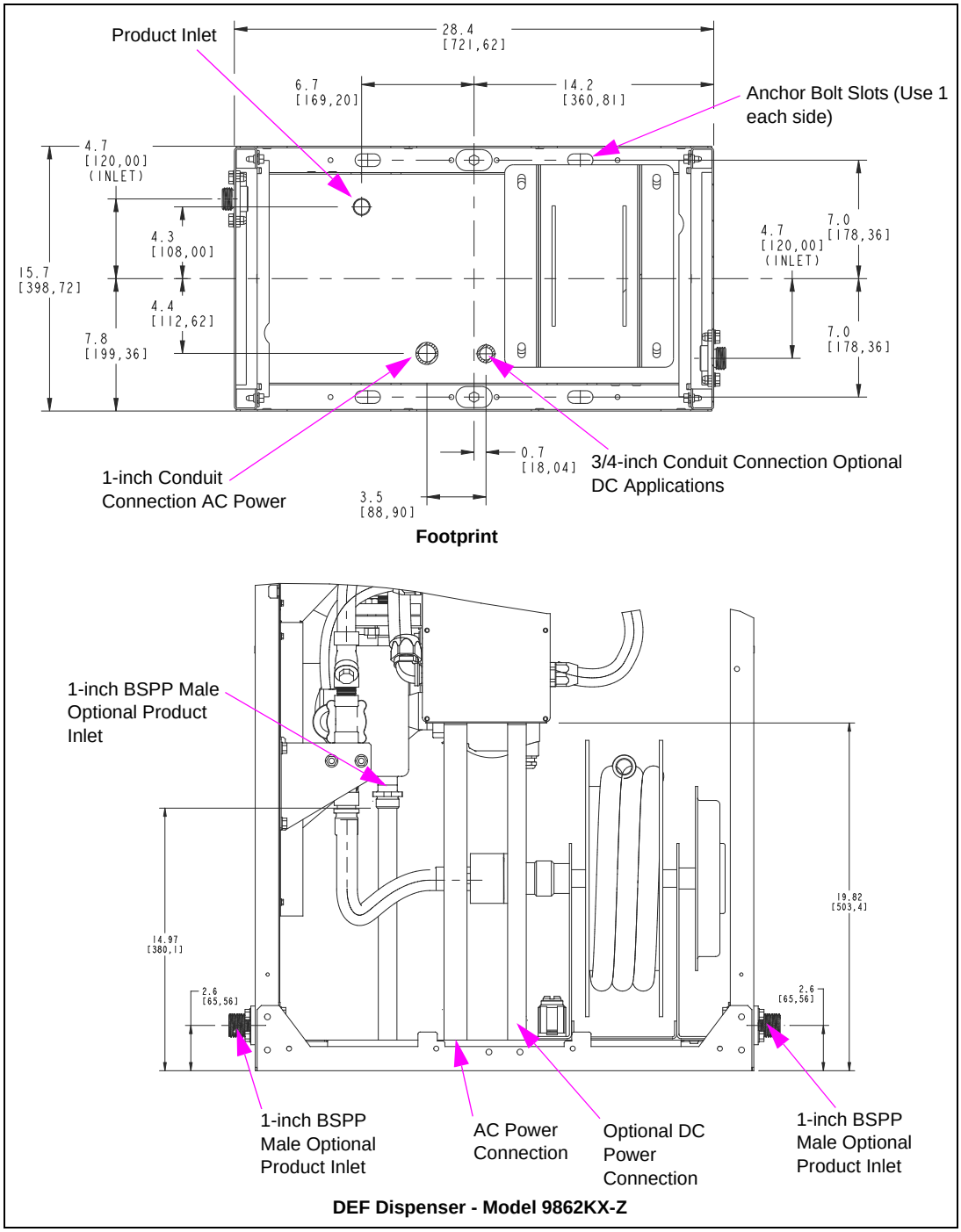
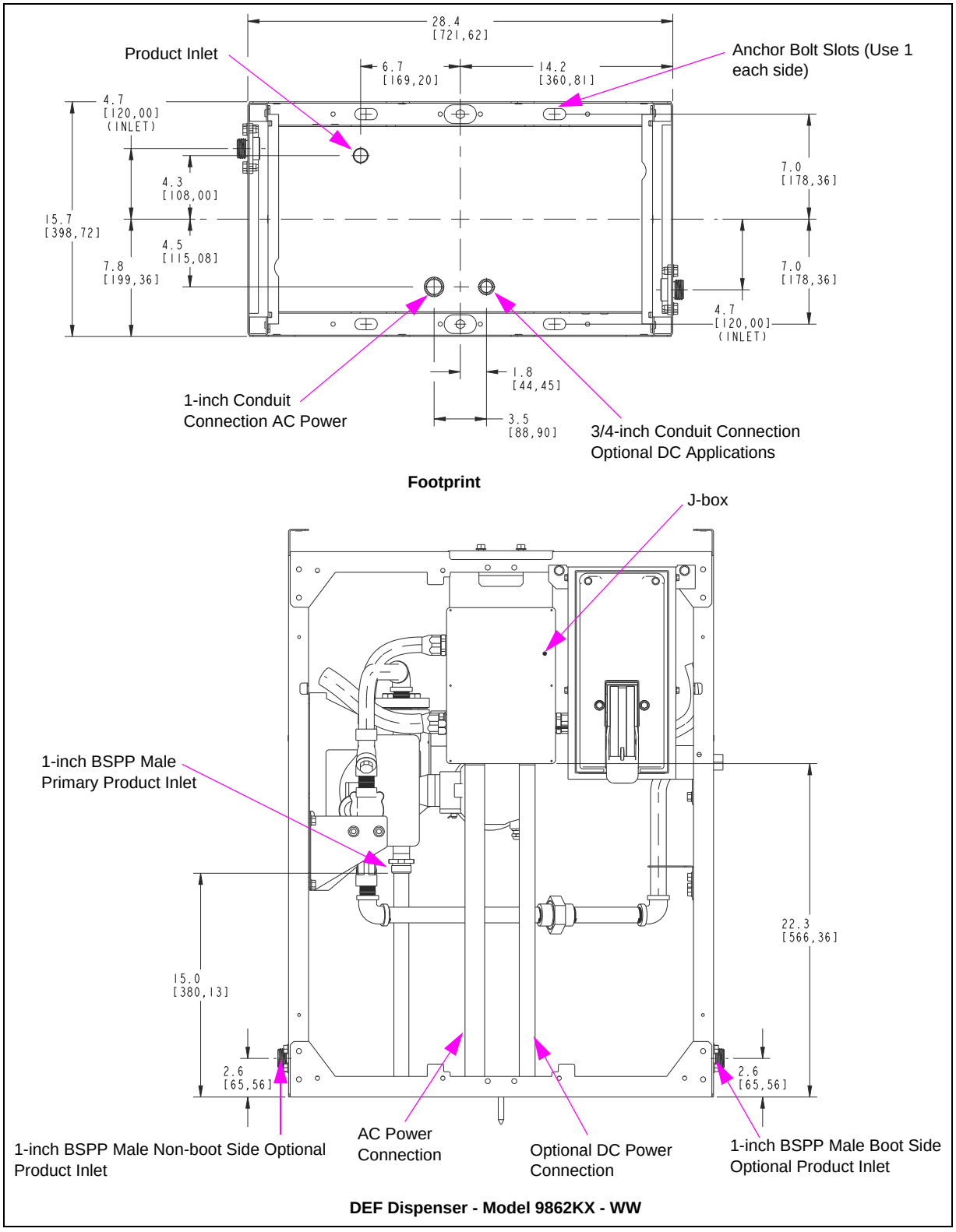


Figure A-21: Warm Weather Unit (9862KX-WW)



Index

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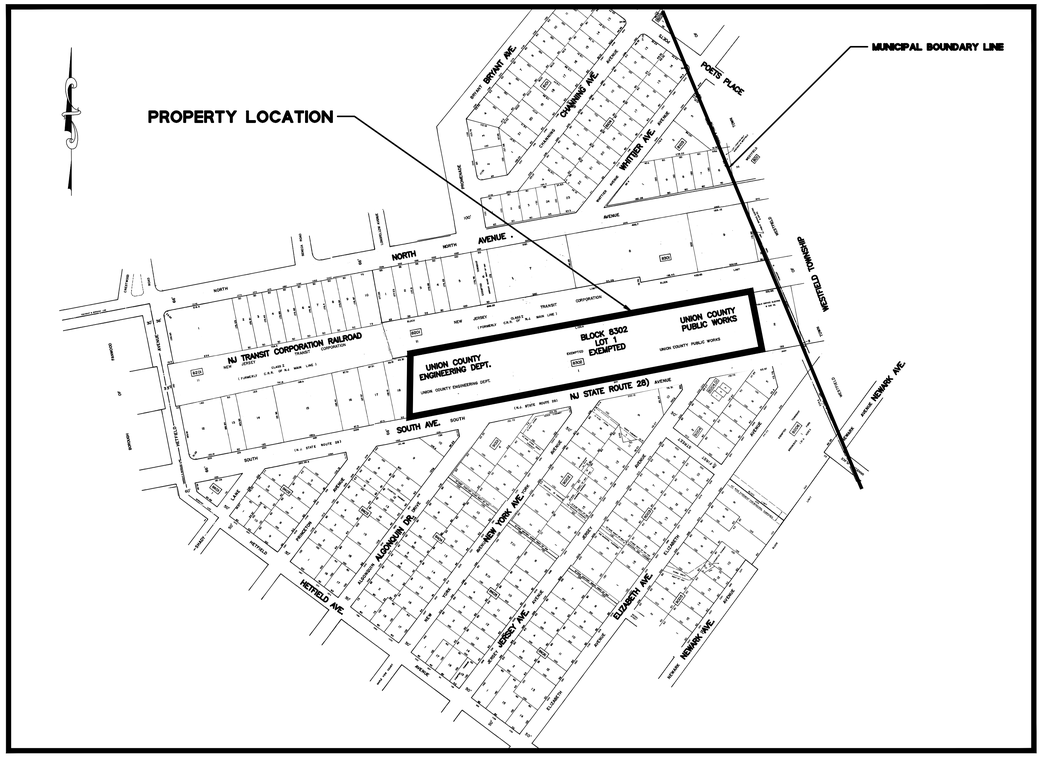
COUNTY OF UNION
BOARD OF CHOSEN FREEHOLDERS

CONSTRUCTION PLANS
TOWNSHIP OF SCOTCH PLAINS, BLOCK 8302, LOT 1

PLANS OF DPW UNDERGROUND STORAGE TANK REPLACEMENT

UNION COUNTY, NEW JERSEY

UC ENGINEERING PROJECT NO. 2015-038



KEY MAP

SCALE: 1"=200'

PUBLIC UTILITIES	
ELECTRIC	PUBLIC SERVICE ELECTRIC AND GAS
GAS	ELIZABETHTOWN GAS COMPANY
CABLE/TV	COMCAST OF NEW JERSEY
TELEPHONE	VERIZON COMMUNICATIONS
SANITARY	DEPARTMENT OF PUBLIC WORKS TOWNSHIP OF UNION
WATER	NEW JERSEY AMERICAN WATER

THE CONTRACTOR SHALL CONTACT NJ ONE CALL AT 811 OR 1-800-272-1000 FOR FIELD LOCATION OF UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION

SHEET INDEX	
SHEET	DESCRIPTION
1	COVER SHEET
2	LEGEND AND GENERAL NOTES
3	EXISTING CONDITIONS
4	DEMOLITION PLAN
5	SITE CONSTRUCTION PLAN
6	GRADING, DRAINAGE, AND UTILITY
7	LIGHTING PLAN
8	SOIL EROSION AND SEDIMENT CONTROL PLAN
9	SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
10	CONSTRUCTION DETAILS
11	CONSTRUCTION DETAILS
12	CONSTRUCTION DETAILS
13	STRUCTURAL NOTES, CANOPY PLAN & SECTIONS
14	STRUCTURAL NOTES, CANOPY PLAN & SECTIONS
15	ELECTRICAL DETAILS

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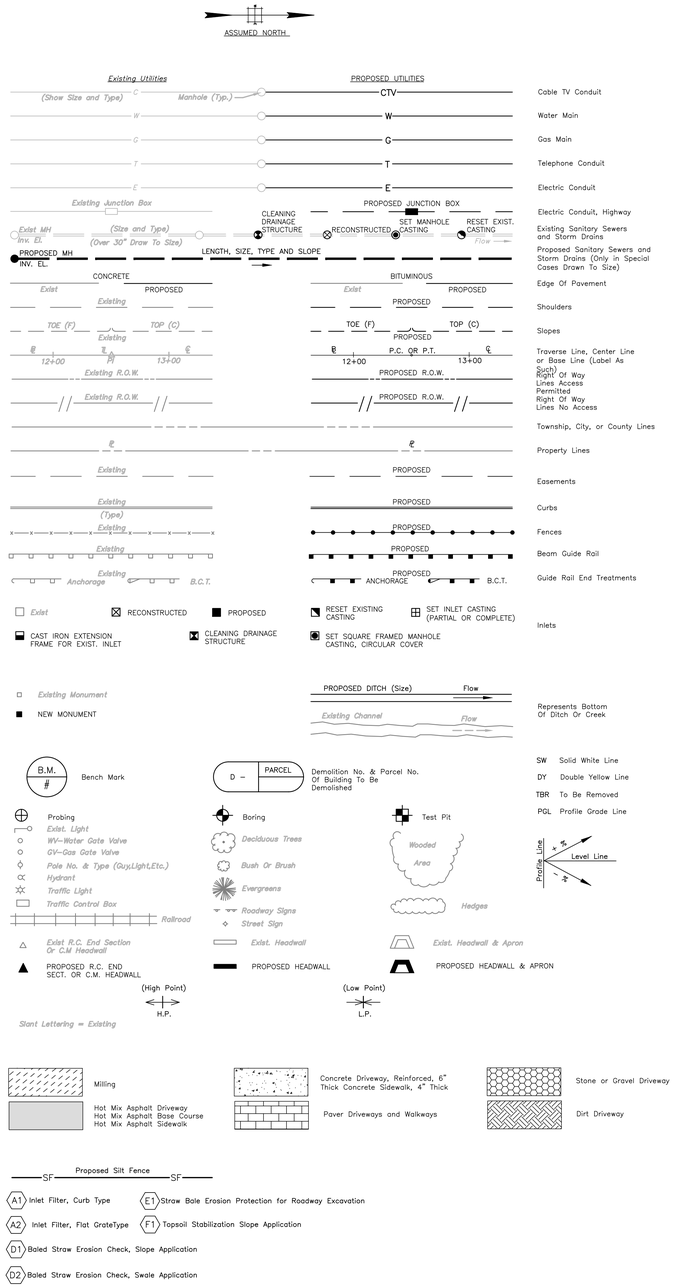
09/14/16
DATE

NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF 2007 WITH AMENDMENTS THERETO TO GOVERN

STANDARD LEGEND



General Notes

1. THESE GENERAL NOTES APPLY TO ALL SHEETS IN THIS SET OF PLANS. UNLESS OTHERWISE STATED, ALL WORK IDENTIFIED HEREIN TO BE INCLUDED IN THE COST OF CONSTRUCTION.
2. EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO EXCAVATION, DRIVING OF PILES, OR ANY OTHER SUBSURFACE DISTURBANCE. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTION, TEST PITS SHALL BE DUG BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING INVERTS, MATERIALS AND SIZES. TEST PIT INFORMATION SHALL BE GIVEN TO THE ENGINEER PRIOR TO CONSTRUCTION OR STRUCTURE FABRICATION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS. FOR MATERIAL REMOVED FROM THE TEST PIT REFER TO NOTE 34.
3. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION NECESSARY PLAN CHANGES, NO EXTRA COMPENSATION SHALL BE MADE TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
4. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:
   A. NJDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", AS CURRENTLY AMENDED.
   B. CURRENT, PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.
   C. CURRENT, PREVAILING UTILITY COMPANY/AUTHORITY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.
   D. NATIONAL FIRE PROTECTION ASSOCIATION AND AMERICAN WATER WORKS ASSOCIATION STANDARDS, AS CURRENTLY AMENDED.
5. THE CONTRACTOR SHALL NOTIFY THE UNDERSIGNED PROFESSIONAL IMMEDIATELY IF ANY FIELD CONDITIONS ENCOUNTERED DIFFER MATERIALLY FROM THOSE PRESENTED HEREON. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF UNDERGROUND UTILITIES ARE DISCOVERED THAT ARE NOT SHOWN HEREIN.
6. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE REQUIREMENTS OF THE GOVERNING AUTHORITIES OR AGENCIES.
7. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS. CONTRACTOR TO PROVIDE COPIES OF CURRENT OSHA 8 HOUR CERTIFICATIONS FOR THE WORKERS WHO WILL BE ON SITE.
8. ALL PIPE LENGTHS ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
9. ALL WATER MAINS ARE TO BE INSTALLED AT A DEPTH TO MAINTAIN A MINIMUM OF 48 INCHES TO THE TOP OF PIPE FROM PROPOSED GRADE.
10. THE CONTRACTOR SHALL VERIFY THE LOCATION, GRADE, AND INVERT ELEVATION OF ALL EXISTING UTILITY STRUCTURES.
11. THE CONTRACTOR SHALL COORDINATE UTILITY INSTALLATION WITH THE RESPECTIVE UTILITY COMPANY IF APPLICABLE. THE UTILITY COMPANY SHALL VERIFY INSTALLATION LOCATION(S).
12. THE CONTRACTOR SHALL RAISE/ADJUST ALL UTILITY VALVE COVERS, FRAMES, GRATES, ETC., WITHIN THE CONSTRUCTION AREA TO THE PROPOSED GRADE. REFER TO DEMOLITION PLAN FOR DETAILS ON UTILITIES TO BE ABANDONED AND UTILITIES TO REMAIN.
13. CONTOURS AND SPOT ELEVATIONS INDICATE FINISHED GRADE.
14. ALL DISTURBED AREAS NOT RECEIVING IMPERVIOUS SURFACE OR LANDSCAPING SHALL BE RESTORED IN ACCORDANCE WITH THE LANDSCAPING/SOIL EROSION AND SEDIMENT CONTROL SEEDING SPECIFICATIONS.
15. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATION SET FORTH BY THE DESIGN ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL SOFT, YIELDING, OR UNSUITABLE MATERIALS AND REPLACING WITH SUITABLE MATERIALS AS APPROVED BY THE ENGINEER. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED TO 95% MODIFIED PROCTOR MAXIMUM DENSITY. MOISTURE CONTENT AT TIME OF PLACEMENT SHALL NOT EXCEED 2% ABOVE OR 3% BELOW OPTIMUM. IF ROCK EXCAVATION IS ENCOUNTERED DURING CONSTRUCTION, INFORM THE DESIGN ENGINEER IMMEDIATELY. ADDITIONAL ROCK EXCAVATION WORK TO BE COMPLETED IF AND WHERE DIRECTED (ALLOWANCE ITEM).
16. ELECTRIC, TELEPHONE, CATV AND ALL OTHER WIRE SERVED UTILITY EXTENSIONS AND SERVICES SHALL BE INSTALLED UNDERGROUND WITH STANDARDS ESTABLISHED BY THE SERVICING UTILITY COMPANY. FOR SOIL REMOVED FROM ASSOCIATED WORK REFER TO NOTE 34.
17. ALL AREAS WHERE NATURAL VEGETATION AND/OR TREES (WITHIN THE LIMIT OF DISTURBANCE) ARE TO REMAIN SHALL BE PROTECTED BY THE ERECTION OF SILT FENCING. AND NO DISTURBANCE SHALL OCCUR PRIOR TO INSPECTION BY THE OWNER OR OWNER'S REPRESENTATIVE AND THE ISSUANCE OF WRITTEN AUTHORIZATION TO PROCEED WITH THE CONSTRUCTION. THESE PROTECTIVE MEASURES SHALL NOT BE ALTERED OR REMOVED WITHOUT THE APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
18. ALL PROPOSED CONSTRUCTION IS TO CONFORM TO THE LATEST EDITION OF THE NEW JERSEY UNIFORM CONSTRUCTION CODE.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTENCE AND LOCATION OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF WORK THRU THE USE OF RECORD DOCUMENTS PROVIDED BY THE OWNER AND THE ENGINEER, AND FIELD SURVEY AND/OR TEST PIT EXCAVATIONS IF SAME ARE DETERMINED TO BE NECESSARY. CONTRACTOR ALSO RESPONSIBLE FOR CALLING 1–800–MARKOUT FOR UTILITY MARKOUT PRIOR TO CONSTRUCTION. NO SEPARATE PAYMENT SHALL BE MADE FOR VERIFYING THE EXISTENCE AND LOCATION OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF WORK.
20. TWO SURVEY BENCHMARKS SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION ACTIVITIES. BM1 IS THE 'M' IN MUELLER ON FIRE HYDRANT ON THE NORTHERLY SIDE OF SOUTH AVE. SEE GENERAL MAP NOTES FOR MORE INFORMATION.
21. REMOVAL OF OFF–SITE DEMOLITION MATERIALS SHALL BE IN CONFORMANCE WITH STATE AND LOCAL REGULATIONS.
22. FIRE DEPARTMENT HOSE CONNECTIONS TO MATCH TOWN OF SCOTCH PLAINS FIRE FIGHTING EQUIPMENT.
23. ALL SITE TRAFFIC CONTROL PROVISIONS WILL BE IMPLEMENTED PURSUANT TO THE PROVISIONS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 (OR CURRENT) EDITION.
24. THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING THE SITE USING DEWATERING TANKER TRUCKS BECAUSE IT IS EXPECTED THAT THE ONSITE GROUNDWATER IS CONTAMINATED. ALL GROUNDWATER COLLECTED SHALL BE DEPOSITED TO AN APPROVED FACILITY APPROVED BY THE COUNTY IN ACCORDANCE WITH NJDEP REGULATIONS. TRANSPORTATION OF CONTAMINATED WATER SHALL BE PER NJDOT STANDARDS FOR BILL OF LADING/MANIFEST AND APPROPRIATE PLACARDS. NO GROUNDWATER IS PERMITTED TO BE DISCHARGED BACK INTO THE EXCAVATED PITS OR TO THE GROUND SURFACE/CATCH BASINS. SHOULD GROUNDWATER BE ENCOUNTERED DURING CONSTRUCTION, THE COST FOR THE TRANSPORTATION AND DISPOSAL WILL BE NEGOTIATED BETWEEN THE CONTRACTOR AND UNION COUNTY DIVISION OF ENGINEERING PRIOR TO ANY OFFSITE REMOVAL.
25. DURING EXCAVATION OF THE UNDERGROUND STORAGE TANKS THE CONTRACTOR SHALL CONTACT THE LSRP TO INSPECT THE CONDITION OF THE TANKS TO ENSURE THERE ARE NO LEAKS PRIOR TO DISPOSING TANKS TO THE OFFSITE STORAGE FACILITY. CONTRACTOR TO PROVIDE DOCUMENTATION OF SCRAP WITHIN THREE (3) DAYS OF DISPOSAL.
26. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE LSRP OF ANY DAMAGE TO EXISTING MONITORING WELLS. IF A WELL IS DAMAGED, CONTRACTOR MUST RETAIN A NEW JERSEY LICENSED WELL DRILLER TO REPAIR THE WELLS. UPON COMPLETION OF REPAIRS TO ANY MONITORING WELLS BY A NEW JERSEY LICENSED WELL DRILLER, THE CONTRACTOR MUST RETAIN THE SERVICES OF A NEW JERSEY LICENSED SURVEYOR TO RE–SURVEY ANY WELLS AND PREPARE NECESSARY DOCUMENTATION.
27. THE CONTRACTOR SHALL NOT STOCKPILE EXCAVATED SOILS ON SITE BUT RATHER DEPOSIT EXCAVATED SOIL IN APPROVED ENCLOSED CONTAINERS. EXISTING EXCAVATED SOILS AND PEA GRAVEL TO BE REMOVED OFFSITE TO A PRE–APPROVED FACILITY. THE CONTRACTOR SHALL PROVIDE CLEAN FILL CERTIFICATIONS TO THE SITE LSRP FOR IMPORTED FILL AND PEA GRAVEL. ALTERNATIVELY, IMPORTED QUARRY STONE CAN BE UTILIZED, BUT SHALL BE VIRGIN, NON–CONTAMINATED MATERIAL FROM A LICENSED MINING QUARRY. THE CONTRACTOR SHALL PROVIDE THE SITE LSRP APPLICABLE QUARRY TEST CERTIFICATIONS PRIOR TO DELIVERY ON–SITE. CONTAINERS SHALL BE LINED TO PREVENT WATER RUNOFF. CONTRACTOR SHALL PROVIDE PROOF OF APPROVAL BEFORE TRANSPORTING SOIL. CLEAN FILL MATERIAL MUST BE PRE–APPROVED BY LSRP PRIOR TO IMPLEMENTATION TO THE SITE. CONTRACTOR IS RESPONSIBLE FOR ANY MATERIAL BROUGHT TO THE SITE WITHOUT FIRST BEING APPROVED AS CERTIFIED CLEAN MATERIAL OR ACCEPTED AS LICENSED QUARRY/MINE MATERIAL BY THE LSRP RETAINED FOR THE SITE. PLEASE BE ADVISED THAT THE EXISTING SUBSURFACE SOILS AND MATERIALS TO EXCAVATED DURING CONSTRUCTION SHALL BE CONSIDERED CONTAMINATED BUT NOT HAZARDOUS.
28. THE CONTRACTOR SHALL NOT STOCKPILE CONCRETE DEBRIS ON SITE BUT RATHER DEPOSIT CONCRETE IN APPROVED ENCLOSED CONTAINERS. CONCRETE SHALL BE TESTED FOR CONTAMINATION AND REVIEWED BY THE COUNTY AND SITE LSRP PRIOR TO RECYCLING AND OFFSITE DISPOSAL. CONCRETE SHALL BE SAMPLED PER NJDEP CHARACTERIZATION OF CONCRETE AND CLEAN FILL CERTIFICATION GUIDANCE.
29. THE CONTRACTOR SHALL COMPLY WITH THE EXISTING ACTIVE ONSITE SPILL PREVENTION PLAN (SPCC) PROVIDED BY THE UNION COUNTY AT ALL TIMES DURING CONSTRUCTION.
30. MONITORING WELLS WITHIN 200' OF EXCAVATION LIMITS TO BE LOCATED AND PROTECTED THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES. SHOULD ANY MONITORING WELLS BE DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT TO LSRP IMMEDIATELY.
31. BORING INFORMATION TAKEN FROM A REPORT TITLED, "REPORT OF SUBSURFACE EXPLORATION & GEOTECHNICAL ENGINEERING ASSESSMENT," PREPARED BY FRENCH & PARRELLO ASSOCIATES, DATED FEBRUARY 24, 2016.
32. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY STORAGE OF EXCAVATED SOILS FOR THE PITS IN STORAGE CONTAINERS. EXCAVATED SOILS SHALL NOT BE PLACED ON THE GROUND SURFACE. ALL SOIL SHALL BE PLACED ON AND COVERED WITH PLASTIC SHEETING UNTIL DISPOSED, IF NOT IN ROLL OFF CONTAINERS.
33. PENDING UNFORESEEN CIRCUMSTANCES, THE UNDERGROUND STORAGE TANK (UST) REPLACEMENT SHALL BE COMPLETED IN A CONTINUOUS OPERATION AND IN A TIMELY MANNER.
34. PRIOR TO THE START OF CONSTRUCTION AN ONLINE NJDEP UNDERGROUND STORAGE TANK REMOVAL PERMIT MUST BE SECURED AND MUST BE PRESENTED TO LSRP PRIOR TO REMOVAL OF TANK. THE CONTRACTOR AND THE CONTRACTOR'S FOREMAN NEED TO BE CERTIFIED AS A TANK REMOVAL CONTRACTOR FROM NJDEP. VERIFICATION OF COMPANY AND OPERATOR/INSTALLER CERTIFICATIONS WITH NJDEP UST CATEGORIES IN CLOSURE, RELEASE DETECTION MONITORING AND INSTALLATION MUST BE PROVIDED BEFORE WORK CAN BEGIN. PLEASE REFER TO THE DPMC CONTRACT CLASSIFICATION (DPMC–27) UNDER THE CLASSIFICATION # C113 (UST CLOSURE AND INSTALLATION).
35. THE FUEL MANAGEMENT SYSTEM THAT THE COUNTY CURRENTLY IS USING IS "GASBOY FLEET HEAD OFFICE." THE COUNTY CURRENTLY OPERATES THIS SOFTWARE AT FOUR OF THE COUNTY FUEL SITES THAT WERE RECENTLY UPDATED WITH THE NEW GASBOY ISLANDER PLUS TOWERS. THE SPECIFICATIONS CALL FOR THIS TYPE OF FUELING CONTROLLER TO BE INSTALLED AT THE SCOTCH PLAINS DPW SITE SO THAT IT WILL BE COMPATIBLE WITH THE OTHER FUELING SITES OPERATING THROUGHOUT THE COUNTY.

General Map Notes

1. EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO EXCAVATION. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTION, TEST PITS SHALL BE DUG BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING INVERTS, MATERIALS, AND SIZES. TEST PIT INFORMATION SHALL BE GIVEN TO THE ENGINEER PRIOR TO CONSTRUCTION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS.
2. SURFACE TOPOGRAPHIC FEATURES SHOWN HEREIN ARE BASED ON HIGH RESOLUTION ORTHO–IMAGERY OBTAINED FROM NJGIN INFORMATION WAREHOUSE. (HTTPS://NJGIN.STATE.NJ.US/NJ_NJGINEXPLORER/IW.JSP)
3. EXISTING TOPOGRAPHIC CONTOUR INFORMATION SHOWN HERE TAKEN FROM US GEO. SURVEY NATIONAL ELEVATION DATASET. (HTTP://NATIONALMAP.GOV)
4. VERTICAL DATUM REFERENCES N.A.V.D. 1988. HORIZONTAL DATUM REFERENCES N.A.D. 1983.
   CONVERSION OF VERTICAL DATUM : N.A.V.D. 1988 = N.G.V.D. 1929 – 1.00'

BM 1 BM IS THE 'M' IN MUELLER ON FIRE HYDRANT ON THE NORTHERLY SIDE OF SOUTH AVENUE 70'+/– EAST OF INTERSECTION OF SOUTH AVENUE W/NEW YORK AVENUE. ELEV.=155.84'

Reference Maps

1. FLOOD INSURANCE RATE MAP, TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY," PANEL 30 OF 49, MAP NUMBER 34039C0030F, LAST REVISED SEPTEMBER 20, 2006.
2. TAX MAP SHEET NOS. 81, 82, 83, 84 AND 90, TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY, PREPARED BY ALPHONSE ZIEMIENSKI, P.L.S., DATED JANUARY 1, 1985, REVISED ON DECEMBER, 2003.
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7. PROPOSED VEHICLE WASH BUILDING, PUBLIC WORKS COMPLEX, TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY, SITE PLAN, DIVISION OF ENGINEERING, COUNTY OF UNION, PREPARED BY G. BRUCE CONNOR, P.E., COUNTY ENGINEER, DATED APRIL 10, 2001, SHEET NO. 1 OF 7.

NO.	BY	DATE
3	KCS	9/14/16
2	KCS	4/25/16
1	KCS	3/24/16

REVISIONS
ISSUED FOR BID/CONSTRUCTION
REVISED PER PROJECT RESID

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE49086
09/14/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

LEGEND AND GENERAL NOTES

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DESIGNED BY MRT	DRAWING LGD
CHECKED BY AP/MRT	
DRAWN BY KCS	SHEET 2 OF 15
DATE 3/24/2016	
SCALE AS NOTED	
PROJ. NO. UNCO0650	

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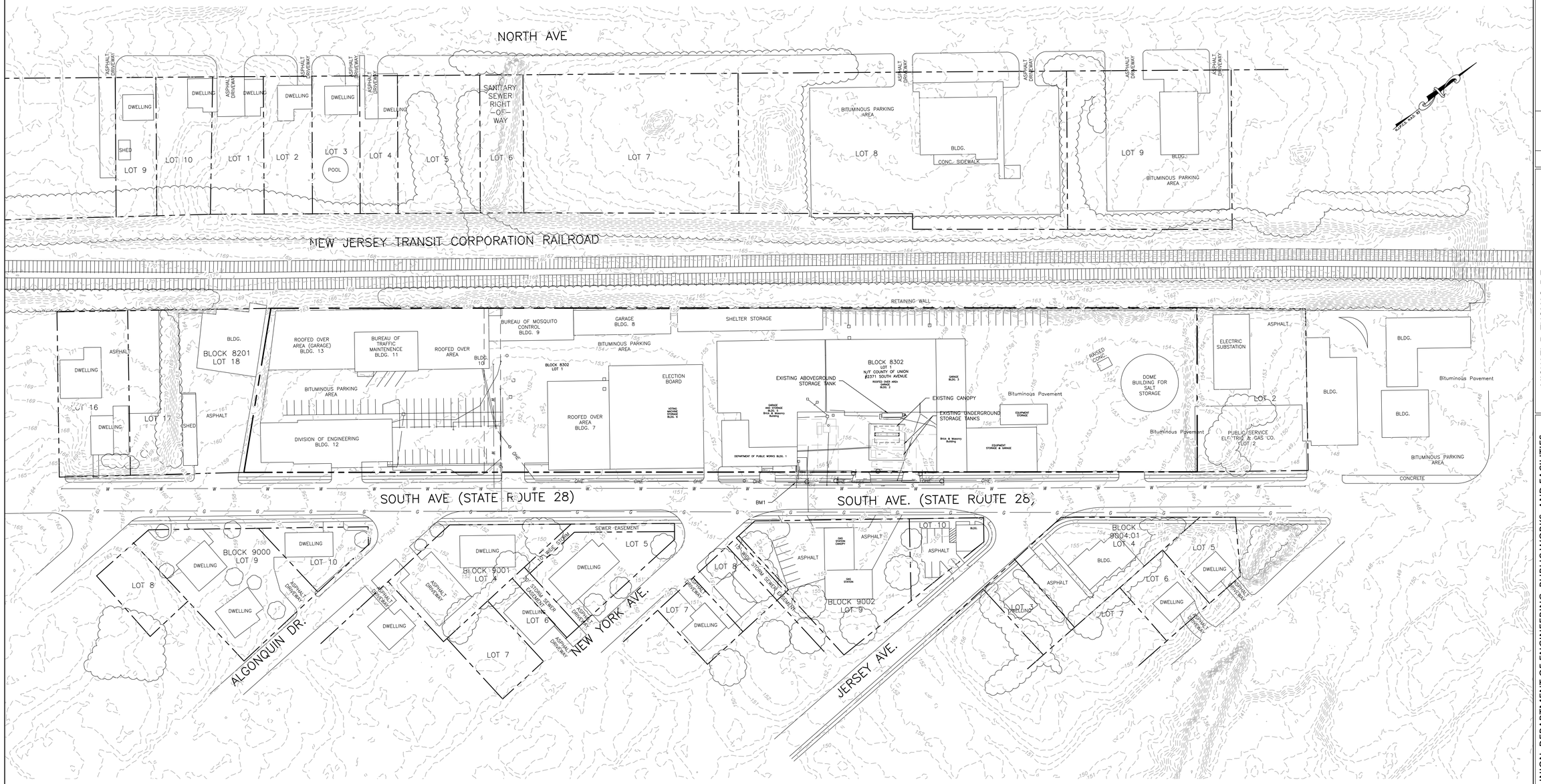

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LEGEND

- WATER LINE — W —
- OVERHEAD ELECTRIC LINE — OHE —
- SANITARY SEWER LINE — S —
- STORM SEWER LINE
- STATE OPEN WATERS & FIELD FLAG LOCATIONS
- GAS LINE — G —
- LOT LINE
- PROPERTY LINE
- MONITORING WELL

(BM 1) BM IS THE 'M' IN MUELLER ON FIRE HYDRANT ON THE NORTHERLY SIDE OF SOUTH AVENUE 70'+/- EAST OF INTERSECTION OF SOUTH AVENUE W/NEW YORK AVENUE. ELEV.=155.84'

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

NO	BY	DATE
2	KCS	4/15/16
		ISSUED FOR BID/CONSTRUCTION
1	KCS	3/24/16
		ISSUED FOR BID/CONSTRUCTION
		REVISIONS

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE49086
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
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EXISTING CONDITIONS PLAN

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DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	EXC
SHEET	3 OF 15

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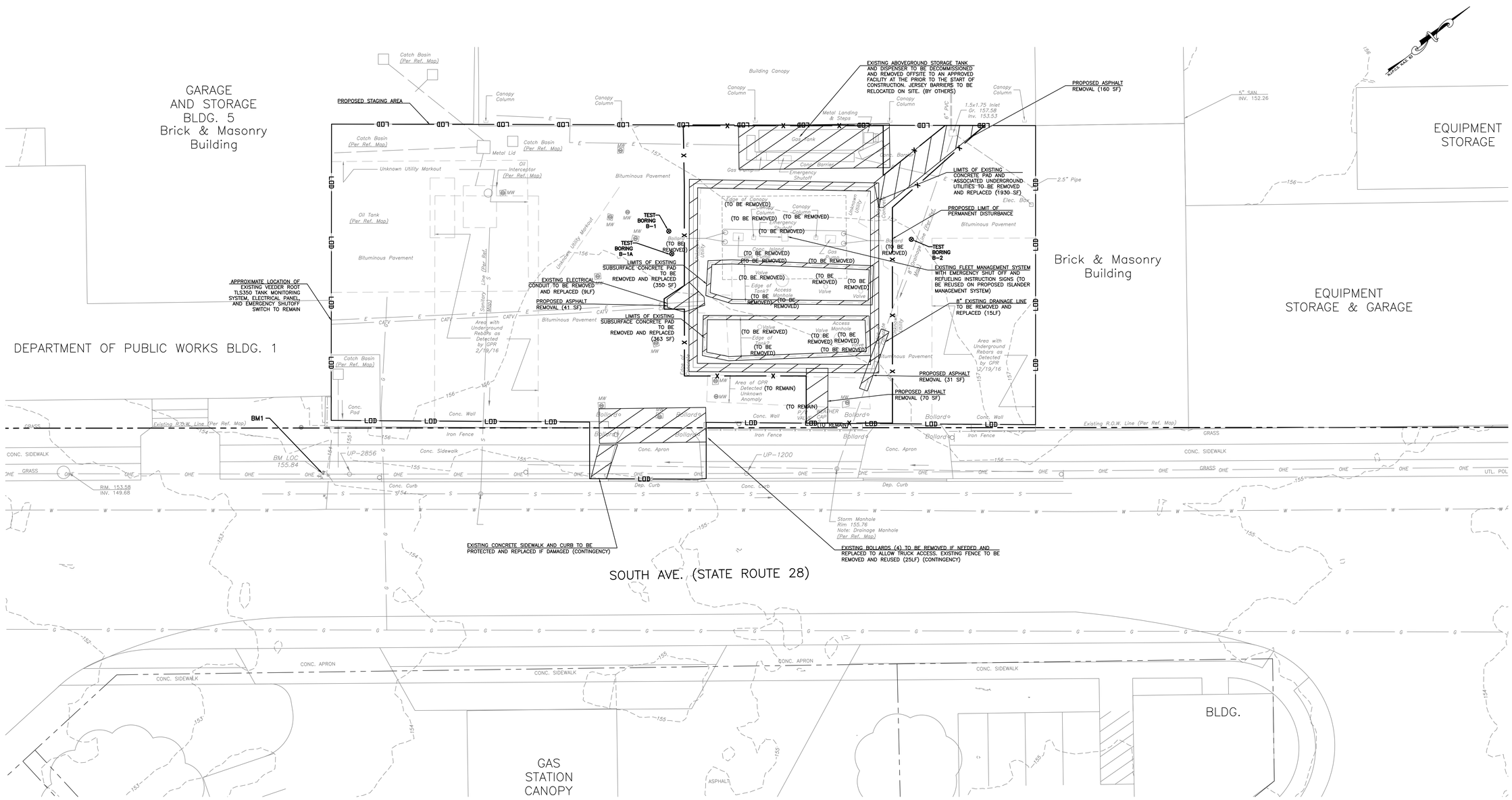

TEST BORING LOG

UNION COUNTY DEPARTMENT OF PUBLIC WORKS IMPROVEMENTS
SCOTCH PLAINS, UNION COUNTY, NJ (FPA NO. 10944.001)

BORING NO.: B-1
SHEET 1 OF 1

DATE STARTED: 2/22/2016 **DEPTH OF WATER:** 7'± **GROUND ELEVATION:** +156.5'±
DATE FINISHED: 2/22/2016 **LOCATION:** See Plan **GROUND WATER ELEV.:** +149.5'±

DRILLING TECHNIQUE: Hollow Stem Augers
HAMMER TYPE: 140 lb. Safety Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – X – 4 – 3		TOP 7.5": Asphalt. MID 4": Grey-Brown cm-f **GRAVEL**, some' mf Sand, little' Silt. (fill) BOT 12.5": Light Brown cm-f **SAND**, little Silt, trace f Gravel. (fill)
	S-2 2-4'	6 – 2 – 1 – 4		
--- 5'---	S-3 4-6'	3 – 2 – 1 – 2		
	S-4 6-8'	22 – 15 – 50/3" – X		
---10'---	S-5 8-10'	50/2" – X – X – X		
---15'---				
---20'---				
---25'---				
---30'---				
---35'---				
---40'---				

S-1 Dark Brown mf **SAND**, some' Silt, some' mf' Gravel. (fill w/ few pieces of concrete)
S-2 Light Grey-Brown cmf **SAND**, little' Clayey Silt, little mf Gravel. (fill)
S-3 Red-Brown **SILT & CLAY**, and mf' Sand, some' cmf Gravel.
S-4 Red-Brown c'mf **GRAVEL**, little' Silt. (highly weathered Sandy Mudstone)
S-5

END OF BORING @ 8.2' (Auger Refusal)

Offset boring 5' South to B-1A.

SOILS ENGINEER: R. KNOTZ, PE **CONTRACTOR:** EAST COAST DRILLING
DRILLING INSPECTOR: D. ROHMEYER, EIT **DRILLER:** S. FOSTER

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

UNION COUNTY DEPARTMENT OF PUBLIC WORKS IMPROVEMENTS
SCOTCH PLAINS, UNION COUNTY, NJ (FPA NO. 10944.001)

BORING NO.: B-1A
SHEET 1 OF 1

DATE STARTED: 2/22/2016 **DEPTH OF WATER:** Not Observed **GROUND ELEVATION:** +156'±
DATE FINISHED: 2/22/2016 **LOCATION:** See Plan **GROUND WATER ELEV.:** N/A

DRILLING TECHNIQUE: Hollow Stem Augers
HAMMER TYPE: 140 lb. Safety Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
				Direct drill to 7'
--- 5'---				
	S-1 7-9'	50/2" – X – X – X		S-1 Red-Brown c **GRAVEL**, (highly weathered Sandy Mudstone)
---10'---				END OF BORING @ 7.2' (Auger Refusal)
---15'---				
---20'---				
---25'---				
---30'---				
---35'---				
---40'---				

SOILS ENGINEER: R. KNOTZ, PE **CONTRACTOR:** EAST COAST DRILLING
DRILLING INSPECTOR: D. ROHMEYER, EIT **DRILLER:** S. FOSTER

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

UNION COUNTY DEPARTMENT OF PUBLIC WORKS IMPROVEMENTS
SCOTCH PLAINS, UNION COUNTY, NJ (FPA NO. 10944.001)

BORING NO.: B-2
SHEET 1 OF 1

DATE STARTED: 2/22/2016 **DEPTH OF WATER:** 8'± **GROUND ELEVATION:** +157'±
DATE FINISHED: 2/22/2016 **LOCATION:** See Plan **GROUND WATER ELEV.:** +149'±

DRILLING TECHNIQUE: Hollow Stem Augers
HAMMER TYPE: 140 lb. Safety Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – X – X – X		S-1 TOP 8": Asphalt. MID 6": Concrete. BOT 10": Dark Grey-Brown **SILT**, and/ c'mf Gravel, little' mf' Sand. (fill w/ many pieces of concrete)
	S-2 2-4'	16 – 10 – 11 – 6		S-2 Grey-Brown cm-f **GRAVEL**, some' mf Sand, little Clayey Silt. (fill)
--- 5'---	S-3 4-6'	25 – 12 – 8 – 3		S-3 Red-Brown & Grey-Brown mf' **GRAVEL**, and' Clayey Silt, little' mf Sand. (fill)
	S-4 6-8'	12 – 3 – 5 – 3		S-4 Same as **S-3.**
---10'---	S-5 8-10'	1 – 2 – 1 – 1		S-5 Red-Brown **SILT & CLAY**, little' mf' Gravel, little f Sand.
	S-6 10-12'	1 – 1 – 1 – 5		S-6 Red-Brown **Clayey SILT**, some' mf Gravel, little' f Sand.
---15'---	S-7 15-17'	8 – 6 – 11 – 10		S-7 Red-Brown mf' **SAND**, and' Silt, little f Gravel. *Possible Cobble 17' (Difficult Drilling)*
	S-8 17-19'	4 – 4 – 6 – 7		S-8 Red-Brown f **SAND**, and Silt.
---20'---	S-9 20-22'	9 – 31 – 14 – 16		S-9 Red-Brown **Clayey SILT**, and' f Sand, trace' cf' Gravel.
---25'---	S-10 25-27'	7 – 9 – 13 – 13		S-10 Red-Brown f **SAND**, and' Silt, little' mf Gravel. (w/ few pieces of highly weathered Sandy Mudstone)
---30'---				END OF BORING @ 27'
---35'---				
---40'---				

SOILS ENGINEER: R. KNOTZ, PE **CONTRACTOR:** EAST COAST DRILLING
DRILLING INSPECTOR: D. ROHMEYER, EIT **DRILLER:** S. FOSTER

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

NOTE: IT IS ANTICIPATED THAT THE GROUNDWATER LEVEL WILL BE BETWEEN 6' AND 8' WITHIN THE LIMIT OF DISTURBANCE.

LEGEND

- WATER LINE — W — W — W —
- OVERHEAD ELECTRIC LINE — OHE — OHE —
- SANITARY SEWER LINE — S — S — S —
- STORM SEWER LINE
- STATE OPEN WATERS & FIELD FLAG LOCATIONS
- GAS LINE — G — G — G —
- LOT LINE
- PROPERTY LINE
- MONITORING WELL ⊖
- BORING LOCATION ⊗ B-1

BM BM1 IS THE 'M' IN MUELLER ON FIRE HYDRANT ON THE NORTHERLY SIDE OF SOUTH AVENUE 70'+/- EAST OF INTERSECTION OF SOUTH AVENUE W/NEW YORK AVENUE. ELEV.=155.84

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 inch = 10 ft.

NO.	REVISIONS	BY	DATE
2	ISSUED FOR BID/ CONSTRUCTION	KCS	4/15/16
1	ISSUED FOR BID/ CONSTRUCTION	KCS	3/24/16

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE45686
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

DEMOLITION PLAN

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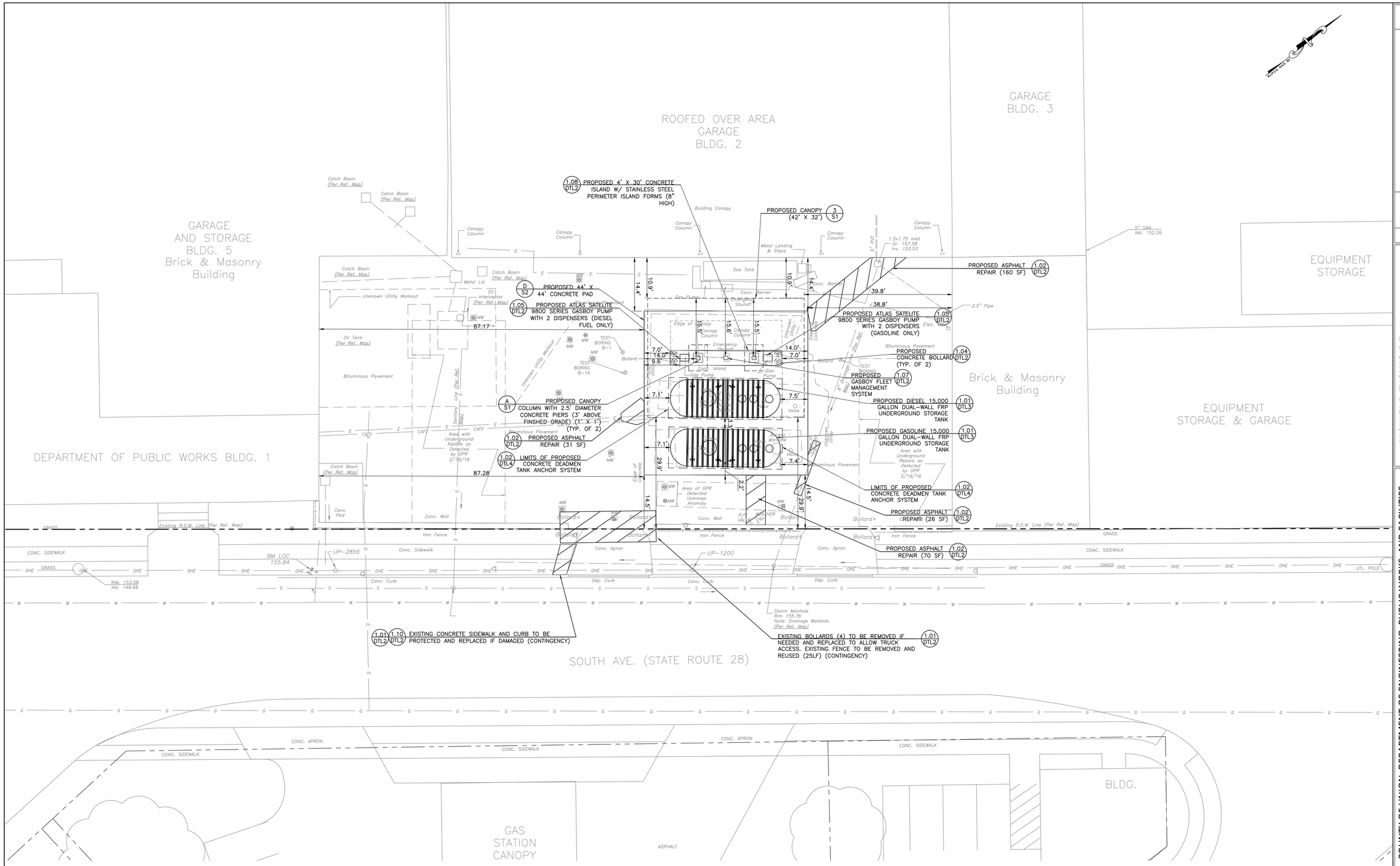
DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	DEM1
SHEET	4 OF 15

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNC000650_SHT004_DEM.dwg LAST EDIT: 09/13/2016 – 09:51:44 AM LOGIN: ksmith



1.08 DTL2 PROPOSED 4' X 30' CONCRETE ISLAND W/ STAINLESS STEEL PERIMETER ISLAND FORMS (8" HIGH)

PROPOSED CANOPY (42' X 32') 3 S1

D S2 PROPOSED 44' X 44' CONCRETE PAD

1.05 DTL2 PROPOSED ATLAS SATELITE 9800 SERIES GASBOY PUMP WITH 2 DISPENSERS (DIESEL FUEL ONLY)

PROPOSED ASPHALT REPAIR (160 SF) 1.02 DTL2

1.05 DTL2 PROPOSED ATLAS SATELITE 9800 SERIES GASBOY PUMP WITH 2 DISPENSERS (GASOLINE ONLY)

A S1 PROPOSED CANOPY COLUMN WITH 2.5' DIAMETER CONCRETE PIERS (3' ABOVE FINISHED GRADE) (1' X 1') (TYP. OF 2)

1.02 DTL2 PROPOSED ASPHALT REPAIR (31 SF)

1.02 DTL4 LIMITS OF PROPOSED CONCRETE DEADMEN TANK ANCHOR SYSTEM

PROPOSED CONCRETE BOLLARD 1.04 DTL2 (TYP. OF 2)

PROPOSED GASBOY FLEET MANAGEMENT SYSTEM 1.07 DTL2

PROPOSED DIESEL 15,000 GALLON DUAL-WALL FRP UNDERGROUND STORAGE TANK 1.01 DTL3

PROPOSED GASOLINE 15,000 GALLON DUAL-WALL FRP UNDERGROUND STORAGE TANK 1.01 DTL3

LIMITS OF PROPOSED CONCRETE DEADMEN TANK ANCHOR SYSTEM 1.02 DTL4

PROPOSED ASPHALT REPAIR (26 SF) 1.02 DTL2

PROPOSED ASPHALT REPAIR (70 SF) 1.02 DTL2

1.01 DTL2 1.10 DTL2 EXISTING CONCRETE SIDEWALK AND CURB TO BE PROTECTED AND REPLACED IF DAMAGED (CONTINGENCY)

EXISTING BOLLARDS (4) TO BE REMOVED IF NEEDED AND REPLACED TO ALLOW TRUCK ACCESS. EXISTING FENCE TO BE REMOVED AND REUSED (25LF) (CONTINGENCY) 1.01 DTL2

NOTE:

EXISTING SIGNAGE ON DISPENSER PUMPS, CANOPY COLUMNS, AND FLEET MANAGEMENT SYSTEM TO BE REMOVED AND SAVED ONSITE DURING DEMOLITION.

LEGEND

- WATER LINE — W — W — W —
- OVERHEAD ELECTRIC LINE — OHE — OHE —
- SANITARY SEWER LINE — S — S — S —
- STORM SEWER LINE
- STATE OPEN WATERS & FIELD FLAG LOCATIONS
- GAS LINE — G — G — G —
- LOT LINE
- PROPERTY LINE
- MONITORING WELL ⊖

(BM 1) BM IS THE 'M' IN MUELLER ON FIRE HYDRANT ON THE NORTHERLY SIDE OF SOUTH AVENUE 70'+/- EAST OF INTERSECTION OF SOUTH AVENUE W/NEW YORK AVENUE. ELEV.=155.84

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 inch = 10 ft.

NO.	BY	REVISIONS	DATE
2	KCS	ISSUED FOR BID/CONSTRUCTION	4/15/16
1	KCS	ISSUED FOR BID/CONSTRUCTION	3/24/16

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE49088
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

SITE CONSTRUCTION PLAN

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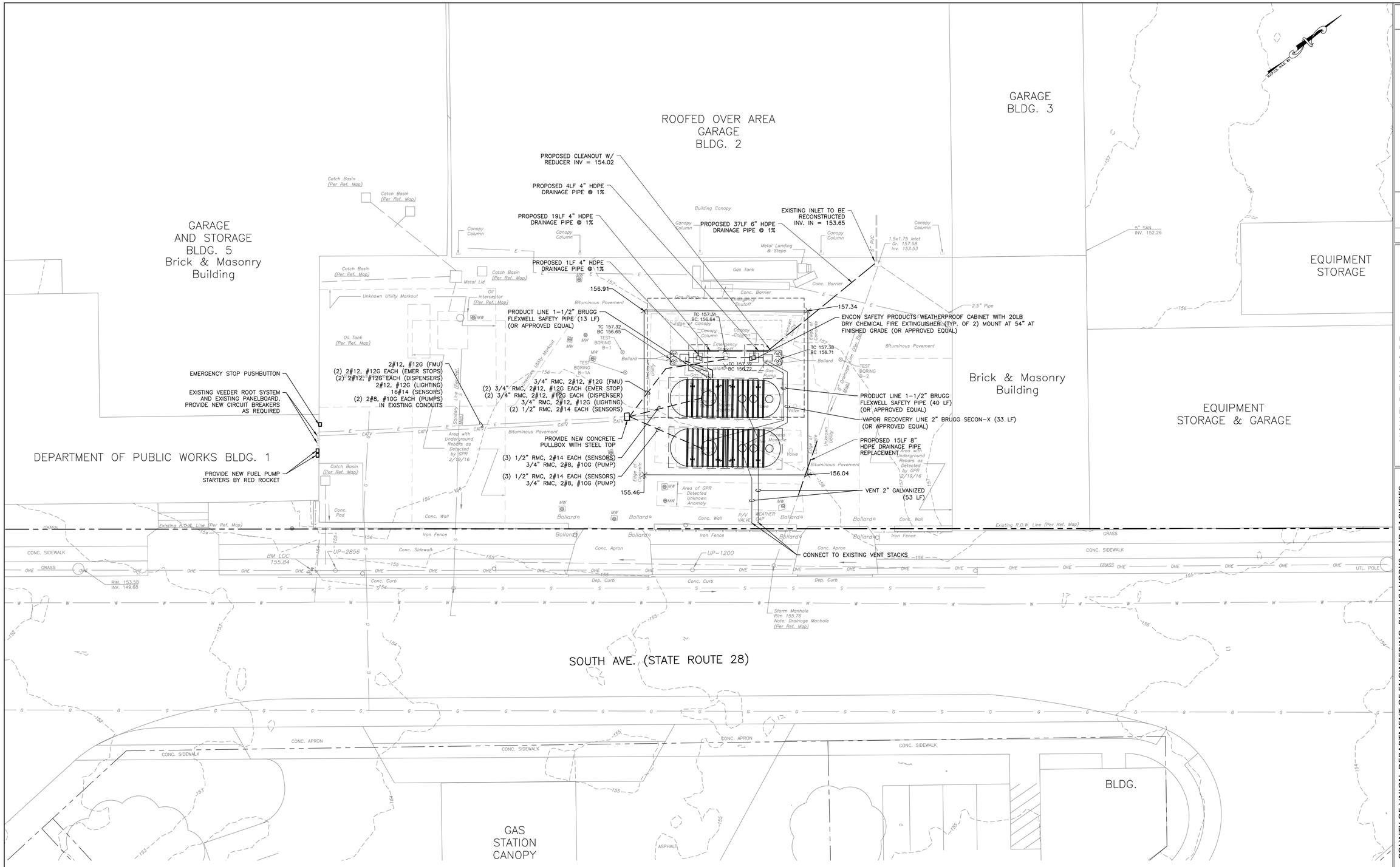
DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	CSP1
SHEET	5 OF 15

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNCO00650_SHT005_CSP.dwg LAST EDIT: 09/13/2016 - 09:52:13 AM LOGIN: kamith



NOTE: FUEL PUMP STARTERS TO BE PROVIDED BY RED ROCKET OR APPROVED EQUAL

LEGEND

- WATER LINE
- OVERHEAD ELECTRIC LINE
- SANITARY SEWER LINE
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- STATE OPEN WATERS & FIELD FLAG LOCATIONS
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GRAPHIC SCALE
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(IN FEET)
1 inch = 10 ft.

NO.	REVISIONS	BY	DATE
2	ISSUED FOR BID/CONSTRUCTION	KCS	4/15/16
1	ISSUED FOR BID/CONSTRUCTION	KCS	3/24/16

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE45086
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

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DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO0650
DRAWING	GDU1
SHEET	6 OF 15

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNCO00650_SHT006_GDU.dwg LAST EDIT: 09/13/2016 – 09:53:06 AM LOGIN: kamith

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNCO00650_SHT007_LGT.dwg LAST EDIT: 09/13/2016 – 09:53:56 AM LOGIN: ksmith

CANOPY MOUNTED LIGHT FIXTURE FURNISHED WITH CANOPY, LSI LEGACY MODEL CRUS-SC-LED-SS (TYP OF 6) (MOUNTED 18' FROM THE BOTTOM OF FASCIA)

NORTH MAG 09°

5.00' 16.00 16.00 5.00

8.00

16.00

8.00

Brick & Mas
Building

UP-1200

Bollards

OHE

S

W

LED CANOPY LIGHT - LEGACY™ (CRUS)

AC distribution utilizes a reflector which alters the look from a standard S distribution

DOE LIGHTING FACTS
Department of Energy has verified representative product test data and results in accordance with its Lighting Facts Program. Visit www.lightingfacts.com for specific catalog strings.

Consult Factory
Class 1, Division 2 – Standard on SS & LW.
T5 Temperature Classification – The surface temperature of this product will not rise above 100˚C, within a 40˚C ambient.
Gas Groups A,B,C, and D – Group A: Acetylene / Group B: Hydrogen / Group C: Propane and Ethylene / Group D: Benzene, Butane, Methane & Propane.

US & SA†, patents pending.
HOUSING - Low profile, durable die-cast, aluminum construction, providing a reliable weather-tight seal.
LEDS - Features an array of select, mid-power, high brightness, high efficiency LED chips; 5000K color temperature, 70 CRI (nominal).
DRIVE CURRENT - Choice of Very Low Wattage (VLW), Low Wattage (LW) or Super Saver (SS).
OPTICS / DISTRIBUTION - Choice of Symmetrical or Asymmetrical, which directs light through a clear tempered glass lens, to provide a uniform distribution of light to vertical and horizontal surfaces.
OPTICAL UNIT - Features an ultra-slim 7/8" profile die-cast housing, with a flat glass lens. Unit is water-resistant, sealed to an IP67 rating. Integral designed heat sink does not trap dirt and grime, ensuring cool running performance over the life of the fixture.
PRESSURE STABILIZING VENT - Luminaire assembly incorporates a pressure stabilizing vent breather to prevent seal fatigue and failure.
HAZARDOUS LOCATION - Designed for lighter than air fuel applications. Product is suitable for Class 1 Division 2 only when properly installed per LSI installation instructions (consult factory).
DRIVER - State-of-the-art driver technology superior energy efficiency and optimum light output. Driver components are fully encased in potting for moisture resistance. Complies with IEC and FCC standards. 0-10 V dimming supplied standard with all drive currents.
DRIVER HOUSING - Die-cast aluminum, wet location rated driver/electrical enclosure is elevated above canopy deck to prevent water entry, provide easy "knock-out" connection of primary wiring and contributes to attaining the lowest operating temperatures available. Seals to optical housing via one-piece molded silicone gasket.
OPERATING TEMPERATURE - -40°C to 50°C (-40°F to +122°F)
ELECTRICAL - Universal voltage power supply, 120-277 VAC, 50/60 HZ input. Drivers feature two-stage surge protection (including separate surge protection built into electronic driver) meets IEEE C62.41.2-2002, Scenario **1**, Location Category C.
FINISH - Standard color is white and is finished with LSI's DuraGrip® polyester powder coat process. DuraGrip withstands extreme weather changes without cracking or peeling.
INSTALLATION - One person installation. No additional sealant required. Installs in a 12" or 16" deck pan. Deck penetration consists of a 4" hole, simplifying installation and water sealing. Unit is designed to quickly retrofit into existing Scottsdale (4") hole as well as openings for Encore and Encore Top Access and to reconnect wiring for the SCJECTA without having to relocate the conduit. Retro panels are available for existing Encores (see back page) as well as kits for recessed and 2x2 installations (see separate spec sheets). Support brackets are provided standard, to prevent sagging of deck.
SHIPPING WEIGHT - 27 pounds (single pack), 48 pounds (double pack).
EXPECTED LIFE - Minimum 60,000 to 100,000 hours depending upon the ambient temperature of the installation location. See LSI web site for specific guidance.
WARRANTY - Limited 5-year warranty.
LISTING - UL and ETL listed to UL 1598, UL 8750 and other U.S. and International safety standards. Suitable for wet locations.
PHOTOMETRICS - Please visit our web site at **www.lsi-industries.com** for detailed photometric data.

This product, or selected versions of this product, meet the standards listed below. Please consult factory for your specific requirements.

LED CANOPY LIGHT - LEGACY™ (CRUS)

LUMINAIRE ORDERING INFORMATION

TYPICAL ORDER EXAMPLE: **CRUS SC LED SS CW UE WHT**

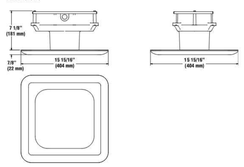
Prefix	Distribution*	Light Source	Drive Current	Color Temperature	Input Voltage	Finish	Options
CRUS	SC - Standard Symmetric AC - Asymmetric	LED	VLW - Very Low Watt LW - Low Watt SS - Super Saver	CW - Cool White	UE - Universal Voltage (120-277V) 347 - 480V	WHT - White BRZ - Bronze BLK - Black	None

FOOTNOTES:
1- AC distribution utilizes a reflector which alters the look from a standard S distribution.

ACCESSORY ORDERING INFORMATION (Accessories are field installed)

Description	Order Number	Description	Order Number
Retrofit Panels - EC / ECTA / SCP to CRU, for 16" Deck Panel	525946	AV - Hole Plugs and Silicone (enough for 25 retrofits)*	1220640
Retrofit Panels - ECTA / SCP to CRU, for 12" Deck Panel	526291	* 1 Consists of (25) 7/8" hole plugs and (1) 10.3 oz tube of RTV	
Retrofit 2x2 Cover Panel Blank (no holes)	261782		
Retrofit RIC Cover Panel Blank (no holes)	264782		

DIMENSIONS



LIGHT OUTPUT - CRUS

		Lumens		Watts		LPW	
		SC	AC	SC	AC	SC	AC
Cool White	VLW - Very Low Watt	8,842	–	79	–	112	–
	LW - Low Watt	10,871	8746	88	83	124	105
	SS - Super Saver	13,504	11,518	114	111	119	104

CANOPY MOUNTED LIGHT FIXTURE CUTSHEET

1.01 / LGT1

NOT TO SCALE

NOTE: TO BE MANUFACTURED BY LSI INDUSTRIES, INC. OR APPROVED EQUAL

LEGEND

WATER LINE — W — W — W —
OVERHEAD ELECTRIC LINE — OHE — OHE —
SANITARY SEWER LINE — S — S — S —
STORM SEWER LINE
STATE OPEN WATERS & FIELD FLAG LOCATIONS
GAS LINE — G — G — G —
LOT LINE
PROPERTY LINE
MONITORING WELL ⊖

BM 1 BM IS THE 'M' IN MUELLER ON FIRE HYDRANT ON THE NORTHERLY SIDE OF SOUTH AVENUE 70'+/- EAST OF INTERSECTION OF SOUTH AVENUE W/NEW YORK AVENUE. ELEV.=155.84

GRAPHIC SCALE
5 0 2.5 5 10
(IN FEET)
1 inch = 5 ft.

NO.	BY	DATE
2	KCS	4/15/16
1	KCS	3/24/16

REVISIONS
ISSUED: FOR BID/CONSTRUCTION
ISSUED: FOR BID/CONSTRUCTION

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE45088
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

LIGHTING PLAN

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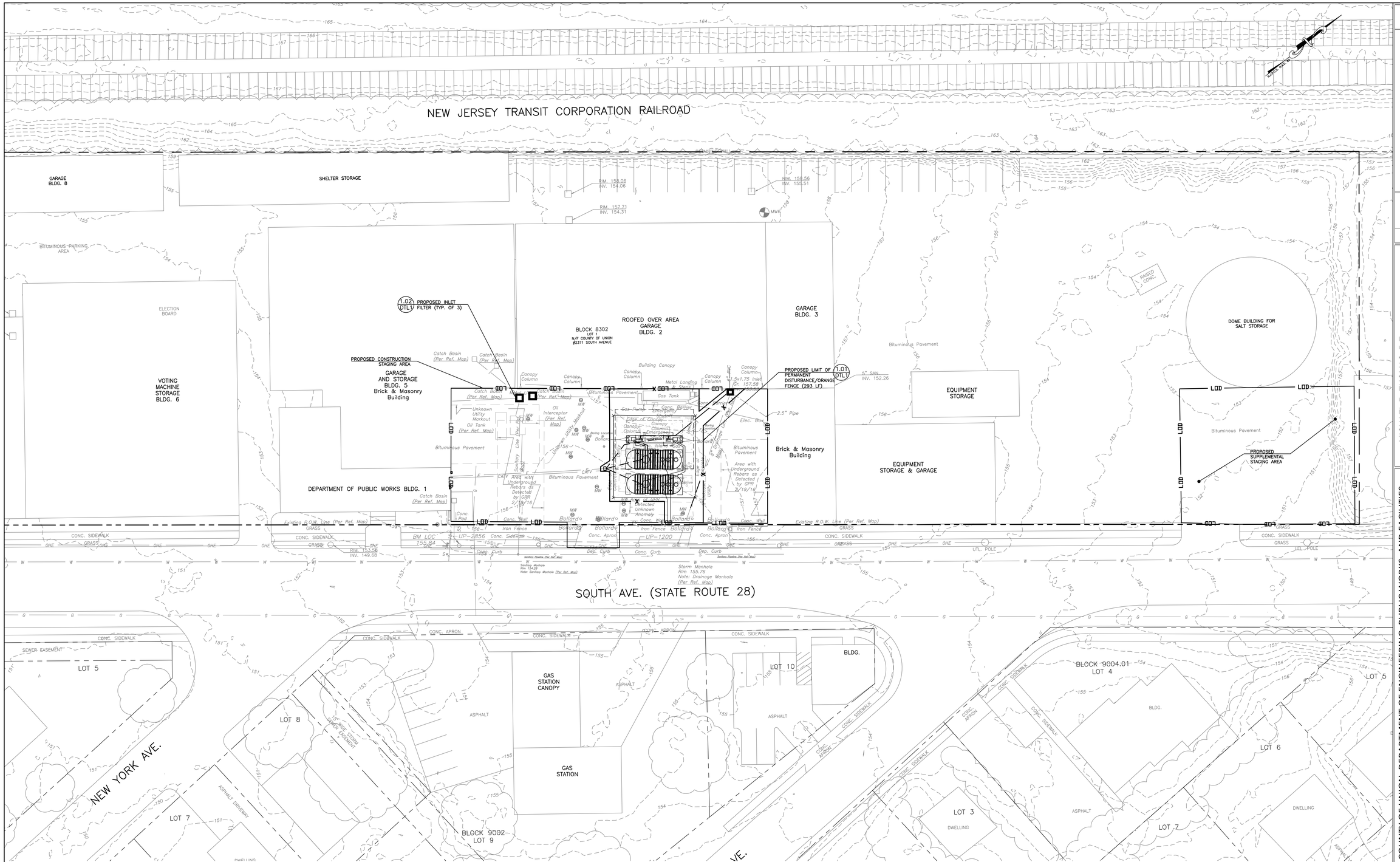
DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	LGT1
SHEET	7 OF 15



LEGEND

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BM IS THE 'M' IN MUELLER ON FIRE HYDRANT ON THE NORTHERLY SIDE OF SOUTH AVENUE 70'+/- EAST OF INTERSECTION OF SOUTH AVENUE W/NEW YORK AVENUE. ELEV.=155.84

NOTES:

1. CONTRACTOR SHALL PERMIT THE FLOW OF ONSITE DPW MAINTENANCE VEHICLES TO THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.
2. CONTRACTOR SHALL UTILIZE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE MUTCD AT ALL TIMES DURING CONSTRUCTION

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

NO.	REVISIONS	DATE
2	ISSUED FOR BID/CONSTRUCTION	4/15/16
1	ISSUED FOR BID/CONSTRUCTION	3/24/16

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE49086
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

SOIL EROSION AND SEDIMENT CONTROL PLAN

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11 TINDALL ROAD
MIDDLETOWN, NJ 07748
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DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	SEP1
SHEET	8 OF 15

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNCO00650_SHT008_SEP.dwg LAST EDIT: 09/13/2016 - 09:54:53 AM LOGIN: kamith

SOMERSET–UNION COUNTY
SOIL EROSION AND SEDIMENT CONTROL NOTES

1. The Somerset-Union Soil Conservation District shall be notified in writing 48 hours in advance of any land disturbing activity.
2. 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.
3. 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
4. Permanent Vegetation shall be seeded or sodded on all exposed areas within ten (10) days after final grading. Mulch will be used for protection until seeding is established
5. All work shall be done in accordance with the NJ State Standards for Soil Erosion and Sediment Control in New Jersey.
6. 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.
7. 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.
8. Any steep slopes receiving pipeline installation will be backfilled and stabilized daily, as the installation proceeds (i.e.: slopes greater that 3:1)
9. 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.
10. 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.
11. In that NJSA 4:24-39 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.
12. Conduit Outlet Protection must be installed at all required outfalls prior to the drainage system becoming operational.
13. 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.
14. The Somerset-Union Soil Conservation District shall be notified of any changes in ownership.
15. Mulching to the NJ Standards is required for obtaining a Conditional Report of Compliance. Conditionals are only issued when the season prohibits seeding.
16. Contractor is responsible for keeping all adjacent roads clean during life of construction project.
17. 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.
18. 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, hydro-mulch should be applied at a rate of 1500 lbs. per acre in second step. The use of hydro-mulch, as opposed to straw, is limited to optimum seeding dates as listed in the NJ Standards.
19. Unfiltered dewatering is not permitted. Necessary precautions must be taken during all dewatering operations to minimize soil transfer. Any dewatering methods used must be in accordance with the Standard for Dewatering.

STANDARD FOR DUST CONTROL

Definition

The control of dust on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduced on-site and off-site damage and health hazards and improve traffic safety.

Condition Where Practice Applies

This practice is applicable to areas subject to dust blowing and movement where on-site 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 Standard of Stabilization with Mulches Only, pg. 5-1

Vegetative Cover - See Standard for: Temporary Vegetative Cover, pg. 7-1, Permanent Vegetative Cover for Soil Stabilization pg. 4-1 and Permanent Stabilization with Sod, pg. 6-1

Spray-On Adhesives - On mineral soils (not effective on muck soils). Keep traffic off these areas.

Table 16-1 Dust Control Materials

MATERIAL	WATER DILUTION	TYPE OF NOZZLE	APPLY GALLONS/ACRE
Anionic asphalt emulsion	7:1	Coarse Spray	1200
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. Sce Sediment Basin standard, p. 26-1		
Acidulated Soy Bean Soap Stick	None	Coarse Spray	1200

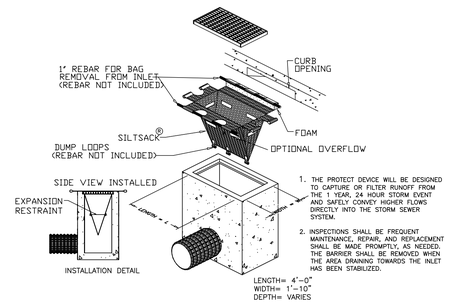
Tillage - To roughen surface and bring clods to the surface. This is a temporary emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart and spring-toothed harrows are examples of equipment which may produce the desired effect.

Sprinkling - Site is sprinkled until the surface is wet.

Barriers - Solid board fences, snow fences, burlap 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 moist 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.

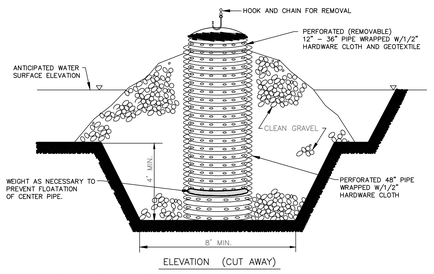
Stone - Cover surface with crushed stone or coarse gravel.



1. THE PROTECT DEVICE WILL BE DESIGNED TO CAPTURE OR FILTER RUNOFF FROM THE 1 YEAR, 24 HOUR STORM EVENT AND SAFELY CONVEY HIGHER FLOWS DIRECTLY INTO THE STORM SEWER SYSTEM.
2. INSPECTIONS SHALL BE FREQUENT MAINTENANCE, REPAIR, AND REPLACEMENT SHALL BE MADE PROMPTLY, AS NEEDED. THE BARRIER SHALL BE REMOVED WHEN THE AREA DRAINING TOWARDS THE INLET HAS BEEN STABILIZED.

INLET FILTER (SEDIMENT TRAP) — 1.02 DTL1

NOT TO SCALE



ELEVATION (CUT AWAY)

CONSTRUCTION SPECIFICATIONS

1. THE OUTER PIPE SHOULD BE 48" DIA. OR SHALL , IN ANY CASE, BE AT LEAST 4" GREATER IN DIAMETER THAN THE CENTER PIPE. THE OUTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH TO PREVENT BACKFILL MATERIAL FROM ENTERING THE PERFORATIONS.
2. AFTER INSTALLING THE OUTER PIPE" BACKFILL AROUND OUTER PIPE WITH 2" AGGREGATE OR CLEAN STONE.
3. THE INSIDE STAND PIPE (CENTER PIPE) SHOULD BE CONSTRUCTED BY PERFORATING A CORRUGATED OR PVC PIPE BETWEEN 12" AND 36" IN DIAMETER. THE PERFORATIONS SHALL BE 1/2"x 6" SLITS OR 1" DIAMETER HOLES 6" ON CENTER. THE CENTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH FIRST, THEN WRAPPED AGAIN WITH GEORTEXTILE CLASS E.
4. THE CENTER PIPE SHOULD EXTEND 12" TO 18" ABOVE THE ANTICIPATED WATER ELEVATION OR RISER CREST ELEVATION WHEN DEWATERING A BASIN.

REMOVABLE PUMPING STATION — 1.03 DTL1

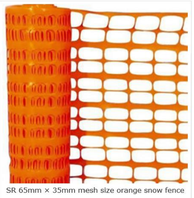
NOT TO SCALE

SR BR series orange plastic snow fence

Orange plastic snow fence, or orange safety mesh, orange warning fencing, is produced by high-density polyethylene through extrusion process. The main color is orange for the purpose of drawing people's attention as warning signal. Orange plastic fence is featured with high strength, aging & rot resistance, durability and highly visibility widely applied in construction site, sports event, agriculture, farmyard, etc.

Features:

- **High visibility.** As its name implies, the main color is orange, mainly designed for attracting people's attention to decrease possibility of danger.
- **High stability.** Orange plastic snow fence is made from high density polyethylene with UV stabilized. The surface is well protected to conquer exterior force.
- **Corrosion and ultraviolet resistant.** The UV stabilized surface resists corrosion, chemicals and ultraviolet.
- **Lightweight and portable.** Orange snow fence is lightweight. It can be easily installed and dismantled.
- **Easy assembly and disassembly.** It is simple to erect the plastic fence with posts & clips and easy to take down with tools.
- **Reusable and Economical.**



SR 65mm × 35mm mesh size orange snow fence

Specification:

Name	Orange plastic snow fence
Raw Material	HDPE with UV stabilized
Main Series	BR/SR
Mesh size (mm)	**BR:** (70 × 40, 80 × 40, 100 × 40, 110 × 40, 100 × 50, 80 × 45, 70 × 26, 80 × 26, 90 × 26, 100 × 26, 110 × 26) **SR:** (65 × 35, 70 × 40, 80 × 65)
Weight (g/m²)	60 - 500
Width (m)	0.9, 1.0, 1.2, 1.22, 1.5, 1.8
Length (m/roll)	20 - 200
Color	The main color is orange.
Packing	Usually packed in rolls in transparent plastic film bags with label inside.

ORANGE SNOW FENCE DETAIL — 1.01 DTL1

NOT TO SCALE

STANDARD FOR DEWATERING

DEFINITION

The removal and discharge of sediment–laden water from an excavated area, construction site or sediment basin.

PURPOSE

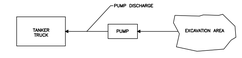
To properly remove suspended sediments and water from areas through filtration and/or settlement prior to discharging water to a receiving water course or body.

CONDITIONS WHERE PRACTICE APPLIES

During construction excavated facilities need to be dewatered to facilitate or complete the construction process. The water pumped out of the excavated areas contain sediments that must be removed prior to the discharging to receiving bodies of water. This standard does not address the removal of ground water through well points etc. This standard describes the following practices for the removal of sediment–laden waters from excavation areas: removable pumping stations, sump pits, and tanker trucks.

WATER QUALITY ENHANCEMENT

Water discharged from excavated areas on construction sites may be a significant contributor of sediment to surface waters during construction. Water must be removed and disposed of in order for construction to move forward. Typically, water is pumped or containment berms are breached and sediment laden waters are permitted to flow uncontrolled into surface waters such as streams or lakes. By employing practices described in this standard, the majority of sediment suspended in water may easily be removed prior to leaving the site. Filters and materials described herein are readily available and are easy to install and maintain.



SEDIMENT CONTROL BAG FOR DEWATERING — 1.04 DTL1

NOT TO SCALE

SEQUENCE OF CONSTRUCTION

DURATION:	
1 DAY	1. NOTICE TO PROCEED/ PRE–CON MEETING
10 WEEKS	2. FABRICATION OF USTs
1 DAY	3. INSTALL SOIL EROSION AND SEDIMENT CONTROL MEASURES.
3 DAYS	4. REMOVE CONCRETE PAD, CONCRETE, ISLAND, CANOPY, AND OTHER FUEL DISPENSER APPURTENANCES. REMOVE ASPHALT, SIDEWALK, AND CURB WHERE IDENTIFIED (CONTINGENCY).
3 DAYS	5. EXCAVATE AND REMOVE EXISTING UST AND UST PADS.
4 DAYS	6. INSTALL NEW UST, UST APPURTENANCES AND CONCRETE PAD.
3 DAYS	7. INSTALL CONCRETE ISLAND, FUEL DISPENSER APPURTENANCES, AND COLUMNS FOR CANOPY.
3 DAYS	6. INSTALL CANOPY.
2 DAYS	7. REPAIR ASPHALT, SIDEWALK, AND CURB THAT WAS DAMAGED DURING CONSTRUCTION (CONTINGENCY)
1 DAY	8. REMOVE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES. REMOVE TREE PROTECTION FENCING.

– ANTICIPATED LENGTH OF CONSTRUCTION IS 14 WEEKS.

NO.	BY	DATE
2	KCS	4/15/16
1	KCS	3/24/16

REVISIONS

ISSUED FOR BID/ CONSTRUCTION

ISSUED FOR BID/ CONSTRUCTION

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE49586
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

YOUR GOALS. OUR MISSION.
11 TINDALL ROAD
MIDDLETOWN, NJ 07748
TEL 484-530-1270
FAX 484-530-1277
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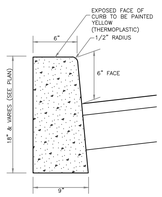
DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	DTL1
SHEET	9 OF 15

PROJECT: FILE NAME: H:\UNCO\UN0650\Plans\UNC000650_SHT009-SHT010_SED.dwg LAST EDIT: 09/13/2016 - 09:55:07 AM LOGIN: kschiffe



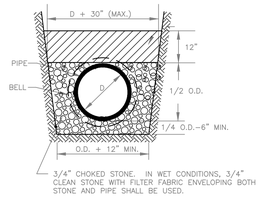
CONSTRUCTION NOTES:

1. ALL CONCRETE SHALL BE 4,500 PSI AIR ENTRAINED.
2. PROVIDE 6" CURB FACE AS SHOWN.
3. PROVIDE PREFORMED BITUMINOUS FIBER EXPANSION JOINTS, 1/2" THICK AT 20'-0" (MAXIMUM) INTERVALS. PROVIDE DUMMY JOINTS (FORMED) BETWEEN EXPANSION JOINTS.
4. THERE SHALL BE NO SEPARATE PAYMENT FOR SPECIAL CURB TREATMENT AT PUBLIC SIDEWALK CURB RAMPS. SEE PUBLIC SIDEWALK RAMP DETAILS.

9"x6"x18" CONCRETE CURB REPAIR (CONTINGENCY)

1.01 DTL2

NOT TO SCALE

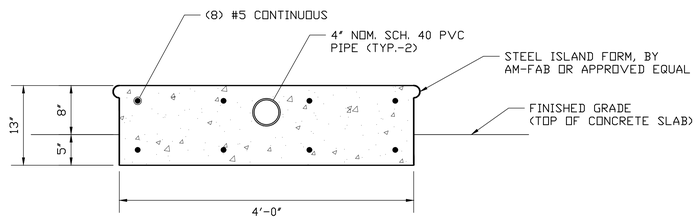


CLASS 'C' BEDDING

PIPE BEDDING FOR STORM PIPE REPAIR

1.03 DTL2

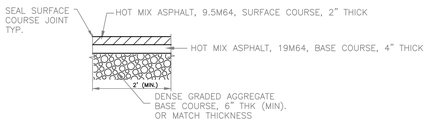
NOT TO SCALE



CONCRETE ISLAND SECTION

1.06 DTL2

SCALE: 1" = 10'-0"



HOT MIX ASPHALT REPAIR DETAIL

1.02 DTL2

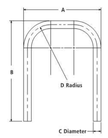
NOT TO SCALE

OPW Pipe Guards

Pipe Guards help protect gasoline dispensers, light poles and other equipment or property from damage.

Features:

- **Choice of Styles –** OPW Pipe Guards are available in straight, half circle and double radius bends.
- **Variety of Sizes Available –** 28", 36", 40" and 48" widths for mounting inside or outside of island forms.
- **Various Lengths Available –** for deeper, more secure anchors in islands and concrete slabs.
- **Sturdy Construction –** OPW Pipe Guards are manufactured from 4" O.D. and 3.5" O.D. schedule 40 steel pipe.
- **Aesthetically-Pleasing Appearance –** OPW Pipe Guards are primer-finished.



Double Radius Pipe Guards

Ordering Specifications

Double Radius Pipe Guards

Model #	Material	Units (inches) A	B	C	D
6PGR3-4153	Steel	41	53	3.5	14
6PGR3-4850	Steel	48	50	3.5	15.75
6PGR3-4859	Steel	48	59	3.5	15.75
6PGR3SS-3672	Stainless	36	72	3.5	14
6PGR3SS-4350	Stainless	43	50	3.5	19.5
6PGR3SS-5495	Stainless	54	45	3.5	19.5
6PGR4-4153	Steel	41	53	4	14
6PGR4-4174	Steel	41	74	4	14
6PGR4-4951	Steel	49	51	4	16
6PGR4-4972	Steel	49	72	4	16

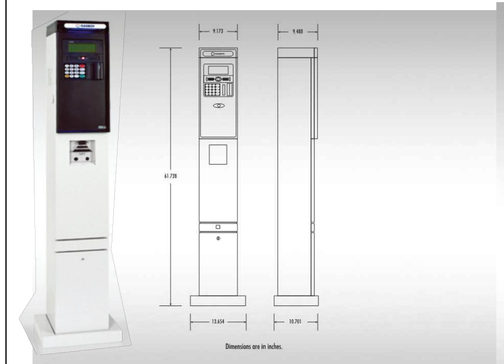
For more information contact OPW Customer Service at 1-800-422-2525; International call 1-513-870-3315.

BOLLARD DETAIL

1.04 DTL2

NOT TO SCALE

NOTE: ISLAND FORMS TO BE MANUFACTURED BY OPW GLOBAL (800) 422-2525 OR APPROVED EQUAL



Dimensions are in inches.

Data Entry Options/Access Control
Piezoelectric keypad, magnetic card reader, mifare card/tag reader, HID reader, Vehicle/Driver Identification System (Fuel Point PLUS), and dual Fleetkey readers. Available optional ruggedized thermal printer for purchase receipts printout.

Dispenser Connection Options
Islander PLUS can control up to 8 mechanical hoses or up to 64 electronic hoses. Supports over 50 different types of dispensers in use in many countries.

Communication Options
Support of large variety of communication links: cellular, dial-in modem, VPN, satellite, ADSL, wireless ethernet and more.

Central Controller
Embedded hardware platform designed to withstand the harsh fueling environment. It runs on an embedded operating system and uses a solid state Flash disk and RTC (Real Time Clock) with back-up, along with surge suppressors for transient and noise immunity. Power fail recovery mechanisms included.

Additional Hardware Features
> Weather-proof enclosure in order to sustain the harsh environment of a Home Base Station
> Secured remote capabilities for monitoring, management and maintenance activities
> Serial and Ethernet interface to Automatic Tank Gauge systems using the Veeder-Root Serial Interface Command Protocol
> Advanced electronic support of mechanical dispensers, enabling pump with totalized, preset and price update

ISLANDER PLUS - PEDESTAL WITH UP TO:	ELECTRONIC: 4 MECHANICAL PUMPS	8 MECHANICAL PUMPS
Name	Islander PLUS	Islander PLUS
Supply voltage	100/240 VAC	120/240 VAC
Power consumption	2A max	2A-1A max
Operating temperature	-22 °F to +113 °F (-30 °C to +45 °C) -4 °F to +113 °F (-20 °C to +45 °C) (Option with printer)	-40 °F to +104 °F (-40 °C to +40 °C) -4 °F to +104 °F (-20 °C to +40 °C) (Option with printer)
Storage temperature	-40 °F to +158 °F (-40°C to +70 °C)	-40 °F to +158 °F (-40°C to +70 °C)
Humidity	80% non-condensing	80% non-condensing
Dimensions	9.45"W x 61.02"H x 9.45"D (24x155x24 cm)	9.45"W x 61.02"H x 9.45"D (24x155x24 cm)
Communication interface	RS-485 – 9600bps, Half-Duplex RS-232 Ethernet RJ-45 – 10 Mbps EIA 802.15.4	RS-485 – 9600bps, Half-Duplex RS-232 Ethernet RJ-45 – 10 Mbps EIA 802.15.4
Pump control maximum current (4 solid state Relay Channels)	Motor maximum: 1 HP at 115 VAC or 2 HP at 230 VAC. Additional external relay must be used if pump motor exceeds these limitations.	Motor maximum: 3/4 HP at 115 VAC or 1.5 HP at 230 VAC. Additional external relay must be used if pump motor exceeds these limitations.
Power supply output voltage to pulsar unit	12 VDC +/- 20%	12 VDC +/- 20%
Pulsar supply maximum output current	80 mA max	30 mA max
Pulsar input high level voltage	9 to 15 VDC	9 to 15 VDC
Pulsar input high level sink current (@15V)	3 mA	3 mA
In-use "on" level (input)	100-240 VAC, 50/60Hz, 2 W (20 mA)	100-240 VAC, 50/60Hz, 2 W (20 mA)
In use "off" level (input)	0 to 20 VAC	0 to 20 VAC

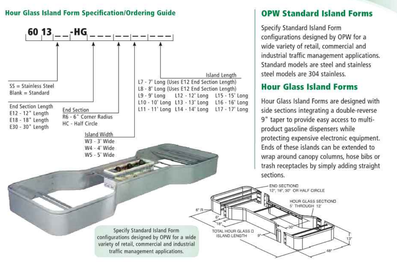
GASBOY PLUS SERIES FLEET MANAGEMENT SYSTEM

1.07 DTL2

NOT TO SCALE

NOTE: PUMPS TO BE MANUFACTURED BY GASBOY (800) 444-5579 OR APPROVED EQUAL

Hour Glass Island Form Specification/Ordering Guide



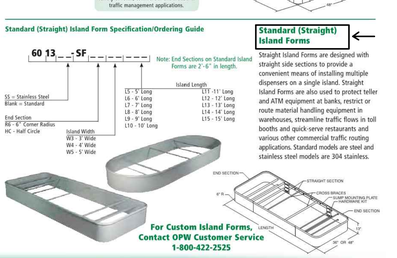
OPW Standard Island Forms

Specify Standard Island Form configurations designed by OPW for a wide variety of retail, commercial and industrial traffic management applications. Standard models are steel and stainless steel models are 304 stainless.

Hour Glass Island Forms

Hour Glass Island Forms are designed with side sections integrating a double-reverse 9° taper to provide easy access to multi-product gasoline dispensers while protecting expensive electronic equipment. Ends of these islands can be extended to wrap around canopy columns, hose bibs or trash receptacles by simply adding straight sections.

Standard (Straight) Island Form Specification/Ordering Guide



Standard (Straight) Island Forms

Straight Island Forms are designed with straight side sections to provide a convenient means of installing multiple dispensers on a single island. Straight Island Forms are also used to protect teller and ATM equipment at banks, restrict or route material handling equipment in warehouses, streamline traffic flows in toll booths and quick-serve restaurants and various other commercial traffic routing applications. Standard models are steel and stainless steel models are 304 stainless.

ISLAND FORM DETAIL

1.08 DTL2

NOT TO SCALE

NOTES:

1. ISLAND FORMS TO BE MANUFACTURED BY OPW GLOBAL (800) 422-2525 OR APPROVED EQUAL
2. USE STAINLESS STEEL, 4' WIDE, AND 6" CORNER RADIUS PARAMETERS WHEN ORDERING.
3. CROSS BRACING TO AVOID COLUMN LOCATIONS.

Atlas™ Features Option Summary

Feature	Description	9825	9840	9850	9855	9860 CW	9860 WW	9155	375/9100
Approvals	UL and cUL Listed, NCWM, Measurement Canada (MC)	S	S	S	S	S	S	S	S
Working Pressure	50 psi minimum	S	S	S	S	S	S	S	S
Unit of Measure	Gallons (liters optional)	S	S	S	S	S	S	S	S
Meters / Valleges	3 MP CD - 115V, 420V - (230V, 50Hz optional)	S	230V	--	S	--	--	S	--
	3 LP/2 MP CD - 115V, 420V - (230V, 50Hz optional)	--	--	S	--	--	--	--	--
	3/4 MP CD 230V, 50Hz, Cyclonic	O	O	--	O	--	--	O	--
Pump Module	10 valve rotary valve with air separator	S	S	--	S	--	--	S	--
	High speed rotary valve with air separator	--	--	S	--	--	--	--	--
Solenoid Valve	2-stage valve for Preset Operation (PP)	1"	1½"	1½"	1"	¾"	¾"	1"	--
Filters	Internal spin-on style (F)	S	S	--	S	S	Strainer	Strainer	S
Discharge	Hose Connection - NPT	1"	1¼"	1½"	1"	¾" NPT	1" BSPP	1"	1" (215) 1¼" (216)
Satellite Piping	Satellite piping connection (S) - display only	O	O	O	--	--	--	--	O
Inlet	Island Connection - NPT	1½"	2"	2"	2½"	1½"	1" BSPP	1½" BSPP	1½"
Housing	12GA Galvanized Steel	13 GA	13 GA	13 GA	13 GA	13 GA	13 GA	13 GA	12 GA
Panels	Lockable removable - Painted Galvanized Steel (std) - gauge	20	20	20	16	20	20	20	16
	Replaceable - Hairline Stainless Steel - 22 gauge	O	O	O	--	O	--	O	O
	Replaceable - Type 304 Stainless Steel - 22 gauge	--	--	--	--	--	--	--	O
Sheathing	Replaceable - Painted Galvanized Steel (std) - gauge	20	20	20	16	20	20	20	16
	Replaceable - Hairline Stainless Steel - 22 gauge	O	O	O	--	O	O	O	--
	Replaceable - Type 304 Stainless Steel - 22 gauge	--	--	--	--	--	--	--	O
Computer / Register	Electronic Register - Volume only display	S	S	S	S	S	S	--	--
	Mechanical Register - MTO volume only	--	--	--	--	--	--	S	--
Electronic Display	7" Backlighted LCD	S	S	S	S	S	S	--	--
Interface Options	Pulser - 10:1 or 100:1 volume (CC or CO)	--	--	--	--	--	--	O	--
	PS-485 - Gasboy CFN, Veeder, or Syphat	O	O	O	O	O	O	--	--
	Pulse Output (-F	O	O	O	O	O	O	--	--
	DC conduit and junction box (D)	S	S	S	--	S	S	--	--
	Keyrail (SK)	--	--	--	--	--	--	O	--
Brand Panel Lighting	Lighted brand panel (L)	O	O	O	O	O	O	O	--
Solenoid	Electronic Solenoid	S	S	S	S	S	S	S	--
	Nonrecordable Electric/Mechanical Solenoid	O	O	--	--	O	O	--	--
	Nonrecordable Mechanical Solenoid	--	--	O	--	--	--	S	--
Nozzle Position	Side load	S	S	S	--	S	--	S	S
	Front Load (2)	O	O	O	S	O	S	O	--
Hose Retractors	Internal hose retractor (I)	O	O	--	--	--	S	O	--
	Internal hose reel	--	--	--	--	--	S	--	--
	High force retractor - external post mounted	O	O	O	--	--	O	O	O
AST Applications	Precision Regulating Valve, Model 52A - suction pumps only	O	--	O	--	--	--	O	--
	TOTUS Above Ground Tank Kit - suction pumps only	--	--	O	--	--	--	--	--
Warranty	12 month - parts & labor	S	S	S	S	S	S	S	S
	Extended Warranty - 2, 3, 4, or 5 years	O	O	O	O	--	--	O	O
Miscellaneous	ATC (Canada Only)	O	O	O	--	--	--	--	--
	Hand Crank -KC	--	--	--	--	--	--	O	--
	Display Purse Full Backup	S	S	S	S	S	S	--	--
	Internal Cabinet Heater (SSF only)	--	--	--	--	S	--	--	--
	Balanced Vapor Recovery	O	--	O	--	O	--	O	--
	Healy Universal Kit Compatible	O	--	--	--	--	--	O	--
	Hose, Nozzle, Swivel, Breakaway	O	O	O	O	O	O	O	O

S = Standard, O = Optional

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Mechanical pumps and dispensers

High Flow (up to 22 gpm/83 lpm)*

Model Number	Type	Hoses	Products	Meters	Meters
9153K	Pump	Single	1	(1) 1 hp c.d.	Gilbarco CFT
9152KTW1	Pump	Twin	1	(1) 1 hp c.d.	Gilbarco CFT
9153KTW1.H	Pump	Twin	1	(2) 1 hp c.d.	Gilbarco CFT
9153KTW2	Pump	Twin	2	(2) 1 hp c.d.	Gilbarco CFT
9153KX	Dispenser	Single	1	n/a	Gilbarco CFT
9153KXTW1	Dispenser	Twin	1	n/a	Gilbarco CFT
9153KXTW2	Dispenser	Twin	2	n/a	Gilbarco CFT

GASBOY

Atlas 9100 Series — Satellite — Atlas 9800 Series

Atlas pumps & dispensers for fleet operations

Choose from the industry's leading range of pump and dispenser models, with features and options designed specifically to meet the unique needs of fleet operators.

The Gasboy® Atlas series is rugged, durable, reliable and perfectly suited for the tough fleet fueling environment. Electronic and mechanical choices are lit for unattended applications. High flow, Super High Flow, and Ultra High models provide fast fueling for large vehicles. Satellite dispensers allow simultaneous fueling of saddle tanks to reduce fueling time.

Gasboy Atlas pumps and dispensers are compatible with a full range of Gasboy Fleet Management Systems to help you track and manage your fleet better. From the most simple system to the most comprehensive one, Gasboy offers turnkey solutions to simplify your operation.

Ultra High Flow (up to 50 gpm/189 lpm)*

Model Number	Type	Hoses	Products	Meters	Meters
9950K	Pump	Single	1	(1) 1½ hp c.d.	Liquid Controls
9950KTW3	Pump	Combo	1	(1) 1½ hp c.d.	Liquid Controls
9950KX	Dispenser	Single	1	n/a	Liquid Controls
9950KXTW1	Dispenser	Twin	1	n/a	Liquid Controls
9950KXTW2	Dispenser	Twin	2	n/a	Liquid Controls
9950KXTW3	Dispenser	Combo	1	n/a	Liquid Controls

Super High Flow (up to 40 gpm/151 lpm)*

Model Number	Type	Hoses	Products	Meters	Meters
9940K	Pump	Single	1	(2) 1 hp c.d.	(2) Gilbarco CFT
9940KX	Dispenser	Single	1	n/a	(2) Gilbarco CFT

High Flow (up to 22 gpm/83 lpm)*

Model Number	Type	Hoses	Products	Meters	Meters
9953K	Pump	Single	1	(1) 1 hp c.d.	Gilbarco CFT
9952KTW1	Pump	Twin	1	(1) 1 hp c.d.	Gilbarco CFT
9953KTW1.H	Pump	Twin	1	(2) 1 hp c.d.	Gilbarco CFT
9953KTW2	Pump	Twin	2	(2) 1 hp c.d.	Gilbarco CFT
9953KX	Dispenser	Single	1	n/a	Gilbarco CFT
9953KXTW1	Dispenser	Twin	1	n/a	Gilbarco CFT
9953KXTW2	Dispenser	Twin	2	n/a	Gilbarco CFT

E85 Electronic Dispensers

Model Number	Type	Hoses	Products	Nozzle Position	Meters
9872KX F	Dispenser	Single	1	Side	(1) C+
9872KX FZ	Dispenser	Single	1	Front	(1) C+
9872KXTW1 Z	Dispenser	Twin	1	Front	(2) C+

DEF Electronic Dispensers

Model Number	Type	Application	Nozzle Position	Hoses	Products	Sides	Meters
9862KX Z	Dispenser	Cold Weather	Front	1	1	1	(1) Coriolis Mass Flow
9862KX-WW	Dispenser	Warm Weather	Side	1	1	2	(1) Coriolis Mass Flow
9862KX/WW	Dispenser	Warm Weather	Front	1	1	1	(1) Coriolis Mass Flow

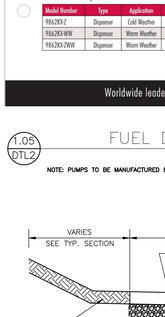
Electronic pumps and dispensers

FUEL DISPENSER DETAILS

1.05 DTL2

NOT TO SCALE

NOTE: PUMPS TO BE MANUFACTURED BY GASBOY (800) 444-5579 OR APPROVED EQUAL. USE ATLAS 9800 SERIES.



SUBMITTALS

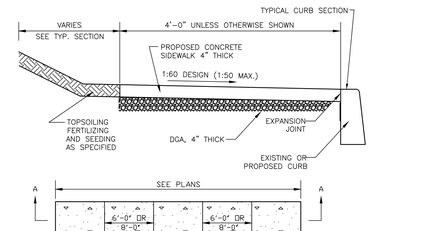
FINISH

1. IN COMPLIANCE WITH HIGH PERFORMANCE COATINGS: MATCH EXISTING
2. COLOR: MATCH EXISTING

BOLLARD REPAIR DETAIL (CONTINGENCY)

1.09 DTL2

NOT TO SCALE



CONSTRUCTION NOTES:

1. ALL SIDEWALK AND DRIVEWAY APRON CONCRETE TO BE 4,500 PSI, AIR ENTRAINED, 6% ±15%.
2. PROVIDE PRE-MOLDED BITUMINOUS EXPANSION JOINT MATERIAL 1/2" THICK CONFORMING TO AASHTO M33, AT 20'-0" (MAXIMUM) INTERVALS. PROVIDE HALF-DEEP CONTRACTION JOINTS AT INTERVALS EQUAL TO THE SIDEWALK WIDTH BETWEEN EXPANSION JOINTS.
3. PROVIDE DECORATIVE JOINT PATTERN AS SHOWN ON PLANS.
4. CURBING AND SIDEWALK SHALL NOT BE A HOMOGENOUS POUR, UNLESS DIRECTED BY THE TOWNSHIP ENGINEER OR HIS REPRESENTATIVE

CONCRETE SIDEWALK REPAIR (CONTINGENCY)

1.10 DTL2

NOT TO SCALE

NO.	BY	ISSUED / REVISIONS	DATE
2	KCS	ISSUED FOR BID/CONSTRUCTION	4/15/16
1	KCS	ISSUED FOR BID/CONSTRUCTION	3/24/16

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE45086
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

CONSTRUCTION DETAILS

YOUR GOALS. OUR MISSION.
11 TINDALL ROAD
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TEL 484-530-1270
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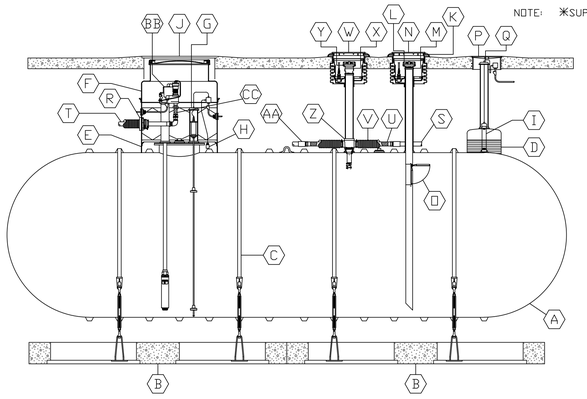
Certificate of Authorization
24GA27987500
OFFICES LOCATED IN:
DELAWARE, INDIANA, KENTUCKY, MASSACHUSETTS, MICHIGAN, NEW JERSEY, OHIO AND PENNSYLVANIA

DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	DTL2
SHEET	10 OF 15

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNCO00650_SHT011-SHT013_CSD.dwg LAST EDIT: 09/13/2016 - 09:55:19 AM LOGIN: ksmith

ITEM	QTY	EQUIPMENT LISTING	ITEM	QTY	EQUIPMENT LISTING	ITEM	QTY	EQUIPMENT LISTING
A	1	DOUBLE WALL FIBERGLASS STORAGE TANK	J	1*	LARGE ROUND MANHOLE	T	1*	DOUBLE WALL PRODUCT SUPPLY PIPING
B	–	XERXES PRECAST CONCRETE DEADMEN SYSTEM	K	1*	FIVE GALLON SPILL FILL MANHOLE	U	2*	FLEXIBLE CONNECTOR
C	–	FIBERGLASS HOLD DOWN STRAP WITH TURNBUCKLE ASSY.	L	1*	FILL CAP	V	2*	FLEXIBLE CONNECTOR BOOT
D	1	HYDROSTATIC MONITORING SYSTEM	M	1*	FILL ADAPTER	W	1*	STAGE 1 VAPOR RECOVERY MANHOLE
E	1	42"DIA FIBERGLASS CONTAINMENT COLLAR	N	1*	PRODUCT LABEL MARKER	X	1*	STAGE 1 VAPOR CAP
F	1	42"DIA FIBERGLASS 8 SIDED SW CONTAINMENT SUMP WITH 32"DIA WATERTIGHT TOP	O	1*	OVERFILL PREVENTION VALVE	Y	1*	STAGE 1 VAPOR CHECK VALVE ADAPTER
			P	1*	MONITORING MANHOLE	Z	1*	EXTRACTOR ASSEMBLY
G	1*	LEVEL PROBE	Q	1*	4" SENSOR CAP	AA	1*	SINGLE WALL STAGE 2 VAPOR RECOVERY PIPING
H	1*	DISTINGUISHING LEAK SENSOR	R	1*	FLEXIBLE ENTRY BOOT	BB	1*	SUBMERSIBLE TURBINE PUMP
I	1*	HYDROSTATIC MONITOR SENSOR	S	1*	SINGLE WALL VENT PIPING	CC	1*	FULL PORT BALL VALVE

NOTE: *SUPPLIED BY OTHERS



STAGE 2 PRESSURIZED PIPING VAPOR RECOVERY

1.01 DTL3 DOUBLE-WALL GASOLINE FIBERGLASS STORAGE TANK COMPONENT LOCATIONS

NOT TO SCALE

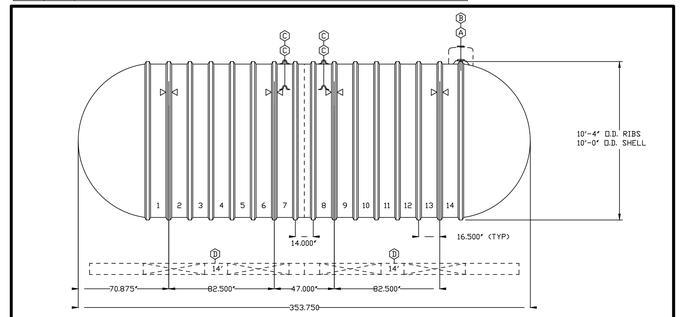
NOTES:

1.) ITEMS A THROUGH F TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL.

2.) ITEMS G THROUGH CC TO BE MANUFACTURED BY VEEDER ROOT OR APPROVED EQUAL.

3.) THIS MAKE AND MODEL SHALL ALSO TO BE USED FOR THE DIESEL FUEL TANK WITH THE EXCEPTION OF ITEMS ASSOCIATED WITH THE STAGE 2 VAPOR RECOVERY

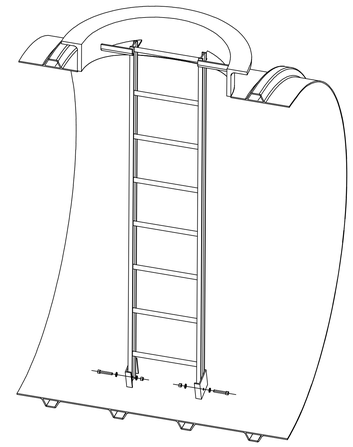
ITEM	QTY	DESCRIPTION
A	1	4" NPT MONITOR FITTING
B	1	OPTIONAL 18" DIA. HYDROSTATIC MONITORING RESERVOIR WITH 4" NPT FITTING
C	4	LIFTING LUG
D	4	OPTIONAL 14" PREFABRICATED CONCRETE DEADMAN
⋈	4	HOLD DOWN STRAP LOCATION



1.02 DTL3 DOUBLE-WALL FIBERGLASS STORAGE TANK DIMENSION DETAIL

SCALE: 1" = 4'

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL



NOTES

1. 12" WIDE LADDERS ONLY CAN BE USED IN A TANK WITH A 22" DIA MANWAY. NO LADDERS FACTORY INSTALLED IN 22" DIA MANWAY EXTENSIONS.
2. 16" WIDE LADDERS ARE FIXED TO THE TANK IN 30" & 36" DIA. MANWAYS.
3. 16" WIDE LADDERS ARE FIXED INSIDE OF 30" & 36" DIA. MANWAY EXTENSIONS.
4. 16" WIDE LADDERS MAY ALSO BE FIXED TO INSIDE WALL OF FRP CONTAINMENT SUMPS AND RISERS 30" DIA. OR LARGER.

STORAGE TANK FIBERGLASS LADDER DETAIL

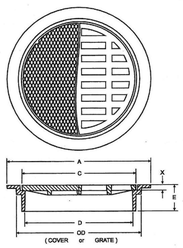
1.05 DTL3

NOT TO SCALE

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL

Slab Type Manhole Frames and Covers or Grates

HEAVY DUTY



PATTERN NUMBER COVER			PATTERN NUMBER GRATE			DIMENSIONS IN INCHES				
E=4½	E=6	E=8	E=4½	E=6	E=8	A	C	D	X	OD
1715	1725	1735	1745	1755	1765	19	14	12	11	6¼
1716	1726	1736	1746	1756	1766	22¼	19¼	18	12	1¼
1717	1727	1737	1747	1757	1767	29¼	23	21	1⅛	25¼
1718	1728	1738	1748	1758	1768	32	25¼	24	1⅛	27¼
1719	1729	1739	1749	1759	1769	39	31½	30	1⅛	34¼
1720	1730	1740	1750	1760	1770	45	37½	36	1¼	41½
1721	1731	1741	1751	1761	1771	50	44	42	1⅛	48¼
1722	1732	1742	1752	1762	1772	60	50	48	1⅛	53

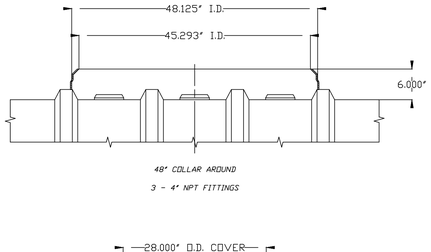
NOTE: Most of the cover patterns can be modified to be watertight or fitted with a Flow Seal gasket (see page 16) for reduced inflow.

NOTES:

1. MANHOLE COVER TO BE WATERTIGHT
2. MANHOLE COVER TO BE MANUFACTURED BY BRIDGESTATE FOUNDRY, OR APPROVED EQUAL.

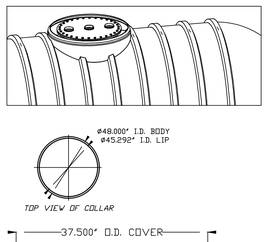
1.03 DTL3 STORAGE TANK MANHOLE COVER DETAIL

NOT TO SCALE



48" COLLAR AROUND

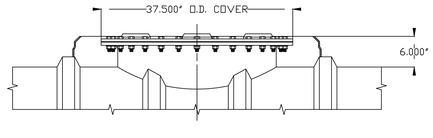
3 - 4" NPT FITTINGS



TOP VIEW OF COLLAR

48" COLLAR AROUND

22" DIA MANWAY



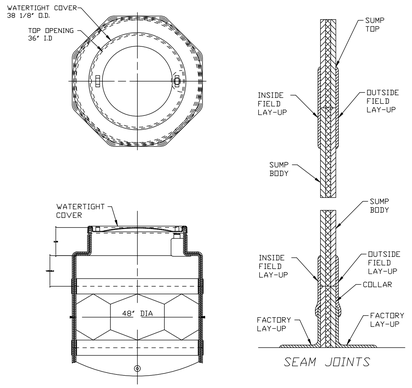
48" COLLAR AROUND

30" DIA MANWAY

1.04 DTL3 STORAGE TANK 48" CONTAINMENT COLLAR AROUND FITTINGS & MANWAYS

NOT TO SCALE

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL



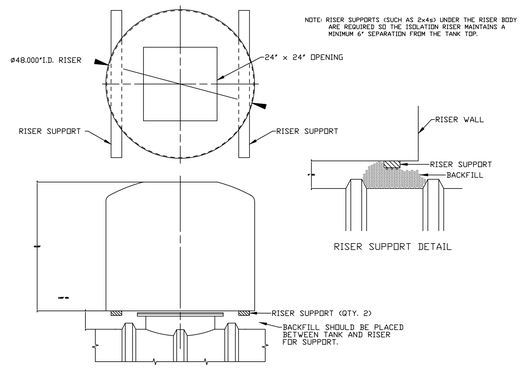
SEAM JOINTS

STORAGE TANK RISER FLAT SIDED DW CONTAINMENT SUMPS AND COVERS

1.06 DTL3

NOT TO SCALE

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL



RISER SUPPORT DETAIL

STORAGE TANK 48" X 42" ISOLATION RISER

1.07 DTL3

NOT TO SCALE

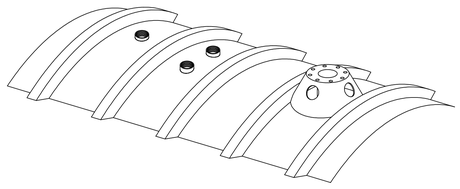
NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL

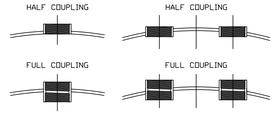
FITTING NOTES:

- ALL NPT FITTINGS MUST BE POSITIONED ON THE TOP CENTERLINE OF THE TANK.
- AVAILABLE IN 2", 4" AND 6" SIZES.

FLANGED NOZZLE NOTES:

- ALL BOLTING PATTERNS CONFORM TO ANSI B16.5 150# STANDARD.
- ALL FLANGED NOZZLES ARE AXIALLY MOUNTED ON THE TANK TOP CENTERLINE.





NOZZLE SIZES					
NOZZLE DIA	# OF BOLTS	CIRCLE DIA.	HOLE DIA.	FLANGE DIA.	PROJECT HGT.
2"	4	4 3/4"	3/4"	6"	6"
4"	8	7 1/2"	3/4"	9"	6"
6"	8	9 1/2"	7/8"	11"	6"
8"	8	11 3/4"	7/8"	13 1/2"	6"
NON U.L. 10"	12	14 1/4"	1"	16"	6"
NON U.L. 12"	12	17"	1"	19"	6"
NON U.L. 14"	12	18 3/4"	1 1/8"	21"	6"

STORAGE TANK HALF & FULL COUPLINGS, SINGLE & DUPLEX FITTINGS, CONICAL NOZZLE

1.08 DTL3

NOT TO SCALE

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL

NO.	BY	DATE
2	KCS	4/15/16
1	KCS	3/24/16

REVISIONS

ISSUED FOR BID/CONSTRUCTION

ISSUED FOR BID/CONSTRUCTION

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE49088
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

CONSTRUCTION DETAILS

YOUR GOALS. OUR MISSION.
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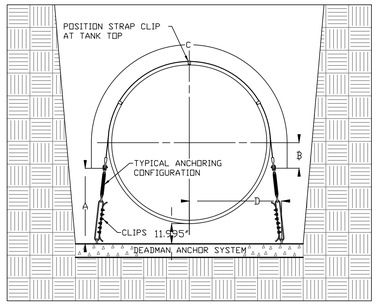
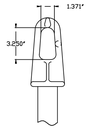
Certificate of Authorization
24GA27987500
OFFICES LOCATED IN:
DELAWARE, INDIANA, KENTUCKY, MASSACHUSETTS, MICHIGAN, NEW JERSEY, OHIO AND PENNSYLVANIA

DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	DTL3
SHEET	11 OF 15

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNC000650_SHT011-SHT013_CSD.dwg LAST EDIT: 09/13/2016 - 09:55:25 AM LOGIN: ksmith





STRAP END DETAIL

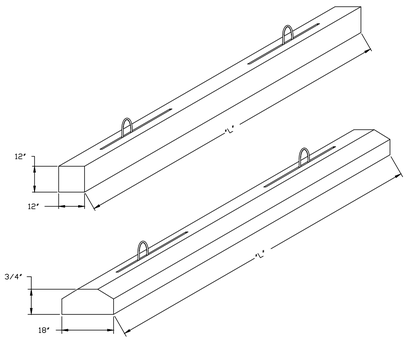
STORAGE TANK HOLD-DOWN STRAP DIMENSIONS DOUBLE D-LUG SLAB INSTALLATION

1.01 DTL4

NOT TO SCALE

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL

XERXES DEADMAN			
TANK SIZE GALLONS	QTY	"L"	APPRDX. WEIGHT EACH
4'-600	2	12'	1,800 LBS
4'-1,000	2	12'	1,800 LBS
4'-1,500	2	16'	2,400 LBS
6'-1,500	2	12'	1,800 LBS
6'-2,000	2	12'	1,800 LBS
6'-3,000	2	16'	2,400 LBS
6'-4,000	2	18'	2,700 LBS
6'-5,000	4	12'	1,800 LBS
6'-6,000	4	16'	2,400 LBS
6'-8,000	4	18'	2,700 LBS
8'-2,000	2	12'	1,800 LBS
8'-3,000	2	12'	1,800 LBS
8'-4,000	2	12'	1,800 LBS
8'-5,000	2	16'	2,400 LBS
8'-6,000	2	18'	2,700 LBS
8'-7,000	4	12'	1,800 LBS
8'-8,000	4	12'	1,800 LBS
8'-9,000	2	12'	1,800 LBS
	2	16'	2,400 LBS
8'-10,000	4	16'	2,400 LBS
8'-11,000	4	16'	2,700 LBS
8'-12,000	4	18'	2,700 LBS
8'-13,000	4	12'	1,800 LBS
	2	16'	2,400 LBS
8'-14,000	2	12'	1,800 LBS
	4	16'	2,400 LBS
8'-15,000	6	16'	2,400 LBS
10'-10,000	2	22'	3,000 LBS
10'-11,000	2	22'	3,000 LBS
10'-12,000	2	22'	3,000 LBS
10'-13,000	4	14'	1,900 LBS
10'-14,000	4	14'	1,900 LBS
10'-15,000	4	14'	1,900 LBS
10'-20,000	4	18'	2,400 LBS
10'-22,000	4	22'	3,000 LBS
10'-25,000	4	14'	1,900 LBS
	2	18'	2,400 LBS
10'-30,000	6	18'	2,400 LBS
10'-35,000	2	18'	2,400 LBS
	4	22'	3,000 LBS
10'-40,000	8	18'	2,400 LBS



XERXES PRECAST DEADMEN

- XERXES DEADMEN ARE ENGINEERED AND DESIGNED TO BE USED WITH XERXES TANKS.
- IN MULTIPLE TANK INSTALLATIONS, EACH TANK REQUIRES ITS OWN SET OF DEADMEN.
- FOR CAST IN PLACE OR DEADMAN CONSTRUCTED OFF SITE, REFER TO XERXES INSTALLATION MANUAL AND OPERATING GUIDELINES FOR PROPER SIZING AND ANCHOR POINT SPECIFICATIONS.

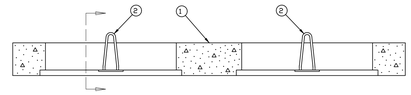
STORAGE TANK XERXES PRECAST DEADMEN

1.02 DTL4

NOT TO SCALE

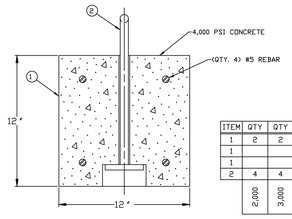
NOTES:

1. TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL
2. CONTRACTOR TO ASSESS CURRENT CONDITION OF EXISTING SUBSURFACE SLABS TO DETERMINE IF THEY CAN REMAIN IN PLACE FOR TANK ANCHORS STRAPS. CONTRACTOR TO REPORT FINDINGS TO UNION COUNTY AND DESIGN ENGINEER FOR APPROVAL PRIOR TO REMOVAL OF EXISTING SLABS OR REPLACEMENT OF PRECAST DEADMEN.



ITEM	QTY	QTY	QTY	UNIT	DESCRIPTION
1	2	2		EA	DEADMAN, 12"x12"x12'
1			2	EA	DEADMAN, 12"x12"x16'
2	4	4	4	EA	GALVANIZED ANCHOR POINT
	600	1,000	1,500		

4' TANKS

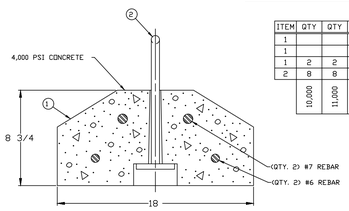


ITEM	QTY	QTY	QTY	QTY	QTY	QTY	QTY	UNIT	DESCRIPTION
1	2	2			4			EA	DEADMAN, 12"x12"x12'
1			2			4		EA	DEADMAN, 12"x12"x16'
1				2			4	EA	DEADMAN, 12"x12"x18'
2	4	4	4	4	8	8	8	EA	GALVANIZED ANCHOR POINT
	1,500	2,000	3,000	4,000	5,000	6,000	8,000		

6' TANKS

ITEM	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	UNIT	DESCRIPTION
1	2	2	2			4	4	2				4	2		EA	DEADMAN, 12"x12"x12'
1				2				2	4	4		2	4	6	EA	DEADMAN, 12"x12"x16'
1					2						4				EA	DEADMAN, 12"x12"x18'
2	4	4	4	4	4	8	8	8	8	8	8	12	12	12	EA	GALVANIZED ANCHOR POINT
	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000		

8' TANKS



ITEM	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	UNIT	DESCRIPTION
1				4	4	4			4					EA	DEADMAN, 8 3/4"x18"x14'
1							4		2	6	2	8		EA	DEADMAN, 8 3/4"x18"x18'
1	2	2	2					4			4			EA	DEADMAN, 8 3/4"x18"x22'
2	8	8	8	8	8	8	12	16	16	20	24	28		EA	GALVANIZED ANCHOR POINT
	10,000	11,000	12,000	13,000	14,000	15,000	20,000	22,000	25,000	30,000	35,000	40,000			

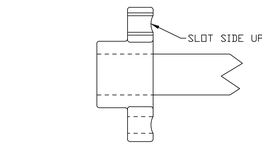
10' TANKS

STORAGE TANK XERXES PRECAST DEADMEN ANCHOR POINT ASSEMBLY

1.04 DTL4

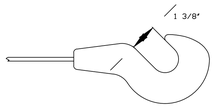
NOT TO SCALE

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL

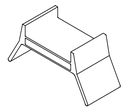


GALVANIZED STRAP END CONNECTOR

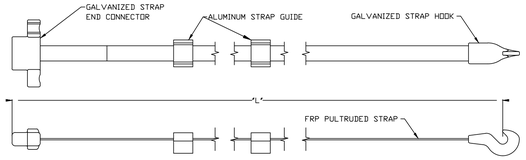
MAN-OUT-OF-HOLE STRAPS	
TANK SIZE	STRAP LENGTH "L"
6' DIA.	7'-6"
8' DIA.	9'-4"
10' DIA.	12'-0"



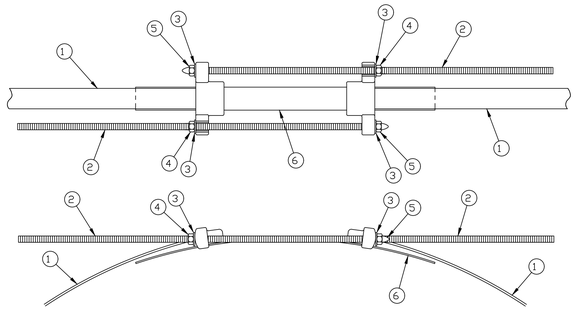
GALVANIZED STRAP HOOK



ALUMINUM STRAP GUIDE



LOAD BINDER ASSEMBLY PARTS LIST		
ITEM	QTY	DESCRIPTION
1	2	MAN-OUT-OF-HOLE STRAP
2	2	5/8" DIA. THREADED ROD, ZINC COATED
3	4	5/8" WASHER, ZINC COATED
4	2	5/8" HEX NUT, ZINC COATED
5	2	5/8" BLIND NUT, LOW CROWN, ZINC COATED
6	1	WEAR PLATE, ZINC COATED



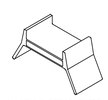
STORAGE TANK ANCHOR MAN-OUT-OF-HOLE STRAPS PARTS LIST

1.03 DTL4

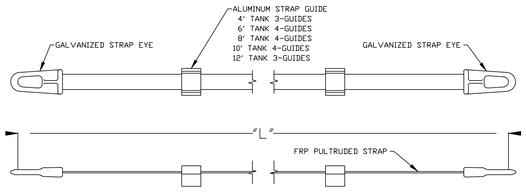
NOT TO SCALE

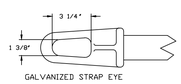
NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL

HOLD-DOWN STRAPS	
TANK SIZE	STRAP LENGTH "L"
4' DIA.	8'-4 1/4"
6' DIA.	12'-1"
8' DIA.	15'-1"
10' DIA.	18'-8 3/4"
12' DIA.	22'-6 3/4"



ALUMINUM STRAP GUIDE





GALVANIZED STRAP EYE

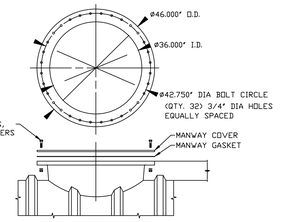
NOTE: STRAPS ARE RATED AT MINIMUM 25,000 LBS

STORAGE TANK ANCHOR DOUBLE D LUG HOLD DOWN STRAPS

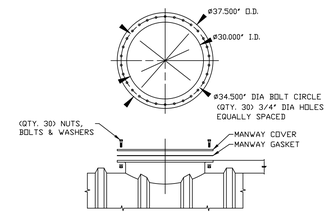
1.06 DTL4

NOT TO SCALE

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL

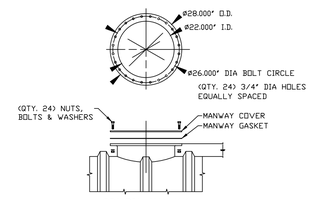


36" DIA. MANWAY



30" DIA. MANWAY

NOTE: 22" MANWAYS ARE CENTERED ON A RIB. 30" AND 36" MANWAYS ARE CENTERED ON A FLAT.



22" DIA. MANWAY

STORAGE TANK 22", 30" & 36" MANWAY SW & DW TANKS

1.05 DTL4

NOT TO SCALE

NOTE: TO BE MANUFACTURED BY XERXES A ZCL COMPANY OR APPROVED EQUAL

NO.	DATE	REVISIONS
2	4/15/16	ISSUED FOR BID/CONSTRUCTION
1	3/24/16	ISSUED FOR BID/CONSTRUCTION

KCS BY

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE49088
04/15/16 DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

CONSTRUCTION DETAILS

YOUR GOALS. OUR MISSION.
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DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	DTL4
SHEET	12 OF 15

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNCO00650_SHT011-SHT013_CSD.dwg LAST EDIT: 09/13/2016 - 09:35:29 AM LOGIN: ksmith

STRUCTURAL NOTES:

CONCRETE NOTES:

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF THE ACI-301 "STANDARD SPECIFICATION FOR STRUCTURAL CONCRETE" AND ACI-304R "GUIDE TO MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE.

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS, A MAXIMUM WATER/CEMENT (W/C) RATIO OF 0.40 AND SHALL HAVE 6 PERCENT ENTRAINED AIR. SUBMIT PROPOSED MIX DESIGN AND MIX DESIGN TEST RESULTS TO THE ENGINEER FOR APPROVAL A MINIMUM OF (2) TWO WEEKS PRIOR TO CONSTRUCTION.

3. READY MIX:

   A. COMPLY WITH ASTM C-94.
   B. CEMENT SHALL CONFORM TO ASTM C-150 STANDARD SPECIFICATION FOR PORTLAND CEMENT, TYPE II.
   C. CONCRETE AGGREGATE SHALL CONFORM TO ASTM C-33 FOR NORMAL WEIGHT AGGREGATE.
   D. MAXIMUM SLUMP OF CONCRETE SHALL BE 4 INCHES AS DETERMINED BY ASTM C-143.
   E. MAXIMUM TIME BETWEEN INTRODUCTION OF WATER AND PLACING CONCRETE SHALL BE LESS THAN 1½ HOURS.
   F. DO NOT LOAD TRUCKS OVER THEIR RATED CAPACITY.

4. COLD WEATHER CONCRETE SHALL BE IN ACCORDANCE WITH ACI-306R. HOT WEATHER CONCRETE SHALL BE IN ACCORDANCE WITH ACI-305R.

5. CONCRETE TEST CYLINDERS SHALL BE PREPARED FROM EACH DAY'S POUR. CYLINDERS SHALL BE PROPERLY CURED, STORED AND TESTED. SUBMIT RESULTS TO THE ENGINEER FOR REVIEW AND APPROVAL.

6. THROUGHOUT THE 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.

7. 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.

8. PRIOR TO MAKING REPAIRS, CONTRACTOR SHALL OBTAIN PERMISSION FROM THE ENGINEER TO MAKE PATCHES FOR OTHER THAN MINOR HONEYCOMBING.

9. CONTRACTOR SHALL COORDINATE CONCRETE CONSTRUCTION WITH THE REQUIREMENTS OF THE STRUCTURAL DRAWINGS.

10. ALL MATERIALS SHALL BE STORED TO PROTECT THEM AGAINST THE ELEMENTS.

REINFORCING STEEL FOR CONCRETE:

1. ALL REINFORCING AND BAR DETAILS SHALL CONFORM TO THE LATEST ACI CODE AND DETAILING MANUAL.

2. ALL BARS SHALL CONFORM TO ASTM A615, GRADE 60.

3. ALL WELDED WIRE FABRIC STEEL SHALL CONFORM TO ASTM A-185 WITH MINIMUM YIELD STRENGTH OF 65 KSI.

4. CLEARANCE OF MAIN REINFORCING FROM ADJACENT SURFACES, UNLESS SHOWN OTHERWISE SHALL BE 3 INCHES.

5. BENDING, TACK WELDING, CUTTING OR SUBSTITUTE REINFORCING OTHER THAN AS SHOWN ON THE DRAWINGS IS PROHIBITED UNLESS SPECIFIC APPROVAL FOR EACH CASE IS GIVEN BY THE ENGINEER. SUBMIT SHOP DRAWINGS FOR ALTERNATE REINFORCING SIZE AND SPACING CONFORMING TO DESIGN CRITERIA ON THESE DRAWINGS.

6. TOLERANCES FOR PLACING REINFORCING SHALL BE; PLUS OR MINUS ¼ INCH FOR MEMBERS UP TO 24 INCHES.

7. WHERE CONTINUOUS BARS ARE CALLED FOR, THEY SHALL BE LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS. BAR LAPS MAY BE OFFSET TO AVOID CONTROL OR CONSTRUCTION JOINTS. EXCEPT WHERE NOTED ON THE DRAWINGS, MINIMUM BAR LAPS SHALL BE AS FOLLOWS:
   #3 BARS - 16 INCHES
   #4 BARS - 20 INCHES
   #5 BARS - 28 INCHES
   #6 BARS - 30 INCHES
   #7 BARS - 36 INCHES

8. PROVIDE MINIMUM LAP SPLICE OF 12 INCHES WHERE CONTINUOUS WELDED WIRE REINFORCING IS CALLED FOR.

9. ALL REINFORCEMENT SHALL BE INSPECTED AND APPROVED BEFORE CONCRETE IS PLACED.

STEEL NOTES:

1. STRUCTURAL STEEL FABRICATION AND ERECTION SHALL CONFORM THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND SPECIFICATION FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL BUILDINGS, LATEST EDITION.

2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS:
   A. STRUCTURAL W-SHAPES: ASTM A992.
   B. CHANNELS AND ANGLES: ASTM A36.
   C. ROUND HOLLOW STRUCTURAL SECTIONS: ASTM A500, GRADE B
   D. SQUARE AND RECTANGULAR HOLLOW STRUCTURAL SECTIONS: ASTM A500, GRADE B.
   E. STRUCTURAL PIPE: ASTM A53
   F. STRUCTURAL PLATES AND BARS: ASTM A36.

3. ALL THE STRUCTURAL STEEL SHALL BE HOT-DIP ZINC COATED (GALVANIZED). MINIMUM COATING WEIGHT 2.0 OUNCES PER SQUARE FOOT.

CANOPY NOTES:

1. CANOPY SHALL BE PRE-ENGINEERED CANOPY AS MANUFACTURED BY AUSTIN MOHAWK, FASHION, INC., TFC CANOPY, OR APPROVED EQUAL.

2. CANOPY SHALL BE DESIGNED TO IBC 2015, 95 MPH WIND LOAD, WITH 3 SECOND GUST, 30 PSF GROUND SNOW LOAD (SEE LOAD REQUIREMENTS BELOW).

3. EQUIPMENT AND CONNECTIONS NOT SHOWN FOR CLARITY.

4. ALL EXPOSED STRUCTURAL STEEL, INCLUDING ISLAND FORM, ARE TO BE PAINTED.

5. CONTRACTOR SHALL PROVIDE ENGINEER WITH FINAL CANOPY SHOP DRAWINGS, INCLUDING CALCULATIONS, BEFORE CONSTRUCTION, FOR APPROVAL. THE FOUNDATION DESIGN WILL THEN BE VERIFIED AND REVISED, IF NECESSARY, TO ACCOMMODATE THE PROPOSED CANOPY.

LOAD REQUIREMENTS:

SNOW LOAD:

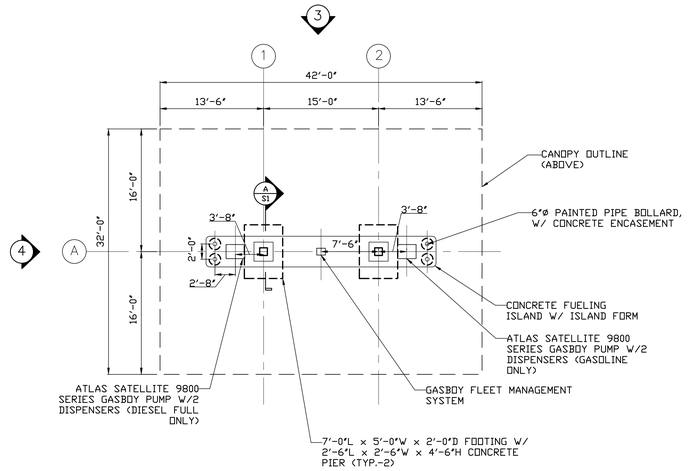
GROUND SNOW LOAD	= 30 PSF
IMPORTANCE FACTOR	= 1.0
SNOW EXPOSURE FACTOR	= 1.0 (PARTIALLY EXPOSED)
THERMAL FACTOR	= 1.2 (UNHEATED)
FLAT ROOF SNOW LOAD	= 25.2 PSF

WIND LOAD:

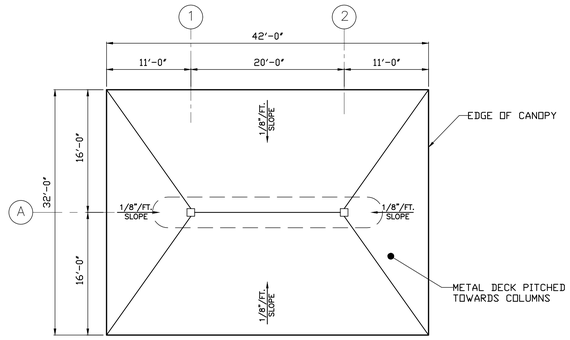
BASIC WIND SPEED	= 95 MPH
IMPORTANCE FACTOR	= 1.0
WIND EXPOSURE	= C
DIRECTIONALITY FACTOR	= 0.85
VELOCITY PRESSURE EXPOSURE COEFFICIENT	= 0.90
TOPOGRAPHIC FACTOR	= 1.0
VELOCITY PRESSURE	= 18 PSF

SEISMIC LOAD:

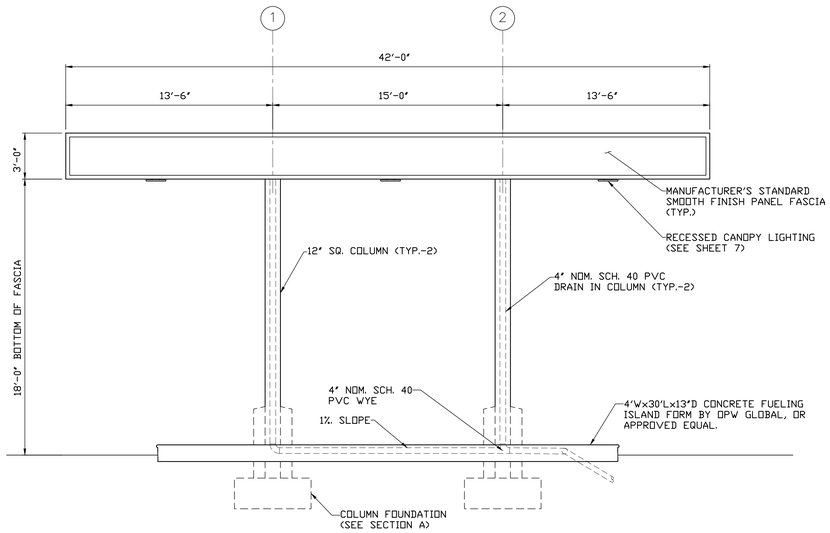
IMPORTANCE FACTOR	= 1.0
SPECTRAL RESPONSE ACCELERATIONS	
S_s	= 0.266
S_1	= 0.070
SITE CLASS	= C
SPECTRAL RESPONSE COEFFICIENTS	
S_{MS}	= 0.213
S_{M1}	= 0.079
SEISMIC DESIGN CATEGORY	= B
SEISMIC FORCE RESISTING SYSTEM	= CANTILEVERED COLUMN FOR ORDINARY STEEL MOMENT FRAMES
RESPONSE MODIFICATION FACTOR	= 1.25
SEISMIC RESPONSE COEFFICIENT	= 0.170
SEISMIC WEIGHT	= 21,760 POUNDS
DESIGN BASE SHEAR	= 3,700 POUNDS
ANALYSIS PROCEDURE	= EQUIVALENT LATERAL FORCE



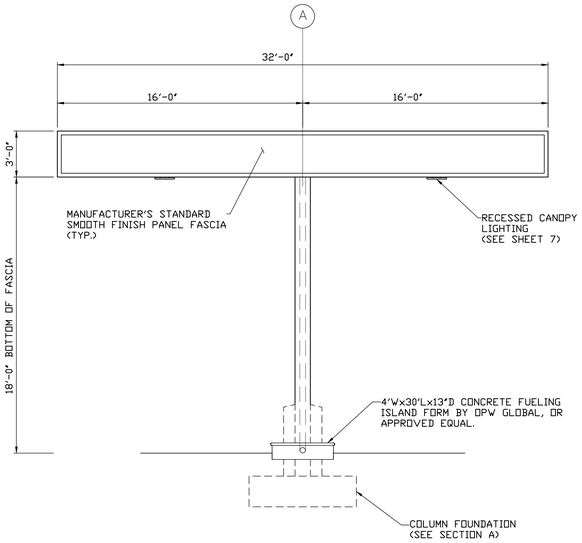
1 S1 FUELING ISLAND PLAN
SCALE: 1/8" = 1'-0"



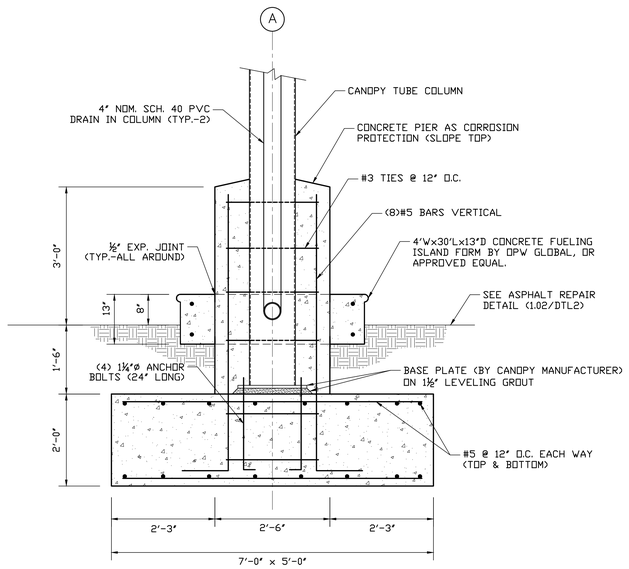
2 S1 CANOPY ROOF PLAN
SCALE: 1/8" = 1'-0"



3 S1 CANOPY ELEVATION
SCALE: 1/4" = 1'-0"



4 S1 CANOPY ELEVATION
SCALE: 1/4" = 1'-0"



A S1 FOUNDATION SECTION
SCALE: 3/4" = 1'-0"

NO	BY	DATE
2	KCS	4/15/16
1	KCS	3/24/16

REVISIONS

ISSUED FOR BID/CONSTRUCTION

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE45686
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

STRUCTURAL NOTES, CANOPY PLANS & SECTIONS

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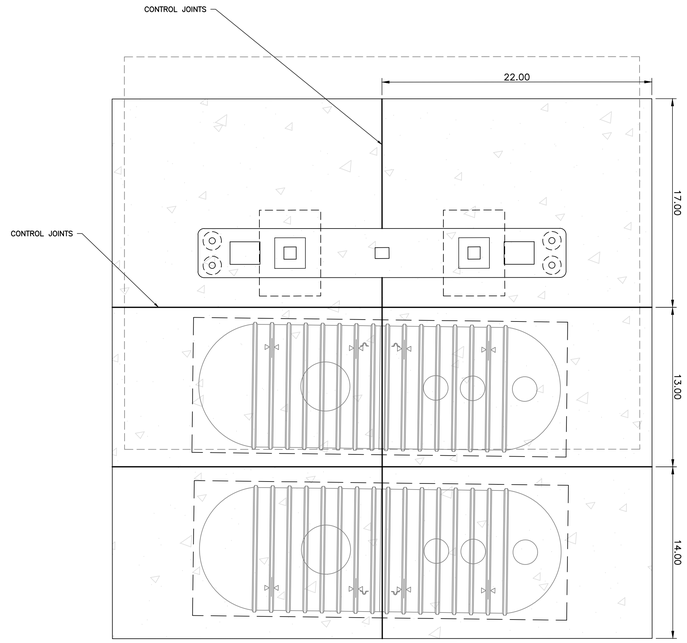
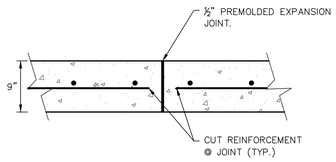
DELAWARE, INDIANA, KENTUCKY, MASSACHUSETTS, MICHIGAN, NEW JERSEY, OHIO AND PENNSYLVANIA

DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	S1
SHEET	13 OF 15

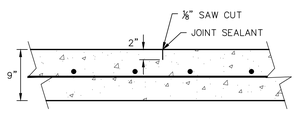
PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNCO00650_SHT01-SHT015_ST.dwg LAST EDIT: 09/13/2016 - 09:56:03 AM LOGIN: kamith



CONCRETE PAD CONTROL JOINT LAYOUT
SCALE: 1" = 5'

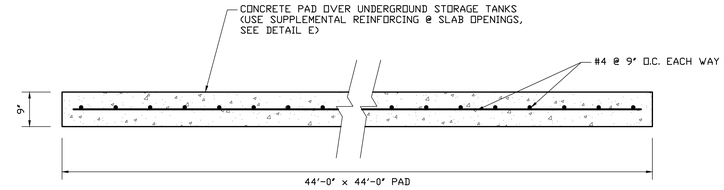


EXPANSION JOINT (EJ)

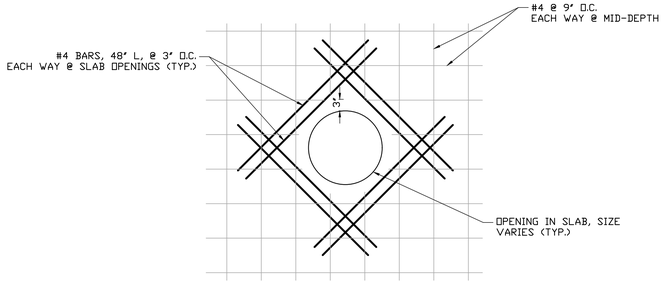


CONTROL JOINT (CJ)

TYPICAL JOINT DETAILS
NOT TO SCALE



D/S2 CONCRETE PAD OVER UNDERGROUND TANKS
SCALE: 3/4" = 1'-0"



E/S2 REINFORCEMENT @ SLAB OPENINGS
NOT TO SCALE

NO.	BY	ISSUED / REVISIONS	DATE
2	KCS	ISSUED FOR BID/CONSTRUCTION	4/15/16
1	KCS	ISSUED FOR BID/CONSTRUCTION	3/24/16

MICHAEL R. THOMAS, P.E.
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STATE OF NEW JERSEY
LICENSE NO. GE49088
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SLAB PLAN, DETAILS & SECTIONS

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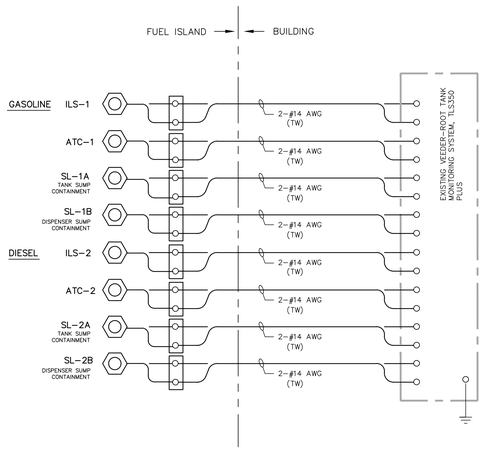
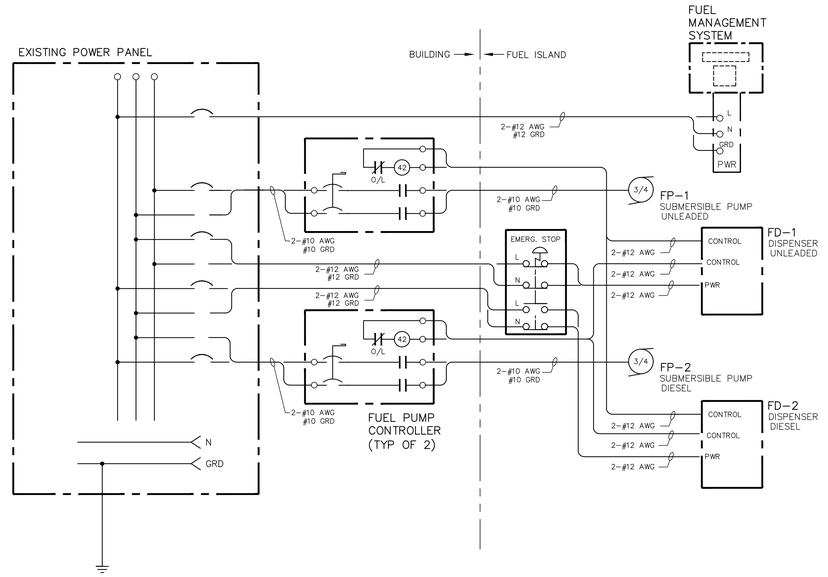
DESIGNED BY	MRT
CHECKED BY	AP/MRT
DRAWN BY	KCS
DATE	3/24/2016
SCALE	AS NOTED
PROJ. NO.	UNCO00650
DRAWING	S2
SHEET	14 OF 15

PROJECT: FILE NAME: H:\UNCO\00650\Plans\UNCO00650_SHT014-SHT015_ST.dwg LAST EDIT: 09/13/2016 - 09:56:05 AM LOGIN: ksmith





POWER RISER

CONSTRUCTION NOTES:

1. WIRING LOCATED WITHIN THE FUEL ISLAND SHALL BE INSTALLED IN 1/2" RMC CONDUIT. WIRING ROUTED BACK TO THE BUILDING SHALL BE INSTALLED IN 3/4" RMC.
2. A SEPARATE DRIVEN GROUND SHALL BE PROVIDED AT THE FMU. A 10'-0" LONG 3/4" DIA. COPPER CLAD ROD SHALL BE PROVIDED.
3. CABLE SHIELDS FOR THE SIGNAL WIRING SHALL BE TIED TO GROUND AT ONE POINT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMENDATION.
4. SURGE PROTECTION SHALL BE PROVIDED ON ALL POWER AND COMMUNICATIONS CIRCUITS WHICH INTERCONNECT BETWEEN THE MAJOR COMPONENTS.
5. THE CONTRACTOR SHALL PROVIDE ALL COMPONENTS AND ACESSSORIES NECESSARY TO ESTABLISH THE OPERATING LINK BETWEEN THE COMPUTER AND THE FMU AND BETWEEN THE COMPUTER AND THE VEEDER ROOT UNIT.
6. CIRCUIT BREAKERS SHALL BE FURNISHED AND INSTALLED INTO THE EXISTING DISTRIBUTION PANEL AS REQUIRED TO PROVIDE THE BRANCH CIRCUITS SHOWN IN THE ELECTRICAL DIAGRAMS. CONTRACTOR SHALL FIELD VERIFY THE MAKE OF THE EXISTING DISTRIBUTION EQUIPMENT.
7. SWITCH-NEUTRAL CIRCUIT BREAKERS SHALL BE USED FOR FUEL DISPENSERS.
8. CONDUITS WITHIN BUILDING SHALL BE INSTALLED PERPENDICULAR TO BUILDING WALLS AND AS CLOSELY AS POSSIBLE TO WALLS FOR VERTICAL RUNS AND CEILING FOR HORIZONTAL RUNS. CONTRACTOR SHALL MEET WITH OWNER AND ENGINEER AT SITE PRIOR TO CONDUIT INSTALLATION TO CONFIRM CONDUIT LOCATIONS. CONTRACTOR TO ADJUST LOCATION AS REQUESTED BY OWNER.
9. A TIME CLOCK SHALL BE PROVIDED FOR AUTOMATIC OPERATION OF THE CANOPY LIGHTING.
10. ALL WIRE SHALL BE STRANDED COPPER TYPE TW GASOLINE RESISTANT UNLESS OTHERWISE SPECIFIED. WIRING SHALL BE #12 AWG UNLESS OTHERWISE NOTED.
11. EMERGENCY SWITCH SHALL BE A FOUR POLE PUSH TO BREAK – PULL TO RESET WITH A RED MUSHROOM TYPE OPERATOR.
12. ALL EQUIPMENT SHALL BE UL LISTED.
13. CONDUITS SHALL BE BURIED A MINIMUM DEPTH OF 24 INCHES BELOW FINAL GRADE.
14. NAMEPLATES SHALL BE PROVIDED ON ALL PILOT DEVICES AND EQUIPMENT.
15. FUEL MANAGEMENT SYSTEM SHALL BE LOCATED TO PROVIDE CLEARANCE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
16. LOCATION OF EXISTING COMPUTERS AND PANELS WITHIN BUILDING ARE APPROXIMATE ONLY. CONTRACTOR SHALL PROVIDE ALL CONDUIT AND WIRE REQUIRED TO COMPLETE THE ELECTRICAL INSTALLATION.
17. ALL EQUIPMENT SHALL BE INSTALLED AND USED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE CHAPTER V, ARTICLE 500, 501, 502 & 514 AND THE AUTOMOTIVE AND MARINE SERVICE STATION CODE (NFPA 30A) AND LOCAL CODES.
18. THE CONTRACTOR SHALL CONFIRM THE FINAL ELEVATION OF THE FUEL ISLAND AND CONCRETE SLAB WITH THE OWNER/ENGINEER PRIOR TO CONSTRUCTION

NO	BY	REVISIONS	DATE
2	KCS	ISSUED FOR BID/CONSTRUCTION	4/15/16
1	KCS	ISSUED FOR BID/CONSTRUCTION	3/24/16

MICHAEL R. THOMAS, P.E.
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW JERSEY
LICENSE NO. GE49586
04/15/16
DATE

COUNTY OF UNION, DEPARTMENT OF ENGINEERING, PUBLIC WORKS, AND FACILITIES
CONSTRUCTION PLANS DPW UNDERGROUND STORAGE TANK REPLACEMENT
TOWNSHIP OF SCOTCH PLAINS, UNION COUNTY, NEW JERSEY

ELECTRICAL DETAILS

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DESIGNED BY: MRT	DRAWING: ED1
CHECKED BY: AP/MRT	
DRAWN BY: KCS	SHEET: 15
DATE: 3/24/2016	OF 15
SCALE: AS NOTED	
PROJ. NO.: UNCO00650	

PROJECT:
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