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CONTRACT AND SPECIFICATIONS

**RIVERHEAD WATER DISTRICT
TOWN OF RIVERHEAD
SUFFOLK COUNTY, NEW YORK**



REHABILITATION OF PLANT NO. 4

**CONTRACT E – ELECTRICAL UPGRADES
CONTRACT M – LIME SYSTEM REPLACEMENT**

Project No: RDWD 1904

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TOWN COUNCIL

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SEPTEMBER 2019

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TABLE OF CONTENTS**DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS**

001113	NOTICE TO BIDDERS
002113	INFORMATION FOR BIDDERS
004105	BIDDER'S DECLARATION
004116	PROPOSAL – CONTRACT E
004117	PROPOSAL – CONTRACT M
004313	BID SECURITY
004350	APPROVAL OF SUBCONTRACTORS/SUBCONTRACT LIMITS
004355	INDEMNITY, LIMITATION OF LIABILITY
004519	NON-COLLUSIVE BIDDING CERTIFICATE
004546	VENDOR RESPONSIBILITY QUESTIONNAIRE
004547	IRAN DIVESTMENT ACT CERTIFICATION
004550	QUALIFICATION OF BIDDERS
004555	CONTRACTOR'S RESPONSIBILITY
005209	CONTRACT
007343	WAGE RATES

DIVISION 01 - GENERAL REQUIREMENTS

011100	SUMMARY OF WORK
011400	WORK RESTRICTIONS
012100	ALLOWANCES
012500	PRODUCT SUBSTITUTION PROCEDURES
012900	PAYMENT PROCEDURES
012973	SCHEDULE OF VALUES
013100	PROJECT MANAGEMENT AND COORDINATION
013119	PROGRESS MEETINGS
013216	CONSTRUCTION SCHEDULE
013300	SUBMITTALS
014100	REGULATORY REQUIREMENTS
014223	SPECIFICATION FORMAT
014500	QUALITY CONTROL
015000	TEMPORARY FACILITIES AND CONTROLS
015719	TEMPORARY ENVIRONMENTAL CONTROLS
016100	BASIC PRODUCT REQUIREMENTS
016500	PRODUCT DELIVERY, STORAGE AND HANDLING
017500	STARTING AND ADJUSTING
017550	PROCESS PIPE AND TANK TESTING
017800	CLOSEOUT SUBMITTALS
017823	OPERATING AND MAINTENANCE DATA
017839	PROJECT RECORD DOCUMENTS
017843	SPARE PARTS
017900	DEMONSTRATION AND TRAINING

DIVISION 02 - EXISTING CONDITIONS

020100	MAINTENANCE OF EXISTING CONDITIONS
024119	SELECTIVE DEMOLITION

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

068211	GLASS FIBER REINFORCED PLASTIC GRATING

DIVISION 09 - FINISHES

099744 MECHANICAL PIPING COATING SYSTEMS

DIVISION 10 - SPECIALTIES

104300 TANK SIGNAGE
104310 SAFETY EQUIPMENT

DIVISION 22 - PLUMBING

220529 HANGERS AND SUPPORT FOR PIPING
220553 IDENTIFICATION FOR MECHANICAL PIPING & EQUIPMENT
221113 FACILITY PIPING

DIVISION 26 - ELECTRICAL

260000 ELECTRICAL
260010 ELECTRICAL DEMOLITION
260519 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
260526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
260533 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
260553 IDENTIFICATION FOR ELECTRICAL SYSTEMS
260574 ARC FLASH HAZARD ANALYSIS AND SHORT CIRCUIT COORDINATION STUDY
261823 SURGE PROTECTION
262200 LOW VOLTAGE TRANSFORMERS
262400 PANELBOARDS
262726 WIRING DEVICES
262816 ENCLOSED SWITCHES AND CIRCUIT BREAKERS
262913 MOTOR CONTROLLERS
262915 MOTOR CONTROL CENTERS
262923 VARIABLE FREQUENCY CONTROLLERS
263353 STATIC UNINTERRUPTIBLE POWER SUPPLY
264010 TELEMETRY SYSTEM
265011 PROGRAMMABLE LOGIC CONTROLLER (COMPACT LOGIX)
265012 DESCRIPTION OF CONTROLS
265013 OPERATOR TERMINAL
267173 ELECTRICAL UTILITY SERVICES

DIVISION 31 - EARTHWORK

312213 ROUGH GRADING
312316 EXCAVATION
312323.13 BACKFILL
312333 TRENCHING

DIVISION 32 - EXTERIOR IMPROVEMENTS

323000 SITE BOLLARDS

DIVISION 40 - PROCESS INTEGRATION

409323	CHART RECORDER
409510	MERCURY ABATEMENT GENERAL REQUIREMENTS
409513	CHEMICAL MONITORING AND CHEMICAL TREATMENT SAFETY CONTROL

DIVISION 44 - POLLUTION CONTROL EQUIPMENT

444459.13	LIME TREATMENT SYSTEM

The Town Board of Riverhead will receive bids for the Riverhead Water District at the Town Clerk's office, Town Hall, 200 Howell Avenue, Riverhead, New York 11901, until 11:00 AM, on **Thursday, September 26, 2019**, at which time and place all bids will be publicly opened and read aloud for:

Rehabilitation of Plant No. 4

Contract E – Electrical Upgrades

Contract M – Lime System Replacement

H2M Project No.: RDWD1904

Plans and specifications may be examined on or after Thursday, September 12, 2019 by visiting the Town of Riverhead website: <http://townofriverheadny.gov> and clicked on "Bid Requests". Plans and specifications are available in electronic format only from the aforementioned website.

Each proposal must be accompanied by a bid bond in the amount of five percent (5%) of the total bid, or a certified check made payable to the TOWN OF RIVERHEAD as assurance that the bid is made in good faith.

The right is reserved to reject any or all bids, to waive any informality, and to accept the lowest responsible bid.

BY ORDER OF THE TOWN BOARD
TOWN OF RIVERHEAD
SUFFOLK COUNTY, NEW YORK

ACTING AS THE GOVERNING BODY
OF THE RIVERHEAD WATER DISTRICT

TOWN CLERK, TOWN OF RIVERHEAD

DATED: SEPTEMBER 12, 2019

END OF SECTION 001113

BIDS FOR PROJECT

The Town of Riverhead, at the Town Clerk's office, will receive SEALED PROPOSALS for:

Riverhead Water District
Rehabilitation of Plant No. 4
Contract E – Electrical Upgrades
Contract M – Lime System Replacement

H2M PROJECT NO.: RDWD1904

TIME AND PLACE OF BID

Bids are to be submitted in sealed opaque envelopes and will be received by the Town of Riverhead at the Town Clerk's office, Town Hall, 200 Howell Avenue, Riverhead, New York, not later than **11:00 A.M.** prevailing time, on **September 26, 2019** at which time and place they will be publicly opened and read aloud. Use of the mail shall be at the Bidder's own risk, and the Bidder shall be responsible for physical delivery of the bid at the time and place set for opening of bids.

BID ENVELOPE

All proposals and either the certified check or bid bond must be placed in a sealed opaque envelope bearing the Bidder's firm name and address and marked, "PROJECT NO.: RDWD 1904, REHABILITATION OF PLANT NO. 4; CONTRACT E - ELECTRICAL UPGRADES AND CONTRACT M – LIME SYSTEM REPLACEMENT FOR THE RIVERHEAD WATER DISTRICT, TOWN OF RIVERHEAD, SUFFOLK COUNTY, NEW YORK", but otherwise unmarked. Bid package shall include Bidder's Declaration (004105), Proposal – Contract E (004116), Proposal – Contract M (004117), Bid Security (004313), Approval of Subcontractors/Subcontract Limits (004350), Non-Collusive Bidding Certificate (004519), Vendor Responsibility Questionnaire (004546), Iran Divestment Act Certification (004547), Qualifications of Bidder (004550).

PLANS AND SPECIFICATIONS

Plans and specifications may be examined on or after SEPTEMBER 12, 2019 by visiting the Town of Riverhead website: <http://townofriverheadny.gov> and click on "Bid Requests".

Plans and specifications are available from the aforementioned Town of Riverhead website only. All contractors who intend to submit a bid package are required to register on the web site.

VERBAL ANSWERS

The Town Board, its agents, servants or employees, or the Engineer, will not be responsible in any manner for verbal answers to any inquiries regarding the meaning of the contract drawings or Specifications given prior to the awarding of the contract.

EXAMINATION OF SITE

Bidders must satisfy themselves by personal examination of the location of the proposed work and of the actual conditions and requirements of the work and shall not, at any time after the submission of a proposal, dispute or complain of such estimate or assert that there was any misunderstanding in regard to the depth or character of excavation to be made or the nature of the work to be done.

PROPOSAL

The Proposal contained herein shall be used in preparing bids. Any proposal not in accordance with these instructions or containing bids not asked for may be rejected. While separate prices are required by various items under this contract, it is understood that the contract will be awarded as a whole.

As the estimates of quantities of items included in the Proposal are approximate, bidders must submit their proposals upon the following express conditions, which shall apply to and become part of each proposal received.

Bids will be compared by total amounts, which shall be the sum of the quantities multiplied by the unit price bid for the various items; due consideration being given to lump sum prices bid and for contingent items. Unbalanced bids will not be accepted.

Each bidder shall fill out in ink (in both words and figures) in the spaces provided, its unit or lump sum bid, as the case may be, for each item in the Proposal for which it is submitting a bid. If there is a discrepancy between the prices in words and figures, the prices in words shall govern as unit and lump sum prices.

A bid which does not include bids for all items in the Proposal may not be considered valid.

If the contract is not awarded by the Town Board within ninety (90) days after the receipt of bids, the obligation of the bidder under this Proposal may terminate at its option and it shall thereupon be entitled to a refund of its certified check or release of its bid bond furnished by it as security with its proposal.

BID BOND OR CERTIFIED CHECK

Each proposal from a Contractor shall be accompanied by a bid bond or certified check on a solvent bank of the STATE OF NEW YORK, in the amount of five percent (5%) of the total bid. Such check shall be made payable to TOWN OF RIVERHEAD, RIVERHEAD, NEW YORK, and the amount thereof shall be the measure of liquidated damages which the Town may sustain by failure, neglect or refusal of the bidder to execute and deliver the contract, should the contract be awarded to it. The checks of all unsuccessful bidders will be returned upon the rejection of bids and the awarding of the contract; also, the check of the successful bidder will be returned upon the execution of the contract and the furnishing of the required bond.

NAME OF BIDDER

Each bidder must state, in its proposal, its full name and business addressed, and the full name of every person, firm or corporation, interested in same, and the address of every person or firm, or president and secretary of every corporation, interested with it.

QUALIFICATIONS OF BIDDERS

(1) The Town Board reserves the right to waive any informalities in, or reject any and all bids. The Board reserves the right to reject any and all bids which do not conform to the Proposal.

(2) All bidders must prove to the satisfaction of the Town Board that they are reputable, reliable and responsible, and that they possess the necessary qualifications (financial, labor, equipment and otherwise) to complete successfully the proposed work.

(3) In determining the qualifications of a bidder, the Town Board will consider its record in the performance of any contracts entered into by it for the work contemplated or of similar nature, may make such investigation as it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Board all such information and data for this purpose as the Town Board may request.

(4) The Town Board shall be the sole judge of the qualifications of the bidders and of the merits thereof and reserves the right to reject any bid if the record of the bidder in the performance of contracts, payment of bills and meeting of obligations to subcontractors, material men or employees is not satisfactory to the Town Board, or if the evidence submitted by, or the investigation of, such bidders fails to satisfy the Town Board that it is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

PERFORMANCE AND MAINTENANCE BOND

The Contractor shall furnish a Performance Bond, Labor and Materials Bond, and a one (1) year Maintenance Bond each in an amount equal to one hundred (100%) percent of the total contract price as security for its faithful performance of this contract, for the payment of all persons performing labor or furnishing materials in connection with this contract. Such bonds shall also cover any penalties, interest charges and assessments levied by any governmental unit for failure to comply with laws and/or regulations governing public work. The Maintenance Bond shall be an assurance that all work and materials provided under this contract shall be maintained for a minimum period of two (2) years. The Maintenance Bond shall be furnished following final completion, and payment under the contract. The contractor shall be required to furnish all guarantees and warranties of manufacturers of products in connection with this contract, but no manufacturer's limitation of time shall act to limit the responsibility of the contractor or its surety hereunder.

The surety must be licensed in the State of New York and have a BEST A rating, or the surety shall present information satisfactory to the TOWN/DISTRICT to permit the TOWN/DISTRICT to accept the bond.

At the time of submission of bonds or at any time thereafter, the TOWN/DISTRICT may evaluate the surety or sureties proposed, and demand a change of surety if it determines that the financial position of such surety does not provide for a proper protection of the interests of the TOWN/DISTRICT. The TOWN/DISTRICT shall be guided by its legal counsel, and insurance industry consultants in determining proper sureties for TOWN/DISTRICT public works contracts. If the TOWN/DISTRICT notifies the contractor in writing that a surety is unacceptable for any reason, then the contractor shall replace the surety and the bond in question within five (5) business days with a surety and bond deemed suitable by the said TOWN/DISTRICT. The premiums charged for all such bonds shall be a cost of the contractor and not the TOWN/DISTRICT. Upon notice to change surety being forwarded to a contractor, no further payments shall be made until a new bond in proper form naming an acceptable surety is provided.

SIGNATURE OF CONTRACTOR

The bidder to whom a contract may be awarded shall attend at the office of the Town Board, with the sureties offered by it, within seven (7) days, Saturdays and Sundays excepted, after date of notification of the acceptance of its proposal, and there sign the contract in quadripartite for the work and furnish approved security for its performance.

In case of failure to do so, the bidder shall be considered as having abandoned the same, and the check accompanying its proposal shall be forfeited to the Town Board, or the penalty of the bid bond shall be invoked.

CONTRACTOR'S INSURANCE

The Contractor shall not commence any work until it has obtained and had approved by the Town all of the insurance specified and required by the Contract.

The Contractor shall not permit any subcontractor to commence any operation on the site until satisfactory proof of carriage of the above required insurance has been posted with, and approved by, the Town Board.

RESPONSIBILITY OF BIDDER

Attention is hereby particularly directed to the provisions of the contract whereby the Contractor will be responsible for any loss or damage that may happen to the work or any part thereof during its progress; and also whereby the Contractor shall make good any defects or faults that may occur during the progress of the work or within twenty-four (24) months after date of the Engineer's approval of the final payment request.

LABOR RATES

The Contractor shall pay not less than the minimum hourly wage rates on this contract as established in accordance with Section 220 of the Labor Law, as shown on the Wage Schedule and Prevailing Rate Schedule, either shown on the following pages or the current prevailing rates paid at the time of construction.

Each bidder shall submit with its bid a separate sealed list that names each subcontractor that the bidder will use to perform work on the contract, and the agreed-upon amount to be paid to each, for: (i) plumbing and gas fitting, (ii) steam heating, hot water heating, ventilating and air conditioning apparatus and (iii) electric wiring and standard illuminating fixtures. After the low bid is announced, the sealed list of subcontractors submitted with such low bid shall be opened and the names of such subcontractors shall be announced, and thereafter any change of subcontractor or agreed-upon amount to be paid to each shall require the approval of the owner, upon a showing presented to the owner of legitimate construction need for such change, which shall be open to public inspection. Legitimate construction need shall include, but not be limited to, a change in project specifications, a change in construction material costs, a change to subcontractor status as determined pursuant to paragraph (e) of subdivision two (2) of section two hundred twenty-two (222) of the labor law, or the subcontractor has become otherwise unwilling, unable or unavailable to perform the subcontract. The sealed lists of subcontractors submitted by all other bidders shall be returned to them unopened after the contract award.

APPRENTICESHIP PROGRAM

Pursuant to Section 816-(b) of the New York Labor Law, the Riverhead Water District has adopted a Resolution related to approved apprenticeship programs. If the successful bidder's bid hereunder exceeds the sum of \$250,000.00, such bidder shall, prior to entering into a contract with the District, be required to have an appropriate apprenticeship agreement that has been registered with and approved by the Commissioner of the New York State Labor Department of Labor pursuant to the requirements found in Article 23 of the New York Labor Law. Any subcontractors under this contract shall also, in all respects, comply with these provisions.

COMPLETION OF WORK

Work is required to be completed to the satisfaction of the Engineer, and in substantial accordance with the Specifications hereunto annexed and the Plans therein referred to and the Change Orders amended to the Contract.

RESPONSIBILITY OF CONTRACTOR

Attention is hereby particularly directed to the provisions of the contract whereby the Contractor will be responsible for any loss or damage that may happen to the work or any part thereof during its progress; and also whereby the Contractor shall make good any defects or faults that may occur during the progress of the work or within twenty-four (24) months after its completion and acceptance. Any progress payments made by the Town during the completion of this contract by the Contractor shall not be a waiver of the foregoing provision.

**TOWN BOARD
TOWN OF RIVERHEAD
SUFFOLK COUNTY, NEW YORK**

END OF SECTION 002113

TO THE TOWN COUNCIL

RIVERHEAD WATER DISTRICT

For the furnishing and installation of materials for all work included under contract as follows:

Made this day of _____, by

BIDDER'S DECLARATION:

The party named as Bidder declares that the only person or persons interested in this bid or proposal as principal or principals is or are named herein; and that no other person than herein named has any interest in this proposal or in the contract proposed to be taken; that this bid or proposal is made without any connections with any other person and persons making a bid or proposal for the same purpose; that the bid or proposal is in all respects fair and without collusion or fraud; that it has examined the site of the work, the contract and specifications and the drawings referred to; and has read the Information for Bidders hereto attached; and it proposed and agrees, if this proposal is accepted, it will contract in the form as approved to perform all the work mentioned in said contract and specifications; and it will accept in full payment therefore the following sums to wit.

END OF SECTION 004105

Board:

The undersigned hereby offers to furnish all labor, equipment, materials and appurtenances for **Rehabilitation of Plant No. 4; Contract E – Electrical Upgrades**, all in accordance with the plans and specifications prepared by H2M architects + engineers for the following individual and lump sum prices:

ITEM 1 - MOBILIZATION AND DEMOBILIZATION

For mobilization, demobilization, and site restoration, as specified.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 2 – REMOVAL AND DISPOSAL OF EXISTING ELECTRICAL SERVICE

For all labor, materials and equipment necessary for disconnection and removal of the existing incoming electrical service including but not limited to service riser, underground primary cable, utility transformer, underground secondary cable, utility meter, and associated equipment in accordance with utility requirements as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 3 – REMOVAL AND DISPOSAL OF EXISTING MOTOR CONTROL CENTER

For all labor, materials and equipment necessary for labeling, disconnection, and removal of the existing motor control center including but not limited to service entrance equipment, manual transfer switch, motor starters, circuit breakers, transformers, panelboards, control cubicles, chart recorders, pilot devices, and associated equipment as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 4 – REMOVAL AND DISPOSAL OF EXISTING LIME TREATMENT EQUIPMENT

For all labor, materials and equipment necessary for disconnection and removal of the existing wire, conduit, motor starters, disconnect switches, receptacles, etc. associated with lime mixers, pumps, and associated equipment as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 5 – REPLACEMENT OF EXISTING WELL PUMP MOTOR FEEDERS

For all labor, materials and equipment necessary for the replacement of the existing well pump feeders as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 6 – NEW MOTOR CONTROL CENTER

For all labor, materials and equipment necessary for the installation of the new motor control center including but not limited to service entrance equipment, motor starters, circuit breakers, kirk-key interlocks, transformers, panelboards, pilot devices, and associated equipment as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 7 – NEW CONTROL PANEL

For all labor, materials and equipment necessary for the installation of the new control panel “CP” and associated equipment as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 8 – NEW ELECTRICAL WORK

For all labor, materials and equipment necessary for all electrical work including but not limited to wire, conduit, equipment, devices, and all associated accessories as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 9 - CASH ALLOWANCES

For all cash allowances for additional work due to unforeseen conditions, as specified in Section 012100 – Allowances.

LUMP SUM: Twenty Thousand & 00/100 (\$ 20,000.00)
(Forced Bid Amount of \$20,000.00) DOLLARS

ITEM 10 – ELECTRICAL UTILITY ALLOWANCE

Cash allowances for invoiced utility fees , as specified in Section 012100 – Allowances.

LUMP SUM: Fifteen Thousand & 00/100 (\$ 15,000.00)
(Forced Bid Amount of \$15,000.00) DOLLARS

ITEM 11 – CONTROL MODIFICATIONS

Allowance for additional control modifications specified in Section 265012 – Description of Controls Section for hardware and software not included in base bid. Allowance shall be in accordance with Specification Section 012100 – Allowances.

COST PER HOUR: _____ (_____)
DOLLARS

LUMP SUM: _____ (_____)
(For 40 HOURS) DOLLARS

ITEM 12 - PROJECT RECORD DOCUMENTS

For furnishing project record documents, as-builts, and operation and maintenance manuals as described in the specification.

LUMP SUM: _____ (\$ _____)
(Minimum Bid of \$1,000.00) DOLLARS

ALT. ITEM 1 – NEW DUST COLLECTION AND EXHAUST SYSTEM

For all labor, materials and equipment necessary for the electrical work associated with the installation of a new dust collection and exhaust system including complete electrical scope as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

TOTAL BASE BID (Sum of Items 1-12)

DOLLARS (\$ _____)

TOTAL ALTERNATE BID (Sum of Items 1-12 and Alt. Item 1)

DOLLARS (\$ _____)

The Board of the Riverhead Water District reserves the right to award this contract based on either the total bid or any combination of bid items, as may be in the best interest of the Riverhead Water District. The award shall be made to the lowest responsible bidder based upon the bid items awarded. The Board reserves the right to reject any or all bids. The Board reserves the right to award this contract within forty-five (45) days of the bid opening.

Within ten (10) consecutive calendar days after the date of the Notice of Award, the bidder shall execute the contract and furnish the required bonds and insurances. The Notice to Proceed will be issued after the contract has been executed by the Owner.

All work shown and specified in the contract documents and included in this bid shall be completed within one hundred and eighty (180) consecutive calendar days from the date of the Notice to Proceed.

Failure of the contractor to complete all work within the specified time will subject him to liquidated damages as set forth in the contract, in the sum of five hundred dollars (\$500.00) per day, commencing with the 76th day from the date of the Notice to Proceed.

In addition to liquidated damages, specific damages will be assessed and deducted from amounts otherwise due the contractor for additional inspection and contract management time required to be expended by the Engineer should the project be completed beyond the contract completion date. Such deduction shall be in accordance with the billing rates and fees established between H2M and the Riverhead Water District.

Each bidder shall submit with its bid a separate sealed list that names each subcontractor that the bidder will use to perform work on the contract, and the agreed-upon amount to be paid to each, for: I) plumbing and gas fitting, II) steam heating, hot water heating, ventilating and air conditioning apparatus, and III)

electric wiring and standard illuminating fixtures. After the low bid is announced, the sealed list of subcontractors submitted with such low bid shall be opened and the names of such subcontractors shall be announced, and thereafter any change of subcontractor or agreed-upon amount to be paid to each shall require the approval of the Owner, upon a showing presented to the Owner of legitimate construction need for such change, which shall be open to public inspection. Legitimate construction need shall include, but not be limited to, a change in project specifications, a change in construction material costs, a change to subcontractor status as determined pursuant to paragraph (E) of subdivision two (2) of section two hundred twenty-two (222) of the labor law, or the subcontractor has become otherwise unwilling, unable, or unavailable to perform the subcontract. The sealed lists of subcontractors submitted by all other bidders shall be returned to them unopened after the contract award.

The contractor shall coordinate all work with the Owner to minimize disturbances to Owner operations.

The bidder represents herewith that he is aware of the working conditions, has carefully reviewed the proposal and specifications, has checked and certifies the accuracy of the bid.

The undersigned hereby acknowledges receipt of the following addenda (if any):

ADDENDUM NO.	DATED
_____	_____
_____	_____
_____	_____

Each proposal shall be accompanied by either a certified check drawn on a solvent bank with an office in the State of New York, or a bid bond equal to five percent (5%) of the total amount of the bid and payable to the Riverhead Water District. The certified check or bid bond shall specify which contract it accompanies.

**SECURITY ENCLOSED FOR THIS SECTION
(BASE BID PLUS CONTINGENCY ITEMS)**

**YES / NO
(Circle One)**

PROPOSAL CERTIFICATION

This Bid is hereby submitted by:

BIDDER: _____

BIDDER'S ADDRESS: _____

SIGNED BY: _____ TITLE: _____

PRINT NAME: _____ DATE: _____

FEDERAL I.D. NO. OR
SOCIAL SECURITY NO.: _____

Telephone number where the contractor or a competent representative can accept a telephone message and provide a reasonable reply as soon as possible, but within 24 hours of being contacted.

DAY: _____ NIGHT: _____

EMERGENCY: _____ FAX: _____

EMAIL: _____

Acknowledgement that the Qualification of Bidders section has been fully completed/executed.

_____ SIGNATURE	_____ PRINT NAME	_____ TITLE	_____ DATE

END OF SECTION 004116

Board:

The undersigned hereby offers to furnish all labor, equipment, materials and appurtenances for **Rehabilitation of Plant No. 4; Contract M – Lime System Replacement**, all in accordance with the plans and specifications prepared by H2M architects + engineers for the following individual and lump sum prices:

ITEM 1 - MOBILIZATION AND DEMOBILIZATION

For mobilization, demobilization, and site restoration, as specified.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 2 – REMOVAL AND DISPOSAL OF EXISTING LIME STORAGE TANK & ACCESSORIES

For all labor, materials and equipment necessary for removing and disposing of the existing 1,000-gallon aboveground lime storage tank, mixers, pumps, piping and associated equipment as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 3 – NEW ABOVEGROUND LIME STORAGE TANK – STEEL

For all labor, materials and equipment necessary for the furnishing and installing of a new 800-gallon aboveground steel lime storage tank and mixer as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 4 – NEW LIME TREATMENT SYSTEM

For all labor, materials and equipment necessary for the furnishing and installing of a new lime treatment system including new chemical treatment pumps, all piping, valves, and fittings, and chemical signage as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ITEM 5 - CASH ALLOWANCES

For all cash allowances for additional work due to unforeseen conditions, as specified in Section 012100 – Allowances.

LUMP SUM: Ten Thousand & 00/100 (\$ 10,000.00)
(Forced Bid Amount of \$10,000.00) DOLLARS

ITEM 6 - PROJECT RECORD DOCUMENTS

For furnishing project record documents, as-builts, and operation and maintenance manuals as described in the specification.

LUMP SUM: _____ (\$ _____)
(Minimum Bid of \$1,000.00) DOLLARS

ALT. ITEM 1 – NEW DUST COLLECTION AND EXHAUST SYSTEM

For all labor, materials and equipment necessary for the furnishing and installation of a new dust collection and exhaust system including complete electrical scope as shown on the Plans and/or as described in the Specifications.

LUMP SUM: _____ (\$ _____)
DOLLARS

ALT. ITEM 2 – NEW ABOVEGROUND LIME STORAGE TANK – FRP

For all labor, materials and equipment necessary for the furnishing and installing of a new 800-gallon aboveground fiberglass reinforced plastic (FRP) lime storage tank and mixer. FRP tank shall meet the requirements of AWWA Standard D120-09.

LUMP SUM: _____ (\$ _____)
DOLLARS

TOTAL BASE BID (Sum of Items 1-6)

DOLLARS (\$ _____)

TOTAL ALTERNATE BID A (Sum of Items 1-6 and Alt. Item 1)

DOLLARS (\$ _____)

TOTAL ALTERNATE BID B (Sum of Items 1-2, 4-6 and Alt. Items 1 and 2)

DOLLARS (\$ _____)

The Board of the Riverhead Water District reserves the right to award this contract based on either the total bid or any combination of bid items, as may be in the best interest of the Riverhead Water District. The award shall be made to the lowest responsible bidder based upon the bid items awarded. The Board reserves the right to reject any or all bids. The Board reserves the right to award this contract within forty-five (45) days of the bid opening.

Within ten (10) consecutive calendar days after the date of the Notice of Award, the bidder shall execute the contract and furnish the required bonds and insurances. The Notice to Proceed will be issued after the contract has been executed by the Owner.

All work shown and specified in the contract documents and included in this bid shall be completed within one hundred and eighty (180) consecutive calendar days from the date of the Notice to Proceed.

Failure of the contractor to complete all work within the specified time will subject him to liquidated damages as set forth in the contract, in the sum of five hundred dollars (\$500.00) per day, commencing with the 76th day from the date of the Notice to Proceed.

In addition to liquidated damages, specific damages will be assessed and deducted from amounts otherwise due the contractor for additional inspection and contract management time required to be expended by the Engineer should the project be completed beyond the contract completion date. Such deduction shall be in accordance with the billing rates and fees established between H2M and the Riverhead Water District.

Each bidder shall submit with its bid a separate sealed list that names each subcontractor that the bidder will use to perform work on the contract, and the agreed-upon amount to be paid to each, for: I) plumbing and gas fitting, II) steam heating, hot water heating, ventilating and air conditioning apparatus, and III) electric wiring and standard illuminating fixtures. After the low bid is announced, the sealed list of subcontractors submitted with such low bid shall be opened and the names of such subcontractors shall be announced, and thereafter any change of subcontractor or agreed-upon amount to be paid to each shall require the approval of the Owner, upon a showing presented to the Owner of legitimate construction need for such change, which shall be open to public inspection. Legitimate construction need shall include, but not be limited to, a change in project specifications, a change in construction material costs, a change to subcontractor status as determined pursuant to paragraph (E) of subdivision two (2) of section two hundred twenty-two (222) of the labor law, or the subcontractor has become otherwise unwilling, unable, or unavailable to perform the subcontract. The sealed lists of subcontractors submitted by all other bidders shall be returned to them unopened after the contract award.

The contractor shall coordinate all work with the Owner to minimize disturbances to Owner operations.

The bidder represents herewith that he is aware of the working conditions, has carefully reviewed the proposal and specifications, has checked and certifies the accuracy of the bid.

The undersigned hereby acknowledges receipt of the following addenda (if any):

ADDENDUM NO.	DATED
_____	_____
_____	_____
_____	_____

Each proposal shall be accompanied by either a certified check drawn on a solvent bank with an office in the State of New York, or a bid bond equal to five percent (5%) of the total amount of the bid and payable to the Riverhead Water District. The certified check or bid bond shall specify which contract it accompanies.

**SECURITY ENCLOSED FOR THIS SECTION
(BASE BID PLUS CONTINGENCY ITEMS)**

**YES / NO
(Circle One)**

PROPOSAL CERTIFICATION

This Bid is hereby submitted by:

BIDDER: _____

BIDDER'S ADDRESS: _____

SIGNED BY: _____ TITLE: _____

PRINT NAME: _____ DATE: _____

FEDERAL I.D. NO. OR
SOCIAL SECURITY NO.: _____

Telephone number where the contractor or a competent representative can accept a telephone message and provide a reasonable reply as soon as possible, but within 24 hours of being contacted.

DAY: _____ NIGHT: _____

EMERGENCY: _____ FAX: _____

EMAIL: _____

Acknowledgement that the Qualification of Bidders section has been fully completed/executed.

SIGNATURE	PRINT NAME	TITLE	DATE

END OF SECTION 004116

Enclosed is a certified check or bid bond for five percent (5%) of the total amount of the bid as required in the foregoing "Information for Bidders".

The Bidder hereby agrees to appear with its sureties at the office of the Attorney for the Riverhead Water District, within ten (10) calendar days (weekends excepted) after due notice from the Board of the Town of Riverhead that the Contract has been awarded to it and is ready for signature; such notice to be given in writing within ninety (90) days of opening of the bids (unless a moving fee is contained on the Proposal pages, and then the last time interval of any moving fee contained on the Proposal pages); and, on the signing of such Contract by the Bidder, to furnish the indemnifying bonds as provided in the Contract Documents.

The Bidder hereby further agrees that in the event of its failure or refusal to enter into a contract in accordance with this bid within ten (10) calendar days (weekends excepted) after due notice from the Town Board that the Contract has been awarded to it and is ready for signature, as given in accordance with the Contract Documents and/or its failure to execute and deliver the bond for the full amount of the Contract price, as provided in said Contract Documents, the Bidder's check or bid bond which is herewith deposited with the Town Board shall (at the option of said Board) become due and payable as ascertained and liquidated damages for such default; otherwise, said check or bid bond will be returned to the undersigned.

The full names and residences of all persons and parties interested in the foregoing bid as principals are as follows:

NAME

ADDRESS

NAME OF BIDDER: _____

BUSINESS ADDRESS OF BIDDER: _____

Telephone number where the bidder or a competent representative can accept a telephone message and provide a reasonable reply as soon as possible, but no later than twenty four (24) hours:

DAY: _____ EVENING: _____

DATED AT: _____ THE _____ DAY OF _____, 20____

END OF SECTION 004313

Riverhead Water District**Suffolk County, New York**

Bidders shall submit to the Owner the names of the Subcontractors which the Bidder proposes to use on the project. The Owner reserves the right to disapprove the use of any proposed subcontractor and in such event the Bidder shall submit the name of another Subcontractor in the like manner and in the time specified by the Owner. Such disapproval shall not result in additional costs to the Owner. The Owner reserves the right to reject any bid if the name of the proposed Subcontractors, or additional subcontractor information, is not submitted as required.

BIDDER:

FIRM NAME: _____

ADDRESS: _____

PREPARED BY: _____

SIGNED BY: _____

TITLE: _____

END OF SECTION 004350

1.0 - INDEMNITY

The Contractor and all subcontractors performing work in connection with this Contract shall HOLD HARMLESS, INDEMNIFY and DEFEND the Owner and Engineer, their consultants and each of their officers, agents and employees from any liability, claims, losses or damage including reasonable costs of defense arising out of or alleged to arise from the Contractor's or subcontractor's negligence in the performance of the work described in the Contract Documents, but not including liability that may be due to the sole negligence of the Owner, the Engineer or their officers, agents and employees.

2.0 - LIMITATION OF LIABILITY

The Contractor and all subcontractors agree to limit the liability of the Owner and the Engineer due to the Engineer's professional negligent errors or omissions such that the total aggregate liability of the Engineer to those named shall not exceed Fifty Thousand Dollars (\$50,000) or five percent (5%) of the Contract award amount, whichever is greater.

3.0 - NO CLAIM FOR DELAY

The Contractor and all subcontractors agree to HOLD HARMLESS from any and all claims for loss or damages of any nature against the Owner or Engineer for delays in commencement, performance or completion of the Contract, regardless of whether said delays are, or may be, caused by the Owner, Engineer or any governmental agency.

END OF SECTION 004355

NON-COLLUSIVE BIDDING CERTIFICATE

Pursuant to Section 103-D of the General Municipal Law, the Contractor makes the following statement under penalty of perjury, and by submission of this bid or proposal, the Bidder certifies that:

(a) this bid or proposal has been independently arrived at without collusion with any other bidder or with any competitor or potential competitor; (b) this bid or proposal has not been knowingly disclosed and will not be knowingly disclosed prior to the opening of the bids or proposals for this project to any other bidder, competitor or potential competitor; (c) no attempt has been or will be made to induce any other person, partnership or corporation to submit or not to submit a bid or proposal; (d) the person signing this bid or proposal certified that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the Bidder as well as to the person signing in its behalf; (e) attached hereto (if a corporate bidder) is a certified copy of resolution authorizing the execution of this certificate by the signatory of the bid or proposal on behalf of the corporate bidder.

Resolved that

(Name of Corporation)

be authorized to sign and submit the bid or proposal of this corporation for the following project:

Rehabilitation of Plant No. 4
Contract E – Electrical Upgrades
Contract M – Lime System Replacement
(Name of Project)

and to include in such bid or proposal the certificate as to non-collusion required by Section 103-D of the General Municipal Law as the act and deed of said corporation; and for any inaccuracies or misstatements in such certificate, this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution adopted by _____

at a meeting of its Board of Directors held on the _____ day of _____, 20____

(Seal of the Corporation)

Secretary: _____

Respectfully submitted,

FIRM NAME: _____

FIRM ADDRESS: _____

SIGNED BY: _____

TITLE: _____

END OF SECTION 004519

Vendor Responsibility Questionnaire begins on the following page.

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

You have selected the For-Profit Construction questionnaire, commonly known as the "CCA-2," which may be printed and completed in this format or, **for your convenience, may be completed online using the [New York State VendRep System](#).**

COMPLETION & CERTIFICATION

The person(s) completing the questionnaire must be knowledgeable about the vendor's business and operations. An owner or official must certify the questionnaire and the signature must be notarized.

NEW YORK STATE VENDOR IDENTIFICATION NUMBER (VENDOR ID)

The Vendor ID is a ten-digit identifier issued by New York State when the vendor is registered on the Statewide Vendor File. This number must now be included on the questionnaire. If the business entity has not obtained a Vendor ID, contact the IT Service Desk at ITServiceDesk@osc.state.ny.us or call 866-370-4672.

DEFINITIONS

All underlined terms are defined in the "New York State Vendor Responsibility Definitions List," found at <http://www.osc.state.ny.us/vendrep/documents/questionnaire/definitions.pdf>. These terms may not have their ordinary, common or traditional meanings. Each vendor is strongly encouraged to read the respective definitions for any and all underlined terms. By submitting this questionnaire, the vendor agrees to be bound by the terms as defined in the "New York State Vendor Responsibility Definitions List" existing at the time of certification.

RESPONSES

Every question must be answered. Each response must provide all relevant information which can be obtained within the limits of the law. However, information regarding a determination or finding made in error which was subsequently corrected or overturned, and/or was withdrawn by the issuing government entity, is not required. Individuals and Sole Proprietors may use a Social Security Number but are encouraged to obtain and use a federal Employer Identification Number (EIN).

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

BUSINESS ENTITY INFORMATION

<u>Legal Business Name</u>		<u>EIN</u> _____		
Address of the <u>Principal Place of Business</u> (street, city, state, zip code)		<u>New York State Vendor Identification Number</u>		
		Telephone ext.	Fax	
		Website		
Authorized Contact for this Questionnaire				
Name		Telephone ext.	Fax	
Title		Email		
Additional <u>Business Entity</u> Identities: If applicable, list any other <u>DBA</u> , <u>Trade Name</u> , <u>Former Name</u> , Other Identity, or <u>EIN</u> used in the last five (5) years, the state or county where filed and the status (active or inactive).				
Type	Name	EIN	State or County where filed	Status

I. BUSINESS CHARACTERISTICS

1.0 <u>Business Entity</u> Type – Check appropriate box and provide additional information:			
a) ☐ <u>Corporation</u> (including <u>PC</u>)	Date of Incorporation		
b) ☐ <u>Limited Liability Company</u> (<u>LLC</u> or <u>PLLC</u>)	Date Organized		
c) ☐ <u>Limited Liability Partnership</u>	Date of Registration		
d) ☐ <u>Limited Partnership</u>	Date Established		
e) ☐ <u>General Partnership</u>	Date Established	County (if formed in NYS)	
f) ☐ <u>Sole Proprietor</u>	How many years in business?		
g) ☐ Other	Date Established		
If Other, explain:			
1.1 Was the <u>Business Entity</u> formed in New York State?			☐ Yes ☐ No
If “No,” indicate jurisdiction where the <u>Business Entity</u> was formed:			
☐ United States	State		
☐ Other	Country		

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

I. BUSINESS CHARACTERISTICS			
1.2 Is the <u>Legal Business Entity</u> publicly traded?			☐ Yes ☐ No
If "Yes," provide the <u>CIK code</u> or Ticker Symbol:			
1.3 Is the <u>Business Entity</u> currently <u>registered to do business in New York State</u> ?			☐ Yes ☐ No
<i>Note: Select "Not Required" if the Business Entity is a Sole Proprietor or General Partnership</i>			☐ Not Required
If "No," explain why the <u>Business Entity</u> is not required to be <u>registered to do business in New York State</u> :			
1.4 Is the responding <u>Business Entity</u> a <u>Joint Venture</u> ? Note: If the submitting <u>Business Entity</u> is a <u>Joint Venture</u> , also submit a separate questionnaire for each <u>Business Entity</u> comprising the <u>Joint Venture</u> .			☐ Yes ☐ No
1.5 If the <u>Business Entity's Principal Place of Business</u> is not in New York State, does the <u>Business Entity</u> maintain an office in New York State?			☐ Yes ☐ No
<i>(Select "N/A" if <u>Principal Place of Business</u> is in New York State.)</i>			☐ N/A
If "Yes," provide the address and telephone number for one office located in New York State.			
1.6 Is the Business Entity a New York State certified <u>Minority-Owned Business Enterprise</u> , or <u>Women-Owned Business Enterprise</u> , or <u>New York State Small Business</u> , or federally certified <u>Disadvantaged Business Enterprise</u> ?			☐ Yes ☐ No
If "Yes," check all that apply: ☐ New York State certified <u>Minority-Owned Business Enterprise</u> (MBE) ☐ New York State certified <u>Women-Owned Business Enterprise</u> (WBE) ☐ <u>New York State Small Business</u> ☐ Federally certified <u>Disadvantaged Business Enterprise</u> (DBE)			
1.7 Identify each person or business entity that is, or has been within the past five (5) years, <u>Principal Owner</u> of 5.0% or more of the firm's shares; a Business Entity Official; or one of the five largest shareholders, if applicable. <i>(Attach additional pages if necessary.)</i> <u>Joint Ventures</u> : Provide information for all firms involved.			
Name <i>(For each person, include middle initial)</i>	Title	Percentage of ownership (Enter 0%, if not applicable)	Employment status with the firm
			☐ Current ☐ Former
			☐ Current ☐ Former
			☐ Current ☐ Former
			☐ Current ☐ Former

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

II. AFFILIATE and JOINT VENTURE RELATIONSHIPS

2.0 Are there any other <u>construction</u> -related firms in which, now or in the past five years, the submitting <u>Business Entity</u> or any of the individuals or business entities listed in question 1.7 either owned or owns 5.0% or more of the shares of, or was or is one of the five largest shareholders or a director, officer, partner or proprietor of said other firm? <i>(Attach additional pages if necessary.)</i>	☐ Yes ☐ No

Firm/Company Name	Firm/Company EIN (If available)	Firm/Company's Primary Business Activity

Firm/Company Address

Explain relationship with the firm and indicate percent of ownership, if applicable (enter N/A, if not applicable):

Are there any shareholders, directors, officers, owners, partners or proprietors that the submitting <u>Business Entity</u> has in common with this firm?	☐ Yes ☐ No

Individual's Name <i>(Include middle initial)</i>	Position/Title with Firm/Company

2.1 Does the <u>Business Entity</u> have any <u>construction</u> -related <u>affiliates</u> not identified in the response to question 2.0 above? <i>(Attach additional pages if necessary.)</i>	☐ Yes ☐ No

Affiliate Name	Affiliate EIN (If available)	Affiliate's Primary Business Activity

Affiliate Address

Explain relationship with the affiliate and indicate percent of ownership, if applicable *(enter N/A, if not applicable)*:

Are there any shareholders, directors, officers, owners, partners or proprietors that the submitting Business Entity has in common with this affiliate?	☐ Yes ☐ No

Individual's Name <i>(Include middle initial)</i>	Position/Title with Firm/Company

2.2 Has the <u>Business Entity</u> participated in any <u>construction-related Joint Ventures</u> within the past three (3) years? <i>(Attach additional pages if necessary.)</i>	☐ Yes ☐ No

Joint Venture Name	Joint Venture EIN (If available)	Identify parties to the Joint Venture

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

III. CONTRACT HISTORY

3.0 Has the Business Entity completed any construction contracts? ☐ Yes ☐ No

If "Yes," list the ten most recent construction contracts the Business Entity has completed using Attachment A – Completed Construction Contracts, found at www.osc.state.ny.us/vendrep/documents/questionnaire/ac3294s.doc.

If less than ten, include most recent subcontracts on projects up to that number.

3.1 Does the Business Entity currently have uncompleted construction contracts? ☐ Yes ☐ No

If "Yes," list all current uncompleted construction contracts by using Attachment B – Uncompleted Construction Contracts, found at www.osc.state.ny.us/vendrep/documents/questionnaire/ac3295s.doc.

Note: Ongoing projects must be included.

IV. INTEGRITY – CONTRACT BIDDING

Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:

4.0 Been suspended or debarred from any government contracting process or been disqualified on any government procurement? ☐ Yes ☐ No

4.1 Been subject to a denial or revocation of a government prequalification? ☐ Yes ☐ No

4.2 Had any bid rejected by a government entity for lack of qualifications, responsibility or because of the submission of an informal, non-responsive or incomplete bid? ☐ Yes ☐ No

4.3 Had a proposed subcontract rejected by a government entity for lack of qualifications, responsibility or because of the submission of an informal, non-responsive or incomplete bid? ☐ Yes ☐ No

4.4 Had a low bid rejected on a government contract for failure to make good faith efforts on any Minority-Owned Business Enterprise, Women-Owned Business Enterprise or Disadvantaged Business Enterprise goal or statutory affirmative action requirements on a previously held contract? ☐ Yes ☐ No

4.5 Agreed to a voluntary exclusion from bidding/contracting with a government entity? ☐ Yes ☐ No

4.6 Initiated a request to withdraw a bid submitted to a government entity or made any claim of an error on a bid submitted to a government entity? ☐ Yes ☐ No

For each "Yes," provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, the government entity involved, project(s), relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses.

V. INTEGRITY – CONTRACT AWARD

Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:

5.0 Defaulted on or been suspended, cancelled or terminated for cause on any contract? ☐ Yes ☐ No

5.1 Been subject to an administrative proceeding or civil action seeking specific performance or restitution (except any disputed work proceeding) in connection with any government contract? ☐ Yes ☐ No

5.2 Entered into a formal monitoring agreement, consent decree or stipulation settlement as specified by, or agreed to with, any government entity? ☐ Yes ☐ No

5.3 Had its surety called upon to complete any contract whether government or private sector? ☐ Yes ☐ No

5.4 Forfeited all or part of a standby letter of credit in connection with any government contract? ☐ Yes ☐ No

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

V. INTEGRITY – CONTRACT AWARD

Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:

For each “Yes,” provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, the government entity/owners involved, project(s), contract number(s), relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses.

VI. CERTIFICATIONS/LICENSES

Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:

6.0 Had a revocation or <u>suspension</u> of any business or professional permit and/or license?	☐ Yes ☐ No

6.1 Had a denial, decertification, revocation or forfeiture of New York State certification of <u>Minority-Owned Business Enterprise</u> , <u>Women-Owned Business Enterprise</u> or a federal certification of <u>Disadvantaged Business Enterprise</u> status, for other than a change of ownership?	☐ Yes ☐ No

For each “Yes,” provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, the government entity involved, relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses.

VII. LEGAL PROCEEDINGS/GOVERNMENT INVESTIGATIONS

Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:

7.0 Been the subject of a criminal <u>investigation</u> , whether open or closed, or an indictment for any business-related conduct constituting a crime under local, state or <u>federal</u> law?	☐ Yes ☐ No

7.1 Been the subject of:	
(i.) An indictment, grant of immunity, <u>judgment</u> or conviction (including entering into a plea bargain) for conduct constituting a crime; or	☐ Yes ☐ No
(ii.) Any criminal <u>investigation</u> , felony indictment or conviction concerning the formation of, or any business association with, an allegedly false or fraudulent <u>Minority-Owned Business Enterprise</u> , <u>Women-Owned Business Enterprise</u> , or a <u>Disadvantaged Business Enterprise</u> ?	☐ Yes ☐ No

7.2 Received any <u>OSHA</u> citation, which resulted in a final determination classified as <u>serious</u> or <u>willful</u> ?	☐ Yes ☐ No

7.3 Had a <u>government entity</u> find a willful prevailing wage or supplemental payment violation?	☐ Yes ☐ No

7.4 Had a New York State Labor Law violation deemed willful?	☐ Yes ☐ No

7.5 Entered into a consent order with the New York State Department of Environmental Conservation, or a <u>federal</u> , state or local government enforcement determination involving a violation of <u>federal</u> , state or local environmental laws?	☐ Yes ☐ No

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

VII. LEGAL PROCEEDINGS/GOVERNMENT INVESTIGATIONS

Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:

7.6 Other than previously disclosed, been the subject of any <u>citations</u>, notices or violation orders; a pending administrative hearing, proceeding or determination of a violation of: • <u>Federal</u>, state or local health laws, rules or regulations; • <u>Federal</u>, state or local environmental laws, rules or regulations; • Unemployment insurance or workers compensation coverage or <u>claim</u> requirements; • Any labor law or regulation, which was deemed willful; • Employee Retirement Income Security Act (ERISA); • <u>Federal</u>, state or local human rights laws; • <u>Federal</u>, state or local security laws?	☐ Yes ☐ No

For each "Yes," provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, the government entity involved, relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses.

Note: Information regarding a determination or finding made in error, which was subsequently corrected or overturned, and/or was withdrawn by the issuing government entity, is not required.

VIII. LEADERSHIP INTEGRITY

If the Business Entity is a Joint Venture Entity, answer "N/A - Not Applicable" to questions in this section.

Within the past five (5) years has any individual previously identified or any individual currently or formerly having the authority to sign, execute or approve bids, proposals, contracts or supporting documentation on behalf of the Business Entity with any government entity been:

8.0 <u>Sanctioned</u> relative to any business or professional permit and/or license?	☐ Yes ☐ No ☐ N/A
8.1 <u>Suspended</u>, <u>debarred</u> or <u>disqualified</u> from any <u>government contracting process</u>?	☐ Yes ☐ No ☐ N/A
8.2 The subject of a criminal <u>investigation</u>, whether open or closed, or an indictment for any business-related conduct constituting a crime under local, state or <u>federal</u> law?	☐ Yes ☐ No ☐ N/A
8.3 Charged with a misdemeanor or felony, indicted, granted immunity, convicted of a crime or subject to a judgment for: (i.) Any business-related activity, including but not limited to fraud, coercion, extortion, bribe or bribe-receiving, giving or accepting unlawful gratuities, immigration or tax fraud, racketeering, mail fraud, wire fraud, price-fixing or collusive bidding; or (ii.) Any crime, whether or not business-related, the underlying conduct of which related to truthfulness, including but not limited to the filing of false documents or false sworn statements, perjury or larceny	☐ Yes ☐ No ☐ N/A

For each "Yes," provide an explanation of the issue(s), the individual involved, the relationship to the submitting Business Entity, the government entity involved, relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses.

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

IX. FINANCIAL AND ORGANIZATIONAL CAPACITY

9.0 Within the past five (5) years, has the Business Entity or any affiliate received any formal unsatisfactory performance assessment(s) from any government entity on any contract? ☐ Yes ☐ No

If "Yes," provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, the government entity involved, relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer below or attach additional sheets with numbered responses.

9.1 Within the past five (5) years, has the Business Entity or any affiliate had any liquidated damages assessed over \$25,000? ☐ Yes ☐ No

If "Yes," provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, relevant dates, the contracting party involved, the amount assessed and the current status of the issue(s). Provide answer below or attach additional sheets with numbered responses.

9.2 Within the past five (5) years, has the Business Entity or any affiliate had any liens, claims or judgments over \$25,000 filed against the Business Entity which remain undischarged or were unsatisfied for more than 90 days? (Note: Including but not limited to tax warrants or liens. Do not include UCC filings.) ☐ Yes ☐ No

If "Yes," provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, relevant dates, the Lien holder or Claimants' name(s), the amount of the lien(s) and the current status of the issue(s). Provide answer below or attach additional sheets with numbered responses.

9.3 In the last seven (7) years, has the Business Entity or any affiliate initiated or been the subject of any bankruptcy proceedings, whether or not closed, or is any bankruptcy proceeding pending? ☐ Yes ☐ No

If "Yes," provide the Business Entity involved, the relationship to the submitting Business Entity, the bankruptcy chapter number, the court name and the docket number. Indicate the current status of the proceedings as "Initiated," "Pending" or "Closed." Provide answer below or attach additional sheets with numbered responses.

9.4 What is the Business Entity's Bonding Capacity?

a. Single Project

b. Aggregate (All Projects)

9.5 List Business Entity's Gross Sales for the previous three (3) Fiscal Years:

1st Year (Indicate year)
Gross Sales

2nd Year (Indicate year)
Gross Sales

3rd Year (Indicate year)
Gross Sales

9.6 List Business Entity's Average Backlog for the previous three (3) fiscal years:
(Estimated total value of uncompleted work on outstanding contracts)

1st Year (Indicate year)
Amount

2nd Year (Indicate year)
Amount

3rd Year (Indicate year)
Amount

9.7 Attach Business Entity's most recent annual financial statement and accompanying notes or complete Attachment C – Financial Information, found at www.osc.state.ny.us/vendrep/documents/questionnaire/ac3296s.xls.
(This information must be attached.)

**NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE
FOR-PROFIT CONSTRUCTION (CCA-2)**

X. FREEDOM OF INFORMATION LAW (FOIL)

10.0 Indicate whether any information provided herein is believed to be exempt from disclosure under the Freedom of Information Law (FOIL).
Note: A determination of whether such information is exempt from FOIL will be made at the time of any request for disclosure under FOIL. Attach additional pages if necessary.

☐ Yes ☐ No

If "Yes," indicate the question number(s) and explain the basis for the claim.

**NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE
FOR-PROFIT CONSTRUCTION (CCA-2)**

Certification

The undersigned: (1) recognizes that this questionnaire is submitted for the express purpose of assisting New York State government entities (including the Office of the State Comptroller (OSC)) in making responsibility determinations regarding award or approval of a contract or subcontract and that such government entities will rely on information disclosed in the questionnaire in making responsibility determinations; (2) acknowledges that the New York State government entities and OSC may, in their discretion, by means which they may choose, verify the truth and accuracy of all statements made herein; and (3) acknowledges that intentional submission of false or misleading information may result in criminal penalties under State and/or Federal Law, as well as a finding of non-responsibility, contract suspension or contract termination.

The undersigned certifies that he/she:

- is knowledgeable about the submitting Business Entity's business and operations;
- has read and understands all of the questions contained in the questionnaire;
- has not altered the content of the questionnaire in any manner;
- has reviewed and/or supplied full and complete responses to each question;
- to the best of his/her knowledge, information and belief, confirms that the Business Entity's responses are true, accurate and complete, including all attachments, if applicable;
- understands that New York State government entities will rely on the information disclosed in the questionnaire when entering into a contract with the Business Entity; and
- is under an obligation to update the information provided herein to include any material changes to the Business Entity's responses at the time of bid/proposal submission through the contract award notification, and may be required to update the information at the request of the New York State government entities or OSC prior to the award and/or approval of a contract, or during the term of the contract.

Signature of Owner/Official _____

Printed Name of Signatory _____

Title _____

Name of Business _____

Address _____

City, State, Zip _____

Sworn to before me this _____ day of _____, 20____;

_____ Notary Public

NEW YORK STATE
VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT A – COMPLETED CONSTRUCTION CONTRACTS

Vendor Name:

NYS Vendor ID:

Question 3.0: List the ten most recent construction contracts the Business Entity has completed. If less than ten, include most recent subcontracts on projects up to that number:						
1.	Agency/Owner		Award Date	Amount		Date Completed
	Contact Person	Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	
2.	Agency/Owner		Award Date	Amount		Date Completed
	Contact Person	Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	
3.	Agency/Owner		Award Date	Amount		Date Completed
	Contact Person	Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	
4.	Agency/Owner		Award Date	Amount		Date Completed
	Contact Person	Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	
5.	Agency/Owner		Award Date	Amount		Date Completed
	Contact Person	Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	

NEW YORK STATE
VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT A – COMPLETED CONSTRUCTION CONTRACTS

Vendor Name:

NYS Vendor ID:

Question 3.0: List the ten most recent construction contracts the Business Entity has completed. If less than ten, include most recent subcontracts on projects up to that number:						
6.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	
7.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	
8.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	
9.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	
10.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable	

NEW YORK STATE
VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT B – UNCOMPLETED CONSTRUCTION CONTRACTS

Vendor Name:**NYS Vendor ID:**

Question 3.1: List all current uncompleted construction contracts:									
1.	Agency/Owner		Telephone No.		Designer Architect and /or Design Engineer			Award Date	Completion Date
	Contact Person								
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable				EIN of JV, if applicable		
			Total Contract Amount	Amount Sublet to others		Uncompleted Amount			
	Agency/Owner				Award Date		Completion Date		
2.	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable				EIN of JV, if applicable		
			Total Contract Amount	Amount Sublet to others		Uncompleted Amount			
	Agency/Owner				Award Date		Completion Date		
	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				
3.	Agency/Owner		Telephone No.		Designer Architect and /or Design Engineer			Award Date	Completion Date
	Contact Person								
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable				EIN of JV, if applicable		
			Total Contract Amount	Amount Sublet to others		Uncompleted Amount			
	Agency/Owner				Award Date		Completion Date		
4.	Agency/Owner		Telephone No.		Designer Architect and /or Design Engineer			Award Date	Completion Date
	Contact Person								
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable				EIN of JV, if applicable		
			Total Contract Amount	Amount Sublet to others		Uncompleted Amount			
	Agency/Owner				Award Date		Completion Date		

NEW YORK STATE
VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT B – UNCOMPLETED CONSTRUCTION CONTRACTS

Vendor Name:**NYS Vendor ID:**

Question 3.1: List all current uncompleted construction contracts:									
5.		Agency/Owner	Telephone No.		Designer Architect and /or Design Engineer		Award Date	Completion Date	
		Contact Person							
		Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable			
				Total Contract Amount	Amount Sublet to others	Uncompleted Amount			
6.		Agency/Owner	Telephone No.		Designer Architect and /or Design Engineer		Award Date	Completion Date	
		Contact Person							
		Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable			
				Total Contract Amount	Amount Sublet to others	Uncompleted Amount			
7.		Agency/Owner	Telephone No.		Designer Architect and /or Design Engineer		Award Date	Completion Date	
		Contact Person							
		Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable			
				Total Contract Amount	Amount Sublet to others	Uncompleted Amount			
8.		Agency/Owner	Telephone No.		Designer Architect and /or Design Engineer		Award Date	Completion Date	
		Contact Person							
		Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable			
				Total Contract Amount	Amount Sublet to others	Uncompleted Amount			

NEW YORK STATE
VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT B – UNCOMPLETED CONSTRUCTION CONTRACTS

Vendor Name:**NYS Vendor ID:**

Question 3.1: List all current uncompleted construction contracts:									
1.	Agency/Owner				Award Date		Completion Date		
	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable				
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount				
	Agency/Owner				Award Date		Completion Date		
2.	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable				
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount				
	Agency/Owner				Award Date		Completion Date		
	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				
3.	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable				
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount				
	Agency/Owner				Award Date		Completion Date		
	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				
4.	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable				
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount				
	Agency/Owner				Award Date		Completion Date		
	Contact Person		Telephone No.		Designer Architect and /or Design Engineer				

NEW YORK STATE
VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT B – UNCOMPLETED CONSTRUCTION CONTRACTS

Vendor Name:**NYS Vendor ID:**

Question 3.1: List all current uncompleted construction contracts:									
5.		Agency/Owner			Award Date			Completion Date	
		Contact Person	Telephone No.	Designer Architect and /or Design Engineer					
		Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable			
				Total Contract Amount	Amount Sublet to others	Uncompleted Amount			
6.		Agency/Owner			Award Date			Completion Date	
		Contact Person	Telephone No.	Designer Architect and /or Design Engineer					
		Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable			
				Total Contract Amount	Amount Sublet to others	Uncompleted Amount			
7.		Agency/Owner			Award Date			Completion Date	
		Contact Person	Telephone No.	Designer Architect and /or Design Engineer					
		Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable			
				Total Contract Amount	Amount Sublet to others	Uncompleted Amount			
8.		Agency/Owner			Award Date			Completion Date	
		Contact Person	Telephone No.	Designer Architect and /or Design Engineer					
		Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable			
				Total Contract Amount	Amount Sublet to others	Uncompleted Amount			

NEW YORK STATE
VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT B – UNCOMPLETED CONSTRUCTION CONTRACTS

Vendor Name:

NYS Vendor ID:

Question 3.1: List all current uncompleted construction contracts:									
9.	Agency/Owner		Telephone No.		Designer Architect and /or Design Engineer		Award Date	Completion Date	
	Contact Person								
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable				
			Total Contract Amount		Amount Sublet to others		Uncompleted Amount		
							Award Date		Completion Date
10.	Agency/Owner		Telephone No.		Designer Architect and /or Design Engineer				
	Contact Person								
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable				
			Total Contract Amount		Amount Sublet to others		Uncompleted Amount		
Grand Total All Uncompleted Contracts							\$0.00		

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT C - FINANCIAL INFORMATION

NYS Vendor ID: _____

As of Date: _____

ASSETS

Current Assets

1. Cash		\$	_____	-
2. Accounts receivable - less allowance for doubtful accounts	\$	_____	-	
Retainers included in accounts receivable	\$	_____	-	
Claims included in accounts receivable not yet approved or in litigation	\$	_____	-	
Total Accounts Receivable		\$	_____	-
3. Notes receivable - due within one year		\$	_____	-
4. Inventory - materials		\$	_____	-
5. Contract costs in excess of billings on uncompleted contracts		\$	_____	-
6. Accrued income receivable				
Interest	\$	_____	-	
Other (list) _____	\$	_____	-	
_____	\$	_____	-	
Total Accrued Income Receivable		\$	_____	-
7. Deposits				
Bid and Plan _____	\$	_____	-	
Other (list) _____	\$	_____	-	
_____	\$	_____	-	
Total Deposits		\$	_____	-
8. Prepaid Expenses				
Income Taxes	\$	_____	-	
Insurance	\$	_____	-	
Other (list) _____	\$	_____	-	
_____	\$	_____	-	
Total Prepaid Expenses		\$	_____	-
9. Other Current Assets				
Other (list) _____	\$	_____	-	
_____	\$	_____	-	
Total Other Current Assets		\$	_____	-
10. Total Current Assets				\$ _____ -
11. Investments				
Listed securities-present market value	\$	_____	-	
Unlisted securities-present value	\$	_____	-	
Total Investments				\$ _____ -

NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT C - FINANCIAL INFORMATION

NYS Vendor ID: _____

12. Fixed Assets

Land	\$	-	
Building and improvements	\$	-	
Leasehold improvements	\$	-	
Machinery and equipment	\$	-	
Automotive equipment	\$	-	
Office furniture and fixtures	\$	-	
Other (list) _____	\$	-	
	\$	-	
Total		\$	-
Less: Accumulated depreciation		\$	-
Total Fixed Assets - Net			\$ -

13. Other Assets

Loans receivable			
Officers	\$	-	
Employees	\$	-	
Shareholders	\$	-	
Cash surrender value of officers' life insurance	\$	-	
Organization expense – net of amortization	\$	-	
Notes receivable - due after one year	\$	-	
Other (list) _____	\$	-	
	\$	-	
Total Other Assets		\$	-

14. TOTAL ASSETS

\$ -

**NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT C - FINANCIAL INFORMATION**

NYS Vendor ID: _____

LIABILITIES

Current Liabilities

15. Accounts payable	\$	_____	-
16 a. Loans from shareholders - due within one year	\$	_____	-
16 b. Other Loans - due within one year	\$	_____	-
17. Notes payable - due within one year	\$	_____	-
18. Mortgage payable - due within one year	\$	_____	-
19. Other payables - due within one year			
Other (list) _____	\$	_____	-
_____	\$	_____	-

Total Other Payables - due within one year	\$	_____	-
20. Billings in excess of costs and estimated earnings	\$	_____	-
21. Accrued expenses payable			
Salaries and wages	\$	_____	-
Payroll taxes	\$	_____	-
Employees' benefits	\$	_____	-
Insurance	\$	_____	-
Other	\$	_____	-
Total Accrued Expenses Payable	\$	_____	-
22. Dividends payable	\$	_____	-
23. Income taxes payable			
State	\$	_____	-
Federal	\$	_____	-
Other	\$	_____	-
Total Income Taxes Payable	\$	_____	-
24. Total current liabilities	\$	_____	-
25. Deferred income taxes payable			
State	\$	_____	-
Federal	\$	_____	-
Other	\$	_____	-
Total Deferred Income Taxes	\$	_____	-
26. Long Term Liabilities			
Loans from shareholders - due after one year	\$	_____	-
Other Loans - due within one year			
Principle	\$	_____	-
Interest	\$	_____	-
Notes payable - due after one year	\$	_____	-
Mortgage - due after one year	\$	_____	-
Other payables - due after one year	\$	_____	-
Other (list) _____	\$	_____	-
_____	\$	_____	-

Total Long Term Liabilities	\$	_____	-

**NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE
ATTACHMENT C - FINANCIAL INFORMATION**

NYS Vendor ID: _____

27. Other Liabilities

Other (list) _____	\$ _____
_____	\$ _____
_____	_____

Total Other Liabilities

\$ _____

28. TOTAL LIABILITIES

\$ _____

NET WORTH

29. Net Worth (if proprietorship or partnership)

\$ _____

30. Stockholders' Equity

Common stock issued and outstanding	\$ _____
Preferred stock issued and outstanding	\$ _____
Retained earnings	\$ _____
Total	\$ _____
Less: Treasury stock	\$ _____

31. TOTAL STOCKHOLDERS' EQUITY

\$ _____

32. TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY

\$ _____

END OF SECTION 004546

IRAN DIVESTMENT ACT CERTIFICATION

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law.

Dated: _____

(Name of corporation or partnership)

(Signature of Individual)

(Officer stating title) (Partner)

(Print Name of Individual)

END OF SECTION 004547

**Riverhead Water District
Suffolk County, New York**

The Owner may make such investigation as the Owner deems necessary to determine the responsibility of any Bidder or to determine the ability of any Bidder to perform the Work. Bidders shall furnish to the Owner all information and data required by the Owner, including complete financial data, within the time and in the form and manner required by the Owner. The Owner reserves the right to reject any bid if the evidence required by the Owner is not submitted as required or if the evidence submitted by or the investigation of any Bidder fails to satisfy the Owner that the Bidder is responsible, or is able or qualified to carry out the obligations of the Contract or to complete the Work as contemplated. At the discretion of the Owner, any bidder may be required to complete and submit the enclosed New York State Vendor Responsibility Questionnaire to assist in determining the bidder's qualifications.

The following is a list showing the name of the Owner, Location, Date of Construction, General Description of Work, Amount of the Contract and Contract Period for projects of similar nature in size, construction method and construction procedure, which have been completed by the undersigned as the prime contractor, and which have been in operation for a period of not less than one year, (minimum of five such projects).

PROJECT NO. 1

Owner: _____

Contact Name and Phone Number: _____

Location: _____

General Description: _____

Contract Amount: _____

Contract Period: _____

PROJECT NO. 2

Owner: _____

Contact Name and Phone Number: _____

Location: _____

General Description: _____

Contract Amount: _____

Contract Period: _____

PROJECT NO. 3

Owner: _____

Contact Name and Phone Number: _____

Location: _____

General Description: _____

Contract Amount: _____

Contract Period: _____

PROJECT NO. 4

Owner: _____

Contact Name and Phone Number: _____

Location: _____

General Description: _____

Contract Amount: _____

Contract Period: _____

PROJECT NO. 5

Owner: _____

Contact Name and Phone Number: _____

Location: _____

General Description: _____

Contract Amount: _____

Contract Period: _____

The following is a list of the major areas of construction work under this contract to be performed by subcontractors to the bidder, showing the Type of Work and the name of the Owner, Location and Date of Construction for work of similar nature in size, construction method and construction procedure, which have been completed by the undersigned, and which have been in operation for a period of not less than one year, (minimum of five such projects).

Subcontractor Name: _____

Type of Work: _____

<u>Owner</u>	<u>Contact Name</u>	<u>Phone Number</u>	<u>Location</u>	<u>Contract Amount</u>

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Subcontractor Name: _____

Type of Work: _____

<u>Owner</u>	<u>Contact Name</u>	<u>Phone Number</u>	<u>Location</u>	<u>Contract Amount</u>

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Subcontractor Name: _____

Type of Work: _____

<u>Owner</u>	<u>Contact Name</u>	<u>Phone Number</u>	<u>Location</u>	<u>Contract Amount</u>

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Subcontractor Name: _____

Type of Work: _____

<u>Owner</u>	<u>Contact Name</u>	<u>Phone Number</u>	<u>Location</u>	<u>Contract Amount</u>

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

The Riverhead Water District reserves the right to reject any and all bids which do not include a completed qualifications section and/or do not meet the necessary qualifications criteria, for both prime contractor and subcontractors, as described within this qualifications section, for construction work to be performed and completed as required by the contract documents.

BIDDER

FIRM NAME: _____

ADDRESS: _____

PREPARED
BY: _____

SIGNED BY: _____

TITLE: _____

END OF SECTION 004550

It is the Contractor's responsibility to inform the Engineer in advance when a situation arises that forces the Contractor to cancel work for a given day. For example, if the Contractor informs the Engineer that he will be on the job on a certain day and then has to cancel the appointment because he cannot obtain certain materials or equipment, it is the Contractor's responsibility to inform the Engineer of these latest developments and to let him know that construction observation services will not be needed for that day.

In the event that the Engineer is not given ample warning of such a cancellation and, as a result, unnecessary time is spent sending field personnel out to the project site to observe the previously scheduled construction, sufficient funds will be deducted from monies due the Contractor to reimburse the Engineer for his wasted time.

By the same token, sufficient funds will be deducted from monies due the Contractor to reimburse the Engineer for any services rendered in the field or in the office regarding work that had to be performed a second time due to substandard work on the part of the Contractor on the original work.

END OF SECTION 004555

CONTRACT IN QUADRUPLICATE FOR _____ AT
TOWN OF RIVERHEAD, SUFFOLK COUNTY, NEW YORK, dated _____, 20____, BY
AND BETWEEN THE TOWN BOARD OF THE TOWN OF RIVERHEAD, SUFFOLK COUNTY,
NEW YORK, acting for and in behalf of the RIVERHEAD WATER DISTRICT (herein called the
TOWN _____ DISTRICT), _____ and

herein called the CONTRACTOR).

WITNESSETH, that the TOWN DISTRICT and the CONTRACTOR, in consideration
of the premises and of the mutual covenants, considerations and agreements herein contained,
agree as follows:

This Contract is hereby awarded to the CONTRACTOR for the work and material
called for under his bid in the Proposal section of the Contract and designated as Items:

and if required by the District Engineers, Items: _____

for the sum of: _____

_____(\$ _____)

for the unit and/or lump sum price(s) as listed in the Proposal herein.

1. CONTRACT DOCUMENTS AND DEFINITIONS

The Notice to Bidders, Information for Bidders, Proposal, General Conditions, Contract, Specifications and Plans, together with any Addenda, shall form part of this Contract, and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The titles, headings, headlines and marginal notes contained herein are solely to facilitate reference to the various provisions of the contract documents and in no way affect, limit or cast light upon the interpretation of the provisions to which they refer. Whenever the term "contract documents" is used, it shall mean and include this Contract, the Plans, Specifications, any Addenda, and the Notice to Bidders, Information for Bidders, General Conditions and Proposal. In case of any conflict or inconsistency between the provisions of the Contract and those of the Specifications, the provisions of the Contract shall govern.

WORK: The term WORK, as used herein, refers to all of the work proposed to be accomplished at the site of the project and all such other work as is in any manner required to accomplish the completed project, and includes all plant, labor, materials, supplies, equipment and other facilities and acts necessary or proper for or incidental to the carrying out and completion of the terms of this Contract. The term WORK PERFORMED shall be construed to include material delivered to and suitably stored at the site of the project.

EXTRA WORK: The term EXTRA WORK, as used herein, refers to and includes all work required by the TOWN DISTRICT which, in the judgment of the Engineer, with the Town's approval, involves changes in or additions to work required by the Plans, Specifications and any Addenda in their present form.

SUBCONTRACTOR: The term SUBCONTRACTOR, as used herein, shall mean any person, firm or corporation applying labor and material for work at the site of the project, but not including the parties to this Contract.

ENGINEER: In the performance of the work, the TOWN DISTRICT shall be represented by its Consulting Engineer H2M architects + engineers (herein called the ENGINEER).

NOTICE: The term NOTICE, as used herein, shall mean and include written notice. Written notice shall be deemed to have been duly served when delivered to, or at the last known business address of, the person, firm or corporation for whom intended or to his, their, or its duly authorized agents, representatives or officers, or when enclosed in a postage prepaid wrapper or envelope addressed to such person, firm, or corporation at his, their, or its last known business address and deposited in a United States Mail Box.

DIRECTED, REQUIRED, APPROVED, ACCEPTABLE: Whenever they refer to the work, or its performance, "directed", "required", "permitted", "ordered", "designated", "prescribed", and words of like import shall imply the direction, requirement, permission, order,

designation or prescription of the Engineer, and "approved", "satisfied", or "satisfactory", "in the judgment of", and words of like import, shall mean approved or acceptable to, or satisfactory to, in the judgment of the Engineer.

2. SCOPE OF THE WORK

The Contractor will furnish all plant, labor, material, supplies, equipment and other facilities and things necessary or proper for or incidental to, the work contemplated by this Contract as required by, and in strict accordance with, the applicable Plans, Specifications and Addenda prepared by the Engineer and/or required by and in strict accordance with, such changes as are ordered and approved pursuant to this Contract, and will perform all other obligations imposed on him by the Contract.

3. COMPENSATION TO BE PAID TO THE CONTRACTOR

A. Agreed Prices: It is understood and agreed that the Contractor will accept as payment in full the summation of products, of the actual quantities in place upon the completion of the work, as determined by the Engineer's measurements by the unit prices bid, no allowance being made for anticipated profit or for reason of variations from the estimated quantities set forth in the Proposal.

B. Extra Work and/or Changes: The TOWN DISTRICT may, at any time, by a written order, and without notice to the sureties, require the performance of such extra work or changes in the work as it may find necessary or desirable. The amount of compensation to be paid to the Contractor for any extra work, as so ordered, shall be determined as follows:

- (1) By such applicable unit prices, if any, as set forth in the contract; or
- (2) If no such unit prices are set forth, then by unit prices or by a lump sum mutually agreed upon by the TOWN DISTRICT and the Contractor; or
- (3) If no such unit prices are set forth, and if the parties cannot agree upon unit prices or a lump sum, then by actual net cost in money to the Contractor of the materials, permits, wages, or applied labor, premium for Workers' Compensation Insurance, payroll taxes required by law, rental for plant and equipment used (excluding small tools) to which total cost will be added 20 percent as full compensation for all other items of profit, costs and expenses, including administration, overhead, superintendence, insurance, insurance other than Workers' Compensation Insurance, material used in temporary structures,

allowances made by the Contractor to subcontractors, additional premiums upon the Performance Bond of the Contractor and the use of small tools.

4. TIME OF ESSENCE

Inasmuch as the provisions of this Contract relating to the time for performance and completion of the work are for the purpose of enabling the TOWN DISTRICT to proceed with the construction of a public improvement, in accordance with a predetermined program, such provisions are of the essence of this Contract.

5. COMMENCEMENT OF WORK

The Contractor agrees that he will commence work within ten (10) consecutive calendar days after signing this Contract, and that the day he commences work shall constitute the first of the consecutive calendar days allowed for completion of the work.

6. TIME FOR COMPLETION

The time for completion of this Contract shall be within the number of calendar days stated in the Bid Proposal and the date of such completion shall be the date of the certificate of completion hereinafter specified.

The TOWN DISTRICT reserves the right to order the Contractor to suspend operations when, in the opinion of the Engineer, improper weather conditions make such action advisable, and to order the Contractor to resume operations when weather and ground conditions permit. The days during which such suspension of work is in force are not chargeable against the specified completion time.

7. LIQUIDATED DAMAGES FOR DELAY

The time limit being essential to and of the essence of this Contract, the Contractor hereby agrees that the TOWN DISTRICT shall be, and is hereby authorized to deduct and retain out of the money which may be due or may become due to said Contractor under this agreement, the sum of FIVE HUNDRED DOLLARS (\$500.00) per day, which amount is hereby agreed upon, fixed and determined by the parties hereto as the LIQUIDATED DAMAGES, including overhead charges, services, inspector's wages, and interest on the money invested, that the TOWN DISTRICT will suffer by reason of such default, for each and every day during which the aforesaid work may be incomplete over and beyond the time herein stipulated for its

completion, provided, however, that the TOWN DISTRICT shall have the right to extend the time for the completion of said work.

8. EXTENSIONS OF TIME - NO WAIVER

If the Contractor shall be delayed in the completion of his work by reason of unforeseeable causes beyond his control and without his fault or negligence, including but not restricted to Acts of God or of any public enemy, acts or neglect of the TOWN DISTRICT, acts or neglect of any other Contractor, fires, floods, epidemics, quarantine restrictions, strikes, riots, civil commotion or freight embargoes, the period herein above specified for completion of his work shall be extended by such time as shall be fixed by the TOWN DISTRICT.

No such extension of time shall be considered a waiver by the TOWN DISTRICT of its right to terminate the Contract for abandonment or delay by the Contractor as hereinafter provided or relieve the Contractor from full responsibility for performance of his obligations hereunder.

9. CONTRACT SECURITY

A. The Contractor shall furnish a Performance Bond in an amount equal to one hundred percent (100%) of the total contract price as security for the faithful performance of this Contract, and for the payment of all persons performing labor or furnishing materials in connection with this Contract.

B. Additional or Substitute Bond - If, at any time, the TOWN DISTRICT shall be or become dissatisfied with any surety or sureties, then upon the Performance Bond, or if, for any other reason, such bond shall cease to be adequate security to the TOWN DISTRICT, the Contractor shall, within five (5) days after notice from the TOWN DISTRICT, substitute an acceptable bond in such form and sum, and signed by such other surety as may be satisfactory to the TOWN DISTRICT. The premiums on such bonds shall be paid by the Contractor. No further payments shall be deemed due, nor shall be made until the new surety shall have been qualified.

C. Prior to release of the Performance Bond, the Contractor shall deliver to the TOWN DISTRICT a Maintenance Bond equal to one hundred percent (100%) of the total Contract price, including all extras. This Maintenance Bond shall remain in full force and effect for a period of one (1) year after the date of the Engineer's approval of the final payment request and such bond, which shall be executed by the Contractor and issued by a reliable, solvent surety company authorized to do business in the State of New York shall guarantee to the TOWN DISTRICT that the Contractor shall promptly remedy any defects or faults that may occur within twelve (12) months after completion and acceptance of the work performed by the Contractor pursuant to this Contract.

10. CONTRACTOR'S INSURANCE

The Contractor shall not commence any work until he has obtained and had approved by the TOWN DISTRICT all of the insurance required under this Contract, as enumerated herein:

Compensation Insurance

Public Liability and Property Damage Insurance

Contractor's Protective Liability and Property Damage Insurance

Owner's (TOWN DISTRICT) and Engineer's Protective Public Liability and Property Damage Insurance

Automobile Public Liability and Property Damage Insurance

The Contractor shall not permit any subcontractor to commence any operation on the site until satisfactory proof of carriage of the above required insurance has been posted with, and approved by, the TOWN DISTRICT.

A. Compensation Insurance - The Contractor shall take out and maintain, during the life of this Contract, Workers' Compensation Insurance for all of his employees employed at the site of the project, and in any case of any of the work being sublet, the Contractor shall require the subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees, unless such employees are covered by the protection afforded by the Contractor.

B. Public Liability and Property Damage Insurance - The Contractor shall take out and maintain during the life of this Contract such Public Liability and Property Damage Insurance as shall protect him and any subcontractor performing work covered by this Contract for claims for damages for personal injury, including accidental death, as well as from claims for property damage which may arise from operations under this Contract, whether such operations be by himself or by any subcontractor, or by any one directly or indirectly employed by either of them, and the amounts of such insurance shall be as follows:

- (1) Public Liability Insurance in the amount not less than FIVE HUNDRED THOUSAND DOLLARS (\$500,000.) for bodily injuries, including wrongful death to any one person, and subject to the same limit for each person in

an amount not less than ONE MILLION DOLLARS (\$1,000,000.) on account of one accident.

- (2) Property Damage Insurance in an amount not less than ONE HUNDRED THOUSAND DOLLARS (\$100,000.) for damages on account of any one accident and in an amount of not less than TWO HUNDRED THOUSAND DOLLARS (\$200,000.) for damages on account of all accidents.

C. Liability and Property Damage Insurance - The above policies for public liability and property damage insurance must be so written as to include Contractor's Protective Liability and Property Damage Insurance to protect the Contractor against claims arising from the operations of any subcontractor.

D. Owner's Protective Public Liability and Property Damage Insurance - (TOWN DISTRICT, and/or TOWN BOARD, TOWN OF RIVERHEAD as OWNER and/or H2M architects + engineers as ENGINEERS) - The Contractor shall furnish to the TOWN DISTRICT with respect to the operations he or any of his subcontractors perform, a regular Protective Public Liability Insurance Policy for and in behalf of the TOWN DISTRICT and/or TOWN BOARD, TOWN OF RIVERHEAD as OWNER and/or H2M architects + engineers, as ENGINEERS, providing for a limit of not less than FIVE HUNDRED THOUSAND DOLLARS (\$500,000.) for all damages arising out of bodily injuries to, or death of, one person and subject to that limit for each person, a total limit of ONE MILLION DOLLARS (\$1,000,000.) for all damages arising out of bodily injuries to, or death of, two or more persons in any one accident; and regular Protective Property Damage Insurance providing for a limit of not less than ONE HUNDRED THOUSAND DOLLARS (\$100,000.) for all damages arising out of injury to, or destruction of, property in any one accident and subject to that limit per accident a total (or aggregate) limit of TWO HUNDRED THOUSAND DOLLARS (\$200,000.) for all damages arising out of injury to, or destruction of property during the policy period. The insurance must fully cover the legal liability of the TOWN DISTRICT and/or TOWN BOARD, TOWN OF RIVERHEAD as OWNER and/or H2M architects + engineers, as ENGINEERS. The coverage provided under this policy must not be affected if the TOWN DISTRICT performs work in connection with the project either for, or in cooperation with, the Contractor or as an aid thereto, whether the same be a part of the Contract or separate therefrom, by means of its own employees or agents, or if the TOWN DISTRICT directs or supervises the work to be performed by the Contractor.

E. Automobile Public Liability and Property Damage Insurance - The Contractor shall take out and maintain during the life of the Contract such automobile public liability and property damage insurance as shall protect him and any subcontractor performing work covered by this Contract from claims for damages for personal injury, including accidental death as well as from claims for property damage which may arise from operations under this Contract, whether such operations be by himself or by any subcontractor, or by any one directly or indirectly employed by either of them and the amounts of such insurance shall be as follows:

- (1) Automobile Public Liability Insurance in an amount not less than FIVE HUNDRED THOUSAND DOLLARS (\$500,000.) for bodily injuries,

including wrong-ful death by any one person, and subject to the same limit for each person in an amount not less than ONE MILLION DOLLARS (\$1,000,000.) on account of one accident.

- (2) Automobile Property Damage Insurance in an amount of not less than ONE HUNDRED THOUSAND DOLLARS (\$100,000.) for damages on account of any one accident and in an amount of not less than TWO HUNDRED THOUSAND DOLLARS (\$200,000.) for damages on account of all accidents.

11. PROOF OF CARRIAGE OF INSURANCE

The Contractor shall furnish the TOWN DISTRICT with certificates of each insurer insuring the Contractor or any subcontractor under this Contract, except with respect to subdivision D. of paragraph 10. In respect to this paragraph, the Contractor shall furnish the TOWN DISTRICT with the original insurance policy and a copy to the Engineer.

Both certificates, as furnished, and the insurance policy, as required, shall bear the policy numbers, the expiration date of the policy and the limit or limits of liability thereunder. Both the certificates and the policy shall be further endorsed to provide the TOWN DISTRICT and Engineer with any notice of cancellation at least ten (10) days prior to the actual date of such cancellation.

12. COMPLIANCE WITH LABOR AND PENAL LAWS

The Contractor hereby expressly agrees to comply with all the provisions of the Labor Law and any and all amendments thereto, insofar as the same are applicable to this Contract. The Labor Laws, as amended, provide that no laborer, worker or mechanic in the employ of the Contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by this Contract, shall be permitted or required to work more than eight (8) hours in any one calendar day, except in cases of extraordinary emergency caused by fire, flood, or danger to life or property; that no such person shall be employed more than eight (8) hours in any day or more than five (5) days in any week, except in such emergency; that the wages to be paid for a legal day's work as hereinbefore defined, to laborers, workers, or mechanics upon the work called for under this Contract, or for any materials used upon or in connection therewith shall not be less than the prevailing rate for a day's work in the same trade or occupation in the locality within the State where such work is to be done and each laborer, worker, or mechanic employed by the Contractor, subcontractor, or other person about or upon the work shall be paid the wages herein provided; that employees engaged in the construction outside the limits of cities and villages are no longer exempt from the provisions of the Labor Laws which required the payment of the prevailing rate of wages and the eight (8) hour day.

Section 220A of the Labor Law, as amended by Chapter 472 of the Laws of 1932, provides that before payment is made by or on behalf of the State or any City, County, Town or Village or other civil division of the State, of any sums due on account of a contract for a public improvement, it is the duty of the Comptroller or the financial officer of the Municipal Corporation to require the Contractor and each and every subcontractor to file a certified statement in writing, in satisfactory form, certifying to the amounts then due and owing to any and all laborers for daily or weekly wages on account of labor performed upon the work of the Contract, setting forth therein the names of the persons whose wages are unpaid and the amount due each, respectively.

Section 220B of the Labor Law, as amended, provides that any interested person who shall have previously filed a protest in writing objecting to the payment to any Contractor or subcontractor to the extent of the amount or amounts due or to become due to him for daily or weekly wages for labor performed on the public improvement for which the Contract was entered into, or if, for any other reason, it may be deemed advisable, the Comptroller of the State or other financial officer of the Municipal Corporation may deduct from the whole amount of any payment on account thereof the sum or sums admitted by any Contractor or subcontractor in such statement or statements so filed to be due and owing by him on account of labor performed and may withhold the amount so deducted for the benefit of the laborers for daily or weekly wages, whose wages are unpaid as shown by the verified statements filed by any Contractor or subcontractor and may pay directly to any person the amount or amounts so shown to be due for such wages.

Section 220C of the Labor Law, as amended, provides the penalty for making of a false oath or verification.

Section 220D of the Labor Law provides that the advertised specifications for every Contract for the construction, reconstruction, maintenance and/or repair of highways to which the State, County, Town and/or Village is a party shall contain the provision stating the minimum rate of hourly wage that can be paid, as shall be designated by the Industrial Commissioner, to the laborers employed in the performance of the Contract, either by the Contractor, subcontractor or other person doing or contracting to do the whole or part of the work contemplated by the Contract, and the Contract shall contain a stipulation that such laborers shall be paid not less than such hourly minimum rate of wage. Any person or corporation that willfully pays after entering into such Contract less than such stipulated minimum hourly wage scale shall be guilty of a misdemeanor and, upon conviction, shall be punished for a first offense by a fine of Five Hundred Dollars (\$500.) or by imprisonment for not more than thirty (30) days, or by both fine and imprisonment for a second offense by a fine of One Thousand Dollars (\$1,000.) and, in addition thereto, the Contract on which the violation has occurred shall be forfeited; and no such person or corporation shall be entitled to receive any sum or nor shall any officer, agent or employee of the State pay the same or authorize its payment from the funds under his charge or control to any person or corporation for work done upon any contract, on which the Contractor has been convicted of second offense in violation of the provisions of this Section.

The minimum wage rates established by the Industrial Commissioner, State of New York, for this Contract, are as set forth in the INFORMATION FOR BIDDERS.

All excavation shall be done in compliance with Article 36 of the General Business Law and notices given as provided by GBL Section 761.

13. PAYMENT OF EMPLOYEES

The Contractor and each of his subcontractors shall pay each of his employees engaged in work on this project under this Contract in full (less deductions made mandatory by law) in cash and not less often than once each week.

14. ESTIMATES AND PAYMENTS

A. Monthly: At the end of each calendar month during the progress of the work, the Contractor shall submit a payment requisition to the Engineer. The Engineer will review the requisition and prepare a payment request based on the estimated amount of work performed and the quantity of materials furnished, based on the prices set forth in the Proposal. In consideration of the work done and the materials furnished, the TOWN DISTRICT will pay or cause to be paid to the Contractor the amount estimated by the Engineer as due him less a sum equal to five percent (5%) of such amount and less such additional amount as may be necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. The making of any such estimate or payment made thereon shall not be taken or construed as an acceptance by the Engineer or the TOWN DISTRICT of any work so estimated and paid for. The amount of the monthly estimate remaining unpaid will be retained by the TOWN DISTRICT as a guarantee that the Contractor will faithfully and completely fulfill all obligations imposed by the Contract and Specifications, and against any damages incurred by the TOWN DISTRICT by reason of any failure on the part of the Contractor to fulfill all conditions and obligations herein contained. All partial payments are subject to correction in any subsequent payment. The retained amounts shall be paid as set forth in the following subsection B.

B. Final: Thirty (30) days after the Contractor shall have substantially completed the work required of it under the Contract the Engineer will prepare an approval of Final Payment Request. Thereafter the TOWN DISTRICT will pay to the Contractor the remaining amount of the Contract balance less a sum equal to two (2) times the value of any remaining items to be completed and less an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. As the remaining items of work are satisfactorily completed or corrected, the TOWN DISTRICT shall promptly pay, upon receipt of a requisition for these items less an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged.

Any claims, liens and judgments referred to in this section shall pertain to the project and shall be filed in accordance with the terms of the applicable Contract and/or applicable laws.

C. In order to secure the performance of the covenant of the Contractor, prior to release of the Performance Bond, the Contractor shall deliver to the TOWN DISTRICT a Maintenance Bond equal to one hundred percent (100%) of the total Contract price, including all extras. This Maintenance Bond shall remain in full force and effect for a period of one (1) year after the date of the Engineer's approval of the Final Payment Request and such bond, which shall be executed by the Contractor and issued by a reliable, solvent surety company authorized to do business in the State of New York shall guarantee to the TOWN DISTRICT that the Contractor shall promptly remedy any defects or faults that may occur within twelve (12) months after completion and acceptance of the work performed by the Contractor pursuant to this Contract.

D. Measurements for Payment: The Engineer shall make due measurement of the work done during the progress of the work and his estimate shall be final and conclusive evidence of the amounts of work performed by the Contractor under, and by virtue of, this agreement, and shall be taken as the full measure of compensation to be received by the Contractor. When requested by the Contractor, the Engineer shall measure, re-measure or re-estimate any portion of the work; but the expense of such re-measurement or re-estimating shall, unless material error be proved, be paid for by the Contractor.

E. Should all work not be completed and final payment request not submitted within one (1) year after the punch list has been issued, the TOWN DISTRICT will be under no obligation to make final payment.

15. ACCEPTANCE OF FINAL PAYMENT CONSTITUTES RELEASE

The acceptance by the Contractor of the final payment shall be, and shall operate as a release to the TOWN DISTRICT from all claims and all liabilities to the Contractor for all things done or furnished in connection with this work, and for every act and neglect of the TOWN DISTRICT and other relating to, or arising out of, this work, excepting the Contractor's claims for interest upon the final payment, if these payments be improperly delayed. No payment, however, final or otherwise, shall operate to release the Contractor or his sureties from any obligations under this Contract or the Performance Bond.

16. CONSTRUCTION REPORTS

The Contractor shall submit to the Engineer prior to the commencing of any work under this Contract a detailed schedule and plan of operation, indicating the manner in which the Contractor proposes to prosecute the work, and a time schedule therefore. Such schedules are not intended to bind the Contractor to a predetermined plan or procedure, but

rather to enable the Engineer to coordinate the work of the Contractor with work required of and to be performed by others.

The Contractor shall furnish the Engineer with periodic estimates for partial payments as required elsewhere in the contract documents and, in addition thereto, will furnish the Engineer with a detailed estimate for final payment. Prior to being eligible to receive final payment under this Contract, the Contractor shall furnish the Engineer with substantial proof that all bills for services rendered and materials supplied have been paid. The enumeration of the above reports in no way relieves the Contractor of his responsibility under existing Federal or State laws of filing such other reports with agencies other than the TOWN DISTRICT as may be required by such existing laws or regulations.

17. INSPECTION AND TESTS

All material and workmanship shall be subject to inspection, examination and test by the Engineer and other representatives of the TOWN DISTRICT at any time during the construction and at any and all places where manufacturing of materials used and/or construction is carried on.

Without additional charge, the Contractor shall furnish promptly all reasonable facilities, labor and materials necessary to make tests so required safe and convenient.

If, at any time, before final acceptance of the entire work, the Engineer, with the TOWN DISTRICT's approval, considers necessary or advisable an examination of any portion of the work already completed, by removing or tearing out the same, the Contractor shall, upon request, furnish promptly all necessary facilities, labor and materials for such examination. If such work is found to be defective in any material respect, due to the fault of the Contractor or any subcontractor, or if any work shall be covered over without the approval or consent of the Engineer, with the TOWN DISTRICT's approval, whether or not the same shall be defective, the Contractor shall be liable for the expenses of such examination and of satisfactory reconstruction.

If, however, such approval and consent shall have been given, and such work is found to meet the requirements of this Contract, the Contractor shall be recompensed for the expense of such examination and reconstruction in the manner herein provided for the payment of costs of extra work pursuant to a Change Order signed by the TOWN DISTRICT and the Contractor.

The selection of laboratories and/or agencies for the inspection and tests of supplies, materials or equipment shall be subject to the approval of the Engineer. Satisfactory documentary evidence that the material has passed the required inspection and test must be furnished the Engineer prior to the incorporation of the material in the work.

Any rejected work shall be removed from the site of the project completely at the expense of the Contractor.

18. PLANS AND SPECIFICATIONS - INTERPRETATIONS

The Contractor shall keep at the site of the work one (1) copy of the Plans and Specifications signed and identified by the Engineer. Anything shown on the Plans and not mentioned in the Specifications or mentioned in the Specifications and not shown on the Plans shall have the same effect as if shown or mentioned respectively in both. In case of any conflict or inconsistency between the Plans and Specifications, the Plans shall govern. Any discrepancy between the figures and drawings shall be submitted to the Engineer, whose decision therein shall be conclusive.

19. SUBSURFACE CONDITIONS FOUND DIFFERENT

Should the Contractor encounter subsurface conditions at the site materially differing from those shown on the Plans or indicated in the Specifications, he shall immediately give notice to the Engineer of such conditions before they are disturbed; the Engineer shall thereupon promptly investigate the conditions and if he finds that they materially differ from those shown on the Plans or indicated in the Specifications, he shall at once make such changes in the Plans and/or Specifications as he may find necessary.

Any increase or decrease of cost resulting from such changes will be adjusted in the manner provided herein for adjustment as to extra and/or additional work and changes shall be by Change Order executed by the TOWN DISTRICT and Contractor.

20. CONTRACTOR'S TITLE TO MATERIALS

No material or supplies for the work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work.

21. SUPERINTENDENCE BY CONTRACTOR

At the site of the work the Contractor shall employ a Construction Superintendent or Foreman who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the Engineer and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll.

22. PROTECTION OF WORK, PERSONS AND PROPERTY

Precaution shall be exercised at all times for the proper protection of all persons, property and work. The safety provisions of applicable laws, building and construction codes shall be observed. Machinery equipment and all hazards shall be guarded or eliminated in accordance with the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law. The Contractor shall furnish entirely at his own expense any and all additional safety measures deemed necessary by the TOWN DISTRICT or its Engineer to adequately safeguard the traveling public. The Contractor shall give notice to the owners of all utilities which may serve the area and request their assistance in pre-determining the location and depth of the various pipes, conduits, manholes and other underground facilities.

The Contractor shall, at all hours of the day, safely guard and protect his own work and adjacent property from any damage and shall replace or make good any such damage, loss or injury unless such be caused directly by errors contained in the contract documents, or by the TOWN DISTRICT or its duly authorized representatives.

The Contractor shall provide and maintain such watchers, barriers, lights, flares and other signals, at his own expense, as will effectively prevent any accident in consequence of his work for which the TOWN DISTRICT might be liable. The Contractor shall be liable for all injury or damage caused by his act or neglect, or that of his employees.

23. PATENT RIGHTS

As part of his obligation hereunder and without any additional compensation, the Contractor will pay for any patent fees or royalties required in respect to the work or any part thereof and will fully indemnify the TOWN DISTRICT for any loss on account of any infringement of any patent rights, unless prior to his use in the work of a particular process or a product of a particular manufacturer, he notifies the TOWN DISTRICT in writing that such process or product is an infringement of a patent.

24. REPRESENTATIONS OF CONTRACTOR

The Contractor represents and warrants:

A. That he is financially solvent and that he is experienced in and competent to perform the type of work involved under this Contract and able to furnish the plan, materials, supplies and/or equipment to be furnished for the work; and

B. That he is familiar with all Federal, State and Municipal Laws, ordinances and regulations which may in any way affect the work of those employed hereunder, including but not limited to any special acts relating to the work; and

C. That such work required by these contract documents as is to be done by him can be satisfactorily constructed and used for the purpose for which it is intended and that such construction will not injure any person or damage any property; and

D. That he has carefully examined the Plans, Specifications, and the site of the work, and that from his own investigation he has satisfied himself as to the nature and location of the work, the character, location, quality and quantity of surface and subsurface materials, structures and utilities likely to be encountered, the character of equipment, and other facilities needed for the performance of the work, the general local conditions which may in any way affect the work or its performance.

25. AUTHORITY OF THE ENGINEER

In the performance of the work, the Contractor shall abide by all orders and directions and requirements of the Engineer and shall perform all work to the satisfaction of the Engineer, at such time and places, by such methods, and in such manner and sequence as he may require. The Engineer shall determine the amount, quality, acceptability and fitness of all parts of the work, shall interpret the plans, specifications, contract documents and any extra work orders and shall decide all other questions in connection with the work. Upon request, the Engineer shall confirm in writing any oral orders, directions, requirements or determinations. The enumeration herein or else-where in the contract documents of particular instances in which the opinion, judgment, discretion or determination of the Engineer shall control, or in which work shall be performed to his satisfaction or subject to his approval, or inspection, shall not imply that only matters similar to those enumerated shall be so governed and so performed, but without exception all the work shall be governed and so performed. Nothing herein shall be construed to give the Contractor a claim for extra work unless prior thereto an appropriate Change Order has been executed by the TOWN DISTRICT and Contractor for such work.

26. SURVEYS

The Contractor shall provide all layouts, measurements, lines, and grades necessary for the execution of the work, and will furnish the necessary stakes and spikes for laying out such lines and grades and the unskilled labor necessary to place same and/or assist in measuring.

27. CHANGES AND ALTERATIONS

The TOWN DISTRICT reserves the right to make alterations in the location, line, grade, plans, form or dimensions of the work, or any part thereof, either before or after the commencement of the construction. If such alterations diminish the amount of work to be done, no claim for damages or anticipated profits will be warranted on the work which may be dispensed with. If such alterations increase the amount of work, such increases shall be paid for according to the quantity of work actually done and at the unit prices for such work as contained in the schedule of prices.

If such alterations decrease the amount of work, such decreases shall be a credit to the TOWN DISTRICT based on the quantity of work not performed as agreed to by the TOWN DISTRICT and the Contractor and at the unit prices for such work as contained in the Schedule of Prices.

28. CORRECTION OF WORK

All work and all materials, whether incorporated into the work or not, all processes of manufacture and all methods of construction shall be, at all times and places, subject to the inspection of the Engineer who shall be the final judge of quality, materials, processes of manufacture and methods of construction suitable for the purpose for which they are used. Should they fail to meet his approval they shall be forthwith reconstructed, made good and replaced and/or corrected as the case may be, by the Contractor at his own expense. Rejected materials shall immediately be removed from the site.

If, in the opinion of the Engineer, it is not desirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work injured or not performed in accordance with the contract documents, the compensation to be paid to the Contractor hereunder shall be reduced by such amount as, in the judgment of the Engineer, shall be equitable.

The Contractor expressly warrants that his work shall be free from any defects in materials or workmanship, and agrees to correct any defects, settlements, or shrinkages which may appear within one (1) year following the date of the final payment request. Neither the acceptance of the completed work nor payment therefor shall operate to release the Contractor or his sureties from any obligations under or upon this Contract or the Performance Bond.

29. WEATHER CONDITIONS

The Contractor will and will cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If any work or materials shall have been damaged or injured by reason of the failure on the part of the Contractor or any of his subcontractors to protect his, or their work, such work and materials shall be removed and replaced at the expense of the Contractor.

30. THE TOWN DISTRICT'S RIGHT TO WITHHOLD PAYMENTS

The TOWN DISTRICT may withhold from the Contractor so much of any approved payments due him as may, in the judgment of the TOWN DISTRICT, be necessary:

A. To assure the payment of just claims then due and unpaid of any persons supplying labor or materials for the work;

B. To protect the TOWN DISTRICT from loss due to defective work not remedied; or

C. To protect the TOWN DISTRICT from loss due to injury to persons or damage to the work or property of other contractors or subcontractors or others, caused by the act or neglect of the Contractor or any of his subcontractors. The TOWN DISTRICT shall have the right, as agent for the Contractor, to apply any such amount so withheld in such manner as the TOWN DISTRICT may deem proper to satisfy such claims or to secure such protection. Such application of such money shall be deemed payments for the account of the Contractor.

31. THE TOWN DISTRICT'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

If:

A. The Contractor shall file for any form of bankruptcy relief or make an assignment for the benefit of creditors; or

B. A receiver or liquidator shall be appointed for the Contractor for any of his property and shall not be dismissed within twenty (20) days after such appointment, or the proceedings in connection therewith shall not be stayed on appeal within the said twenty (20) days; or

C. The Contractor shall violate any provision of this Contract; or

D. The Contractor shall fail or refuse to regard laws, ordinances, regulations, or the instructions of the Engineer and/or the TOWN DISTRICT;

then, and in any such event, the TOWN DISTRICT without prejudice to any other rights or remedy it may have, and after seven (7) days written notice to the Contractor and Contractor's Surety may terminate the employment of the Contractor and take possession of the premises and all material, tools and appliances therein, and complete the work by contract or otherwise, as the TOWN DISTRICT solely may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished.

If the unpaid balance of the compensation to be paid the Contractor hereunder shall exceed the expense of so completing the work (including compensation for additional managerial, engineering, administration, legal, testing and observation services and any damages for delay), such excess shall be paid to Contractor.

If the expense shall exceed the unpaid balance, the Contractor and his sureties shall be liable to the TOWN DISTRICT for such excess.

32. CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the work shall be stopped by order of the Court or any public authority, Federal or State agency, for a period of three (3) months through no act or fault of the Contractor or any of his agents, servants, employees, materialmen, or subcontractors, the Contractor may, upon ten (10) days notice to the TOWN DISTRICT, discontinue his performance of the work and/or terminate the Contract.

Upon termination by the Contractor the TOWN DISTRICT may take possession of the work and complete the work by Contract or otherwise, as the TOWN DISTRICT solely may deem expedient.

If the Contract is terminated by the Contractor, the liability of the TOWN DISTRICT to the Contractor shall be for all work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment, including reasonable profit and damages.

33. RESPONSIBILITY OF WORK

The Contractor agrees to be responsible for the entire work embraced in this Contract until its completion and final acceptance, and that any unfaithful or imperfect work that may become damaged from any cause, either by act or commission or omission to properly guard and protect the work that may be discovered at any time before the completion and acceptance shall be removed and replaced by good and satisfactory work without any charge to the TOWN DISTRICT and that such removal and replacement will be performed immediately on the requirement of the Engineer, notwithstanding the fact that it may have been overlooked by the proper inspector, and partial payment made thereon. It is fully understood by the Contractor that the inspection of the work shall not relieve him of any obligation to do sound and reliable work as herein prescribed, and that any omission to disapprove of any work by the Engineer at or before the time of a partial payment or other estimate shall not be construed to be an acceptance of any defective work.

34. USES OF PREMISES AND REMOVAL OF DEBRIS

The Contractor expressly undertakes at his own expense:

- A. To take every precaution against injury to persons or damages to property;
- B. To store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any of his subcontractors, or other contractors;
- C. To place upon any of the completed work only such superimposed loads as are consistent with the safety of that portion of the work;
- D. To frequently clean up all refuse, rubbish, scrap materials and debris caused by the operations to the end that at all times the site of the work shall present a neat and orderly and workmanlike appearance;
- E. Before the Engineer's approval of the Final Payment Request, to remove all surplus material, temporary structures, plants of any description and debris of any and every nature resulting from his operations and to put the site in a neat and orderly condition.

35. POWER OF THE CONTRACTOR TO ACT IN AN EMERGENCY

In case of an emergency which threatens loss or injury to property and/or safety to life, the Contractor will be permitted to act as he sees fit without previous instructions from the TOWN DISTRICT. He shall notify the TOWN DISTRICT thereof immediately thereafter and any compensation claimed by the Contractor due to extra work made necessary because of his acts in such emergency shall be submitted to the TOWN DISTRICT for approval and Change Order executed by the TOWN DISTRICT and the Contractor.

Where the Contractor has not taken action but has notified the Engineer of an emergency indicating injury to persons or damage to adjoining property or to the work being accomplished under this Contract, then upon authorization from the Engineer to prevent such threatened injury or damage, he shall act as instructed by the Engineer. The amount of reimbursement claimed by the Contractor on account of any such action shall be determined in the manner provided herein for the payment of extra work and shall be incorporated into a Change Order executed by the TOWN DISTRICT and Contractor.

36. SUITS AT LAW

The Contractor shall indemnify and save harmless the TOWN DISTRICT from and against all suits, claims, demands or actions for any injury sustained or alleged to be sustained by any party or parties in connection with the construction of the work or any part thereof, or any commission or omission of the Contractor, his employees or agents or any subcontractors and in case any such action shall be brought against the TOWN DISTRICT, the Contractor shall immediately take care of and defend the same at his own cost and expense.

37. PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and, if through mistake or otherwise, any such provision is not inserted or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.

38. SUBLETTING, SUCCESSOR AND ASSIGNS

The Contractor shall not sublet any part of the work under this Contract, nor assign any money due him hereunder without first obtaining the written consent of the TOWN DISTRICT. This Contract shall inure to the benefit of and shall be binding upon the parties hereunder and upon their respective successors and assigns, but neither party shall assign or transfer his interest herein in whole or in part without consent of the other.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

RIVERHEAD WATER DISTRICT

BY: _____ (TOWN SEAL)
LAURA JENS-SMITH, SUPERVISOR

CONTRACTOR

BY: _____

TITLE: _____ (SEAL)

STATE OF NEW YORK)

) ss:

COUNTY OF SUFFOLK)

On the ____ day of _____, 20__, before me personally came LAURA JENS-SMITH, to me known, who being by me duly sworn, did depose and say that he is the duly elected SUPERVISOR of the TOWN OF RIVERHEAD, COUNTY OF SUFFOLK, NEW YORK, and that at a meeting of the Town Board of the Town of Riverhead, duly held on the ____ day of _____, 20__, Resolution No. _____, the said Board, also acting in its capacity as the Governing Body of the Riverhead Water District, authorized the said SUPERVISOR to execute all and any contracts on behalf of the Board; that he knows the seal of said Town, and that the said Water District seal is also the seal of the Town of Riverhead; that the seal affixed to the foregoing instrument is its corporate seal; that it was affixed thereto by order of the said Board, and that he signed his name thereto and executed the said instrument on behalf of the said Water District by like order and authority.

NOTARY PUBLIC

ACKNOWLEDGMENT OF CONTRACTOR, IF A CORPORATION

STATE OF NEW YORK)

) ss:

COUNTY OF)

On this ____ day of _____, 20__, before me personally came and appeared _____, to me known, who by me being duly sworn, did depose and say that he resides at _____ that he is the _____ of _____, the Corporation described in and which executed the foregoing instrument, that he knows the seal of said corporation, that one of the seals affixed to said instrument is such seal, that it was so affixed by order of the Directors of said Corporation, and that he signed his name thereto by like order.

NOTARY PUBLIC

ACKNOWLEDGMENT OF CONTRACTOR, IF A PARTNERSHIP

STATE OF NEW YORK)

) ss:

COUNTY OF)

On this ____ day of _____, 20__, before me personally came and appeared _____, to me known, and known to me to be one of the members of the firm of _____, described in and who executed the foregoing instrument, and he acknowledged to me that he executed the same as and for the act and deed of said form.

NOTARY PUBLIC

END OF SECTION 005209

Wage Rates begin on the following page.



Andrew M. Cuomo, Governor

Roberta Reardon, Commissioner

Riverhead Water District

Steven Mirra
H2M Group
538 Broad Hollow Road
Melville NY 11747

Schedule Year 2019 through 2020
Date Requested 08/08/2019
PRC# 2019010384

Location Riverhead
Project ID# RDWD1904
Project Type Architectural, electrical, and chemical upgrades to the Riverhead Water District's Plant No. 4

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2019 through June 2020. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission; a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion [online](#).

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

There are very few exceptions to this rule. Complete information regarding these exceptions is available on the ["4 Day / 10 Hour Work Schedule" form \(PW 30.1\)](#).

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule form the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12240; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.ny.gov.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.ny.gov.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.ny.gov.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. Payrolls must be maintained for at least three (3) years from the project's date of completion. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment. Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed \$100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds \$25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8, Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The ["Public Work Project"](#) notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers' compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeyworkers in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyworker's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12240 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-

e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of \$50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.



Andrew M. Cuomo, Governor

Roberta Reardon, Commissioner

Riverhead Water District

Steven Mirra
H2M Group
538 Broad Hollow Road
Melville NY 11747

Schedule Year 2019 through 2020
Date Requested 08/08/2019
PRC# 2019010384

Location Riverhead
Project ID# RDWD1904
Project Type Architectural, electrical, and chemical upgrades to the Riverhead Water District's Plant No. 4

Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

Contractor Information

All information must be supplied

Federal Employer Identification Number: _____		
Name: _____		
Address: _____ _____		
City: _____	State: _____	Zip: _____
Amount of Contract: \$ _____	Contract Type:	
Approximate Starting Date: ____/____/____	☐ (01) General Construction	
Approximate Completion Date: ____/____/____	☐ (02) Heating/Ventilation	
	☐ (03) Electrical	
	☐ (04) Plumbing	
	☐ (05) Other : _____	

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

IMPORTANT NOTICE

FOR

CONTRACTORS & CONTRACTING AGENCIES

Social Security Numbers on Certified Payrolls

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concerns with regard to inclusion of this information on payrolls if another identifier will suffice.

For these reasons, *the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor.*

NOTE: This change does not affect the Department's ability to request and receive the entire social security number from employers during the course of its public work / prevailing wage investigations.

**To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND**

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12240

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.

Construction Industry Fair Play Act

Required Posting For Labor Law Article 25-B § 861-d

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site.

Failure to post the notice can result in penalties of up to \$1,500 for a first offense and up to \$5,000 for a second offense.

The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, www.labor.ny.gov.

If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.state.ny.us .



New York State Department of Labor
Required Notice under Article 25-B of the Labor Law

**ATTENTION ALL EMPLOYEES, CONTRACTORS AND SUBCONTRACTORS:
YOU ARE COVERED BY THE
CONSTRUCTION INDUSTRY FAIR PLAY ACT**

The law says that you are an employee unless:

- You are free from direction and control in performing your job AND
- You perform work that is not part of the usual work done by the business that hired you AND
- You have an independently established business

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

**IT IS AGAINST THE LAW FOR AN EMPLOYER TO MISCLASSIFY EMPLOYEES AS
INDEPENDENT CONTRACTORS OR PAY EMPLOYEES OFF-THE-BOOKS.**

Employee rights. If you are an employee:

- You are entitled to state and federal worker protections such as
 - unemployment benefits, if unemployed through no fault of your own, able to work, and otherwise qualified
 - workers' compensation benefits for on-the-job injuries
 - payment for wages earned, minimum wage, and overtime (under certain conditions)
 - prevailing wages on public work projects
 - the provisions of the National Labor Relations Act and
 - a safe work environment
- It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

Independent Contractors: If you are an independent contractor:

- You must pay all taxes required by New York State and Federal Law.

Penalties for paying off-the-books or improperly treating employees as independent contractors:

- **Civil Penalty** First Offense: up to \$2,500 per employee.
Subsequent Offense(s): up to \$5,000 per employee.
- **Criminal Penalty** First Offense: Misdemeanor - up to 30 days in jail, up to a \$25,000 fine and debarment from performing Public Work for up to one year.
Subsequent Offense(s): Misdemeanor - up to 60 days in jail, up to a \$50,000 fine and debarment from performing Public Work for up to 5 years.

If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at 1(866)435-1499 or send an email to dol.misclassified@labor.ny.gov. All complaints of fraud and violations are taken seriously and you can remain anonymous.

Employer Name:

WORKER NOTIFICATION

(Labor Law §220, paragraph a of subdivision 3-a)

Effective February 24, 2008

This provision is an addition to the existing prevailing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage rate* for their particular job classification *on each pay stub**. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address for the Department of Labor and a statement informing laborers, workers or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her particular job classification. The required notification will be provided with each wage schedule, may be downloaded from our website www.labor.ny.gov or made available upon request by contacting the Bureau of Public Work at 518-457-5589.

* In the event that the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

Attention Employees

THIS IS A: **PUBLIC WORK PROJECT**

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Chapter 629 of
the Labor Laws
of 2007:

**These wages are set by law and must be posted
at the work site. They can also be found at:**
www.labor.ny.gov

If you feel that you have not received proper wages or benefits,
please call our nearest office.*

Albany	(518) 457-2744	Patchogue	(631) 687-4882
Binghamton	(607) 721-8005	Rochester	(585) 258-4505
Buffalo	(716) 847-7159	Syracuse	(315) 428-4056
Garden City	(516) 228-3915	Utica	(315) 793-2314
New York City	(212) 932-2419	White Plains	(914) 997-9507
Newburgh	(845) 568-5156		

* For New York City government agency construction projects, please
contact the Office of the NYC Comptroller at (212) 669-4443, or
www.comptroller.nyc.gov – click on Bureau of Labor Law.

Contractor Name: _____

Project Location: _____

OSHA 10-hour Construction Safety and Health Course – S1537-A

Effective July 18, 2008

This provision is an addition to the existing prevailing wage rate law, Labor Law §220, section 220-h. It requires that on all public work projects of at least \$250,000.00, all laborers, workers and mechanics working on the site, be certified as having successfully completed the OSHA 10-hour construction safety and health course. It further requires that the advertised bids and contracts for every public work contract of at least \$250,000.00, contain a provision of this requirement.

NOTE: The OSHA 10 Legislation only applies to workers on a public work project that are required, under Article 8, to receive the prevailing wage.

Where to find OSHA 10-hour Construction Course

1. NYS Department of Labor website for scheduled outreach training at:

https://labor.ny.gov/workerprotection/safetyhealth/dosh_training.shtm

2. OSHA Training Institute Education Centers:

Rochester Institute of Technology OSHA Education Center

Rochester, NY

Donna Winter

Fax (585) 475-6292

e-mail: dlwtpo@rit.edu

(866) 385-7470 Ext. 2919

www.rit.edu/~outreach/course.php3?CourseID=54

Atlantic OSHA Training Center

UMDNJ – School of Public Health

Piscataway, NJ

Janet Crooks

Fax (732) 235-9460

e-mail: crooksje@umdnj.edu

(732) 235-9455

<https://ophs.umdj.edu/wconnect/ShowSchedule.awp?~GROUP~AOTCON~10~>

Atlantic OSHA Training Center

University at Buffalo

Buffalo, New York

Joe Syracuse

Fax (716) 829-2806

e-mail: <mailto:japs@buffalo.edu>

(716) 829-2125

http://www.smbs.buffalo.edu/CENTERS/trc/schedule_OSHA.php

Keene State College

Manchester, NH

Leslie Singleton

e-mail: lsingleton@keene.edu

(800) 449-6742

www.keene.edu/courses/print/courses_oshacfm

3. List of trainers and training schedules for OSHA outreach training at:

www.OutreachTrainers.org

Requirements for OSHA 10 Compliance

Chapter 282 of the Laws of 2007, codified as Labor Law 220-h took effect on July 18, 2008. The statute provides as follows:

The advertised specifications for every contract for public work of \$250,000.00 or more must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training “prior to the performing any work on the project.”

The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.*)
- Training roster, attendance record of other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

******A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-485-5696.

WICKS Reform 2008

(For all contracts advertised or solicited for bid on or after 7/1/08)

- Raises the threshold for public work projects subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work. The total project's threshold would increase from \$50,000 to: \$3 million in Bronx, Kings, New York, Queens and Richmond counties; \$1.5 million in Nassau, Suffolk and Westchester counties; and \$500,000 in all other counties.
- For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical work and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or use of a Project Labor Agreement (PLA), and must be open to public inspection.
- Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.
- The Commissioner of Labor shall have the power to enforce separate specification requirements on projects, and may issue stop-bid orders against public owners for non-compliance.
- Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clifton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.
- Reduces from 15 to 7 days the period in which contractors must pay subcontractors.

IMPORTANT INFORMATION

Regarding Use of Form PW30.1 (Previously 30R)

“Employer Registration for Use of 4 Day / 10 Hour Work Schedule”

To use the ‘4 Day / 10 Hour Work Schedule’:

There **MUST** be a *Dispensation of Hours (PW30)* in place on the project

AND

You **MUST** register your intent to work 4 / 10 hour days, by completing the PW30.1 Form.

REMEMBER...

The ‘4 Day / 10 Hour Work Schedule’ applies **ONLY** to Job Classifications and Counties listed on the PW30.1 Form.

Do not write in any additional Classifications or Counties.

(Please note : For each Job Classification check the individual wage schedule for specific details regarding their 4/10 hour day posting.)

Instructions for Completing Form PW30.1

(Previously 30R)

“Employer Registration for Use of 4 Day / 10 Hour Work Schedule”

Before completing Form PW30.1 check to be sure ...

- There is a *Dispensation of Hours* in place on the project.
- The 4 Day / 10 Hour Work Schedule applies to the Job Classifications you will be using.
- The 4 Day / 10 Hour Work Schedule applies to the County / Counties where the work will take place.

Instructions (Type or Print legibly):

Contractor Information:

- Enter the Legal Name of the business, FEIN, Street Address, City, State, Zip Code; the Company's Phone and Fax numbers; and the Company's email address (if applicable)
- Enter the Name of a Contact Person for the Company along with their Phone and Fax numbers, and the personal email address (if applicable)

Project Information:

- Enter the Prevailing Rate Case number (PRC#) assigned to this project
- Enter the Project Name / Type (i.e. Smithtown CSD – Replacement of HS Roof)
- Enter the Exact Location of Project (i.e. Smithtown HS, 143 County Route #2, Smithtown, NY; Bldgs. 1 & 2)
- If you are a Subcontractor, enter the name of the Prime Contractor for which you work
- On the Checklist of Job Classifications -
 - Go to pages 2 and 3 of the form
 - Place a checkmark in the box to the right of the Job Classification you are choosing
 - Mark all Job Classifications that apply

****Do not write in any additional Classifications or Counties.****

Requestor Information:

- Enter the name of the person submitting the registration, their title with the company, and the date the registration is filled out

Return Completed Form:

- **Mail** the completed PW30.1 form to: NYSDOL Bureau of Public Work, SOBC – Bldg.12 – Rm.130, Albany, NY 12240 **-OR-**
- **Fax** the completed PW30.1 form to: NYSDOL Bureau of Public Work at (518)485-1870



Bureau of Public Work Harriman
State Office Campus
Building 12, Room 130
Albany, New York 12240
Phone: (518) 457-5589 | Fax: (518) 485-1870
www.labor.ny.gov

Employer Registration for Use of 4 Day / 10 Hour Work Schedule

Before completing this form, make sure that:

- There is a **Dispensation of Hours** in place on the project.
- The 4 Day / 10 Hour Work Schedule applies to the Job Classifications you will be using.
- The 4 Day / 10 Hour Work Schedule applies to the County / Counties where the work will take place.

Please **type or print** the requested information and then **mail or fax** to the address above.

Contractor Information

Company Name: _____ FEIN: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Phone No: _____ Fax No: _____ Email: _____

Contact Person: _____

Phone No: _____ Fax No: _____ Email: _____

Project Information

Project PRC#: _____ Project Name/Type: _____

Exact Location
of Project: _____ County: _____

(If you are Subcontractor)

Prime Contractor Name: _____

Job Classification(s) to Work 4/10 Schedule: *(Choose all that apply on Job Classification Checklist - Pages 3-8)*
*** Do not write in any additional Classifications or Counties***

Requestor Information

Name: _____

Title: _____ Date: _____

Please use the list below with the number assigned to each county as a reference to the corresponding numbers listed in the following pages under **Entire Counties & Partial Counties**.

1.	Albany County	33.	Oneida County
2.	Allegany County	34.	Onondaga County
3.	Bronx County	35.	Ontario County
4.	Broome County	36.	Orange County
5.	Cattaraugus County	37.	Orleans County
6.	Cayuga County	38.	Oswego County
7.	Chautauqua County	39.	Otsego County
8.	Chemung County	40.	Putnam County
9.	Chenango County	41.	Queens County
10.	Clinton County	42.	Rensselaer County
11.	Columbia County	43.	Richmond County (Staten Island)
12.	Cortland County	44.	Rockland County
13.	Delaware County	45.	Saint Lawrence County
14.	Dutchess County	46.	Saratoga County
15.	Erie County	47.	Schenectady County
16.	Essex County	48.	Schoharie County
17.	Franklin County	49.	Schuyler County
18.	Fulton County	50.	Seneca County
19.	Genesee County	51.	Steuben County
20.	Greene County	52.	Suffolk County
21.	Hamilton County	53.	Sullivan County
22.	Herkimer County	54.	Tioga County
23.	Jefferson County	55.	Tompkins County
24.	Kings County (Brooklyn)	56.	Ulster County
25.	Lewis County	57.	Warren County
26.	Livingston County	58.	Washington County
27.	Madison County	59.	Wayne County
28.	Monroe County	60.	Westchester County
29.	Montgomery County	61.	Wyoming County
30.	Nassau County	62.	Yates County
31.	New York County (Manhattan)		
32.	Niagara County		

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Carpenter – Building	276B-All	7	2 ,5	
Carpenter – Building	276B-Cat	15	5	
Carpenter – Building	276-B-LIV	26, 28, 35, 59	61	
Carpenter – Building	276B-Gen	19, 32, 37	61	
Carpenter – Heavy & Highway	276HH-All	2, 5, 7		
Carpenter – Heavy & Highway	276HH-Erie	15		
Carpenter – Heavy & Highway	276HH- Gen	19, 32, 37, 61		
Carpenter – Heavy & Highway	276HH-Liv	26, 28, 35, 59		
Carpenter – Residential	276R-All	7	2, 5	
Carpenter – Building	277B-Bro	4, 54		
Carpenter – Building	277B-CAY	6, 50, 62		
Carpenter – Building	277B-CS	8, 12, 49, 51, 55	2	
Carpenter – Building	277 JLS	23, 25, 45		
Carpenter – Building	277 omh	22, 27, 33		
Carpenter – Building	277 On	34		
Carpenter – Building	277 Os	38		
Carpenter – Building	277CDO Bldg	9, 13, 39		
Carpenter – Heavy & Highway	277CDO HH	9, 13, 39		
Carpenter – Heavy & Highway	277HH-BRO	4, 6, 8, 12, ,22, 23, 25, 27, 33, 34, 38, 45, 49, 50, 51, 54, 55, 62		
Carpenter – Building	291B-Alb	1, 18, 20, 29, 42, 47, 48		
Carpenter – Building	291B-Cli	10, 16, 17		
Carpenter – Building	291B-Ham	21, 57, 58		
Carpenter – Building	291B-Sar	46		
Carpenter – Heavy & Highway	291HH-Alb	1, 10, 16, 17,18, 20, 21, 29, 42, 46, 47, 48, 57, 58		
Electrician	25m	30, 52		
Electrician – Teledata Cable Splicer	43	12, 22, 27, 33, 38	6, 9, 34, 39, 55, 59	

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Electrician	86	26, 28	19, 35, 37, 59, 61	
Electrician	840 Teledata and 840 Z1	62	6, 34, 35, 50, 59	
Electrician	910	10, 16, 17, 23, 25, 45		
Electrical Lineman	1049Line/Gas	30, 41, 52		
Electrical Lineman	1249a	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 44, 46, 47, 48, 49, 50, 45, 51, 53, 54, 55, 56, 57, 58, 59, 61, 62		
Electrical Lineman	1249a West	60		
Electrical Lineman	1249a-LT	1, 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 32, 33, 34, 35, 37, 38, 39, 42, 46, 47, 48, 49, 50, 45, 51, 53, 54, 55, 57, 58, 59, 61, 62		
Electrical Lineman	1249aREG8LT	11, 14, 36, 40, 44, 56		
Electrical Lineman	1249aWestLT	60		
Elevator Constructor	138	11, 14, 20, 36, 40, 53, 56	13, 44, 60	
Elevator Constructor	14	2, 5, 7, 15, 19, 32, 37, 61		
Elevator Constructor	27	8, 26, 28, 35, 49, 50, 51, 59, 62		
Elevator Constructor	35	1, 10, 16, 18, 21, 22, 29, 39, 42, 46, 47, 48, 57, 58		
Elevator Constructor	62.1	4, 6, 9, 12, 23, 25, 27, 33, 34, 38, 45, 54, 55	13	
Glazier	201	1, 10, 11, 16, 17, 18, 20, 21, 29, 42, 46, 47, 48, 57, 58		
Glazier	660r	2, 5, 7, 15, 19, 32, 37, 61		
Glazier	660	2, 5, 7, 15, 19, 32, 37, 61		
Glazier	677.1	23, 25, 26, 28, 35, 45, 50, 59, 62		
Glazier	677Z-2	6, 12, 22, 27, 33, 34, 38		
Glazier	677z3	4, 8, 9, 13, 39, 49, 51, 54, 55		
Glazier	677r.2	6, 12, 22, 27, 33, 34, 38		
Insulator – Heat & Frost	30-Syracuse	4, 6, 8, 9, 12, 22, 23, 25, 27, 33, 34, 38, 39, 49, 50, 45, 54, 55		
Laborer – Building	621b	2, 7	5	
Laborer – Building	633 bON	34		

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Laborer – Building	633b Cay	6		
Laborer – Building	633bOS	38		
Laborer – Building	785(7)	4	9, 13, 54	
Laborer – Building	785B-CS	8, 51	49	
Laborer – Building	7-785b	12, 55	49, 54	
Laborers – Heavy & Highway	157h/h	47	18, 29, 46	
Laborers – Heavy & Highway	190 h/h	1, 42, 58	11, 20, 46	
Laborers – Heavy & Highway	35/2h	21, 22, 27, 33	18, 29	
Laborer – Residential	621r	2, 7	5	
Laborers – Tunnel	157	47	18, 29, 46	
Laborers – Tunnel	35T	21, 22, 27, 33	18, 29	
Laborers – Tunnel	190	1, 42, 58	11, 20, 46	
Mason – Building	2TS.1	1, 10, 11, 16, 17, 18, 20, 21, 29, 42, 46, 47, 48, 57, 58		
Mason – Building	2TS.2	22, 23, 25, 33, 45	27	
Mason – Building	2TS.3	6, 34, 38	27	
Mason – Building	2b-on	34		
Mason – Building	2b.1	1, 11, 18, 20, 21, 29, 42, 46, 47, 48, 58	57	
Mason – Building	2b.2	22, 33	25	
Mason – Building	2b.3	6, 34	27	
Mason – Building	2b.4	38		
Mason – Building	2b.5	23	25	
Mason – Building	2b.6	45		
Mason – Building	2b.8	10, 16, 17	57	
Mason – Building	3b-Co-Z2	8, 49, 51	2	
Mason – Building	3B-Z1	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Building – Residential	3B-Z1R	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Building	3B-Bing-Z2	4, 9, 13, 39, 54		
Mason – Building	3B-lth-Z2	12, 55		

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Mason – Building	3B-Jam-Z2	7	2, 5	
Mason – Building – Residential	3B-Jam-Z2R	2, 4, 8, 7, 9, 12, 39, 13, 49, 51, 54, 55	5	
Mason – Building	3B-Z3	15, 32	5	
Mason – Building	3B-Z3.Orleans	37		
Mason – Residential	3B-Z3R	15, 32	5	
Mason – Residential	3B-z3R.Orleans	37		
Mason - Heavy & Highway	3h	2, 4, 8, 7, 9, 12, 13, 19, 26, 28, 35, 37, 39, 49, 50, 51, 54, 55, 59, 61, 62	5, 15, 32	
Mason – Tile Finisher	3TF-Z1	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Tile Finisher	3TF-Z2	2, 4, 8, 7, 9, 12, 13, 39, 49, 51, 54, 55	5	
Mason – Tile Finisher	3TF-Z3	15, 32, 37	5	
Mason – Tile Finisher	3TF-Z1R	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Tile Finisher	3TF-Z2R	2, 4, 7, 9, 12, 13, 39, 49, 51, 54, 55	5	
Mason – Tile Finisher	3TF-Z3R	15, 32, 37	5	
Mason – Tile Setter	3TS-Z1	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Tile Setter Residential	3TS-Z1R	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Tile Setter	3TS-Z2	2, 4, 7, 8, 9, 12, 13, 39, 49, 51, 54, 55	5	
Mason – Tile Setter Residential	3TS-Z2R	2, 4, 7, 8, 9, 12, 13, 39, 49, 51, 54, 55	5	
Mason – Tile Setter	3TS-Z3	15, 32, 37	5	
Mason – Tile Setter Residential	3TS-Z3R	15, 32, 37	5	
Mason – Building/Heavy & Highway	780	3, 24, 30, 31, 41, 43, 52		
Operating Engineer - Heavy & Highway	137H/H	40, 60	14	
Operating Engineer – Heavy & Highway	158-832H	2, 8, 26, 28, 35, 49, 51, 59, 62	19	
Operating Engineer – Heavy & Highway	158-H/H	1, 4, 9, 10, 11, 14, 16, 17, 18, 20, 21, 22, 29, 39, 42, 46, 47, 48, 54, 57, 58		
Operating Engineer – Heavy & Highway	158-545h	6, 12, 23, 25, 27, 33, 38, 45, 50, 55		
Painter	1456-LS	1, 3, 10, 11, 14, 16, 17, 18, 20, 21, 24, 29, 30, 31, 36, 40, 41, 42, 43, 44, 46, 47, 48, 52, 53, 56, 57, 58, 60		
Painter	150	28, 59, 62	26, 35	

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Painter	178 B	4, 9, 54		
Painter	178 E	8, 49	51	
Painter	178 I	12, 55		
Painter	178 O	13, 39		
Painter	31	6, 22, 27, 33, 34, 50	25, 35, 38	
Painter	38.O		38	
Painter	38.W	23, 45	25	
Painter	4- Buf,Nia,Olean	2, 15, 19, 32, 37, 61	5, 7, 26, 51	
Painter	4-Jamestown		5, 7	
Sheetmetal Worker	46	26, 28, 35, 50, 59, 62		
Sheetmetal Worker	46r	26, 28, 35, 50, 59, 62		
Teamsters – Heavy & Highway	294h/h	1, 11, 18, 20, 29, 42, 46, 47, 48, 58	57	
Teamsters – Heavy & Highway	317bhh	6, 12, 50, 51, 55, 62	2	
Teamsters - Building/Heavy & Highway	456	40, 60		

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.ny.gov) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Suffolk County General Construction

Asbestos Worker

08/01/2019

JOB DESCRIPTION Asbestos Worker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour: 07/01/2019

Asbestos Worker \$ 44.00
Removal & Abatement Only*

NOTE: *On Mechanical Systems that are NOT to be SCRAPPED.

SUPPLEMENTAL BENEFITS

Per Hour:

Asbestos Worker \$ 8.70
Removal & Abatement Only

OVERTIME PAY

See (B, B2, *E, J) on OVERTIME PAGE

Hours worked on Saturdays are paid at time and one half only if forty hours have been worked during the week.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8) on HOLIDAY PAGE

REGISTERED APPRENTICES

Apprentice Removal & Abatement Only:

1000 hour terms at the following percentage of Journeyman's rates.

1st	2nd	3rd	4th
78%	80%	83%	89%

SUPPLEMENTAL BENEFIT

Per Hour:

Apprentice
Removal & Abatement \$ 8.70

4-12a - Removal Only

Boilermaker

08/01/2019

JOB DESCRIPTION Boilermaker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2019 01/01/2020

Boilermaker	\$ 59.17	\$ 61.24
Repairs & Renovations	59.17	61.24

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2019 01/01/2020

Boilermaker	32% of hourly	32% of hourly
Repair & Renovations	Wage Paid	Wage Paid
	+ \$ 25.35	+ \$ 25.38

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

OVERTIME PAY

See (D, O) on OVERTIME PAGE

Repairs & Renovation see (B,E,Q)

HOLIDAY

Paid: See (8, 16, 23, 24) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 12, 15, 16, 22, 23, 24, 25) on HOLIDAY PAGE

NOTE: *Employee must work in pay week to receive Holiday Pay.

**Employee gets 4 times the hourly wage rate for working Labor Day.

REGISTERED APPRENTICES

Wage per hour:

(1/2) Year Terms at the following percentage of Boilermaker's Wage

1st	2nd	3rd	4th	5th	6th	7th
65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits Per Hour:

Apprentice(s)	07/01/2019 32% of Hourly Wage Paid Plus Amount Below	01/01/2020 32% of Hourly Wage Paid Plus Amount Below
1st Term	\$ 19.38	\$ 19.41
2nd Term	20.24	20.26
3rd Term	21.08	21.11
4th Term	21.94	21.96
5th Term	22.79	22.82
6th Term	23.65	23.68
7th Term	24.48	24.52

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

Carpenter

08/01/2019

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2019

Piledriver	\$ 54.63
Dockbuilder	\$ 54.63

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker	\$ 51.63

OVERTIME PAY

See (B, E2, O) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.

Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour

(1)year terms:

1st	2nd	3rd	4th
\$21.85	\$27.32	\$35.51	\$43.70

Supplemental benefits per hour:

All Terms:	\$ 33.97

8-1556 Db

Carpenter

08/01/2019

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2019

Carpet/Resilient

Floor Coverer \$ 50.50

INCLUDES HANDLING & INSTALLATION OF ARTIFICIAL TURF AND SIMILAR TURF INDOORS/OUTDOORS.

SUPPLEMENTAL BENEFITS

Per hour: \$ 45.83

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE.

Paid for 1st & 2nd yr.

Apprentices See (5,6,11,13,16,18,19,25)

Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wage per hour - (1) year terms:

1st	2nd	3rd	4th
\$20.20	\$25.25	\$32.83	\$40.40

Supplemental benefits per hour - all apprentice terms:

\$ 31.09

8-2287

Carpenter

08/01/2019

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour: 07/01/2019

Marine Construction:

Marine Diver \$ 69.22

Marine Tender 49.14

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 51.58

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 11, 13, 16, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms.

1st year	\$ 21.85
2nd year	27.32
3rd year	35.51
4th year	43.70

Supplemental Benefits

Per Hour:

All terms \$ 33.97

8-1456MC

Carpenter**08/01/2019**

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2019

Building

Millwright \$ 54.20

SUPPLEMENTAL BENEFITS

Per hour:

Millwright \$ 53.66

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18,19) on HOLIDAY PAGE.

Overtime See (5,6,8,11,13,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms:

1st.	2nd.	3rd.	4th.
\$29.16	\$34.46	\$39.76	\$50.36

Supplemental benefits per hour:

One (1) year terms:

1st.	2nd.	3rd.	4th.
\$34.51	\$38.16	\$42.46	\$49.12

8-740.1

Carpenter**08/01/2019**

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:

07/01/2019

Timberman

\$ 50.05

SUPPLEMENTAL BENEFITS

Per Hour:

07/01/2019

\$ 50.88

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.

Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms:

1st	2nd	3rd	4th
\$20.02	\$25.03	\$32.53	\$40.04

Supplemental benefits per hour:

All terms \$ 33.61

8-1556 Tm

Carpenter

08/01/2019

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Westchester

PARTIAL COUNTIES

Orange: South of but including the following, Waterloo Mills, Slate Hill, New Hampton, Goshen, Blooming Grove, Mountainville, east to the Hudson River.

Putnam: South of but including the following, Cold Spring, TompkinsCorner, Mahopac, Croton Falls, east to Connecticut border.

Suffolk: West of Port Jefferson and Patchogue Road to Route 112 to the Atlantic Ocean.

WAGES

Per hour: 07/01/2019

Core Drilling:

Driller \$ 40.44

Driller Helper 32.12

Note: Hazardous Waste Pay Differential:

For Level C, an additional 10% above wage rate per hour

For Level B, an additional 10% above wage rate per hour

For Level A, an additional 10% above wage rate per hour

Note: When required to work on water: an additional \$ 0.50 per hour.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2019

Driller and Helper \$ 26.70

OVERTIME PAY

OVERTIME: See (B,E,K*,P,R**) on OVERTIME PAGE.

HOLIDAY

Paid: See (5,6) on HOLIDAY PAGE.

Overtime: * See (5,6) on HOLIDAY PAGE.

** See (8,10,11,13) on HOLIDAY PAGE.

8-1536-CoreDriller

Carpenter - Building / Heavy&Highway

08/01/2019

JOB DESCRIPTION Carpenter - Building / Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour: 07/01/2019

Carpenter

(Building) \$ 49.38

Carpenter

(Heavy Highway) \$ 49.38

"NOTE" ADD 15% to straight time hourly wage for NEW YORK STATE D.O.T. and other GOVERNMENTAL MANDATED Off-Shift Work.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday, with one-half (1/2) hour allowed for a lunch period.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per Hour:

Both Carpenter
Categories \$ 32.81

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

One(1) Year Terms at the following:

Per Hour:

1st	2nd	3rd	4th	5th
\$ 23.73	\$ 27.86	\$ 29.93	\$ 32.00	\$ 33.13

Supplemental Benefits

Per Hour:

All Terms: \$ 18.10

4-Reg.Council Nass/Suff

Electrician

08/01/2019

JOB DESCRIPTION Electrician

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour: 07/01/2019 03/30/2020

Electrician		
Electrical Maintenance	\$ 43.70	\$ 44.12
Traffic Signal	\$ 44.60	\$ 45.05

"PLEASE NOTE"

Applicable to "EXISTING ELECTRICAL SYSTEMS" including, but not limited to TRAFFIC SIGNALS & STREET LIGHTING. Not used for addons.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday, with one-half (1/2) hour allowed for a lunch period.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per Hour:

Electrician	12% of Hourly Wage Paid + \$18.52	12% of Hourly Wage Paid + \$18.60

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay

OVERTIME PAY

See (B, E2, K, P) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

One(1) Year Term(s) at the following Percentage
of Journeyman(s) Wage:

1st	2nd	3rd	4th	5th	6th
40%	50%	60%	70%	80%	90%

Supplemental Benefits:

	07/01/2019	03/30/2020
1st	3% + \$3.65	3% + \$3.65
2nd	8% + \$4.19	8% + \$4.19
3rd	9% + \$5.20	9% + \$5.20
4th	10% + \$ 6.96	10% + \$ 6.96
5th	11% + \$10.91	11% + \$10.91
6th	12% + \$14.01	12% + \$14.01

NOTE: Percentages are on "Hourly Wage Paid"

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay

4-25m

Electrician	08/01/2019

JOB DESCRIPTION Electrician

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour:	07/01/2019	3/29/2020
Tree Trimmer/Remover Line Clearance Specialist	\$ 34.71	\$ 35.75
Groundman*	\$20.83	\$ 21.45

These rates apply to all tree trimming/removal contracts including but not limited to "Electrical Line Clearance"/"Long Island Railroad Right of Ways".

For Building Construction or Road/Highway Construction Contracts, Heavy & Highway Laborer and Operating Engineer classifications Apply.

* Note: Groundman Classification not to exceed 20% of the company workforce on Project.

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2019	3/29/2020
Tree Trimmer Line Clearance Specialist and Groundman	20.25% of Hourly Wage Paid + \$10.57	20.50% of Hourly Wage Paid + \$11.07

NOTE: "Hourly Wage Paid" shall include any and all premium(s) paid

OVERTIME PAY

See (B, E, P, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 16, 23, 24, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 16, 23, 24, 25, 26) on HOLIDAY PAGE

4-1049/Tree

Electrician	08/01/2019

JOB DESCRIPTION Electrician

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour:	07/01/2019	04/26/2020
Electrician/Wireman	\$ 53.00	\$ 54.00
HVAC Controls	53.00	54.00
Fire Alarms	53.00	54.00

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2019	04/26/2020
Electrician/Wireman (all categories)	16% of Hourly Wage Paid + \$ 27.52	16% of Hourly Wage Paid + \$ 29.16

NOTE: "Hourly Wage Paid" shall include any and all premium[s]

OVERTIME PAY

See (B, E, E2, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

One(1) Year Terms at the following Percentage of Journeyman(s) Wage:

1st	2nd	3rd	4th	5th	6th
35%	35%	40%	45%	60%	75%

Supplemental Benefits Per Hour:

	07/01/2019	04/26/2020
1st	3% + \$5.15	3% + \$5.15
2nd	8% + \$6.32	8% + \$6.32
3rd	9% + \$7.45	9% + \$7.45
4th	10% + \$8.74	10% + \$8.74
5th	13% + \$10.97	13% + \$10.97
6th	14% + \$17.23	14% + \$17.23

NOTE: Percentages are on "Hourly Wage Paid"

NOTE: "Hourly Wage Paid" shall include any and all premium(s).

4-25

Electrician	08/01/2019

JOB DESCRIPTION Electrician

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour: 07/01/2019
Electrician
Pump & Tank \$ 41.65

SUPPLEMENTAL BENEFITS

Per Hour:

Electrician
Pump & Tank 65.25%
of *Wage
Paid

*Wage Paid includes any and all Premiums

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

1 Year Terms at the Following:

Per Hour:

1st Term	\$ 12.50
2nd Term	\$ 14.58
3rd Term	\$ 16.66
4th Term	\$ 18.74

5th Term	\$ 24.99
6th Term	\$ 29.16

SUPPLEMENTAL BENEFITS

Per Hour:

All Terms	65.25% of *Wage Paid

*Wage Paid includes any and all Premiums

4-25 Pump & Tank

Electrician

08/01/2019

JOB DESCRIPTION Electrician

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour:	07/01/2019	04/25/2020
Telephone and Intergrated Tele-Data System Electrician	\$ 37.83	\$ 38.18

This rate classification applies to ALL Voice, Data & Video work.: Excluding Fire Alarm Systems and Energy Managment Systems (HVAC Controls), in those cases the regular Electrician rate applies. To ensure proper use of this rate please call Nassau Offices at (516)228-3912 or Suffolk Offices at (631)687-4882.

SUPPLEMENTAL BENEFITS

Per Hour:

Tele-Data Electrician	16% of Hourly Wage Paid + \$19.16	16% of Hourly Wage Paid + \$19.85

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 15, 16, 25) on HOLIDAY PAGE

4-25tela

Electrician Lineman

08/01/2019

JOB DESCRIPTION Electrician Lineman

DISTRICT 4

ENTIRE COUNTIES

Nassau, Queens, Suffolk

WAGES

For Utility Distribution & Transmission Line Construction:

Per Hour:	07/01/2019
Lineman/Splicer	\$ 57.41
Material Man	49.95
Heavy Equip. Operator	45.93
Groundman	34.45
Flagman	25.83

For Natural Gasline Construction:

Per Hour:	07/01/2019	06/07/2020
Journeyman U.G.Mech.	\$ 48.52	\$50.10

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per Hour:

Utility Distribution & Transmission Line Construction:

07/01/2019

All Classifications 32% of Hourly
Wage Paid +
\$ 13.09

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay

Natural Gasline Construction:

Per Hour: 07/01/2019 06/07/2020

Journeyman U.G.Mech. 27.5% of Hourly 28% of Hourly
Wage Paid + Wage Paid +
\$13.94 \$14.60

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

OVERTIME for Natural Gas Mechanic:(B,G,P)

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 16, 23, 25, 26) on HOLIDAY PAGE

Same as Above for Natural Gas Mechanic.

REGISTERED APPRENTICES

1000 hour Terms at the following Percentage of Journeyman's Wage.

(Lineman Only)

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFIT: 07/01/2019

All Terms 31% of Hourly
Wage Paid +
\$13.09

4-1049 Line/Gas

Elevator Constructor

08/01/2019

JOB DESCRIPTION Elevator Constructor

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

PARTIAL COUNTIES

Rockland: Entire County except for the Township of Stony Point

Westchester: Entire County except for the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per hour:

07/01/2019 03/17/2020

Elevator Constructor \$ 66.95 \$ 69.56

Modernization & Service/Repair \$ 52.44 \$ 54.56

SUPPLEMENTAL BENEFITS

Per Hour:

Elevator Constructor \$ 40.93 \$ 41.92

Modernization & \$ 39.90 \$ 40.86

Service/Repairs

OVERTIME PAY

Constructor See (D, M, T) on OVERTIME PAGE.

Modern/Service See (B, F, S) on OVERTIME PAGE.

HOLIDAY

Paid: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES PER HOUR:

*Note: 1st Term is based on Average wage of Constructor & Modernization.

Terms 2 thru 4 Based on Journeymans wage of classification Working in.

1 YEAR TERMS:

1st Term*	2nd Term	3rd Term	4th Term
50%	55%	65%	75%

SUPPLEMENTAL BENEFITS

Elevator Constructor

1st Term	\$ 32.72	\$ 33.38
2nd Term	33.51	34.20
3rd Term	34.80	35.55
4th Term	36.09	36.89

Modernization &
Service/Repair

1st Term	\$ 32.66	\$ 33.33
2nd Term	33.13	33.82
3rd Term	34.36	35.09
4th Term	35.58	36.36

4-1

Glazier

08/01/2019

JOB DESCRIPTION Glazier

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per hour: 7/01/2019

Glazier	\$ 56.25
*Scaffolding	57.25
Glass Tinting & Window Film	28.74
**Repair & Maintenance	28.74

*Scaffolding includes swing scaffold, mechanical equipment, scissor jacks, man lifts, booms & buckets 24' or more, but not pipe scaffolding.

**Repair & Maintenance- All repair & maintenance work on a particular building, whenever performed, where the total cumulative contract value is under \$100,000. All Glass tinting, window film, regardless of material or intended use, and all affixing of decals to windows or glass.

SUPPLEMENTAL BENEFITS

Per hour: 7/01/2019

Journeyworker	\$ 33.39
Glass tinting & Window Film	19.39
Repair & Maintenance	19.39

OVERTIME PAY

See (C*, D* E2, O) on OVERTIME PAGE. (Premium is applied to the respective base wage only.)

* If an optional 8th hour is required to complete the entire project, the same shall be paid at the regular rate of pay. If a 9th hour is worked, then both hours or more (8th & 9th or more) will be paid at double time rate of pay.

For 'Repair & Maintenance' and 'Glass Tinting & Window Film' see (B, B2, F, P) on overtime page.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (4, 6, 16, 25) on HOLIDAY PAGE
For 'Repair & Maintenance' and 'Glass Tinting & Window Film' see (5, 6, 16, 25)

REGISTERED APPRENTICES

Wage per hour:
(1) year terms at the following wage rates:

7/01/2019

1st term	\$ 19.44
2nd term	27.59
3rd term	33.35
4th term	44.77

Supplemental Benefits:

(Per hour)

1st term	\$ 15.86
2nd term	22.12
3rd term	24.41
4th term	28.76

8-1281 (DC9 NYC)

Insulator - Heat & Frost

08/01/2019

JOB DESCRIPTION Insulator - Heat & Frost

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour:	07/01/2019	01/01/2020

Insulators		
Heat & Frost	\$ 67.86	\$ 1.25/Hr. Additional

SUPPLEMENTAL BENEFITS

Per Hour:

Insulators	\$ 34.06
Heat & Frost	

OVERTIME PAY

See (*C, **O, V) on OVERTIME PAGE

* 8th Hour paid at time and one half

** Triple time for Labor Day (If worked)

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages:
1 year terms Per Hour:

Hired prior to 8/21/2017

	1st	2nd	3rd	4th
7/1/2019	\$27.14	\$33.93	\$40.72	\$50.90

Hired after 8/21/2017

7/1/2019	\$23.75	\$30.54	\$37.32	\$44.11

Supplemental Benefits:

Hired prior to 8/21/2017

7/1/2019	\$13.62	\$17.03	\$20.44	\$25.55

Hired after 8/21/2017

7/1/2019	\$11.92	\$15.33	\$18.73	\$22.14

Ironworker	08/01/2019

JOB DESCRIPTION Ironworker

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour: 07/01/2019

Ironworker Rigger \$ 62.84

Ironworker Stone
Derrickman \$ 62.84

SUPPLEMENTAL BENEFITS

Per hour: \$ 39.79

OVERTIME PAY

See (B, D1, *E, Q, **V) on OVERTIME PAGE

*Time and one-half shall be paid for all work on Saturday up to eight (8) hours and double time shall be paid for all work thereafter.

** Benefits same premium as wages on Holidays only

HOLIDAY

Paid: See (18) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 25) on HOLIDAY PAGE

*Work stops at schedule lunch break with full day's pay.

REGISTERED APPRENTICES

Wage per hour:

1/2 year terms at the following hourly wage rate:

	1st	2nd	3rd	4th	5th	6th
07/01/2018	\$31.42	\$31.42	\$44.54	\$43.07	\$54.41	\$54.41

Supplemental benefits:

Per hour:	\$19.97	\$19.97	\$30.02	\$30.02	\$30.02	\$30.02

9-197D/R

Ironworker	08/01/2019

JOB DESCRIPTION Ironworker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour: 07/01/2019 1/1/2020

Ornamental	\$45.15	\$ 1.25/hr
Chain Link Fence	\$45.15	
Guide Rail	\$45.15	

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker: \$ 56.05

OVERTIME PAY

See (B, B1, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

1st term represents first 1-10 months, thereafter (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th
50%	55%	60%	70%	80%

Supplemental Benefits per hour:

1st Term	\$ 17.89
2nd Term	19.14
3rd Term	19.14

4th Term	48.15
5th Term	50.78

4-580-Or

Ironworker**08/01/2019**

JOB DESCRIPTION Ironworker**DISTRICT 4****ENTIRE COUNTIES**

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

PER HOUR:

07/01/2019

Ironworker:

Structural \$ 52.98

Bridges

Machinery

SUPPLEMENTAL BENEFITS

PER HOUR:

Journeyman \$ 77.40

OVERTIME PAY

See (B, B1, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES PER HOUR:

6 month terms at the following rate:

1st \$26.62

2nd \$27.22

3rd - 6th \$27.83

Supplemental Benefits

PER HOUR:

All Terms \$53.60

4-40/361-Str

Ironworker**08/01/2019**

JOB DESCRIPTION Ironworker**DISTRICT 4****ENTIRE COUNTIES**

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES

Rockland: Southern section - south of Convent Road and east of Blue Hills Road.

WAGES

Per hour: 07/01/2019

Reinforcing &

Metal Lathing \$ 58.28

"Basic" Wage \$ 56.65**

**Overtime to be calculated on "Basic" wage

SUPPLEMENTAL BENEFITS

Per hour:

Reinforcing & \$ 35.30

Metal Lathing

OVERTIME PAY

See (B, E, Q, *X) on OVERTIME PAGE

*Only \$22.00 per Hour for non worked hours

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 13, 18, 19, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wage rates:

Wages Per Hour:

1st term	2nd term	3rd term	4th Term
\$ 26.38	\$ 30.38	\$ 35.38	\$ 37.38

SUPPLEMENTAL BENIFITS

Per Hour:

1st term	2nd term	3rd term	4th Term
\$ 15.37	\$ 17.37	\$ 19.33	\$ 20.33

4-46Reinf

Laborer - Building

08/01/2019

JOB DESCRIPTION Laborer - Building

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

WAGES

Per Hour: 07/01/2019

Building Laborer \$ 39.40

Asbestos Abatement Workers 36.00
(Re-Roofing Removal see Roofer)

SUPPLEMENTAL BENEFITS

Per Hour:

Building Laborer \$ 29.56
Asbestos Abatement Worker 16.45

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

See also(H)for Fire Watch on OVERTIME PAGE

Asbestos Worker See (B, H)

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 25) on HOLIDAY PAGE

Asbestos Worker see (5,6,8 & 28)

REGISTERED APPRENTICES

Regular Hours Work Terms

Term #1	1 hr to 1000hrs
Term #2	1001hrs to 2000hrs
Term #3	2001hrs to 3000hrs
Term #4	3001hrs to 4000hrs

Wages per hour:

1st Term	\$ 17.46
2nd Term	20.55
3rd Term	25.43
4th Term	30.41

Benifits per hour

1st Term	\$ 19.65
2nd Term	22.44
3rd Term	22.44
4th Term	22.44

4-66

Laborer - Heavy&Highway

08/01/2019

JOB DESCRIPTION Laborer - Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Laborer (Heavy/Highway):

GROUP # 1: Asphalt Rakers, Concrete Curb Formsetters.

GROUP # 2: Asphalt Shovelers, Roller Boys and Tampers.

GROUP # 3: Basic Laborer, Power Tool(Jackhammer), Landscape Construction, Traffic Control Personnel(flaggers)

WAGES PER HOUR:

	07/01/2019	06/01/2020
GROUP # 1		
Total Wage Paid	\$ 52.89	Additional
"Base Wage"	\$ 45.84	\$ 3.36
GROUP # 2		
Total Wage Paid	\$ 51.43	Additional
"Base Wage"	\$ 44.48	\$ 3.30
GROUP # 3		
Total Wage Paid	\$ 47.40	Additional
"Base Wage"	\$ 40.35	\$ 3.14

NOTE: "Base Wage" for Premium/Overtime calculation Only. \$7.05 is difference between "Base" and "Total"

SUPPLEMENTAL BENEFITS

Per Hour:

ALL GROUPS \$ 30.86

After Forty (40)paid hours in a work week

OVERTIME PAY \$ 19.29

OVERTIME PAY

OVERTIME PAY

See (B, E2, F) on OVERTIME PAGE

NOTES: Premium/Overtime Pay to be calculated on "Base Wage" ONLY

Example Group# 3: \$40.35 X Time and One Half = \$60.52 + \$7.05 = \$67.57

Premium Pay of 30% of base wage for all Straight time hours on all New York State, D.O.T. and other Government Mandated Off-Shift Work.

Hazardous Material Work add an Additional 10% of base wage

HOLIDAY

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (1) on HOLIDAY PAGE

REGISTERED APPRENTICES

1000 hour(s) Terms at the following Percentage of the "Base Wage" except

4th Term calculate at Total Wage Paid.

1st 0-1000/Hrs.	60%
2nd 1001-2000/Hrs.	70%
3rd 2001-3000/Hrs.	80%
4th 3001-4000/Hrs.	90%

Supplemental Benefits per hour:

All APPRENTICES	\$ 30.86
After Forty(40) paid hours in a work Week	\$ 19.29

4-1298

Mason

08/01/2019

JOB DESCRIPTION Mason

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour:	07/01/2019	07/01/2020

Brick/Blocklayer \$ 61.82 Additional \$ 1.36

SUPPLEMENTAL BENEFITS

Per Hour:

Brick/Block Layer \$ 27.80

OVERTIME PAY

See (A, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(800 hour) Terms at the following Percentage of Journeyworkers Wage:

1st	2nd	3rd	4th	5th
50%	60%	70%	80%	90%

Supplemental Benefits per hour:

All Apprentices \$ 18.95

4-1Brk

Mason - Building

08/01/2019

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2019	12/02/2019	06/01/2020
		Additional	Additional
Tile Setters	\$ 58.95	\$0.88	\$0.88

SUPPLEMENTAL BENEFITS

Per Hour: \$ 24.56*+ \$9.34

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

* This portion of benefits subject to same premium rate as shown for overtime wages.
Work beyond 10 hours on Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage per hour:

Tile Setters:

(750 hour) term at the following wage rate:

Term:									
1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-	751-	1501-	2251-	3001-	3751-	4501-	5251-	6001-	6501-
750	1500	2250	3000	3750	4500	5250	6000	6750	7000
\$19.73	\$24.39	\$31.20	\$35.85	\$39.19	\$42.34	\$45.70	\$50.35	\$53.02	\$56.68

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 13.20	\$ 13.25	\$ 15.85	\$ 15.90	\$ 17.27	\$ 18.82	\$ 20.17	\$ 20.22	\$22.26	\$28.01
									9-7/52A

Mason - Building

08/01/2019

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Building:

	07/01/2019	01/01/2020	06/01/2020
Wages per hour:		Additional \$0.95	Additional \$0.95
Mosaic & Terrazzo Mechanic	\$56.41		
Mosaic & Terrazzo Finisher	\$54.81		

SUPPLEMENTAL BENEFITS

Per hour:

Mosaic & Terrazzo Mechanic	\$ 25.11* plus \$11.13
Mosaic & Terrazzo Finisher	\$ 25.11* plus \$11.11

OVERTIME PAY

See (A, E, Q) on OVERTIME PAGE

Deduct \$6.50 from hourly wages before calculating overtime.

*This portion of benefits subject to same premium rate as shown for overtime wages.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

Easter Sunday is an observed holiday. Holidays falling on a Saturday will be observed on that Saturday. Holidays falling on a Sunday will be celebrated on the Monday.

REGISTERED APPRENTICES

Wages per hour:

(750 Hour) terms at the following wage rate.

	1st	2nd	3rd	4th	5th	6th	7th	8th
07/01/2019	\$ 24.95	\$ 27.43	\$ 29.94	\$ 32.42	\$ 34.94	\$ 37.41	\$ 42.40	\$ 47.40

Supplemental benefits per hour:

07/01/2019	\$ 12.56* +\$8.82	\$ 13.82* +\$9.71	\$ 15.07* +\$10.58	\$ 16.33* +\$11.47	\$ 17.58* +\$12.34	\$ 18.84* +\$13.24	\$ 21.35* +\$15.02	\$ 23.86* +\$16.67

Apprentices hired after 07/01/2017`:

Wages Per hour:

	1st 0- 1500	2nd 1501- 3000	3rd 3001- 3750	4th 3751- 4500	5th 4501- 5250	6th 5251- 6000
07/01/2019	\$19.73	\$25.37	\$33.84	\$39.49	\$45.13	\$50.71

Supplemental Benefits per hour:

07/01/2019	1st \$8.79* +\$3.91	2nd \$11.30* +\$5.02	3rd \$15.07* +\$6.68	4th \$17.58* +\$7.79	5th \$20.09* +\$8.90	6th \$22.60* +\$10.02

9-7/3

Mason - Building

08/01/2019

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2019	01/01/2020	07/01/2020
Building-Marble Restoration:		Additional \$1.10	Additional \$1.10
Marble, Stone & Terrazzo Polisher, etc	\$ 42.81		

SUPPLEMENTAL BENEFITS

Per Hour:
Journeyworker:

Building-Marble Restoration:
Marble, Stone &
Polisher \$ 28.06

OVERTIME PAY

See (B, *E, Q, V) on OVERTIME PAGE

*ON SATURDAYS, 8TH HOUR AND SUCCESSIVE HOURS PAID AT DOUBLE HOURLY RATE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE

1ST TERM APPRENTICE GETS PAID FOR ALL OBSERVED HOLIDAYS.

REGISTERED APPRENTICES

WAGES per hour:

900 hour term at the following wage:

07/01/2019	1st 1- 900	2nd 901- 1800	3rd 1801- 2700	4th 2701
	\$29.91	\$34.21	\$38.51	\$42.81

Supplemental Benefits Per Hour:

\$ 25.52	\$ 26.37	\$ 27.21	\$ 28.06

9-7/24-MP

Mason - Building

08/01/2019

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Wages:	07/01/2019	12/30/2019	06/29/2020
		Additional	Additional
Marble Cutters & Setters	\$ 59.44	\$0.47	\$0.95

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 36.73

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage Per Hour:

7500 hour terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1- 750	751- 1500	1501- 2250	2251- 3000	3001- 3750	3751- 4500	4501- 5250	5251- 6000	6001- 6751	6751- 7500
07/01/2019									
\$23.72	\$26.69	\$29.66	\$32.65	\$36.21	\$38.59	\$41.56	\$44.55	\$50.50	\$56.47

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$21.14	\$22.44	\$23.76	\$25.04	\$26.35	\$27.65	\$28.95	\$30.24	\$32.84	\$35.43

9-7/4

Mason - Building	08/01/2019

JOB DESCRIPTION Mason - Building **DISTRICT 9**

ENTIRE COUNTIES
Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2019	12/02/2019	06/01/2020
		Additional	Additional
Tile Finisher	\$ 45.54	\$0.73	\$0.72

SUPPLEMENTAL BENEFITS

Per Hour:
\$ 21.26* + \$9.17

OVERTIME PAY

See (B, E, Q, *V) on OVERTIME PAGE
*This portion of benefits subject to same premium rate as shown for overtime wages
Work beyond 10 hours on a Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88A-tf

Mason - Building	08/01/2019

JOB DESCRIPTION Mason - Building **DISTRICT 9**

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2019	01/01/2020	07/01/2020
Marble, Stone, etc.		Additional	Additional
Maintenance Finishers:	\$ 24.31	\$0.68	\$0.67

Note 1: An additional \$2.00 per hour
for time spent grinding floor using
"60 grit" and below.
Note 2: Flaming equipment operator
shall be paid an additional \$25.00 per day.

SUPPLEMENTAL BENEFITS

Per Hour:

Marble, Stone, etc
Maintenance Finishers: \$ 13.72

OVERTIME PAY

See (B, *E, Q, V) on OVERTIME PAGE
*Double hourly rate after 8 hours on Saturday

HOLIDAY

Paid: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
1st term apprentice gets paid for all observed holidays.

REGISTERED APPRENTICES

WAGES per hour:

	07/01/2019
0-750	\$16.97
751-1500	\$17.95
1501-2250	\$18.93
2251-3000	\$19.90
3001-3750	\$21.38
3751-4500	\$23.33
4501+	\$24.31

Supplemental Benefits:
Per hour:

0-750	\$ 13.65
751-1500	\$ 13.66
1501-2250	\$ 13.67
2251-3000	\$ 13.68
3001-3750	\$ 13.69
3751-4500	\$ 13.71
4501+	\$ 13.72

9-7/24M-MF

Mason - Building / Heavy&Highway

08/01/2019

JOB DESCRIPTION Mason - Building / Heavy&Highway

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2019	12/30/2019	06/29/2020
Marble-Finisher	\$ 47.41	Additional \$0.41	Additional \$0.60

SUPPLEMENTAL BENEFITS

Journeyworker:
per hour

Marble- Finisher \$ 34.49

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

* Work beyond 8 hours on a Saturday shall be paid at double the rate.

** When an observed holiday falls on a Sunday, it will be observed the next day.

9-7/20-MF

Mason - Building / Heavy&Highway

08/01/2019

JOB DESCRIPTION Mason - Building / Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour:	07/01/2019
Cement Mason	\$ 51.97

SUPPLEMENTAL BENEFITS

Per Hour:

Cement Mason	\$ 33.71
Overtime Rate*	\$ 54.42

OVERTIME PAY

See (*B1, Q, V) on OVERTIME PAGE

* Applies to 9th and 10th hours and up to the 10th hour on Saturday

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 13, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following Percentage of Journeyworkers Wage.

1st Term	50%
2nd Term	60%
3rd Term	70%

Supplement Benefits per hour paid:

1st Term	\$ 16.86	OT Rate \$ 27.22
2nd Term	\$ 20.23	OT Rate \$ 32.66
3rd Term	\$ 23.60	OT Rate \$ 38.10

4-780

Mason - Building / Heavy&Highway**08/01/2019**

JOB DESCRIPTION Mason - Building / Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

NOTE: Shall include but not limited to Precast concrete slabs (London Walks)Marble and Granite pavers 2'x 2' or larger.

Per Hour:

07/01/2019

Stone Setter \$ 64.42

Stone Tender \$ 44.89

SUPPLEMENTAL BENEFITS

Per Hour:

Stone Setter \$ 33.30

Stone Tender \$ 19.40

OVERTIME PAY

See (*C, **E, Q) on OVERTIME PAGE

* On weekdays the eighth (8th) and ninth (9th) hours are time and one-half all work thereafter is paid at double the hourly rate.

** The first nine (9) hours on Saturday is paid at time and one-half all work thereafter is paid at double the hourly rate.

HOLIDAY

Paid: See (*18) on HOLIDAY PAGE

Overtime: See (5, 6, 10) on HOLIDAY PAGE

Paid: *Must work first 1/2.

REGISTERED APPRENTICES

Per Hour:

Stone Setter(800 hour) terms at the following Percentage of Stone Setters wage rate per hour:

1st	2nd	3rd	4th	5th	6th
50%	60%	70%	80%	90%	100%

Supplemental Benefits:

All Apprentices \$ 20.44

4-1Stn

Mason - Heavy&Highway**08/01/2019**

JOB DESCRIPTION Mason - Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour: 07/01/2019

Pointer, Caulkers & Cleaners \$ 53.67

SUPPLEMENTAL BENEFITS

Per Hour:

Pointer, Cleaners & Caulkers \$ 27.14

OVERTIME PAY

See (B, E2, H) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms at the following wage rates.

1st	2nd	3rd	4th
\$ 26.36	\$ 29.42	\$ 34.80	\$ 41.93

Apprentices Supplemental Benefits:
(per hour paid)

\$ 14.30	\$ 18.24	\$ 20.99	\$ 21.99

4-1PCC

Operating Engineer - Building

08/01/2019

JOB DESCRIPTION Operating Engineer - Building

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

BUILDING CATEGORIES:

CLASS " AA "CRANES:

ABI Machine (150,000lbs and over or 149,999lbs and under when driving steel sheet piles),Crane, Truck Crane, Derrick, Dragline, Dredge, Crawler Crane, Tower Crane & Pile Driver, Vertical Drill Rig (115,000lbs and over and 114,999lbs and under).

CLASS "A":

ABI Machine (149,999 and under used for augering and drilling), Asphalt Spreader, Backhoe Crawler(360 swing), Barrier Machine, CAP (ice machine), Cherrypicker CAP (over 70 tons), CMI or Maxim Spreader, Concrete Pump, Directional Boring, GradAll, Grader, Hydraulic Cherrypicker/Crane (2seats), Hoist (3drum or multi platform), Laser Screed, Loading Machine (Bucket/CAP 10yds or more), Milling Machine (Large), Pipeline Welder, Plant Engineer, Power Winch (stone setting/structural steel), Powerhouse, Scoop Carry-All Scraper (in tandem), Sideboom Tractor (includes tank work), Track Alignment Machine, Stone Spreader (self propelled), Striping Machine (long line/truck mounted), Tree Grapple, Zamboni.

CLASS "B":

Backhoe (other than 360), Belt Screte, Boom Truck, Bulldozer, Boring Machine/Auger, Cherry Picker(under 70 Tons), Conveyor-Multi, Curb Machine (asphalt or concrete), Dinky Locomotive, Drill Rig (dowels)Fork Lift, Hoist (2 Drum), Loading Machine & Front End Loader, Mechanical Compactors (machine drawn), Mulch Machine(Machine Fed), Post Hole/Auger, Power Wincher (Not Included in Class "A"), Asphalt Roller, Hydraulic Pump with Boring Machine, Scoop, Carryall/Scaper, Skid Loader/Skid Steer/Bobcat, Trenching Machine, Vermeer Cutter, Work Boat, Inspection/Safety Boat.

CLASS "C":

Concrete Finish/Saw/Spreader, Dirt Roller, Hoist (1 drum), Interior Hoist, Milling Machine (small), Oiler Truck Crane (pile work), Power Broom, Vactor Truck, VacAll.

CLASS "D":

Boiler (thermoplastic), Concrete Breaker, Conveyer, Curing Machine, Fork Lift or Walk Behind (power operated), Generator, Hydra Hammer, Compactors (mechanical or hand operated), Maintenance Engineer (small equipment/well point/welding & burning), Mechanic (field man), Micro-Trap with Compressor, Oiler (Truck Crane Boom 100ft or more) Power Winch Truck Mounted (Stone Setter/Struct.Steel), Pin Puller, Portable Heaters, Power Buggies, Pump (double action diaphragm), Pump (4 inch or over), Pump (hydraulic/submersible) Jet Pump, Pulvi-Mixer, Ridge Cutter, Shot Blaster.

CLASS "E":

Batching Plant, Compressor (structural steel/2 or more battery), Generator (small), Grinder, Ground Heater, Power Grinder, Mixer with Skip, Mulching Machine (hand fed), Oiler, Pipeline Welder Helper, Power Washer, Pumps (up to 3 inch/single action 1 to 3 inches), Pump (gypsum), Root Cutter, Stump Chipper, Track Tamper, Tractor (caterpillar or wheel), Trenching Machine (hand), Welding Machine (pile work/structural steel), Deckhand on Work/Inspection/Safety Boat.

07/01/2019

6/01/2020

Additional

Class "AA" \$ 75.40

\$ 3.50

Cranes: Boom length over 100 feet add \$ 1.00

" " " 150 " " \$ 1.50 " "

" " " 250 " " \$ 2.00 " "

" " " 350 " " \$ 3.00 " "

Class "A"	62.53	3.10
Add \$3.50 for Hazardous Waste Work		
Class "B"	59.27	2.99
Add \$2.50 for Hazardous Waste Work		
Class "C"	57.09	2.93
Add \$1.50 for Hazardous Waste Work		
Class "D"	42.98	2.50
Add \$1.00 for Hazardous Waste Work		
Class "E"	41.03	2.44

SUPPLEMENTAL BENEFITS

Per Hour:

All Classes	\$ 38.10
Overtime Rate	32.60

OVERTIME PAY

See (D, O) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

"NOTE" Employee must be Employed day before
and day after Holiday to receive Holiday Pay.

REGISTERED APPRENTICES

One(1) Year Terms at the following Rate:

1st Term	\$ 21.94	\$1.13
2nd Term	22.80	1.15
3rd Term	23.48	1.17

Supplemental Benefits per hour:

All Apprentices	\$ 15.64
Overtime Rate	5.60

4-138

Operating Engineer - Building / Heavy&Highway

08/01/2019

JOB DESCRIPTION Operating Engineer - Building / Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour:	07/01/2019	08/01/2019	08/01/2020 Additional
Well Driller	\$ 37.33	\$ 38.40	3%
Well Driller Helper	32.49	33.42	3%

Hazardous Waste Differential

Added to Hourly Wage:

Level A	\$ 3.00	\$3.00
Level B	2.00	2.00
Level C	1.00	1.00

Monitoring Well Work

Add to Hourly Wage:

Level A	\$ 3.00	\$3.00
Level B	2.00	2.00

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2019	08/01/2019

Well Driller & Helper	10% of straight time rate plus \$ 12.20	10% of straight time rate plus \$ 12.25

Additional \$ 4.00 for Premium Time Hours Worked

OVERTIME PAY

See (B2, P, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 16, 23) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 23) on HOLIDAY PAGE

REGISTERED APPRENTICES

Apprentices at 12 Month Terms

Wages Per Hour:	07/01/2019	08/01/2019
1st Term	\$ 21.94	\$ 21.94
2nd Term	22.80	22.80
3rd Term	23.48	23.48

SUPPLEMENTAL BENIFITS

Per Hour:

1st Term	10% of Wage + \$ 5.10
2nd Term	10% of Wage + \$ 5.60
3rd Term	10% of Wage + \$ 6.60

BENEFITS AT PREMIUM TIME

Per Hour:

1st Term	10% of Wage + \$ 5.85
2nd Term	10% of Wage + \$ 6.60
3rd Term	10% of Wage + \$ 8.10

4-138well

Operating Engineer - Heavy&Highway

08/01/2019

JOB DESCRIPTION Operating Engineer - Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

HEAVY and HIGHWAY CATEGORIES:

CLASS "AA" CRANES:

ABI Machine (150,000lbs and over), ABI Machine (149,000lbs and under driving steel sheets), Crane, Truck Crane, Derrick, Dragline, Dredge, Crawler Crane, Tower Crane, Pile Driver.

CLASS "A":

ABI Machine (149,000lbs and under for Augering or Drilling), Asphalt Spreader, Backhoe Crawler (360 Swing & over 150,000lbs), Backhoe Crawler (360 Swing & under 149,000lbs), Barrier Machine, Cherrypicker Cap (over 70 tons), CMI or Maxim Spreader, Concrete Pump, Directional Boring, Grader, Gradall, Hoist (3 drum or multi-platform), Hydraulic Cherrypicker/crane (2 seats), Loading Machine (bucket 10 yds. or more), Laser Screed, Milling Machine (Large), Pipeline Welder, Plant Engineer. Power Winch-Stone Setting/Structural Steel or Truck Mounted, Powerhouse, Scoop-Carryall-Scaper in Tandem, Side Boom Tractor, Side Boom Tractor (Tank Work), Stone Spreader(self propelled), Striping Machine (long line/truck mounted), Tree Grapple, Tank Work, Track Alignment Machine.

CLASS "B":

Backhoe (other than 360), Belt Screte, Boom Truck, Bulldozer, Boring Machine/Auger, Cherry Picker (under 70 tons), Conveter-Multi, Curb Machine Asphalt/Concrete, Dinky Locomotive, Drill Rig for Dowels, Field Mechanic, Fork Lift, Hoist (2 Drum), Loading Machine, Loading Machine (Front End), Mechanical Compactors (Machine Drawn), Mulching Machine (Machine Fed), Post Hole/Auger, Power Winch (other than structural steel), Pump Hydraulic (with boring machine), Asphalt Roller, Scoop (carry-all, scraper), Skid Loader/Steer, Vermeer Cutter, Work Boat, Inspection & Safety Boat.

CLASS "C":

Concrete Finish/Saw/Spreader Machines, Dirt Roller, Hoist (1 drum), Interior Hoist, Oiler Truck Crane(Pile work), Power Broom, Small Milling Machine, Vactor Truck/VacAll Truck.

CLASS "D":

Boiler (Thermoplastic), Concrete Breaker, Conveyor, Curing Machine, Fireman, Fork lift (walk behind), Generator, Hydra Hammer, Maintenance Engineer (small equipment/Well Point/Welding & Burning), Compactors (hand operated), Pin Puller, Portable Heaters, Power Buggies, Pulvi Mixer, Pumps (double action/4 inch and over/Hydraulic/Submersible & Jet), Ridge Cutter, Robotic Unit Operator(Trenchless Pipe Rehab-Cleaning & Television of Sewers/CCTV Inspection), Shotblaster.

CLASS "E":

Batching Plant (On Job Site), Compressor (structural steel/2 or more in battery), Generator(small), Grinder, Ground Heater(boilers), Power Grinder, Mixer (with skip), Mulching Machine (hand feed), Oiler, Pipeline Welder Helper, Power Washer, Pump(up to 3 inches/Gypsum/Single action 1 to 3 inches), Root Cutter, Stump Grinder, Track Tamper, Tractor (caterpillar or wheel), Trenching Machine (hand), Welding Machine (Pile Work/Structural Steel), Deckhand (on Work/Inspection/Safety Boat).

	07/01/2019	6/01/2020 Additional
Class "AA"	\$ 77.78	\$ 3.48
Cranes: Boom Length over 100 feet add \$ 1.00 per hour		
" " " 150 " " \$ 1.50 " "		
" " " 250 " " \$ 2.00 " "		
" " " 350 " " \$ 3.00 " "		
Class "A"	68.83*	3.22
*Add \$3.50 for Hazardous Waste Work.		
Class "B"	64.30*	3.07
*Add \$2.50 for Hazardous Waste Work.		
Class "C"	62.00*	3.01
*Add \$1.50 for Hazardous Waste Work		
Class "D"	47.08*	2.56
*Add \$1.00 for Hazardous Waste Work		
Class "E"	45.00	2.50

"NOTE": ADD 30% to straight time hourly wage for NEW YORK STATE D.O.T. and other GOVERNMENTAL MANDATED off-shift work.

SUPPLEMENTAL BENEFITS

Per Hour:

ALL CLASSES \$ 38.35

Note: OVERTIME AMOUNT 32.60

OVERTIME PAY

See (D, O) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 8, 15, 20, 22, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 8, 15, 20, 22, 25, 26) on HOLIDAY PAGE

"Note" Employee must be employed day before and day after a holiday to receive holiday pay.

REGISTERED APPRENTICES

Wage per hour:

REGISTERED APPRENTICES

One(1) Year Terms at the following Rate:

		Additional
1st Term	\$ 28.00	\$ 1.31
2nd Term	22.80	1.34
3rd Term	23.48	1.37

SUPPLEMENTAL BENEFITS:

APPRENTICES 15.64

Note: Overtime Amount 5.60

4-138

Operating Engineer - Heavy&Highway

08/01/2019

JOB DESCRIPTION Operating Engineer - Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Party Chief - One who directs a survey party

Instrument Man - One who runs the instrument and assists Party Chief

Rodman - One who holds the rod and in general, assists the survey party

Categories cover GPS & Under Ground Surveying

Per Hour: 07/01/2019

Heavy Highway/Building

Party Chief \$ 67.76

Instrument Man 51.66

Rodman 44.30

SUPPLEMENTAL BENEFITS

Per Hour:

Heavy Highway/Building \$ 34.23

Premium*:

Heavy Highway/Building \$ 43.40

Premium**:

Heavy Highway/Building \$ 52.56

* Applies to instances where 1-1/2 regular rate are paid

**Applies to instances where 2 times the rate are paid.

OVERTIME PAY

See (B, *E, Q) on OVERTIME PAGE

* Doubletime paid on the 9th hour on Saturday.

HOLIDAY

Paid: See (5, 6, 9, 11, 12, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 9, 11, 12, 15, 25) on HOLIDAY PAGE

4-15D-N/S co.

Operating Engineer - Marine Dredging

08/01/2019

JOB DESCRIPTION Operating Engineer - Marine Dredging

DISTRICT 4

ENTIRE COUNTIES

Albany, Bronx, Cayuga, Chautauqua, Clinton, Columbia, Dutchess, Erie, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Niagara, Orange, Orleans, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

WAGES

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for all equipment and operators are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour: 07/01/2019 10/01/2019

CLASS A1 \$ 39.23 \$ 40.31

Deck Captain, Leverman

Mechanical Dredge Operator

Licensed Tug Operator 1000HP or more.

CLASS A2 34.96 35.92

Crane Operator (360 swing)

CLASS B To conform to Operating Engineer
Dozer, Front Loader Prevailing Wage in locality where work
Operator on Land is being performed including benefits.

CLASS B1 33.93 34.86

Derrick Operator (180 swing)

Spider/Spill Barge Operator

Operator II, Fill Placer,

Engineer, Chief Mate, Electrician,
Chief Welder, Maintenance Engineer
Licensed Boat, Crew Boat Operator

CLASS B2 Certified Welder	31.94	32.82
CLASS C1 Drag Barge Operator, Steward, Mate, Assistant Fill Placer	31.07	31.92
CLASS C2 Boat Operator	30.06	30.89
CLASS D Shoreman, Deckhand, Oiler, Rodman, Scowman, Cook, Messman, Porter/Janitor	24.97	25.66

SUPPLEMENTAL BENEFITS

Per Hour:

THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes A & B	07/01/2019 \$11.23 plus 7.5% of straight time wage, Overtime hours add \$ 0.63	10/01/2019 \$11.88 plus 7.5% of straight time wage, Overtime hours add \$ 0.63
All Class C	\$10.93 plus 7.5% of straight time wage, Overtime hours add \$ 0.48	11.58 plus 7.5% of straight time wage, Overtime hours add \$ 0.48
All Class D	\$10.63 plus 7.5% of straight time wage, Overtime hours add \$ 0.33	11.28 plus 7.5% of straight time wage, Overtime hours add \$ 0.33

OVERTIME PAY

See (B2, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

Operating Engineer - Survey Crew - Consulting Engineer 08/01/2019

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES

Dutchess: That part in Dutchess County lying South of the North City line of Poughkeepsie.

WAGES

Feasibility and preliminary design surveying, any line and grade surveying for inspection or supervision of construction.

Per hour: 07/01/2019
Survey Classifications

Party Chief	\$ 43.71
Instrument Man	36.43
Rodman	31.84

SUPPLEMENTAL BENEFITS

Per Hour:

All Crew Members: \$ 19.50

OVERTIME PAY

OVERTIME:.... See (B, E*, Q, V) ON OVERTIME PAGE.

*Doubletime paid on the 9th hour on Saturday.

HOLIDAY

Paid: See (5, 6, 7, 11, 16) on HOLIDAY PAGE

Overtime: See (5, 6, 7, 11, 16) on HOLIDAY PAGE

9-15dconsult

Operating Engineer - Trenchless Pipe Rehab

08/01/2019

JOB DESCRIPTION Operating Engineer - Trenchless Pipe Rehab

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

IMPORTANT NOTE: This Category & Classifications are now located in
Operating Engineers/Heavy Highway & Laborers/ Heavy Highway.

Per Hour:

07/01/2019
(SEE)

Robotic Unit Operator

Operator(class D)

Technician/Boiler, Generator

Operator(classes C&D)

AM Liner/Hydra Seal

Laborer(Grp#3)

Hobas Pipe, Polyethylene Pipe or
Pull and Inflate Liner

Laborer(Grp#3)

OVERTIME PAY

HOLIDAY

4-138TrchPReh

Painter

08/01/2019

JOB DESCRIPTION Painter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour: 07/01/2019

Brush

\$ 48.20*

Abatement/Removal of lead based
or lead containing paint on
materials to be repainted.

48.20*

Spray & Scaffold

\$ 51.20*

Fire Escape

51.20*

Decorator

51.20*

Paperhanger/Wall Coverer

50.97*

*Subtract \$ 0.10 to calculate premium rate.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2019

Paperhanger

\$ 29.47

All others

27.59

Premium

30.35**

**Applies only to "All others" category, not paperhanger journeyworker.

OVERTIME PAY

See (A, H) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

One (1) year terms at the following wage rate.

Per hour:	07/01/2019
Appr 1st term...	\$ 18.39*
Appr 2nd term...	24.02*
Appr 3rd term...	29.12*
Appr 4th term...	38.95*

*Subtract \$ 0.10 to calculate premium rate.

Supplemental benefits:

Per Hour:	07/01/2019
Appr 1st term...	\$ 14.16
Appr 2nd term...	17.17
Appr 3rd term...	19.77
Appr 4th term...	24.91

8-NYDC9-B/S

Painter

08/01/2019

JOB DESCRIPTION Painter

DISTRICT 8

ENTIRE COUNTIES

Putnam, Suffolk, Westchester

PARTIAL COUNTIES

Nassau: All of Nassau except the areas described below: Atlantic Beach, Ceadhurst, East Rockaway, Gibson, Hewlett, Hewlett Bay, Hewlett Neck, Hewlett Park, Inwood, Lawrence, Lido Beach, Long Beach, parts of Lynbrook, parts of Oceanside, parts of Valley Stream, and Woodmere. Starting on the South side of Sunrise Hwy in Valley Stream running east to Windsor and Rockaway Ave., Rockville Centre is the boundary line up to Lawson Blvd. turn right going west all the above territory. Starting at Union Turnpike and Lakeville Rd. going north to Northern Blvd. the west side of Lakeville road to Northern blvd. At Northern blvd. going east the district north of Northern blvd. to Port Washington Blvd. West of Port Washington blvd. to St. Francis Hospital then north of first traffic light to Port Washington and Sands Point, Manor HAVen, Harbour Acres.

WAGES

Per hour:	07/01/2019
Drywall Taper	\$ 48.20*

*Subtract \$ 0.10 to calculate premium rate.

SUPPLEMENTAL BENEFITS

Per hour:	07/01/2019
Journeyman	\$ 27.59

OVERTIME PAY

See (A, H) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages - Per Hour: 07/01/2019

1500 hour terms at the following wage rate:

1st term	\$ 18.39*
2nd term	\$ 24.02*
3rd term	\$ 29.12*
4th term	\$ 38.95*

*Subtract \$ 0.10 to calculate premium rate.

Supplemental Benefits - Per hour:

One year term (1500 hours) at the following dollar amount.

1st year	\$ 14.16
2nd year	\$ 17.17
3rd year	\$ 19.77
4th year	\$ 24.91

8-NYDCT9-DWT

Painter - Bridge & Structural Steel**08/01/2019**

JOB DESCRIPTION Painter - Bridge & Structural Steel**DISTRICT** 8**ENTIRE COUNTIES**

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per Hour:

STEEL:

Bridge Painting: 07/01/2019

\$ 49.50

+ 6.38*

ADDITIONAL \$6.00 per hour for POWER TOOL/SPRAY, whether straight time or overtime.

NOTE: All premium wages are to be calculated on base rate per hour only.

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

NOTE: Generally, for Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker: 07/01/2019

\$ 9.50

+26.05*

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

OVERTIME PAY

See (A, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (4, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage - Per hour:

Apprentices: (1) year terms

07/01/2019

1st year \$ 23.13

2nd year 34.73

3rd year 46.30

Supplemental Benefits - Per hour:

1st year \$ 13.44

2nd year 20.16

3rd year 26.88

8-DC-9/806/155-BrSS

Painter - Line Striping**08/01/2019**

JOB DESCRIPTION Painter - Line Striping**DISTRICT** 8**ENTIRE COUNTIES**

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per hour:

Painter (Striping-Highway):	07/01/2019
Striping-Machine Operator*	\$ 29.93
Linerman Thermoplastic	\$ 36.06

Note: * Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work Schedule,' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour paid: 07/01/2019
Journeyworker:

Striping-Machine operator	\$ 7.44
Linerman Thermoplastic	\$ 7.44

OVERTIME PAY

See (B, B2, E2, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 20) on HOLIDAY PAGE
Overtime: See (5, 20) on HOLIDAY PAGE

REGISTERED APPRENTICES

One (1) year terms at the following wage rates:

	07/01/2019
1st term	\$ 11.97
2nd term	17.96
3rd term	23.94

Supplemental Benefits per hour:

1st term	\$ 7.44
2nd term	7.44
3rd term	7.44

8-1456-LS

Painter - Metal Polisher

08/01/2019

JOB DESCRIPTION Painter - Metal Polisher

DISTRICT 8

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2019
Metal Polisher	\$ 30.58
Metal Polisher*	31.53
Metal Polisher**	34.08

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2019

Journeyworker:

All classification \$ 7.72

OVERTIME PAY

See (B, E, P, T) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 9, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year term at the following wage rates:

07/01/2019

1st year \$ 15.00
2nd year 15.00
3rd year 15.75

1st year* \$ 17.39
2nd year* 17.44
3rd year* 18.29

1st year** \$ 19.50
2nd year** 19.50
3rd year** 20.25

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:

Per hour:

1st year \$ 5.52
2nd year 5.52
3rd year 5.52

8-8A/28A-MP

Plasterer

08/01/2019

JOB DESCRIPTION Plasterer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per hour:

07/01/2019

08/01/2019

Building: \$ 45.58 \$ 54.56
Plasterer/Traditional &
Spraying Fireproofing

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 26.27 \$ 22.62

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages:

(per hour)

800 hours term:

07/01/2019

08/01/2019

1st term \$18.33 \$28.34
2nd term \$20.62 \$30.59
3rd term \$25.21 \$38.41
4th term \$27.50 \$41.41
5th term \$32.08

6th term \$34.37

Supplemental Benefits:

(per hour):

(800) hours term:

	07/01/2019	08/01/2019
1st term	\$ 13.88	\$ 14.27
2nd term	\$ 14.36	\$ 15.39
3rd term	\$ 16.44	\$ 17.14
4th term	\$ 17.53	\$ 18.01
5th term	\$ 19.72	
6th term	\$ 20.81	

9-262

Plumber

08/01/2019

JOB DESCRIPTION Plumber

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour: 07/01/2019 5/01/2020

Plumber/
PUMP & TANK \$ 44.99 \$ 45.49

SUPPLEMENTAL BENEFITS

Per Hour:

Plumber \$ 29.14 \$ 30.64

OVERTIME PAY

See (B, B2, E2, Q, *V) on OVERTIME PAGE

(V) For Sundays & Holidays if Worked Only

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

One(1) Year Terms at the Following

Percentage of Journeymans wage:

1st Term	30%
2nd Term	40%
3rd Term	50%
4th Term	60%
5th Term	70%

Supplemental Benefits Per Hour:

1st Term	\$17.22	\$18.72
2nd Term	\$17.86	\$19.36
3rd Term	\$18.68	\$20.18
4th Term	\$19.06	\$20.56
5th Term	\$22.29	\$23.79

4-200 Pump & Tank

Plumber

08/01/2019

JOB DESCRIPTION Plumber

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour: 07/01/2019 11/01/2019 05/01/2020

Plumber \$ 52.48 \$ 52.48 \$ 52.48

SUPPLEMENTAL BENEFITS

Per Hour:

Plumber	\$ 41.98	\$ 42.98	\$ 43.98

OVERTIME PAY

See (A, E, Q, *V) on OVERTIME PAGE

CODE "V" is only for SUNDAYS and HOLIDAYS THAT ARE WORKED

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

One(1) Year Terms at the following percentage of Plumbers Rate:

1st Term	2nd Term	3rd Term	4th Term	5th Term
30%	40%	50%	60%	70%

Supplemental Benefits per hour:

	07/01/2019	11/01/2019	05/01/2020
1st Term	\$ 29.46	\$ 30.46	\$ 31.96
2nd Term	31.77	32.77	34.27
3rd Term	33.14	34.14	35.64
4th Term	34.63	35.61	37.13
5th Term	36.21	37.21	38.71

4-200

Plumber	08/01/2019

JOB DESCRIPTION Plumber

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour:

	07/01/2019	5/01/2020
Plumber		
MAINTENANCE ONLY	\$ 34.24	\$ 34.74

Maintenance: Correction of problem(s) with the existing fixture or group of fixtures, preventive repairs or servicing of said fixtures

SUPPLEMENTAL BENEFITS

SUPPLEMENTAL BENEFITS

Per Hour:

Plumber		
Maintenance	\$ 20.86	\$ 22.36

OVERTIME PAY

See (B, B2, J) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

4-200 Maintance

Roofer	08/01/2019

JOB DESCRIPTION Roofer

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour	07/01/2019	05/01/2020
ROOFER/Waterproofeer		Additional

Total Wage to be Paid	\$ 45.00	\$ 1.50

"Base" Wage	41.00**

SUPPLEMENTAL BENEFITS

Per Hour:

ROOFER/Waterproofeer	\$ 33.12

OVERTIME PAY

Per Hour:

NEW ROOF SEE (B,E,Q)

RE-ROOF SEE (B,E,E2,Q)

NOTE:** Overtime Pay to be calculated on "BASE" Wage then add \$4.00.

(Example: \$41.00 x time and one half = \$61.50 + \$4.00 = \$65.50)

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 13, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) Year terms at the following Percentage of Roofers/Waterproofers Wage.

1st	2nd	3rd	4th
40%	50%	70%	80%

Supplemental Benefits per hour:

07/01/2018

1st Term	\$ 9.18
2nd Term	11.35
3rd Term	23.39
4th Term	26.65

4-154

Sheetmetal Worker

08/01/2019

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour: 07/01/2019

Sign Erector \$ 50.45

NOTE: Structurally Supported Overhead Highway Signs(See STRUCTURAL IRON WORKER CLASS)

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2019

Sign Erector \$ 46.66

OVERTIME PAY

See (A, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Per Hour:

6 month Terms at the following percentage of Sign Erectors wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
35%	40%	45%	50%	55%	60%	65%	70%	75%	80%

SUPPLEMENTAL BENEFITS

Per Hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$13.11	\$14.85	\$16.59	\$18.34	\$25.56	\$27.80	\$30.76	\$33.07	\$35.36	\$37.65

4-137-SE

Sheetmetal Worker

08/01/2019

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour:	07/01/2019	08/01/2019 Additional
Sheetmetal Worker	\$ 53.97	\$ 2.00
Temporary Operation or Maintenance of Fans	43.18	

SUPPLEMENTAL BENEFITS

Per Hour:	
Sheetmetal Worker	\$ 46.49
Maintenance Worker	46.49

OVERTIME PAY

See (B, E, E2, Q, V) on OVERTIME PAGE
For Maintenance See Codes B,E, Q & V

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Per Hour:Wages

Six(6) Month Terms As Follows:

1st & 2nd Term	\$ 18.93
3rd & 4th Term	24.32
5th & 6th Term	29.72
7th & 8th Term	37.81
9th Term	43.20

Per Hour: Supplemental Benifits

1st & 2nd Term	\$ 17.11
3rd & 4th Term	23.53
5th & 6th Term	27.69
7th & 8th Term	33.85
9th Term	38.13

4-28

Steamfitter

08/01/2019

JOB DESCRIPTION Steamfitter

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour:	07/01/2019	01/01/2020 Additional
AC Service/Heat Service	\$ 41.75	\$ 1.00

Refrigeration, A/C, Oil Burner and Stoker Service and Repair.
Refrigeration Compressor installation.
Air Condition / Heating Compressor installation up to 15hp (combined).

SUPPLEMENTAL BENEFITS

Per Hour	
AC Service/Heat Service	\$ 17.06

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid:	See (5, 6, 11, 15, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

1 year terms
Wages per hour:

1st Term	\$ 20.22
2nd Term	24.39
3rd Term	28.42
4th Term	34.31

Benefits per hour:

1st Term	\$ 11.61
2nd Term	12.65
3rd Term	13.76
4th Term	15.25

4-638B-StmFtrRef

Steamfitter

08/01/2019

JOB DESCRIPTION Steamfitter

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

WAGES

Per Hour:	07/01/2019	01/01/2020
		Additional
Sprinkler/Steam Fitter	\$ 64.56	\$ 1.00
Temporary Heat & AC Fitter	\$ 49.08	

Note: Add 15% to Hourly Wage for "Contracting Agency" Mandated Off Shift Work.

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2019

Sprinkler/Steam Fitter \$ 50.43

Temporary Heat & AC Fitter 41.36

Note: Add 15% to Hourly Benefit for "Contracting Agency" Mandated Off Shift Work.

OVERTIME PAY

See (C, *D, O, **V) on OVERTIME PAGE

(D*) For Temporary Heat & AC Fitter, on Fire Protection/Sprinkler contracts under \$3,000,000.00 and HVAC/Mechanical contracts under \$30,000,000.00.

(V**) Benefit Amount to be paid:

Sprinkler/Steam \$ 76.30

Temp Heat/AC 58.36

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

1 year Terms at the Following:

WAGES per hour:

07/01/2019

1st Term	2nd Term	3rd Term	4th Term	5th Term
\$ 25.86	\$ 32.31	\$ 41.99	\$ 51.66	\$ 54.89

SUPPLEMENTAL BENEFIT per hour:

07/01/2019

1st Term	2nd Term	3rd Term	4th Term	5th Term

\$ 20.70	\$ 25.67	\$ 33.09	\$ 40.52	\$ 43.00
Premium Time Amounts:				
\$ 30.52	\$ 38.16	\$ 49.60	\$ 61.04	\$ 64.86
				4-638A-StmSpFtr

Teamster - Asphalt Delivery	08/01/2019

JOB DESCRIPTION Teamster - Asphalt Delivery

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour:

Heavy Construction Work:

Shall include the supply of Asphalt for construction, improvement and modification of all or any part of Streets, Highways, Bridges, Tunnels, Railroads, Canals, Dams, Airports, Schools, Power Generation Plants, where distance between project and asphalt plant is not more than 50 miles.

TRUCK DRIVER

07/01/2019

Asphalt Delivery

\$ 37.545

Light Construction Work:

Shall include the supply of Asphalt for construction of Single & Multi Family Homes, Town Houses, Apartment Buildings, including Driveways, Streets and Curbs within those projects. Parking Lots, Office Buildings, where distance between project and asphalt plant is not more than 50 miles.

TRUCK DRIVER

07/01/2019

Asphalt Delivery

\$ 32.16

SUPPLEMENTAL BENEFITS

Per Hour:

Heavy Construction Work

TRUCK DRIVER

07/01/2019

Asphalt Delivery

\$ 46.6825

Light Construction Work

TRUCK DRIVER

07/01/2019

Asphalt Delivery

\$ 13.05

OVERTIME PAY

See (B, *B2, E, **I, P, ***R, ****U) on OVERTIME PAGE

(NOTE) PREMIUM PAY of 25% on straight time hours for New York State D.O.T. and or other GOVERNMENTAL MANDATED off shift work.

Note: (B,E,P,T&*U) Apply to Heavy Construction.

Note: (B2,I,T&*U) Apply to Light Construction.

Note: (*U) Only applies after 8 hours worked on holiday.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, *16, **25) on HOLIDAY PAGE

NOTE: (*16) Paid at Double if Worked; (**25) Paid at Double if Worked.

4-282

Teamster - Building	08/01/2019

JOB DESCRIPTION Teamster - Building

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour:

Truck Driver (Building Demolition & Debris)

07/01/2019

Trailers \$ 34.61
Straight Jobs \$ 34.31

SUPPLEMENTAL BENEFITS

Per Hour:

All Classifications

07/01/2019
\$ 34.34

OVERTIME PAY

See (B, E, S1) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 12, 15, 25, 26) on HOLIDAY PAGE

4-282

Teamster - Delivery of Concrete

08/01/2019

JOB DESCRIPTION Teamster - Delivery of Concrete

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour:

Heavy Construction Work:

Shall Include the supply of Ready-Mix Concrete for construction, improvement and modification of all or any part of Streets, Highways, Bridges, Tunnels, Railroads, Canals, Dams, Airports, Schools & Power Generation Plants, where distance between project and asphalt plant is not more than 50 miles.

TRUCK DRIVER

Concrete Delivery 07/01/2019
\$ 40.005

Light Construction Work:

Shall include the supply of Ready-Mix Concrete for construction of Single & Multi Family Homes, Town Houses, Apartment Buildings, including Driveways, Streets and Curbs within those projects. Parking Lots and Office Buildings, where distance between project and asphalt plant is not more than 50 miles.

TRUCK DRIVER

Concrete Delivery 07/01/2019
\$ 36.005

SUPPLEMENTAL BENEFITS

Per Hour:

Heavy Construction Work 07/01/2019
Concrete Delivery \$ 43.955

Light Construction Work 07/01/2019
Concrete Delivery \$ 15.235

OVERTIME PAY

NOTE: Heavy Construction:B2,I
Light Construction:B,E,P

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, *16, **25) on HOLIDAY PAGE
NOTE:(*16) Paid at Double if Worked. (**25) Paid at Double if Worked.

4-282ns

Teamster - Heavy&Highway

08/01/2019

JOB DESCRIPTION Teamster - Heavy&Highway

DISTRICT 4

ENTIRE COUNTIES

Nassau, Suffolk

WAGES

Per Hour:

Heavy Construction Work:

Shall include the construction, improvement or modification of all or any part of Streets, Highways, Bridges, Tunnels, Railroads, Canals, Dams, Airports, Schools, Power Generation Plants.

07/01/2019

Site Excavating
(Chauffeurs)

\$ 37.545

Light Construction Work:

Shall include the construction, improvement and modification of Single & Multi Family Homes, Town Houses, Apartment Buildings, including Driveways, Streets and Curbs within those projects. Parking Lots and Office Buildings.

Site Excavating
(Chauffeurs)

32.16

SUPPLEMENTAL BENEFITS

Per Hour:

07/01/2019

Heavy Construction Work
Chauffeurs

\$ 46.6825

Light Construction Work
Chauffeurs

13.05

OVERTIME PAY

See (B, *B2, E, **I, P, ***R, ****U) on OVERTIME PAGE

(NOTE) PREMIUM PAY of 25% on straight time hours for NEW YORK STATE D.O.T. and or other GOVERNMENTAL MANDATED off shift work.

Note: (B,E,P,T & *U) Apply to Heavy Construction.

Note: (B2,I,T & *U) Apply to Light Construction.

Note: (*U) Only applies after 8 hours work on holiday

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, *16, **25) on HOLIDAY PAGE

NOTE:(*16) Paid at Double if Worked. (**25) Paid at Double if Worked.

4-282

Welder

08/01/2019

JOB DESCRIPTION Welder

DISTRICT 1

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour

07/01/2019

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY

HOLIDAY

1-As Per Trade

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

- (AA) Time and one half of the hourly rate after 7 and one half hours per day
- (A) Time and one half of the hourly rate after 7 hours per day
- (B) Time and one half of the hourly rate after 8 hours per day
- (B1) Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday.
Double the hourly rate for all additional hours
- (B2) Time and one half of the hourly rate after 40 hours per week
- (C) Double the hourly rate after 7 hours per day
- (C1) Double the hourly rate after 7 and one half hours per day
- (D) Double the hourly rate after 8 hours per day
- (D1) Double the hourly rate after 9 hours per day
- (E) Time and one half of the hourly rate on Saturday
- (E1) Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
- (E2) Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E3) Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
- (E4) Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E5) Double time after 8 hours on Saturdays
- (F) Time and one half of the hourly rate on Saturday and Sunday
- (G) Time and one half of the hourly rate on Saturday and Holidays
- (H) Time and one half of the hourly rate on Saturday, Sunday, and Holidays
- (I) Time and one half of the hourly rate on Sunday
- (J) Time and one half of the hourly rate on Sunday and Holidays
- (K) Time and one half of the hourly rate on Holidays
- (L) Double the hourly rate on Saturday
- (M) Double the hourly rate on Saturday and Sunday
- (N) Double the hourly rate on Saturday and Holidays
- (O) Double the hourly rate on Saturday, Sunday, and Holidays
- (P) Double the hourly rate on Sunday
- (Q) Double the hourly rate on Sunday and Holidays
- (R) Double the hourly rate on Holidays
- (S) Two and one half times the hourly rate for Holidays

- (S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
- (T) Triple the hourly rate for Holidays
- (U) Four times the hourly rate for Holidays
- (V) Including benefits at SAME PREMIUM as shown for overtime
- (W) Time and one half for benefits on all overtime hours.
- (X) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

(1)	None
(2)	Labor Day
(3)	Memorial Day and Labor Day
(4)	Memorial Day and July 4th
(5)	Memorial Day, July 4th, and Labor Day
(6)	New Year's, Thanksgiving, and Christmas
(7)	Lincoln's Birthday, Washington's Birthday, and Veterans Day
(8)	Good Friday
(9)	Lincoln's Birthday
(10)	Washington's Birthday
(11)	Columbus Day
(12)	Election Day
(13)	Presidential Election Day
(14)	1/2 Day on Presidential Election Day
(15)	Veterans Day
(16)	Day after Thanksgiving
(17)	July 4th
(18)	1/2 Day before Christmas
(19)	1/2 Day before New Years
(20)	Thanksgiving
(21)	New Year's Day
(22)	Christmas
(23)	Day before Christmas
(24)	Day before New Year's
(25)	Presidents' Day
(26)	Martin Luther King, Jr. Day
(27)	Memorial Day
(28)	Easter Sunday



New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12240

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By:

(Check Only One)

☐

Contracting Agency

☐

Architect or Engineering Firm

☐

Public Work District Office

Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone: ()

Fax: ()

E-Mail:

2. NY State Units (see Item 5)

☐ 01 DOT

☐ 02 OGS

☐ 03 Dormitory Authority

☐ 04 State University
Construction Fund

☐ 05 Mental Hygiene
Facilities Corp.

☐ 06 OTHER N.Y. STATE UNIT

☐ 07 City

☐ 08 Local School District

☐ 09 Special Local District, i.e.,
Fire, Sewer, Water District

☐ 10 Village

☐ 11 Town

☐ 12 County

☐ 13 Other Non-N.Y. State
(Describe)

3. SEND REPLY TO ☐ (check if new or change)
Name and complete address:

Telephone:()

Fax: ()

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR
THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title _____

Description of Work _____

Contract Identification Number _____

Note: For NYS units, the OSC Contract No. _____

6. Location of Project:
Location on Site _____

Route No/Street Address _____

Village or City _____

Town _____

County _____

7. Nature of Project - Check One:

- ☐ 1. New Building
- ☐ 2. Addition to Existing Structure
- ☐ 3. Heavy and Highway Construction (New and Repair)
- ☐ 4. New Sewer or Waterline
- ☐ 5. Other New Construction (Explain)
- ☐ 6. Other Reconstruction, Maintenance, Repair or Alteration
- ☐ 7. Demolition
- ☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

- ☐ Construction (Building, Heavy Highway/Sewer/Water)
- ☐ Tunnel
- ☐ Residential
- ☐ Landscape Maintenance
- ☐ Elevator maintenance
- ☐ Exterminators, Fumigators
- ☐ Fire Safety Director, NYC Only
- ☐ Guards, Watchmen
- ☐ Janitors, Porters, Cleaners, Elevator Operators
- ☐ Moving furniture and equipment
- ☐ Trash and refuse removal
- ☐ Window cleaners
- ☐ Other (Describe)

9. Has this project been reviewed for compliance with the Wicks Law involving separate bidding?

YES ☐ NO ☐

10. Name and Title of Requester

Signature



NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

**LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE
AWARDED ANY PUBLIC WORK CONTRACT**

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: <https://applications.labor.ny.gov/EDList/searchPage.do>

For inquiries where WCB is listed as the "Agency", please call 1-866-546-9322

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL	*****0996	A-1 CONSTRUCTION & RENOVATION INC		1973 81ST ST - SUITE A-5 BROOKLYN NY 11214	01/08/2015	01/08/2020
DOL	NYC		ABDUL KARIM		C/O NORTH AMERICAN IRON W 1560 DECATUR STREETRIDGEWOOD NY 11385	05/15/2015	05/15/2020
DOL	DOL	*****4539	ACCOMPLISHED WALL SYSTEMS INC		112 OSCAWANNA HEIGHTS RD PUTNAM VALLEY NY 10542	03/13/2015	03/12/2020
DOL	DOL	*****3344	ACT INC		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL	*****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	07/29/2015	07/29/2020
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC	*****6775	ADVENTURE MASONRY CORP.		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	DOL		AJ TORCHIA		10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL	*****3344	ALL CATASTROPHE CONSTRUCTION TEAM INC	ACT INC	6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL	*****8740	ALLSTATE ENVIRONMENTAL CORP		C/O JOSE MONTAS 27 BUTLER PLACEYONKERS NY 10710	03/18/2011	03/19/2020
DOL	DOL		AMADEO J TORCHIA	TORCHIA'S HOME IMPROVEMENT	10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL		ANGELO F COKER			12/04/2018	12/04/2023
DOL	NYC		ANISUL ISLAM		C/O RELIANCE GENERAL CONS 644 OCEAN PARKWAYBROOKLYN NY 11230	09/02/2015	09/02/2020
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL	*****7004	ANNEX CONTRACTING LTD		3005 WYNSUM AVENUE MERRICK NY 11566	08/18/2014	08/18/2019
DOL	DOL	*****7004	ANNEX GENERAL CONTRACTING INC		3005 WYNSUM AVENUE MERRICK NY 11566	08/18/2014	08/18/2019
DOL	DA		ANTHONY CARDINALE		58-48 59TH STREET MASPETH NY 11378	05/16/2012	05/08/2020
DOL	DOL		ANTHONY J MINGARELLI JR		C/O T & T CONCRETE INC 2560 HAMBURG TURNPIKELACKAWANNA NY 14218	07/08/2015	07/08/2020
DOL	DOL		ANTHONY PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10323	01/23/2017	01/23/2022
DOL	DOL		ANTONIO ESTIVEZ		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3020	APCO CONTRACTING CORP		24 SOUTH MARYLAND AVENUE PORT WASHINGTON NY 11050	09/24/2012	09/02/2020
DOL	NYC	*****9232	ARKAY CONSTRUCTION INC		102-104 GREYLOCK AVENUE BELLEVILLE NJ 07109	07/15/2015	07/15/2020
DOL	NYC	*****4779	ASTORIA GENERAL CONTRACTING CORP		35-34 31ST STREET LONG ISLAND CITY NY 11106	09/02/2015	09/02/2020
DOL	NYC	*****7217	ASTRO COMMUNICATIONS OF NY CORP		79 ALEXANDER AVE- STE 36A BRONX NY 10454	10/30/2015	10/30/2020
DOL	NYC	*****6046	ATLANTIC SUN CONSTRUCTION CORP		58-46 59TH AVENUE MASPETH NY 11378	05/08/2015	05/08/2020
DOL	NYC	*****6683	ATLAS RESTORATION CORP.		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	NYC		AUDLEY O'BRIEN		1273 NORTH AVENUE/#1 CP NEW ROCHELLE NY 10804	04/07/2015	04/07/2020
DOL	NYC	*****2591	AVI 212 INC.		260 CROPSEY AVENUE APT 11GBROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	DOL		AVIS R HILL		3510 HICKORY WALK LANE ELLENWOOD GA 32094	01/22/2015	01/22/2020

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	AG		AVTAR SINGH		116-24 127TH STREET SOUTH OZONE PARK NY 11420	12/22/2015	12/22/2020
DOL	AG		BALDEV SINGH		116-24 127TH STREET SOUTH OZONE PARK NY 11420	12/22/2015	12/22/2020
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL		BARBARA CASSIDY		7 BLENIS PLACE VALHALLA NY 10595	04/02/2015	04/02/2020
DOL	DOL		BARRY KINNEY		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	NYC	*****3915	BEACON RESTORATION INC		SUITE B-8 782 PELHAM PARKWAY SOUTHBRONX NY 10462	04/21/2016	04/21/2021
DOL	NYC	*****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	DOL		BIAGIO CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	*****8551	BRANDY'S MASONRY		216 WESTBROOK STREET P O BOX 304SAYRE PA 18840	08/09/2016	08/09/2021
DOL	NYC	*****6555	BROOKLYN WELDING CORP		1273 NORTH AVENUE/ #1 CP NEW ROCHELLE NY 10804	04/07/2015	04/07/2020
DOL	DOL	*****1449	BRRESTORATION NY INC		140 ARCADIA AVENUE OSWEGO NY 13126	09/12/2016	09/12/2021
DOL	DOL		BRUCE MORSEY		C/O KENT HOLLOW SIDING LL 29A BRIDGE STREETNEW MILFORD CT 06776	01/15/2016	01/15/2021
DOL	DOL		BRUCE P. NASH JR.		5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****8809	C.B.E. CONTRACTING CORPORATION		310 MCGUINESS BLVD GREENPOINT NY 11222	03/07/2017	03/07/2022
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		CANTISANI & ASSOCIATES LTD		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CANTISANI HOLDING LLC			06/12/2018	06/12/2023
DOL	DOL		CARIBBEAN POOLS		C/O DOUGLAS L MALARKEY 64 VICTORIA DRIVEBINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	*****3812	CARMODY "2" INC			06/12/2018	06/12/2023
DOL	DOL	*****1143	CARMODY BUILDING CORP	CARMODY CONTRACTIN G AND CARMODY CONTRACTIN G CORP.	442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY CONCRETE CORPORATION			06/12/2018	06/12/2023
DOL	DOL		CARMODY ENTERPRISES, LTD.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY INC		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3812	CARMODY INDUSTRIES INC			06/12/2018	06/12/2023
DOL	DOL		CARMODY MAINTENANCE CORPORATION		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY MASONRY CORP		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC	*****9172	CASSIDY EXCAVATING INC		14 RAILROAD AVENUE VALHALLA NY 10595	05/15/2014	04/02/2020
DOL	DOL	*****6745	CATSKILL FENCE INSTALLATIONS INC		5445 ROUTE 32 CATSKILL NY 12414	08/22/2014	08/22/2019
DOL	DOL	*****8809	CBE CONTRACTING CORP		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG		CESAR J. AGUDELO		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL	*****7655	CHAMPION CONSTRUCTION SERVICES CORP		2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	NYC		CHARLES CASSIDY JR		14 RAILROAD AVENUE VALHALLA NY 10595	05/15/2014	04/02/2020
DOL	DOL		CHARLES ZIMMER JR		216 WESTBROOK STREET P O BOX 304SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL		CHRISTINE J HEARNE		C/O C.J-HEARNE CONSTRUCTIO 131 PONCE DE LEON AVE NEATLANTA GA 30308	12/01/2015	12/01/2020
DOL	DOL		CHRISTOPHER J MAINI		19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		CHRISTOPHER PAPASTEFANOU A/K/A CHRIS PAPASTEFANOU		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****0671	CJ-HEARNE CONSTRUCTION CO		SUITE 204 131 PONCE DE LEON AVENUEATLANTA GA 30308	12/01/2015	12/01/2020
DOL	DOL	*****1927	CONSTRUCTION PARTS WAREHOUSE, INC.	CPW	5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	NYC	*****4468	CRAFT CONTRACTING GROUP INC		3256 BRUNER AVENUE BRONX NY 10469	07/29/2014	07/29/2019
DOL	NYC	*****8507	CRAFT FENCE INC		3256 BRUNER AVENUE BRONX NY 10469	07/29/2014	07/29/2019
DOL	NYC	*****2164	CREATIVE TRUCKING INC		58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	DOL	*****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLASTON NY 11363	01/14/2019	01/14/2024
DOL	DOL	*****7761	D L MALARKEY CONSTRUCTION		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	*****7888	D L MALARKEY CONSTRUCTION INC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	*****5629	DAKA PLUMBING AND HEATING LLC		2561 ROUTE 55 POUGHQUAG NY 12570	02/19/2016	02/19/2021
DOL	DOL		DANICA IVANOSKI		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		DARYL T RIEKS		C/O RIEKS CONTRACTING LLC 4804 GAHWILER ROADAUBURN NY 13021	05/01/2015	05/01/2020
DOL	NYC	*****7707	DASSLE CONTRACTING INC		213-37 39TH AVE/SUITE 120 BAYSIDE NY 11360	05/08/2015	05/08/2020
DOL	DOL		DAVID MARTINEZ		C/O EMPIRE TILE INC 6 TREMONT COURTHUNTINGTON STATION NY 11746	03/08/2016	03/08/2021
DOL	DOL		DEBBIE STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	AG		DEBRA MARTINEZ		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		DEDA GAZIVODAN		C/O DAKA PLUMBING AND H 2561 ROUTE 55POUGHQUAG NY 12570	02/19/2016	02/19/2021
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		DENNIS SCHWANDTNER		C/O YES SERVICE AND REPAI 145 LODGE AVEHUNTINGTON STATION NY 11476	08/09/2016	08/09/2021
DOL	DOL		DF CONTRACTORS OF ROCHESTER, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DF CONTRACTORS, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DIMITRIOS KOUTSOUKOS		C/O ASTORIA GENERAL CONTR 35-34 31ST STREETLONG ISLAND CITY NY 11106	09/02/2015	09/02/2020
DOL	NYC		DIMITRIOS TSOUMAS		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	DOL	*****3242	DONALD R. FORSAY	DF LAWN SERVICE	1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DONALD R. FORSAY		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DORIS SKODA		C/O APCO CONTRACTING CORP 24 SOUTH MARYLAND AVENUEPORT WASHINGTON NY 11050	09/24/2012	09/02/2020
DOL	NYC	*****7404	DOSANJH CONSTRUCTION CORP		9439 212TH STREET QUEENS VILLAGE NY 11428	02/25/2016	02/25/2021

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	DOL		DOUGLAS L MALARKEY	MALARKEY CONSTRUCTI ON	64 VICTORIA DRIVE B INGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL		E C WEBB		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL		EARL L WILSON	WILSON BROTHER DRYWALL CONTRACTOR S	36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	DOL		EAST COAST PAVING		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	DOL	*****3270	EMPIRE TILE INC		6 TREMONT COURT HUNTINGTON STATION NY 11746	03/08/2016	03/08/2021
DOL	DOL	*****7403	F & B PAINTING CONTRACTING INC		2 PARKVIEW AVENUE HARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		FAY MATTHEW		C/O CHAMPION CONSTRUCTION 2131 SCHENECTADY AVENUEBROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	DOL		FAZIA GINA ALI-MOHAMMED	C/O CHAMPION CONSTRUCTI ON	2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	DOL		FRANK BENEDETTO		19 CATLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		FRANK BENEDETTO		C/O F & B PAINTING CONTRA 2 PARKVIEW AVENUEHARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL	*****4722	FRANK BENEDETTO AND CHRISTOPHER J MAINI	B & M CONCRETE	19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		FRANK DEMARTINO		101-61 99TH STREET OZONE PARK NY 11416	02/15/2017	02/15/2022
DOL	DOL		FRANK DEMARTINO		101-61 99TH STREET OZONE PARK NY 11416	02/15/2017	02/15/2022
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	DOL		GALINDA ROTENBERG		C/O GMDV TRANS INC 67-48 182ND STREETFRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	DOL		GEOFF CORLETT		415 FLAGGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL	*****5674	GMDV TRANS INC		67-48 182ND STREET FRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	NYC		GREAT ESTATE CONSTRUCTION, INC.		327 STAGG ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	DOL		GREGORY S. OLSON		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	NYC	*****0346	H N H CONTRACTORS CORP		4558 BROADWAY # 6 NEW YORK NY 10040	08/04/2014	08/04/2019
DOL	NYC		HAMEEDUL HASAN		240 HOME STREET TEANECK NJ 07666	08/04/2014	08/04/2019
DOL	NYC		HARMEL SINGH		15 CLINTON LANE HICKSVILLE NY 11801	02/25/2016	02/25/2021
DOL	NYC		HAROLD KUEMMEL		58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	DOL		HENRY VAN DALRYMPLE		2663 LANTERN LANE ATLANTA GA 30349	12/01/2015	12/01/2020
DOL	DOL	*****6370	HILLIANO CONSTRUCTION & ELECTRICAL INC		354 MAGNOLIA STREET ROCHESTER NY 14611	01/22/2015	01/22/2020
DOL	DOL	*****8282	IDEMA DEVELOPMENT INC		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL	*****8282	IDEMA GENERAL CONTRACTORS INC		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL	*****7001	INTEGRATED CONSTRUCTION & POWER SYSTEMS INC		SUITE 100 2105 W GENESEE STREETSYRACUSE NY 13219	01/06/2016	01/06/2021

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	DOL	*****5131	INTEGRITY MASONRY, INC.	M&R CONCRETE	722 8TH AVE WATERVLIT NY 12189	06/05/2018	06/05/2023
DOL	DOL		IRENE KASELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	AG		J A M CONSTRUCTION CORP		SUITE 125 265 SUNRISE HIGHWAYROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	DOL	*****4910	J V MAGIC TOUCH CORPORATION		94-25 57TH AVENUE, APT 5G ELMHURST NY 11373	01/12/2015	01/12/2020
DOL	DOL		J.A. HIRES CADWALLADER		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JAMES B RHYNDERS		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL		JAMES C. DELGIACCO		722 8TH AVE WATERVLIT NY 12189	06/05/2018	06/05/2023
DOL	DOL		JAMES E RHYNDERS		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	AG		JAMES FALCONE		SUITE 125 265 SUNRISE HIGHWAYROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	DOL		JAMES LIACONE		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RACHEL		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RHYNDERS SR		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL		JAMES SICKAU		3090 SHIRLEY ROAD NORTH COLLINS NY 14111	04/19/2011	07/08/2020
DOL	DOL		JASON W MILLIMAN		C/O ROCHESTER ACOUSTICAL P O BOX 799HILTON NY 14468	02/19/2016	02/19/2021
DOL	DOL	*****5368	JCH MASONRY & LANDSCAPING INC.		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JEFFREY CASSIDY		14 RAILROAD AVENUE VALHALLA NY 10595	05/15/2014	04/02/2020
DOL	DOL		JEROME LACITIGNOLA		C/O CATSKILL FENCE INSTAL 5445 ROUTE 32 CATSKILL NY 12414	08/22/2014	08/22/2019
DOL	DOL		JESSICA WHITESIDE		C/O BRRESTORATION NY INC 140 ARCADIA AVENUEOSWEGO NY 13126	09/12/2016	09/12/2021
DOL	AG		JOHN ANTHONY MASSINO		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JOHN F. CADWALLADER		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4612	JOHN F. CADWALLADER, INC.	THE GLASS COMPANY	P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	AG	*****0600	JOHNCO CONTRACTING, INC.		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	07/29/2015	07/29/2020
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORGE VILLALOBOS		94-25 57TH AVENUE - APT 5 ELMHURST NY 11373	01/12/2015	01/12/2020
DOL	DOL		JORI PEDERSEN		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		JOSE CHUCHUCA		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	DOL		JOSE MONTAS		27 BUTLER PLACE YONKERS NY 10710	03/18/2011	03/19/2020
DOL	AG		JOSEPH FALCONE		SUITE 125 265 SUNRISE HIGHWAYROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	DOL	*****9273	JOSEPH M LOVETRO		P O BOX 812 BUFFALO NY 14220	08/09/2016	08/09/2021
DOL	NYC		JOSEPH MARTINO		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	DOL		JOSEPH MARTONE		112 OSCAWANA HEIGHTS RD PUTNAM VALLEY NY 10542	03/13/2015	03/13/2020

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	DOL		JUANA MARTINEZ		C/O LEAD CONSTRUCTION 27 BUTLER PLACEYONKERS NY 10710	03/19/2015	03/19/2020
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL	*****5062	K R F SITE DEVELOPMENT INC		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL		KATIE BURDICK		2238 BAKER RD GILLETT PA 16923	03/12/2018	03/12/2023
DOL	DOL		KENNETH FIORENTINO		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL	*****9732	KENT HOLLOW SIDING LLC		29A BRIDGE STREET NEW MILFORD CT 06776	01/15/2016	01/15/2021
DOL	DOL		KEVIN BABCOCK JR		P O BOX 46 THOMPSON RIDGE NY 10985	08/22/2014	08/22/2019
DOL	DOL		KEVIN M BABCOCK		P O BOX 46 THOMPSON RIDGE NY 10985	08/22/2014	08/22/2019
DOL	DOL		KIM SOROCENSKI		C/O SOLUTION MATTERS INC 198 NORWOOD ROADPORT JEFFERSON NY 11776	11/19/2015	11/19/2020
DOL	DOL	*****3490	L & M CONSTRUCTION/DRYWALL INC.		1079 YONKERS AVE YONKERS NY 10704	08/07/2018	08/07/2023
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL	*****6224	LAKESIDE FIRE SPRINKLERS LLC		125 CHAUTAUQUA AVENUE LAKEWOOD NY 14750	06/24/2015	06/24/2020
DOL	AG	*****4643	LALO DRYWALL, INC.		221 OLD FORD ROAD NEW PLATZ NY 12561	05/20/2016	05/20/2021
DOL	DOL	*****4505	LARAPINTA ASSOCIATES INC		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		LAURI MARTONE		112 OSCAWANA HEIGHTS RD PUTNAM VALLEY NY 10542	03/13/2015	03/13/2020
DOL	DOL		LAVERN GLAVE		161 ROBYN RD MONROE NY 10950	09/15/2014	09/15/2019
DOL	DOL		LAVERN GLAVE		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	*****1364	LEAD CONSTRUCTION SERVICES INC		3 ALAN B SHEPARD PLACE YONKERS NY 10705	03/19/2015	03/19/2020
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	08/14/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	08/14/2017	08/14/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DOL		LINDSEY R CRILL		143 FILLMORE AVENUE BUFFALO NY 14210	01/08/2015	01/08/2020
DOL	DA	*****4460	LONG ISLAND GLASS & STOREFRONTS, LLC		4 MANHASSET TRL RIDGE NY 11961	09/06/2018	09/06/2023
DOL	AG	*****4216	LOTUS-C CORP.		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	AG		LUIS MARTINEZ	LALO	211 MAIN ST.	05/20/2016	05/20/2021

NYSDOL Bureau of Public Work Debarment List 07/22/2019
Article 8

DOL	DOL		M ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG	*****6957	M B DIN CONSTRUCTION INC		8831 20TH AVENUE/SUITE 6E BROOKLYN NY 11214	11/17/2015	11/17/2020
DOL	NYC	*****6317	M S QUALITY CONSTRUCTION LLC		27 MAPLEWOOD AVENUE COLONIA NJ 07067	02/04/2015	02/04/2020
DOL	DOL		M. ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	NYC		MACIEJ SONTOWSKI		27 MAPLEWOOD AVENUE COLONIA NJ 07067	02/04/2015	02/04/2020
DOL	NYC	*****9590	MACK GLASSNAUTH IRON WORKS INC		137 LIBERTY AVENUE BROOKLYN NY 11212	12/21/2015	12/21/2020
DOL	DOL	*****1784	MADISON AVE CONSTRUCTION CORP		39 PENNY STREET WEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL		MALARKEY'S BAR & GRILL LLC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	*****0705	MALARKEY'S PUB & GRUB LLC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	DOL		MARIACHI'S PIZZERIA		C/O DOUGLAS L MALARKEY 64 VICTORIA DRIVEBINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL		MARK MIONIS		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL		MARVIN A STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		MASONRY CONSTRUCTION, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3333	MASONRY INDUSTRIES, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		MATTHEW IDEMA GENERAL CONTRACTORS INC		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL		MAURICE GAWENO		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****6416	MCCALL MASONRY		P O BOX 304 SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL		MCLEAN "MIKKI BEANE"		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN "MIKKI" DRAKE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN M DRAKE-BEANE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	*****9445	MCLEAN M WALSH	ELITE PROFESSION AL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	*****9445	MCLEAN M WALSH	ELITE PROFESSION AL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	NYC	*****5330	METRO DUCT SYSTEMS INC		1219 ASTORIA BOULEVARD LONG ISLAND CITY NY 11102	04/16/2014	11/19/2020
DOL	DOL	*****3368	MICEK CONSTRUCTION CO INC		20 CROSS STREET FALCONER NY 14733	12/02/2014	12/02/2019
DOL	DOL		MICHAEL A PASCARELLA		SUITE 100 2105 WEST GENESEE STREET SYRACUSE NY 13219	01/06/2016	01/06/2021
DOL	NYC		MICHAEL HIRSCH		C/O MZM CORP 163 S MAIN STREETNEW CITY NY 10956	01/28/2016	01/28/2021
DOL	DOL		MICHAEL LENIHAN		1079 YONKERS AVE UNIT 4YONKERS NY 10704	08/07/2018	08/07/2023
DOL	AG		MICHAEL RIGLIETTI		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		MICHAEL WILSON	WILSON BROTHER DRYWALL CONTRACTOR S	36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	NYC		MILANCE HADZIC		22 CALIFORNIA AVE - STE 1	03/11/2015	03/11/2020

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	DOL	*****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29MORGANVILLE NJ 07751	04/10/2019	04/10/2024
DOL	AG		MOHAMMED N CHATHA		8831 20TH AVENUE/SUITE 6E BROOKLYN NY 11214	11/17/2015	11/17/2020
DOL	DOL	*****2737	MOUNTAIN'S AIR INC		2471 OCEAN AVENUE- STE 7A BROOKLYN NY 11229	09/24/2012	09/18/2020
DOL	AG		MSR ELECTRICAL CONSTRUCTION CORP.		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD PERVAIZ		C/O CHAMPION CONSTRUCTION 2131 SCHENECTADY AVENUEBROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	NYC	*****3613	MZM CORP		163 S MAIN STREET NEW CITY NY 10956	01/28/2016	01/28/2021
DOL	DA	*****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023
DOL	NYC	*****1284	NEW AMERICAN RESTORATION INC		22 CALIFORNIA AVE - STE 1 PATERSON NJ 07503	03/11/2015	03/11/2020
DOL	DA	*****6988	NEW YORK INSULATION INC		58-48 59TH STREET MASPETH NY 11378	05/16/2012	05/08/2020
DOL	NYC	*****4839	NEW YORK RIGGING CORP		58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	NYC	*****1968	NORTH AMERICAN IRON WORKS INC		1560 DECATUR STREET RIDGEWOOD NY 11385	05/15/2015	05/15/2020
DOL	DOL	*****6966	NORTH COUNTRY DRYWALL AND PAINT		23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	*****0065	NORTHEAST LANDSCAPE AND MASONRY ASSOC		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL	*****1845	OC ERECTERS, LLC A/K/A OC ERECTERS OF NY INC.		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	NYC		ORSON ARROYO		C/O METRO DUCT SYSTEMS 12-19 ASTORIA BOULEVARDLONG ISLAND CITY NY 11102	04/16/2014	11/19/2020
DOL	NYC	*****9422	PELIUM CONSTRUCTION, INC.		22-33 35TH ST. ASTORIA NY 11105	12/30/2016	12/30/2021
DOL	DOL		PETER M PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL		PIERRE LAPORT		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	DOL	*****1543	PJ LAPORT FLOORING INC		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	DOL	*****6895	PROLINE CONCRETE OF WNY INC		3090 SHIRLEY ROAD NORTH COLLINS NY 14111	04/19/2011	07/08/2020
DOL	DA	*****6817	QUADRANT METAL BUILDINGS LLC		2740 SW MARTIN DOWNS BLVD PALM CITY FL 34990	08/25/2016	08/25/2021
DOL	NYC		RAMESHWAR ASU		137 LIBERTY AVENUE BROOKLYN NY 11212	12/21/2015	12/21/2020
DOL	DOL		RANA A KAHN		1973 81ST ST - SUITE A-5 BROOKLYN NY 11214	01/08/2015	01/08/2020
DOL	NYC		RANTIK PARIKH		13 LORIANN ROAD WARREN NJ 07059	07/15/2015	07/15/2020
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP		3 PARK CIRCLE MIDDLETOWN NY 10940	09/16/2013	09/15/2019
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP		3 PARK CIRCLE MIDDLETOWN NY 10940	01/30/2018	01/30/2023
DOL	AG	*****7015	RCM PAINTING INC.		69-06 GRAND AVENUE 2ND FLOORMASPETH NY 11378	02/07/2018	02/07/2023
DOL	DOL		REGINALD WARREN		161 ROBYN RD MONROE NY 10950	09/15/2014	09/15/2019
DOL	DOL		REGINALD WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	NYC	*****3461	RELIANCE GENERAL CONSTRUCTION INC		644 OCEAN PARKWAY BROOKLYN NY 11230	09/02/2015	09/02/2020
DOL	DA		RIANN MULLER		2740 SW MARTIN DOWNS BLVD PALM CITY FL 34990	08/25/2016	08/25/2021
DOL	DOL	*****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD MACONE		8647 THIRD AVE	09/17/2018	09/17/2023

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	DOL	*****9148	RICHARD TIMIAN	RICH T CONSTRUCTI ON	108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL	*****8618	RIEKS CONTRACTING LLC		4804 GAHWILER ROAD AUBURN NY 13021	05/01/2015	05/01/2020
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROBERT BRUNO		3 GAYLORD ST AUBURN NY 13021	11/15/2016	11/15/2021
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	NYC		ROBERT GUIDO		3256 BRUNER AVENUE BRONX NY 10469	07/29/2014	07/29/2019
DOL	DOL		ROBERT TORDELLA		125 CHAUTAUQUA AVENUE LAKEWOOD NY 14750	06/24/2015	06/24/2020
DOL	DOL	*****3859	ROCHESTER ACOUSTICAL CORP		P O BOX 799 HILTON NY 14468	02/19/2016	02/19/2021
DOL	DOL		RODERICK PUGH		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL	*****4880	RODERICK PUGH CONSTRUCTION INC.		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	NYC		RODNEY SCOTT		201 HEMPSTEAD AVENUE WEST HEMPSTEAD NY 11552	10/30/2015	10/30/2020
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	09/16/2013	09/15/2019
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL		ROSEANNE CANTISANI			06/12/2018	06/12/2023
DOL	DOL		RYAN ALBIE		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	*****3347	RYAN ALBIE CONTRACTING INC		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	*****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	NYC		SABIR MUHAMMED		SUITE B-8 782 PELHAM PARKWAY SOUTHBRONX NY 10462	04/21/2016	04/21/2021
DOL	NYC		SAEED HASAN		4558 BROADWAY #6 NEW YORK NY 10040	08/04/2014	08/04/2019
DOL	NYC	*****2117	SCOTT ELECTRICAL LLC		201 HEMPSTEAD AVENUE WEST HEMPSTEAD NY 11552	10/30/2015	10/30/2020
DOL	DOL	*****9751	SCW CONSTRUCTION		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	AG		SERGIO RAYMUNDO		109 DUBOIS RD. NEW PALTZ NY 12561	05/20/2016	05/20/2021
DOL	NYC	*****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL	*****1961	SHANE BURDICK	CENTRAL TRAFFIC CONTROL, LLC.	2238 BAKER ROAD GILLETT PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE BURDICK		2238 BAKER ROAD GILLETT PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE NOLAN		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	*****0816	SOLAR ARRAY SOLUTIONS, LLC		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	*****4025	SOLUTION MATTERS INC		198 NORWOOD ROAD PORT JEFFERSON NY 11776	11/19/2015	11/19/2020
DOL	NYC	*****4934	SPHINX CONTRACTING CORP		240 HOME STREET TEANECK NJ 07666	08/04/2014	08/04/2019
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	*****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	DOL		STEFANOS PAPASTEFANOU, JR. A/K/A STEVE PAPASTEFANOU, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL	*****9751	STEPHEN C WAGAR		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	DOL		STEVE TATE		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		STEVEN P SUCATO		15-68 208TH STREET BAYSIDE NY 11360	06/23/2016	06/23/2021
DOL	DOL		STEVEN SAGGESE		3005 WYNSUM AVENUE MERRICK NY 11566	08/18/2014	08/18/2019
DOL	DOL		STEVEN TESTA		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	NYC	*****9432	SUBLINK LTD		346 THIRD AVENUE PELHAM NY 10803	11/19/2015	11/19/2020
DOL	DOL	*****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	*****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL	*****7441	T & T CONCRETE INC		2560 HAMBURG TURNPIKE P O BOX 367LACKAWANNA NY 14218	07/08/2015	07/08/2020
DOL	DOL	*****7417	TADCO CONSTRUCTION		101-61 99TH STREET OZONE PARK NY 11416	02/15/2017	02/15/2022
DOL	DOL		TADCO CONSTRUCTION		101-61 99TH STREET OZONE PARK NY 11416	02/15/2017	02/15/2022
DOL	DOL	*****7417	TADCO CONSTRUCTION CORP		101-61 99TH STREET OZONE PARK NY 11416	02/15/2017	02/15/2022
DOL	DOL		TALAILA OCAMPA		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	DOL		TAMMY LACITIGNOLA		C/O CATSKILL FENCE INSTAL 5445 ROUTE 32CATSKILL NY 12414	08/22/2014	08/22/2019
DOL	DOL	*****9852	TAP STEEL INC		ROUTE 26 3101 P O BOX 457CONSTABLEVILLE NY 13325	01/28/2016	01/28/2021
DOL	DOL	*****5570	TESTA CORP		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	DOL	*****0887	THE BRINSON PAINTING CORPORATION		72 TAUNTON PLACE BUFFALO NY 14216	04/14/2015	04/14/2020
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****8174	THE DALRYMPLE CORPORATION		UNIT 278 541 10TH STREET NWATLANTA GA 30318	12/01/2015	12/01/2020
DOL	DOL	*****8174	THE DALRYMPLE GROUP LLC		289 JONESBORO RD/ STE 216 MCDONOUGH GA 30253	12/01/2015	12/01/2020
DOL	DOL		TIMOTHY A PALUCK		C/O TAP STEEL INC RTE 26 3101/ P O BOX 457CONSTABLEVILLE NY 13325	01/28/2016	01/28/2021
DOL	DOL	*****0600	TOMSON ALLOYS RECYCLING INC		143 FILLMORE AVENUE BUFFALO NY 14210	01/08/2015	01/08/2020
DOL	DOL	*****3453	TORCHIA'S HOME IMPROVEMENT		10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL	*****6914	TRI-COUNTY RESTORATIONS & CONSTRUCTION INC		13 SUMMERSET DRIVE WALKILL NY 12589	08/22/2014	08/22/2019
DOL	DOL		TRI-COUNTY RESTORATIONS INC		392 ROCK CUT ROAD WALDEN NY 12586	08/22/2014	08/22/2019
DOL	DOL	*****8311	TRIPLE B FABRICATING, INC.		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL	*****9407	TURBO GROUP INC		15-68 208TH STREET BAYSIDE NY 11360	06/23/2016	06/23/2021
DOL	DOL	*****6392	V.M.K CORP.		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	NYC		VALERIE VISCONTI		346 THIRD AVENUE PELHAM NY 10803	11/19/2015	11/19/2020
DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	DOL		VICTOR ROTENBERG		C/O GMDV TRANS INC 67048 182ND STREETFRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	NYC		VIKTAR PATONICH		2630 CROPSEY AVE BROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	NYC		VITO GARGANO		1535 RICHMOND AVE	12/13/2017	12/13/2022

NYSDOL Bureau of Public Work Debarment List 07/22/2019

Article 8

DOL	DOL		WAYNE LIVINGSTON JR	NORTH COUNTRY DRYWALL AND PAINT	23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL		WHITE PLAINS CARPENTRY CORP		442 ARMONK RD	06/12/2018	06/12/2023
DOL	DOL		WILLIAM C WATKINS		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		WILLIAM DEAK		C/O MADISON AVE CONSTR CO 39 PENNY STREETWEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL		WILLIE BRINSON		72 TAUNTON PLACE BUFFALO NY 14216	04/14/2015	04/14/2020
DOL	DOL	*****6195	WILSON BROTHER DRYWALL CONTRACTORS		36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	DOL	*****4043	WINDSHIELD INSTALLATION NETWORK, INC.		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4730	XGD SYSTEMS, LLC	TDI GOLF	415 GLAGE AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL	*****7345	YES SERVICE AND REPAIRS CORPORATION		145 LODGE AVE HUNTINGTON STATION NY 11476	08/09/2016	08/09/2021
DOL	DOL		YURIY IVANIN		C/O MOUNTAIN'S AIR INC 2471 OCEAN AVENUE-STE 7ABROOKLYN NY 11229	09/24/2012	09/18/2020
DOL	NYC		ZAKIR NASEEM		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	NYC	*****8277	ZHN CONTRACTING CORP		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022

END OF SECTION 007343

PART 1 - GENERAL

1.01 BRIEF PURPOSE OF PROJECT / GENERAL

- A. The purpose of the project is to construct various electrical upgrades and to replace the existing 1,000-gallon lime storage tank and feed system at Plant No. 4 which includes the furnishing and installation of a new 800 Gallon above ground lime tank, pumps, piping, and accessories, etc.
- B. All work shown and specified in the Contract Documents shall be the work of this Construction Contract. The Owner does not anticipate awarding other prime contracts for the project as shown.
- C. This Section provides an abbreviated summary of the work for the Construction Contract associated with the Owner's program to construct the project.
- D. Each Contractor has been provided with copies of all relevant construction drawings for related construction contracts whose work may directly effect and impact the work under this Contract.
 - 1. Each Contractor shall provide a complete and operational project in anticipation of these affects and impacts.
 - 2. It is each Contractor's responsibility to investigate the work that will be performed by others and consider such in the conduct of his/her work.

1.02 NOMENCLATURE

- A. Where the terms "Engineer/Architect", "Architect/Engineer", "Engineer", or "Architect" are used throughout these Contract Documents, they shall mean the firm of H2M architects + engineers as may be abbreviated by H2M or H2M Group.
- B. The terms "Contractor" and/or "Prime Contractor" where used shall refer to the individual or company who has entered into an agreement with the Owner to perform the work contained within these Contract Documents. The lack of word capitalization shall be incidental.
- C. The terms "Contractor" and/or "Prime Contractor" where used within the body of a specific Construction Contract, (i.e.; Contract E and Contract M), shall refer to the individual or company who has entered into an agreement with the Owner to perform the work contained within those Contract Documents. The lack of word capitalization shall be incidental.
- D. The Electrical Construction Contractor may be referred to as the "Electrical Contractor", "Prime Electrical Contractor", "Contract E Contractor" or similar wording. The lack of word capitalization shall be incidental. This Construction Contract shall be known as Contract E.
- E. The Mechanical Construction Contractor may be referred to as the "Mechanical Contractor", "Prime Mechanical Contractor", "Contract M Contractor" or similar wording. The lack of word capitalization shall be incidental. This Construction Contract shall be known as Contract M.

1.03 ABBREVIATED SUMMARY OF CONTRACT E WORK

- A. Furnish all labor, equipment, materials, tools, means, methods, and incidentals necessary to complete the Work as required by the Contract Documents for this Construction Contract. Each Contractor shall coordinate, through the Owner/Engineer, the work of their contract with the work by others.
- B. This following abbreviated summary is provided in order to briefly describe the work covered by the Contract Documents for this Construction Contract. It is not all inclusive of the work under the Contract.

- C. The work includes, but is not limited to, the following:
1. Provide, install, maintain, and repair, if necessary, temporary power and light throughout the site and to the Owner/Engineer's field office. Temporary power shall be provided at location(s) selected by the Engineer based on input by the General Contractor.
 2. Arrange for and install primary electric service.
 3. Main secondary feeders, power distribution, and instrumentation control wiring. Provide, mount, and install electrical conduit, wire, fittings, boxes, panels, and electrical accessories.
 4. All clearing, excavation, filling, and backfilling associated with the installation of underground conduit, duct bank, or wiring.
 5. Motor control centers, power distribution panels, breakers, lights, and switches.
 6. Furnish, install and power primary flow elements, transmitters, flow recorders and install interconnecting wiring where said devices are to be provided as work of Contract E. Install and power primary flow elements, transmitters, flow recorders and install interconnecting wiring where said devices are to be provided as work of other contracts.
 7. Extend all existing wiring and conduit associated with existing instrumentation and control cubicles to new control panel CP and terminate as required to provide a fully functional control system in accordance with the description of controls.
 8. Setting of electrical sleeves and/or embedded conduit in all concrete construction. All conduit for new construction shall be embedded in concrete slabs, decks, or walls.
 9. Electrical connections (final termination) to all equipment, control panels, ventilating equipment and electrical devices.
 10. Startup participation for the various equipment and systems of the project and provide complete service to troubleshoot and assist manufacturer service representatives in obtaining a completely functional installation.
 11. Final electrical terminations to all control panels, pumping equipment, blowers, HVAC equipment, etc.
 12. Connections to PLC for all control and telemetry equipment and devices.
 13. Testing, programming and adjusting of all electrical systems.
 14. Project closeout submittals.
- D. All other work shown and specified in the Contract Documents for Contract E.

1.04 ABBREVIATED SUMMARY OF CONTRACT M WORK

- A. Furnish all labor, equipment, materials, tools, means, methods, and incidentals necessary to complete the Work as required by the Contract Documents for this Construction Contract. The contractor shall coordinate, through the Owner/Engineer, the work of their contract with any work by others.
- B. This following abbreviated summary is provided in order to briefly describe the work covered by the Contract Documents for this Construction Contract. It is not all inclusive of the work under the Contract.
- C. The work includes, but is not limited to, the following:
1. Remove and dispose of existing 1,000 gallon steel lime storage tank, pumps, piping and appurtenances.
 2. Protect and maintain existing water piping in lime treatment room, including lime system flushing water line and water supply line to lime tank.
 3. Furnish and install new 800 gallon steel lime slurry tank, lime pumps, lime system piping and appurtenances.
 4. Furnish and install new dust collection and exhaust system.
 5. Furnish and install appropriate signage for lime treatment room.
 6. Furnish and install new FRP grating around front of new tank.
 7. Perform daily and final cleanup.

8. Project closeout submittals.
- D. All other work shown and specified in the Contract Documents for Contract M.

1.05 PARTIAL LISTING OF SPECIFIC CONTRACT REQUIREMENTS

- A. The Contract Documents detail the work included in the Contract. Related requirements and conditions covered by the Contract Documents include, but are not limited to, the following:
 1. Guidelines and requirements of the New York State Department of Environmental Conservation (NYSDEC).
 2. Guidelines and requirements of the local Health Department.
 3. Local laws and ordinances of the Riverhead Water District and the Town of Riverhead.
 4. Local gas utility requirements for new services, connections, alterations and related work.

1.06 PARTIAL LISTING OF OVERALL CONTRACT REQUIREMENTS

- A. The Contract Documents detail the work included in the Contract. Related requirements and conditions covered by the Contract Documents include, but is not limited to, the following:
 1. Debris removal and daily and final cleaning up.
 2. Coordination with utility companies necessary to schedule connection of services, and management of the installation.
 3. Site utilization and management so as not to disrupt the Owner's ability to operate the existing facilities in a safe and efficient manner.
 4. Facilities to be used during the contract period that are to be used by the Owner or his representatives and others involved with constructing the project.
 5. Product and equipment storage and handling requirements.
 6. Starting and adjusting of the equipment and systems required under the project.
 7. Site safety in accordance with all applicable federal, state, and local regulations.
 8. Project submittals, meetings, testing services, schedules, shop drawings, closeout procedures and documents, manuals, as-built drawings, and final commissioning of the work shall be provided as required by the Contract.
 9. To not hinder the Owner's ability to deliver a safe and potable water supply.
- B. The Owner has or will award other construction contracts associated with this project.
- C. It is anticipated that work of all the contracts will coincide with work of this Contract.
- D. Each Contractor shall coordinate the work between the various construction contracts, through the Owner/Engineer, as required to complete the contract requirements in accordance with the requirements contained in Section 013100.

1.07 OWNER SUPPLIED PRODUCTS AND UTILITIES

- A. The Owner will not be supplying equipment, labor, or tools for the project.
- B. The Owner will be supplying products or materials for the project as follows:
 1. Products shown on the Drawings or specified elsewhere.
- C. The Owner will pay for electricity usage. The restrictions on electrical usage shall be as follows:
 1. Power tool usage during specified working hours will only be permitted.
 2. Dewatering and trash pumps and portable heaters will not be permitted.
 3. Sump pumps, if less than 1/3 horsepower will be allowed. Only two (2) sump pumps will be permitted to operate at the same time.
 4. Power to the Owner/Engineer's trailer, if applicable.
 5. Power to help cure concrete or painting systems will not be permitted.
 6. Power to the Contractor's trailer will be permitted.

- D. The Owner reserves the right to stop paying for electrical usage at any time if, in the opinion of the Owner/Engineer, the Contractor causes excessive electrical charges or does not conserve electricity to the maximum extent possible in the opinion of the Engineer. All Contractors shall conserve electricity during the course of construction.

1.08 EXISTING CONDITIONS

- A. The Drawings show certain information that has been obtained by the Owner regarding various pipelines, structures, and utilities that exist at the location of the project both below and at grade.
- B. The Owner and the Engineer expressly disclaims all responsibility for the accuracy or completeness of the information given on the Drawings with regard to existing facilities.
- C. In the case where the Contractor discovers an obstruction not indicated on the Drawings or not described via specification reference, then the Contractor shall immediately notify the Engineer of the obstructions' existence.
- D. The Engineer will determine if the obstruction is to be relocated or removed.
- E. Compensation for this extra work will be paid for in accordance with the provisions in the Contract for "Extra Work".

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 011100

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Site access and control of areas outside of site.
- B. Contractor use of the premises.
- C. Contractor storage, parking and deliveries.
- D. Work hours, employee conduct and miscellaneous employee requirements.
- E. Contract requirements related to maintaining Owner's current operations and excess inspection required.

1.02 SITE ACCESS AND CONTROL

- A. Contractors shall use the designated entrance to the site as shown on the drawings. If no site entrance is designated, Contractors shall use an entrance designated by the Owner's Construction Representative.
 - 1. The Owner may permit, solely at the Owner's discretion, the temporary use of another entrance for site access.
 - 2. The Owner will only review requests made by the Contractor for an exception to the designated site entrance if made in writing at least 72 hours in advance of each of the times desired for use.
- B. All contractors to maintain the entrance area clear of materials, vehicles and any other obstacle or debris. Failure to do so will result in a minimum back charge of \$750 per occurrence.
- C. The area around the site is a residential neighborhood. The Owner intends to be a good neighbor. Contractors shall not close any road for any period in time. The Contractors shall take whatever measures are necessary to not cause any inconvenience to the area's residents
- D. All Contractors are responsible to employ methods to prevent construction materials and/or debris from leaving the site. All Contractors are responsible to routinely monitor the areas surrounding the site during the day as well as at the end of the work-day and to immediately clean up any area to its previous condition.
- E. The Contractors shall employ methods to prevent the transmission of dirt from vehicles driving on exposed areas of the site from reaching the surrounding roadways. The Contractors will be responsible to immediately clean the roadway, should the measures being taken by the Contractors not satisfactorily control the transmission of any dirt to the roadway.
- F. Any damages to areas outside the site, spills of soil, liquid, or any other material shall immediately be repaired, cleaned and restored to its previous condition.
- G. The Contractors shall comply with all state and local requirements for allowable weight limits of vehicles on all roads.
- H. The Owner reserves the right to back charge the Contractors for all costs associated with maintaining the grounds as well as maintaining areas outside the site, which may be disturbed by the Contractors should the Contractors fail to maintain or repair the aforementioned in a condition acceptable to the Owner.

1.03 CONTRACTOR USE OF THE PREMISES

- A. Premises, for the purpose of this Contract, shall mean the site, buildings and other structures located within the property line or in any temporary or permanent construction easements identified on the plans.
- B. The Contractors shall use and manage the premises and the associated construction activities as follows:
 - 1. To not hinder the Owner's ability to operate their facilities.
 - 2. To allow other Prime Contractors to install their work and complete their contractual obligations in the time period specified.
 - 3. To allow for stockpiling of construction material and debris without any significant hardship, as defined by the Owner's Construction Representative, on the Owner or other contractors.
 - 4. To allow for the stockpiling of excavated soil and imported fill, when called for, without any significant hardship, as defined by the Owner's Construction Representative, on the Owner or other contractors.
 - 5. To allow utility companies to install their work.
 - 6. To allow for the delivery of equipment and materials by independent trucking companies by leaving enough space for backing in and out of areas.
 - 7. To allow for the safe, unimpeded travel way of the Owners vehicles, Owner's Construction Representative's vehicles, Engineer's vehicles, construction vehicles and heavy construction equipment about the entire site.
- C. Contractors shall maintain the premises in a safe condition throughout the construction period. Compliance with OSHA regulations and site safety shall be the responsibility of the Contractor as it relates to work of the Contract. The posting of all applicable OSHA safety signs shall be the responsibility of the Contractors.
- D. Contractors shall provide temporary handrails, as required, for their work or for work put in place by their Contract that will require temporary handrails. Construction of temporary handrails shall be as specified in Section 015000.
- E. Contractors shall be responsible for protecting Owner's property. All existing buildings, structures, shrubs, trees, lawn fixtures, sculptures and misc. equipment shall be protected at all times. Any removals or relocation of said objects, if allowed shall be as directed by Owner's Construction Representative.
- F. Contractors shall protect all of the physical structures, property and improvements upon the site from damage by their Work and shall immediately repair or replace damage caused by construction operations, employees or equipment employed by the Contractor. All labor, materials and equipment and outside contractors that are employed by the Owner to repair damage caused by the Contractor shall be billed to the Contractor directly or withheld from money due the Contractor for work already completed.
- G. Immediately remove excess excavated material or relocate to areas on the site requiring placement of fill. Do not stockpile excess material on the site.
- H. Contractors are responsible for cleaning up their own materials and debris. Failure to maintain a clean work site daily, will result in other performing the work and Contractors being back charged for the cleaning cost plus construction administration fees.
- I. Use of the existing building facilities during construction is prohibited including but not limited to: toilet rooms, telephone and water fountains. Contractors shall be fined **(\$250)** per occurrence if their employee (or subcontractor's employee) is observed disregarding these rules.

- J. Should it become necessary to access the existing building during construction hours for measurements or other non-disruptive work, the contractor shall be escorted by an Owner's Construction Representative.
- K. Refer to Section 015000 - Temporary Facilities and Controls for minimum rubbish removal requirements.
- L. Do not discard or dispose of any waste on-site.
- M. Open fires will not be permitted on the site.
- N. Install erosion control measures as indicated in the Contract. The Contractor shall confine stormwater runoff to the site.

1.04 CONTRACTOR STORAGE, PARKING AND DELIVERIES

- A. Contractors must provide exterior storage containers when required. Final location of storage container shall be determined by the Owner.
- B. Do not unreasonably encumber the premises with materials and equipment. Do not store material in existing buildings. Store all equipment and materials to allow the Owner's employees to operate and conduct their business safely.
- C. Confine premise storage areas to locations designated by the Owner. Immediately repair or replace damaged facilities to the satisfaction of the Owner and to a condition that existed before the damage occurred as determined by preconstruction photographs, or if photographs are unavailable, to that deemed by the Owner.
- D. No storage materials will be permitted within the buildings at any time during construction.
- E. Storage of chemicals and painting shall be outside the existing or new structures and shall follow manufacturer's guidelines.
- F. Compressed gas containers shall be properly stored and secured per OSHA, to the satisfaction of the Owner. Failure to do so will result in a **[\$250]** back charge, per occurrence.
- G. Contractors shall provide minimum of 48 hours advance written notice to the Owner's Construction Representative for deliveries of materials, site visits by inspectors, manufacturer's representatives or any other occasion that impacts the use of the site. Contractors shall be responsible for any costs that are incurred by the owner, for failure to meet previously agreed upon appointments or work schedules.
- H. Deliveries sent to the Owner will not be signed for or unloaded by the Owner. They will be directed to the construction site and if no employee is on site, the delivery will be rejected, at the contractor's expense.
- I. Night deliveries of equipment (past the designated quitting time) will not be permitted. Do not schedule trucking companies to deliver equipment or wait for the job site to open. Delivery trucks shall not obstruct the site entrance, shall not sit within the neighborhood causing an obstruction or perceived nuisance, nor be left idling on or off the site for any period of time.
- J. Parking shall be in the designated areas of the site only. All automotive type vehicles are to be locked when parked or unattended to prevent unauthorized use. Do not leave vehicles or equipment unattended with the motor running or the ignition key in place. Any vehicles or trucks in non-designated areas may be towed at contractor's expense.

1.05 WORK HOURS, EMPLOYEE CONDUCT AND MISCELLANEOUS EMPLOYEE REQUIREMENTS

- A. The Contractors will be permitted to schedule working days and hours as specified in the General Terms and Conditions, if no times are specified therein then the work hours shall be Monday - Friday 8:00 am - 4:00 pm.
- B. Employees are to act in a professional manner. Any employee using inappropriate language or who is disruptive to the work environment will be banned from the site.
- C. Proper work attire is required. Shirts are to be worn at all times and no short pants are permitted.
- D. Employees shall not converse with local residents or Owner's employees.
- E. Any employee found under the influence of any drug or alcohol will be banned from the site.

1.06 CONTRACT REQUIREMENTS RELATED TO MAINTAINING OWNER'S CURRENT OPERATIONS AND EXCESS INSPECTION REQUIRED

- A. The Contractors shall schedule working days and hours as specified. The Contractors shall pay all excess costs for inspection services provided by the Owner/Engineer for working beyond the times specified.
- B. The hourly rate paid for inspection services beyond normal working hours shall be at a maximum billing rate of **[\$180]** per hour, which shall be used to compute the overtime hourly charge.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 011400

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Allowance pricing for the following items:
 - 1. Contingency Account - Contract E Only
 - 2. Contingency Account - Contract M Only
 - 3. Electrical Utility Allowance - Contract E Only
- B. The Contractor shall include the cash allowances stipulated in this Section in the amount bid.
- C. Eligible costs described in this Section, and Sections referenced herein, will be the only costs paid for out of the stipulated allowances.
- D. All other costs associated with the project as specified and/or shown, including but not limited to the delivery, installation and all Contractor overhead and/or collateral expenses are to be distributed among the other portions of the work and shall be included in other bid items.

1.02 SUBMITTALS

- A. Make all submissions under the provisions of Section 013300.
- B. For each type of product/material specified to be furnished under allowance pricing provide documentation of the unit pricing on manufacturer's letterhead certifying pricing of the product/material.
- C. Submit additional backup information to substantiate the invoiced amount(s) as the Engineer may require for review and approval, prior to order or payment of item.
- D. Provide written breakdowns for extra work as the Owner may require.

1.03 CHANGES TO STIPULATED (CASH) ALLOWANCE

- A. If the actual cost of services differs from the cash allowance, then the Contract Price will be adjusted accordingly.

1.04 PAYMENTS TO BE MADE OUT OF CONTINGENCY ACCOUNT (**CONTRACT E ONLY**)

- A. Include the cash allowance of \$20,000.00 (Twenty Thousand Dollars and Zero Cents) in the amount bid for use upon the Owner's instructions.
- B. Include the cash allowance amount indicated in the proposal for use upon the Owner's instructions for additional improvements beyond those identified in the contract documents and for unforeseen conditions.
- C. The Owner will draw funds from the contingency account only upon prior approval by the Owner's Construction Field Representative and Engineer.
- D. Funds remaining at project closeout shall be credited to the Owner.

1.05 PAYMENTS TO BE MADE OUT OF CONTINGENCY ACCOUNT (**CONTRACT M ONLY**)

- A. Include the cash allowance of \$10,000.00 (Ten Thousand Dollars and Zero Cents) in the amount bid for use upon the Owner's instructions.

- B. Include the cash allowance amount indicated in the proposal for use upon the Owner's instructions for additional improvements beyond those identified in the contract documents and for unforeseen conditions.
- C. The Owner will draw funds from the contingency account only upon prior approval by the Owner's Construction Field Representative and Engineer.
- D. Funds remaining at project closeout shall be credited to the Owner.

1.06 PAYMENTS TO BE MADE OUT OF ELECTRICAL UTILITY ALLOWANCE (CONTRACT E ONLY)

- A. Include the cash allowance of \$15,000.00 (Fifteen Thousand Dollars and Zero Cents) in the amount bid for actual invoiced charges from utility companies in order to complete the contract work under Contract E. Payment for utility fees will not be made unless a certified invoice is submitted.
- B. One week prior to each partial payment, submit a certified invoice listing and detailing the total costs incurred since the last invoice. The invoice shall be on the utility company letterhead, signed by the authorized representative of the utility company and shall include man-hours, work conducted, date of work, and associated costs and fees.
- C. The Owner will draw funds from the utility allowance account only upon prior approval by the Owner's Construction Field Representative and Engineer.
- D. Funds remaining at project closeout shall be credited to the Owner.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 012100

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section includes the requirements for substitution of specified products during construction.
- B. *The Engineer will consider requests for substitutions only within **thirty (30)** days from the date of the Notice to Proceed, with the exception of the Motor Control Center (MCC). Any proposed substitution of the MCC shall be included with the bid package and may not be accepted after bids are received.*
- C. Only products not specifically named in the bid are eligible for substitution in accordance with the requirements contained herein these specifications.
- D. Products named by the Bidder, at the time of bid, shall be furnished and installed and substitutions will not be considered by the Owner/Engineer for those products named in the bid.

1.02 CONTRACTOR'S OPTIONS

- A. For products specified only by reference standard, select any product meeting that standard.
- B. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named which complies with the Specifications.
- C. Where products are not named, then submit products that meet the specifications.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

- A. Name - The Drawings and Specifications list acceptable manufacturers, commercial names, trademarks, brands and other product, material and equipment designations. Such names are provided to establish the required type, quality and other salient requirements of procurement.
- B. Equals - An item equal to that named or described on the Drawings or in the Specifications may be provided by Contractor if accepted by the Engineer.
- C. A request for product substitution constitutes a representation that the Contractor:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Shall provide the same warranty for the Substitution as for the specified Product.
 - 3. Shall coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner, including extra charges by other Prime Contractors, material suppliers, and vendors.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Shall reimburse the Owner and the Engineer for review or redesign services associated with re-approval by authorities.
 - 6. Shall reimburse the Owner for all additional engineering services claimed by the Engineer for extra services associated with the review of the Contractor's substituted item since it could not have been originally included in the Engineer's professional engineering services agreement. Reimbursement shall be based on the man-hours expended, at current billing rates.

- D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- E. Substitution Submittal Procedure:
 - 1. Contractors shall submit the REQUEST FOR SUBSTITUTION FORM for consideration including all required information.
 - 2. Contractors shall use the form included within this Section.
 - 3. All forms shall be type written.
 - 4. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
- F. The burden to prove product equivalence rests on the Contractor.
- G. The Engineer will notify Contractors in writing of decision to accept or reject request and at that time the Contractor can make a formal submittal in accordance with the requirements contained in Section 013300.
- H. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

2.02 MOTOR CONTROL CENTER SUBSTITUTION

- A. All of the above in section 2.01 applies to the substitution of the MCC equipment with the exception that all proposed MCC substitutions must be included in the bid package, including all proposed dimensions of the equipment. Any proposed substitutions on this equipment may not be accepted after the bid package is received.
- B. Substitute manufacturers shall be responsible to fit MCC line-up as detailed on the drawings to the exact dimensions (or less) detailed on the drawings. Motor Control Center manufacturer shall provide applicable U.L. labeling for all sections shown on drawings and for complete installation of all equipment specified to be packaged into the Motor Control Center. All equipment specified to be installed in Motor Control Center shall be factory installed by Motor Control Center manufacturer. No exceptions.

PART 3 - EXECUTION

NOT USED

This space left intentionally blank.

REQUEST FOR SUBSTITUTION FORM

Project: Rehabilitation of Plant No. 4 -
Contracts E & M

Substitution Request Number: _____

Contractor: _____

Address: _____

To: _____ Date: _____

H2M Project Number: RDWD1904

Owner: Riverhead Water District

Contract Name: _____ Contract No.: _____

Specification Title: _____

Section: _____ Page: _____ Article/Paragraph: _____

Drawing No(s): _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____

Trade Name: _____ Phone #: (____) _____

Installer: _____ Address: _____

Phone #: (____) _____

History: ___ New product ___ 2-5 years old ___ 5-10 years old ___ More than 10 years old

Differences between proposed substitution and specified product:

___ Point-by-point comparative data attached

Reason for not providing specified item (Attach separate sheet if necessary):

Typical Similar Installation:

Project: _____

Engineer / Architect: _____

Address: _____

Owner: _____

Date Installed: _____

Submit complete installation list on separate sheets.

Proposed substitution affects other parts of Work: ☐ No ☐ Yes

Explain: _____

Gross Savings to Owner for accepting substitution: \$ _____

Proposed substitution changes Contract Time: ☐ No ☐ Yes

Add / deduct (circle): _____ days

Supporting data attached for evaluation of the proposed substitution:

☐ Product Data ☐ Photos ☐ Drawings ☐ Tests ☐ Reports ☐ Samples☐ Other (explain): _____

Attached data includes description, specifications, drawings, photographs, performance and test data adequate for evaluation of request; applicable portions of data are clearly identified.

Attached data also includes a description of changes to Contract Documents that proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

1. Proposed Substitution has been fully checked and coordinated with Contract Documents.
2. Proposed Substitution does not affect dimensions shown on Drawings.
3. Proposed Substitution does not require revisions to any other Prime Contractor's work.
4. The undersigned will pay for changes to building design, including Architectural and Engineering design, detailing, and construction costs caused by requested Substitution.
5. Proposed Substitution will have no adverse affect on other trades, construction schedule, or specified warranty requirements.
6. Maintenance and service parts will be locally available for proposed substitution.
7. The undersigned further states that the function, appearance, and quality of proposed Substitution are equivalent or superior to specified item.

This request for product substitution also constitutes a representation that I, as the Contractor:

1. Has investigated proposed Product and determined that it meets or exceeds the quality of the specified Product.
2. Shall provide the same warranty for the Substitution as for the specified Product.
3. Shall coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner, including extra charges by other Prime Contractors, material suppliers, and vendors.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Shall reimburse the Owner and the Engineer for review or redesign services associated with re-approval by authorities.
6. Shall reimburse the Owner for all additional engineering services claimed by the Engineer for extra services associated with the review of the Contractor's substituted item since it could not have been originally included in the Engineer's professional engineering services agreement. Reimbursement shall be based on the man-hours expended, at current billing rates.

Contractor's Authorized Representative (Typewritten): _____

Authorized Signature: _____

Date: _____

END OF SECTION 012500

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work under this Section specifies the procedures used to process partial payments and the Final Payment Request.

1.02 TIME FOR COMPLETION

- A. Inasmuch as the provisions of the Contract relating to the time for performance and completion of the Work are for the purposes of enabling the Owner to proceed with the construction of a public improvement in accordance with a predetermined program, and inasmuch as failure to complete the Work within the period herein specified may result in damage or loss to the Owner, time is of the essence of the Contract.
- B. Time for completion of the Work shall be in accordance with that stipulated in the Contract Documents.
- C. The date for completion will be calculated from the date shown on the Notice to Proceed. The Contractor shall execute the Work with diligence from day to day, and complete it within the time fixed.
- D. For the purpose of defining the date of substantial completion, the Project will be considered complete when all Work covered by the Contract has been performed and all installations and equipment have been tested and are ready for permanent use. Removal of the Contractor's equipment and other minor adjustments which do not prevent use of the Project will not be a factor in establishing the date of substantial completion.
- E. Notwithstanding the foregoing, the Engineer will establish the date of substantial completion when the project is accepted and ready for operation, and no large or major items of work are as yet outstanding. At such time, the Engineer will issue a punch list, itemizing the items of work remaining. The punch list will include "minor" items only, as defined solely by the Engineer. Any prior punch lists, which include "major" or significant items, as defined by the Engineer, shall not be a criterion in establishing the date of substantial completion.

1.03 PARTIAL COMPENSATION

- A. At the Owner's discretion, the Contractor may receive compensation for materials and products delivered to the site yet not installed providing:
 - 1. A canceled check or paid bill from the supplier is submitted to the Engineer indicating that the Contractor has paid the supplier for the material or equipment.
 - 2. The material or piece of equipment is properly stored and protected from the elements and/or vandalism in accordance with the manufacturer's written requirements for long term storage.
 - 3. A certificate of insurance is provided for the material or piece of equipment in the event of a fire, vandalism, theft, etc.
 - 4. A bill of material is delivered to the Engineer at the time of delivery itemizing the subject material or equipment. Payment will be made for on-site material and/or equipment in the amount of 80% of the gross amount of the paid invoice. This payment will be subject to the normal retainage of the partial estimate.
 - 5. The Engineer has agreed to the pre-purchasing of the materials.
- B. The Contractor may not receive compensation for materials and products stored in the Contractor's yard or shop unless permitted by the Owner.

1.04 APPLICATIONS FOR PAYMENT

- A. The Contractor shall review the percentage of work completed during the payment period with the Engineer, based on the bid items in the proposal. The Engineer shall make the final decision on the percentage of work completed.
- B. The form of application for payment shall be AIA Document G702, application and certificate for payment supported by AIA Document G703, Continuation Sheet.
- C. Submit one (1) copy of each payment application, completed, signed and notarized.
- D. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- E. The payment application shall include a Contractor Invoice and an Owner Claim Voucher.
- F. Provide completed Labor Affidavit Form for each pay period included in the certified payroll reports for each payment application for both the contractor and any subcontractor(s).
- G. Submit payment application to Engineer no later than the first day of each month. Payments received after the first day of each month shall be reviewed and processed after the first day of the following month. Only one application for payment will be reviewed and processed each month.
- H. Submit certified payroll receipts for all workers and subcontractors. Payroll receipts shall be submitted with every application for payment. All payroll receipts shall be certified correct and notarized by a Notary in the State of New York. Application for Payment will not be processed unless all payroll receipts are received.
- I. Contractor shall pay all workers and have all subcontractors pay all workers the prevailing New York State Wage Rates.
- J. Owner may conduct on-site interviews with all workers to verify payments of prevailing wage rates are enforced.
- K. The Engineer shall submit the documentation along with an Engineer's Payment Report to the Owner for payment.
- L. Retainage in the amount of 5% will be held from each partial payment. Retainage will only be released upon full completion of the project and will be included in the final payment.

1.05 ACCEPTANCE OF FINAL PAYMENT REQUEST

- A. The Contractor shall be conclusively deemed to have accepted the Final Payment Request as a correct statement of the total liability of the Owner and of the compensation paid and to be paid to the Contractor by the Owner unless within seven (7) days after delivery of his copy of the Final Payment Request to him, the Contractor shall return such copy to the Owner together with a statement of his objections to such request and of any claim for damages or compensation in excess of the amounts shown on the Request. The acceptance by the Contractor of the Final Payment Request approved by the Owner shall constitute a release and shall discharge the Owner from all further claims by the Contractor arising out of or relating to the Contract, including but not limited to, a release from all impact costs.

1.06 SCOPE OF PAYMENTS

- A. The Contractor shall receive and accept the compensation as herein provided, in full payment for furnishing all materials, labor, tools, and equipment and for performing all work contemplated

and embraced under the Contract, also for all loss or damage arising out of the nature of the Work or from the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered during the prosecution of the Work, and for all risks of every description connected with the prosecution of the Work, until its final acceptance by the Owner, also for all expenses incurred by, or in consequence of, the suspension or discontinuance of the said prosecution of the Work as herein specified, and for all actual or alleged infringements of patent, trademark, or copyright, and for completing the Work and the whole hereof, in an acceptable manner, according to the Plans, Specifications, and other Contract Documents. The payment of any partial or final estimate shall in no way or in no degree prejudice or affect the obligation of the Contractor, at his own cost and expense, to renew or replace all defects and imperfections, or damages. The Engineer shall be the judge, and the said Contractor shall be liable to the Owner for failure so to do.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION 012900

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Schedule of Values

1.02 SCHEDULE OF VALUES

- A. Submit for approval prior to the start of the work a Schedule of Values that indicates a breakdown of the labor, materials and equipment and other costs used in the preparation of the bid. This schedule shall be in sufficient detail to indicate separate figures for such items as excavation, concrete, equipment and all other items making up the lump sum price. The cost breakdown shall be separately itemized for each lump sum bid item in the project.
- B. Where the cost breakdown includes items for bond payment, insurance payment, job set-up, or job mobilization, these items will be paid based on paid invoices and copies of cancelled checks.
- C. Submit a Schedule of Values to the Engineer for review and approval within fifteen (15) calendar days from the date shown on the Notice to Proceed.

1.03 FORM OF SUBMITTAL

- A. Submit typewritten Contract Cost Breakdown on AIA Form G703 - Application and Certificate for Payment Continuation Sheet or EJCDC 1910-8-E. The Engineer reserves the right to revise the form or provide a form prepared by the Engineer.
- B. Use the Table of Contents of the Contract Specifications as a basis for format for listing costs of work for Sections under Divisions 1-48 as sections apply to work. Not all Sections need be assigned a breakout price as determined by the Engineer.
- C. Identify each line item with number and title as listed in Table of Contents.
- D. Provide dollar values for each line item for labor, overhead, profit, material, and equipment components for each category of work if requested by the Engineer.
- E. List quantities of materials specified under unit price allowances.
- F. The Schedule of Values, after approval by the Engineer, shall be the basis for the Contractor's Application for Payment.
- G. The first Application for Payment will not be reviewed prior to an approved breakdown.

1.04 PREPARATION OF SCHEDULE OF VALUES

- A. Breakdown schedule of values based on bid items in proposals with further breakdown below each item. In addition to the above, provide a separate line item cost below each bid item, as applicable, for each of the following items which shall be supported by proof where requested by Engineer:
 - 1. Performance and payment bonds.
 - 2. Insurance.
 - 3. Mobilization and Demobilization (Amounts shall be equal in value).
 - 4. Temporary facilities and measures as specified in Section 015000.
 - 5. Preparation of the Project Construction Schedule, and updates, as specified in Section 013300.

6. Rubbish removal and daily cleaning up. (Provide a total dollar amount and a daily rate for each calendar day during the contract period.)
 7. All Cash Allowance items as contained in Section 012100.
 8. Surveyor used for layout.
 9. A total dollar amount for furnishing all the Operations and Maintenance Manuals specified throughout the specifications.
 10. Final cleaning.
- B. Show total costs including overhead and profit.
- C. Provide additional details and data to substantiate the cost breakdown as requested by the Engineer.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 012973

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work of this Section includes:
 - 1. Requests for Interpretation or for information
 - 2. Administration of subcontracts
 - 3. Coordination of work with utility companies and the Owner/Engineer
 - 4. Communication and coordination requirements
 - 5. Qualifications of Contractor's job site superintendent
- B. Site staffing requirements for the Contractor's superintendent are also specified herein, the costs for which shall be included in the Contract price.

1.02 REQUEST FOR INTERPRETATION OR INFORMATION

- A. The Contractor shall use the Request for Interpretation/Information Form included within this Section when the Contractor feels that additional information is needed to perform the work of the Contract.
- B. The Engineer may not respond to any requests unless the form is used.
- C. The Engineer's verbal response(s) to the Contractor's formal requests, if provided, shall not constitute an official response and if acted upon by the Contractor are done so at the Contractor's own risk and liability and shall not be subject to claims for additional compensation.
- D. A signed facsimile or emailed image of the form will be accepted.
- E. The Engineer will respond in writing to the request as soon as possible.

1.03 COORDINATION BETWEEN CONTRACTORS

- A. During the progress of the Work, other Contractors may be engaged in performing other work or may be awarded other contracts for other work on this Project. Each Contractor shall coordinate all the work to be done with the work of each Contractor(s) through the Owner.
- B. Each Contractor shall fully cooperate with each other Contractor(s) and carefully fit its own work to that provided under other contracts as shown or specified in the Contract Documents and as may be coordinated by the Owner/Engineer.
- C. Each Contractor shall not commit or permit any act that will interfere with the timely performance of work by any other Contractor.
- D. The Contractor shall conduct his/her own operations, and to cooperate with such other parties, so as to cause as little interference as possible with the work by others.
- E. The Contractor agrees to make no claim against the Owner/Engineer for additional payment due to delays or other conditions created by the operation of others.
- F. If there is a difference of opinion as to the respective project rights of each Contractor doing the work, within the limits of or adjacent to the Project, the Owner/Engineer shall decide as to the respective rights of the various parties involved in order to secure completion of the work in a satisfactory manner. The Owner/Engineer's decision shall be final and binding on each Contractor.

- G. If any portion of the work of the Contractor, or any of his/her subcontractors, depends upon the proper execution of the work by others, the Contractor shall promptly give written notice to the Engineer of all purported defects in the installed work as renders it unsuitable for proper execution and completion of his own work. The Contractor shall further notify the Engineer of all supposed delays, in the performance of his/her work, as will affect the timely performance of his own work or the project.
- H. The Contractor's lack of notice shall constitute an acceptance by him/her that the work of others is fit and proper for the reception of the Contractor's own work, except as to defects developing in the work that could not have been reasonably foreseen.
- I. The Contractor's lack of notice shall also constitute an acceptance by him/her and an acknowledgement of the timely performance of work by other Contractors or the Owner and that no claims for additional compensation may result.
- J. If the Owner/Engineer determines that the Contractor is failing to coordinate his own work with the work of others, then the Owner shall have the right to enforce the provisions of the Contract as related to non-performance.
- K. The Owner/Engineer shall not be liable for any damages suffered by this Contractor by reason of any other Contractor's failure to comply with the directions so issued by the Owner/Engineer, or by reason of another Contractor's default in performance; it being understood that the Owner does not guarantee the continued efficiency or work production of any Contractor and by execution of the Contract, the Contractor fully understood the potential coordination problems associated with projects involving multiple prime construction contracts.
- L. The Contractor's attention is specifically directed to the fact that he may not have exclusive occupancy of the work area within the limits of the Contract. Each Contractor shall afford the Owner, other Contractors, and utilities reasonable opportunity for the storage of their materials and equipment, and the execution of their work, and shall connect and coordinate his work with theirs as required by the Contract Documents.

1.04 SUBCONTRACTOR ADMINISTRATION AND COORDINATION

- A. Terms and conditions of the Contract shall be binding upon each subcontractor.
- B. Furnish each subcontractor and major equipment vendor at least one (1) copy of the Plans and Technical Specifications.
- C. Provide at least one (1) copy of each approved shop drawing to each subcontractor whose work may depend upon the contents of the shop drawing submittal. The Owner reserves the right to stop all work, without claims for delay, until such time as appropriate subcontractors are furnished with appropriate shop drawings.
- D. Each Contractor shall sequence and schedule the work of subcontractors. Coordinate construction and administration activities of subcontractors. The Engineer and Owner will not accept telephone calls, facsimiles or office visits from any subcontractors on the project. Subcontractor and vendor questions and clarifications shall be directed to the Engineer by the Contractor.
- E. The Contractor's on-site project superintendent shall inspect all the work of all of his/her subcontractors, as it is being constructed. The Contractor's subcontractor shall not be permitted to do any work on the site without the Contractor's job site superintendent also being there to inspect the work as it is being performed.

1.05 UTILITY COORDINATION

- A. Comply with the requirements of 16 NYCRR Part 753 - Protection of Underground Facilities. Submit a letter stating the case number.
- B. Comply with the utility coordination requirements contained in the General Conditions.

1.06 PUBLIC/PRIVATE UTILITIES

- A. Notify all public and private utilities in accordance with Article 20, Section 322-a of the New York State General Business Law for location and markout of existing utilities in the vicinity of the work.
- B. Repair all utilities damaged during the Work to the standards and approval of the respective utility at no cost to the Owner.

1.07 SPECIFIC COORDINATION REQUIREMENTS

- A. Sequence and schedule work so as not to interfere with the work by others. Coordinate the work of this Contract with the work by others. In case of conflicts due to improper coordination by the Contractor, the Owner/Engineer's resolution will be final. No compensation will be awarded for extra work required to resolve conflicts.
- B. Coordinate space requirements, supports, and installation of mechanical, electrical and plumbing work which may be indicated diagrammatically on the Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practicable. Place runs parallel with building lines. Utilize spaces efficiently to maximize accessibility for other installations, maintenance, and to facilitate repairs.
- C. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of all fixtures and outlets with finish elements and work by all other trades.
- D. Coordinate the work by complying with the following:
 - 1. Email Account: Each Contractor shall maintain an email account that shall be used to improve communication. An email shall not constitute a formal advisement regarding the terms and conditions of the contract. Email shall only be considered an informal way of notifying relevant parties of project related activities.
 - 2. Email List: Each Contractor, within five (5) calendar days from the Notice To Proceed, provide a list of email addresses for each major equipment supplier and local representative, if such exists. A contact person shall be provided for each email address.
- E. The Contractor shall sequence and schedule work so as not to interfere with the work by others and to afford each Contractor the time to complete their contractual obligations with the Owner. Coordinate the work of this Contract with the work by others. Coordination includes, but is not limited to, the following:
 - 1. Schedule work with all trades throughout the project to prevent interference.
 - 2. Accomplish work in coordination with the other Contractors in a manner that will allow each Contractor adequate time (at the proper stage of construction as determined by the Owner/Engineer) to perform and complete the work of their contract.
 - 3. The Contractor shall annotate on each of his own shop drawings and submittals, information that is relevant to the work of others or where potential conflicts in the installed work may occur. The Contractor shall "bubble" in green ink the area of potential conflict so as to alert the reviewer.

4. Each prime Contractor shall provide the Engineer with a list of shop drawings that they may require to properly coordinate the work. If a list is not provided to the Engineer within fifteen (15) calendar days from the date of the Notice to Proceed, then it shall be taken that shop drawings of other prime Contractors are not required. Each prime Contractor shall be responsible for providing the list within the time specified.
 5. In case of conflicts due to improper coordination by any Contractor, the Owner/Engineer's resolution will be final. No compensation will be awarded for extra work required to resolve conflicts or to coordinate the work of all contracts.
 6. Coordinate space requirements, supports, and installation of mechanical, electrical and plumbing work which may be indicated diagrammatically on the Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practicable. Place runs parallel with building lines. Utilize spaces efficiently to maximize accessibility for other installations, maintenance, and to facilitate repairs.
 7. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of all fixtures and outlets with finish elements and work by all other trades.
- F. Shop Drawings and Submittals Coordination Procedure:
1. The Engineer will forward copies of relevant shop drawings to all prime Contractors, whose work may be subject to that of others, as solely determined by the Engineer.
 2. The Contractor shall then, within five (5) calendar days of receipt, review said shop drawings provided by the Engineer for the purposes of resolving field and fabrication problems and as a way to coordinate the work.
 3. Immediately notify the Engineer should a purported conflict in the work be discovered so that the Engineer can investigate and take appropriate action.
 4. If a shop drawing was so provided by the Engineer and a conflict in the work was not brought to the attention of the Engineer, then the conflict shall be immediately corrected by the Contractor submitting the shop drawing.
- G. Each Contractor shall also coordinate the work by complying with the following:
1. Construction Schedule: Each Contractor shall provide a construction schedule as specified in Section 013216 - Construction Schedules.
 2. Weekly Schedule: By 3:00 PM of each Friday during the construction period, each Contractor shall fax or email a typed memo addressed to the Engineer/Owner's resident field engineer/inspector and designated office project manager summarizing the work for the following week. The memo shall also be faxed or emailed to each Prime Contractor's home office and the Owner. The memo shall briefly itemize the planned activities for the coming week. The memo shall also include a summary of expected material/equipment deliveries, concrete pours, utility tie-ins, excavated material removals and other heavy construction traffic that may impact the work activities for the coming week.
 3. Email Account: Each Contractor shall maintain an email account that shall be used to improve communication. An email shall not constitute a formal advisement regarding the terms and conditions of the contract. Email shall only be considered an informal way of notifying relevant parties of project related activities.
 4. Email List: Each Contractor, within five (5) calendar days from the Notice To Proceed, shall provide a list of email addresses for each major equipment supplier and local representative, if such exists. A contact person shall be provided for each email address.
 5. Equipment and Startup Schedule: All Contractors shall also submit a preliminary equipment delivery schedule and a preliminary startup schedule for all equipment and systems being furnished under the Contract. This schedule shall be submitted within 30 calendar days from the date of the Notice To Proceed.
 - a. Include an early and late date for each item.
 - b. Indicate the time necessary to physically install and ready each item so that other work can be completed by other Prime Contractors.

- c. The Engineer/Architect may waive this schedule if the Contractor has adequately shown the information on the construction schedule, in the opinion of the Engineer/Architect.

1.08 CONTRACTOR'S JOB SITE SUPERINTENDENT

- A. Each Contractor shall employ an on-site superintendent as specified herein below. He/She shall be a full-time employee of the Contractor.
- B. Each Contractor shall name the job site superintendent within five (5) days of the Notice To Proceed. A letter to the Engineer shall be provided.
- C. He/She shall have the authority to sequence and schedule the work, and to staff the project, so as not to interfere with the work by others and to complete the work daily within the time so required.
- D. Each Superintendent shall have a minimum of five (5) years of experience as a job site superintendent for projects of equal size and complexity.
- E. The superintendent may be a foreman or crew supervisor.
- F. Contract E superintendent may be a foreman or crew supervisor.
- G. Contract M superintendent may be a foreman or crew supervisor.
- H. Each superintendent shall be qualified to perform the duties so required to successfully complete the work in accordance with the Contract Documents.
- I. All construction superintendents shall be on the project site while work under his/her contract is being performed, either by direct forces or by subcontractors as stipulated above for subcontractor coordination.
- J. Each superintendent shall speak English. If required by the Engineer, provide a resume for the proposed superintendent that shall be typed and shall list the qualifications of the superintendent. Prior to the Contractor assigning a superintendent to the project, he may wish to arrange an interview with the Engineer to determine the proposed superintendent's ability to properly coordinate the work through the Owner/Engineer. The Contractor shall employ a superintendent acceptable to the Owner.

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REQUEST FOR INTERPRETATION/INFORMATION (RFI)

OWNER'S NAME: Riverhead Water District

PROJECT NAME & CONTRACT DESIGNATION: Rehabilitation of Plant No. 4 - Contracts E & M

CONSTRUCTION CONTRACT NO.: RDWD1904

Product, Item, or System:		
Request Date:		RFI No.:
Specification Section:		Paragraph Ref:
Contract Drawing Reference(s):		
Describe Request:		
Signed:		See Contractor's Attachments for Additional Description for Information
Owner/Engineer Response:		
Engineer (Printed):		See Engineer's Attachments for Additional Information
Engineer's Signature & Date		<i>Response Accepted By Contractor</i> <i>Contractor's Signature & Date</i>
The Work shall be carried out in accordance with these supplemental instructions without change in Contract amount or Contract time for completion. Prior to proceeding with these instructions, indicate your acceptance of these instructions by signing where indicated and returning this form to the Engineer.		

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 013100

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work of this Section includes the requirements for progress meetings.

1.02 PRE-CONSTRUCTION CONFERENCE

- A. Each Contractor is required to attend the pre-construction conference at a location, date, and time selected by the Owner.
- B. The owner, a partner, or a corporate officer representing each Contractor shall attend the conference. The job site superintendent and office project manager for each Contractor shall also attend.
- C. The Engineer will prepare an agenda for the conference.

1.03 PROGRESS MEETINGS

- A. Progress meetings will be held approximately once every two (2) weeks during the project. The Owner may elect to hold meetings more or less frequently.
- B. At least seven (7) calendar days advance notice will be given by the Engineer or the date for the upcoming meeting will be set during the progress meeting.
- C. Attendance at progress meetings shall be mandatory. An amount of \$1,000 shall be deducted from the Contract Amount for each announced meeting not attended by the Contractor.
- D. The owner, a partner, or a corporate officer representing the Contractor shall attend each announced progress meeting. The job site superintendent and office project manager for each Contractor shall also attend.
- E. Subcontractors shall attend when requested by the Owner or Engineer at no cost to the Owner.
- F. Meetings will be conducted by Engineer at a location selected by the Owner, normally at or adjacent to the project site.
- G. The minimum agenda will cover:
 - 1. Review minutes of previous meetings.
 - 2. Identify present problems and resolve them.
 - 3. Plan work progress during next work period.
 - 4. Review the status of off-site fabrication and delivery schedule.
 - 5. Review shop drawings and submittal schedules.
 - 6. Review change order status.
 - 7. Review status of construction progress schedule.
 - 8. Coordinate access requirements.
 - 9. Other business related to the work.

1.04 OTHER MEETINGS

- A. Attend special meetings which may be required or called for by Federal, State or Local authorities, utility companies, Owner, Engineer or any other firm, person or organization related to the project.

1.05 CONDUCTING MEETINGS

- A. General - This paragraph covers Owner and/or Engineer meetings with Contractor and/or his subcontractors. Neither Owner nor Engineer wishes to meet solely with a subcontractor and requests for such meetings will be discouraged. If a meeting is deemed necessary, every effort will be made to have Contractor attend. If, for some reason, circumstances do not allow such, the meeting may be held, minutes of the meeting will be sent to contractor and decisions on any major questions will be reserved until contractor has been consulted. Subcontractors may accompany contractor to meetings provided contractor notifies Engineer in advance.
- B. Chairman - When Engineer/Owner attend meetings, Engineer, or his duly authorized representative, will act as chairman. Should Owner-Contractor meetings be necessary, Owner will chair such meetings.
- C. Notices - Engineer or Owner will issue notices of meetings to all parties concerned and will note, thereof, who must attend and who may attend if they so desire. When a Contractor desires a formal meeting, make a request through Engineer. Except when Engineer determines that a prompt meeting is essential, all notices will be issued at least one week in advance of the meeting date.
- D. Agenda - All parties shall inform Engineer of items desired to be discussed and Engineer will notify all parties of all items to be considered. This is to allow each party to fully prepare for the meeting. This shall not be construed to mean that other items cannot be brought up at the meetings.
- E. Time Limits - It is the intent to hold productive and efficient meetings and to keep them as short as is reasonably possible. The Chairman will be the sole judge as to whether or not further discussion on any matter is warranted and all discussions shall cease when he so orders.
- F. Minutes - Minutes of meetings will be kept, written and distributed by the Chairman or his duly authorized representative. Minutes of all meetings will be available upon request to the Chairman.
- G. Conduct - It is the intent to conduct all meetings in an orderly manner, to reasonably discuss all items and to hear and observe the rights and opinions of all parties. The Chairman will allow each party to speak, however, he reserves the right to order any individual to leave the meeting at any time for any reason.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 013119

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies the requirements for preparing construction schedules and for keeping them up to date.
- B. All schedules shall be submitted in accordance with the requirements contained herein in Section 013300.

1.02 PRIME CONTRACTORS SCHEDULE TYPES

- A. Gantt Chart Type: Each Contractor shall prepare a Gantt Chart type schedule as specified hereinafter.
 - 1. Contractor E shall prepare a Gantt Chart type schedule as specified hereinafter.
 - 2. Contractor M shall prepare a Gantt Chart type schedule as specified hereinafter.

1.03 CONSTRUCTION SCHEDULE - GENERAL

- A. Coordinate the work and maintain the construction schedule. In the event actual progress begins to lag the schedule, promptly employ additional means and methods of construction to make up the lost time.
- B. Keep the construction schedule current and revise and resubmit as often as necessary to accurately reflect the conditions of the work, past progress and anticipated future progress.
- C. The construction schedule shall be completed, submitted, and deemed received by the Engineer prior to the first payment application.
- D. The schedule, when approved by the Engineer and the Owner, shall establish the dates for starting and completing work for the various portions of the Contract. It shall be the duty of the Contractor to conform to his/her own schedule and to perform the work within the time limits indicated. Failure to adhere to the approved schedule shall expose the Contractor to disputes, claims and additional costs incurred by others.
- E. Coordinate letting of subcontracts, material purchases, shop drawing submissions, delivery of materials, and sequence of operations, to conform to the schedule.
- F. Coordinate the construction schedule with the proposed schedules of the equipment suppliers and subcontractors.

1.04 CONSTRUCTION SCHEDULE - GANTT CHART TYPE

- A. The schedule shall show, in detail, the proposed sequence of the work and the estimated date of starting and completing each stage of the work in order to complete the project within the contract time.
- B. Prepare the schedule in a manner so that the actual progress of the work can be recorded and compared with the expected progress.
- C. Coordinate the construction schedule with the proposed schedules of the equipment suppliers and subcontractors.
- D. The schedule shall be plotted out in color and shall be 36-inch by 40-inch. It shall contain as many sheets as are necessary to show all rolled down tasks. Partially printed schedules will not

be accepted. Each Contractor shall arrange to have it plotted on a color plotter suitable for the intended application.

- E. The schedule shall show the following:
 - 1. Task links/task dependency in blue ink.
 - 2. Work under the Contract in green ink.
 - 3. Work by others in blue ink.
 - 4. Milestone dates (zero duration) by a red diamond.
 - 5. The end date for each task and subtask at the end of a bar.
 - 6. The description of all major tasks within the bar. The bar shall be red.
 - 7. Critical path.

1.05 REVISION OF PROJECT PROGRESS SCHEDULE

- A. Each Prime Contractor shall evaluate and provide updated construction schedules monthly in accordance with job requirements. Each update shall be submitted to the Engineer for information purposes and be provided by the last Friday of every month
- B. Each Contractor shall modify his construction schedule to accommodate coordination of the construction contracts by the Owner/Engineer without claims for additional compensation or delay.
- C. From time to time, and at stages deemed appropriate by the Engineer, the Engineer may issue updated schedules to reflect the project's status. The percent complete for each task may be shown, as determined by the Engineer.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 013216

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies the requirements for making submissions for the project. Electronic submissions will be required unless expressly noted otherwise.
- B. Refer to Section 013216 - Construction Schedule for the requirements concerning the submission of construction schedules and for making updates thereto.

1.02 IDENTIFICATION OF SUBMITTALS

- A. Each and every submission shall be provided by the Contractor and shall be accompanied by a SUBMISSION TRANSMITTAL FORM. The Contractor shall use the specimen form made a part of this Section. *Submittals not containing the form will be returned to the Contractor un-reviewed.* The Engineer will not review project submissions until such time as the form is completed in its entirety. Identify each submittal and resubmittal using the form.
- B. Each individual submittal shall be identified with a 'submission log number' as specified here in this example: 033000-01-1
 - 1. The Section number for which the submittal applies, followed by a dash, shall be indicated, "033000-".
 - 2. The submittal within the Section shall be indicated by the next grouping "01". For instance and in this example, the concrete design mix may be submission "01", the waterstop catalog cut may be "02", and so on. Submittals shall be sequentially numbered within the Specification Section, i.e. 01, 02, etc.
 - 3. The number of times the submission was made shall be preceded by a dash and a numerical suffix as follows: "-1". In this example, the concrete design mix is being submitted for the first time. Use the number "1" for the first time it is being submitted.
 - 4. Subsequent submissions of the concrete design mix shall utilize the original number and a sequential numeric suffix, i.e. "2" for a resubmission, "3" for the second resubmission, and so on. Substitute the new number for the original "1".
- C. Where a layout drawing, containing different elements of the project, is being submitted and there is a question as to what the log number might be, then the Contractor shall contact the Engineer so that an agreed upon log number can be assigned.
- D. It is incumbent on the Contractor to initially assign the submission log number designation to each submission. Submissions not containing a log number, as specified above, will be returned to the Contractor un-reviewed by the Engineer.
- E. Every submittal shall also be accompanied by a Transmittal Letter (or "Speed Form") addressed to the Engineer's Project Manager as hereinafter defined.

1.03 COORDINATION OF SUBMITTALS

- A. Prior to submitting to the Engineer, fully coordinate all interrelated work. As a minimum, do the following:
 - 1. Determine and verify all field dimensions and conditions by field measuring existing conditions and the installed work of this Contract and work by others.
 - 2. Coordinate with all trades, subcontractors, vendors, system and equipment suppliers and manufacturers, public agencies, and utility companies and secure all necessary approvals, in writing.
- B. Make submittals in groups containing all associated items that in some way depend upon each other.

1. This also applies to color charts, as one color may not be able to be selected without the selection of other colors so as to form a color-coordinated group.
2. The Engineer may elect not to review partial or incomplete submissions, whereupon he will notify the Contractor of the additional submissions that are required before a review can be made.

1.04 TIMING OF SUBMITTALS

- A. Make submittals far enough in advance of scheduled dates of installation to provide time for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery. The Engineer will review submittals in a manner as expedient as possible, and will generally send a written response to the Contractor within seven (7) calendar days of receipt of submittals.
- B. Submissions may be returned reviewed, unreviewed, rejected, returned conditioned upon submission of related items, or for other reasons set forth in the Contract Documents.
- C. Make submissions well in advance as the returning, rejecting or disapproval of submissions or other similar circumstances are possible and are deemed "avoidable delays". Costs for these delays or those attributed to Contractor's tardiness in making submittals shall be borne by the Contractor.
- D. **All** submittals requiring Engineer's review (except operations manuals) as required under the technical specifications of these documents shall be submitted within **FORTY FIVE (45)** consecutive calendar days after the date of the Notice to Proceed. An amount of **\$250** per calendar day shall be deducted from payment due the Contractor for **each** day that an outstanding submittal exists, said amount being the cost associated with the Engineer's review.
- E. Operation and maintenance manuals shall be submitted at least **FORTY FIVE (45)** consecutive calendar days prior to scheduled startup of the unit or system.
- F. If material or equipment is installed before it has been deemed to be in general compliance with the Contract Documents, as determined by the Engineer, the Contractor shall be liable for its removal and replacement at no extra charge and without an increase in contract time.

1.05 DESTINATION OF SUBMITTALS

- A. Each submission of documents shall be accompanied by a transmittal form containing the name of the project, the contract name, the Engineer's project manager, a submittal ID number, and a description of content for the submitted items.
- B. A copy of the TRANSMITTAL FORM shall also be provided to the Engineer's inspector at the job site.
- C. Electronic submittals shall be transmitted through the Newforma® Project Center website or by email, pending instruction by the Engineer. H2M architects + engineers is using a project information application called Newforma® Project Center. One of its components is Newforma Info Exchange, a web application that facilitates sending and sharing transmittals, and file sharing.
- D. As an external team member on this project the Contractor will be required to access the H2M architects + engineers/Newforma Info Exchange website for information related to the project, including file transfers, RFI, Submittals, Action Items, and project Calendar information. The Contractor will have access to this website using any internet-capable computer running Internet Explorer or Firefox. All data transmitted through the H2M architects + engineers/Newforma Info

Exchange website is encrypted and logged. Further instructions will be provided to the Contractor after the contract is awarded.

- E. Other submissions, such as material samples or other items as instructed by the Engineer, shall be sent to the Engineer's office as follows:

H2M architects + engineers

538 Broad Hollow Road - 4th Floor East

Melville, New York 11747

Attention: H2M Project Manager (Named at Pre-Construction Conference or in the Notice to Proceed)

1.06 CLARITY OF SUBMITTALS

- A. All printed materials shall be neat, clean, professionally drafted by hand or by computer, clear, legible, and of such quality that they can be easily reproduced by normal photocopying.
- B. All electronic submittals shall be produced with a minimum resolution of 300 dpi.
- C. Binders of information shall be separated into groups, subsystems, or similar equipment/function. Copies not conforming to this paragraph will be returned to the Contractor without the Engineer's review.

1.07 CONTRACTOR'S REPRESENTATION

- A. By making a submission, the Contractor represents that he has determined and verified all field measurements and dimensions, field construction criteria, site and building constraints in terms of limitations in moving equipment into an enclosed space, materials, catalog and model numbers and similar data and that he has checked and coordinated each submission with other work at or adjacent to the project site in accordance with the requirements contained in Section 013100 - Project Management and Coordination and the Contract Documents.
- B. Every SUBMISSION TRANSMITTAL FORM shall contain the Contractor's approval stamp and date showing that the submittal has been approved by the Contractor. The Engineer will not review submittals that have not yet been reviewed and approved by the Contractor.

1.08 ENGINEER/ARCHITECT'S REVIEW

- A. Engineer will review and comment on each submission conforming to the requirements of this Section.
 - 1. Engineer's review will be for conformance with the design concept of the project and will be confined to general arrangement and compliance with the Contract Documents only, and will not be for the purpose of checking dimensions, weights, clearances, fittings, laying lengths, tolerances, interference's, for coordinating the work by others or subcontractors.
 - 2. The Engineer's review of a separate item, or portion of a system, does not represent a review of an assembly or system in which the item functions.
- B. The Engineer will mark submittals as follows:
 - 1. NO EXCEPTION TAKEN (A) - No corrections, no marks. The content of this submittal has been reviewed by the Engineer and been found to be in general compliance with the Contract Documents. No further submission of this submittal is required and the information contained in the submittal may be built into the work in accordance with the Contract Documents.
 - 2. MAKE CORRECTIONS NOTED (B) - Minor amount of corrections. The content of this submittal has been reviewed by the Engineer and has been found in general to be in compliance with the Contract Documents. The notations made on the submittal by the

Engineer shall be incorporated into the work in accordance with the terms and conditions of the Contract Documents. No further submission of this submittal is required.

3. AMEND AND RESUBMIT (C) - The content of this submittal has been reviewed by the Engineer and this review has determined that additional data and/or modification to the submitted data or other changes are required to bring the work represented in this submittal into compliance with the Contract Documents. This submittal shall be reviewed and revised in accordance with the Engineer's comments and resubmitted to the Engineer for review. The information contained on the resubmittal shall not be incorporated into the work until the submittal is returned to the Contractor marked "NO EXCEPTION TAKEN" or "MAKE CORRECTIONS NOTED".
 4. REJECTED (D) - The content of this submittal has been reviewed by the Engineer and has been determined not to be in accordance with the requirements contained in the Contract Document and requires too many corrections or other justifiable reason. The submittal shall be corrected and resubmitted or a submittal of an alternate shall be provided. No items are to be fabricated under this mark.
 5. SUBMIT SPECIFIED ITEM (E) - The content of this submittal has been reviewed by the Engineer and this review has indicated that the work displayed in the submittal is not in compliance with the Contract Documents. The Contractor shall submit another submittal for this portion of the work, which complies with the Contract Documents.
 6. RECEIVED (R) - This submittal is accepted on the project and filed for record purposes only, in accordance with the terms and conditions of the Contract Documents. Documents marked "RECEIVED" will not be returned.
- C. No payment will be made on any item for which a submission is required if such submission:
1. has not been made,
 2. has been made but was not stamped "No Exceptions Taken" by Engineer,
 3. has been made and stamped "Make Corrections Noted", but contractor has not complied with Engineer's notes marked on the submittal,
 4. has been made and stamped "No Exceptions Taken", but item provided does not conform to the shop drawing nor to the Contract Documents.
- D. Submittals not required by these specifications will not be recognized or processed.
- E. Provide an 8-inch by 10-inch space for the Engineer's review stamp.

1.09 RESUBMISSIONS

- A. Prepare new and additional submissions, make required corrections, and resubmit corrected copies until found in compliance with the Contract Documents.
- B. On, or with, re-submittals, clearly describe revisions and changes made, other than the corrections requested by Engineer, which did not appear on the previous submissions.

1.10 CONTRACTOR'S RESPONSIBILITIES

- A. Engineer's review of submittals shall not relieve the Contractor of his/her responsibility for any deviation from the requirements of the Contract Documents nor relieve the Contractor from responsibility for errors or omissions in the submittals.
- B. No portion of the work requiring a submission shall be commenced until the Engineer has found the submission in general compliance with the Contract Documents.
- C. The Contractor shall provide written notification of any specification or drawing deviation.

1.11 EXCESS COSTS FOR ENGINEERING/ARCHITECTURAL SERVICES

- A. The Owner will charge to the Contractor, and will deduct from the partial and final payments due the Contractor, all excess engineering and architectural expenses incurred by the Owner for extra services (work) conducted or undertaken by the Engineer as stipulated below:
 - 1. Services and other similar charges because of the Contractor's errors, omissions, or failures to conform to the requirements of the Contract Documents as related to administrative charges associated with non-compliance with the requirements for making project submissions.
 - 2. Services and other similar charges required to examine and evaluate any changes or alternates proposed by the Contractor and which may vary from the Contract Documents.
 - 3. Services and other similar charges as a result of the Contractor's proposed substitution of materials, equipment or products which require a redesign of any portion of the project, as contained in the Contract Documents at the time of bid.
 - 4. Services and other similar charges as a result of the Contractor's proposed substitution of products which require an engineering and/or architectural evaluation, beyond the time stipulated in Section 012500, to determine if the substituted product is equal to that specified.
 - 5. Services and other similar charges as a result of changes by the Contractor to dimensions, weights, sizes, voltages, phase, horsepower, materials of construction, and similar physical or operating characteristics of the product furnished which require redesign of the project in any way.
 - 6. Services and other similar charges for the review of resubmissions of shop drawings that have been marked as "No Exceptions Taken" or "Make Corrections Noted".
 - 7. Services and other similar charges for the review of shop drawings submitted more than two (2) times for the same product or portion of the work.

1.12 MISCELLANEOUS SUBMITTALS

- A. Provide a Submittal Schedule within seven (7) calendar days from the date of the Notice to Proceed. The Submittal Schedule shall list all submittals for the project referenced by draft log number. Provide the estimated date that the submittal will be transmitted to the Engineer for review.
- B. Within seven (7) calendar days from the date of the Pre-Construction Meeting, submit a Proposed Products List. This list shall be a complete listing of all products proposed for use, with name of manufacturer, service headquarters, trade name and model number of each product. Partial listings will not be accepted.
- C. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.13 SUBCONTRACTOR LIST

- A. The Contractor shall submit, on AIA Form G705, within THIRTY (30) calendar days after the date of the Notice to Proceed, a list of all subcontractors, including the names of the major subcontractors that were submitted at the time of the bid.

1.14 MATERIAL SAFETY DATA SHEETS (MSDS)

- A. Comply with "Right to Know" requirements of Chapter 551 of Laws of New York, 1980, concerning notification of the use of toxic substances.
- B. Any product or substance used by the Contractor or its subcontractors which is listed in Subpart Z of OSHA Part 1910 Title 29 of the Code of Federal Regulations entitled "Toxic and Hazardous

Substances" shall be identified to the Owner/Engineer by the Contractor's submission of a standard Material Safety Data Sheet (MSDS) in accordance with "Right To Know" requirements.

- C. Products will not be permitted to be kept on site without a MSDS.

1.15 SHOP DRAWINGS

- A. Submit shop drawings for all fabricated work, for all manufactured items and for items specifically required by the specifications.
- B. Submit one (1) electronic copy of each standard drawing, catalog cut, or other material. All shop drawings or submittals that are not in the standard 8-1/2" x 11" format shall be submitted both electronically and in paper. Samples shall be delivered directly to the office of the Engineer. The Engineer will return an electronic copy of each submittal once reviewed.
- C. Subcontractors shall submit shop drawings directly to the Contractor for checking. Thoroughly check subcontractors' shop drawings for measurements, sizes of members, details, materials, and conformance with the Contract Documents.
 - 1. Return submittals which are found to be inaccurate or in error.
 - 2. Do not submit to the Engineer until all corrections have been made.
- D. Clearly show the relationship of the various parts of the project and where the information provided on the submission depends upon field measurements and existing conditions.
- E. The Contractor shall make all measurements, confirm existing conditions, and include them on the shop drawings before making a submission to the Engineer.
- F. Submissions for a single item, or group of related items shall be complete.
- G. When submitting manufacturers' catalogs, pamphlets or other data sheets, in lieu of prepared shop drawings, clearly mark the items being submitted for review.
- H. If the shop drawings contain any departures from the contract requirements, specifically describe them in the letter of transmittal.
 - 1. Where such departures require revisions to layouts, structural, architectural, electrical, HVAC or any other changes to the work as shown, Contractor shall, at his own expense, prepare and submit revised drawings accordingly.
 - 2. Make drawings the same size as the Contract Drawings and to the same scale.

1.16 SAMPLES

- A. Where required, or where requested by the Engineer, submit sample or test specimens of materials to be used or offered for use.
 - 1. Samples shall be representative, in all respects, of the material offered or intended, shall be supplied in such quantities and sizes as may be required for proper examination and tests, and shall be delivered to Engineer, prepaid, along with identification as to their sources and types of grades.
 - 2. Submit samples well in advance of anticipated use to permit the making of tests or examinations.
- B. Samples will be checked for conformance with the design and for compliance with the Contract Documents.
- C. Work shall be in accordance with the approved sample. The use of materials or equipment for which samples are requested or required to be submitted is not permitted until such time that the Engineer has completed his review.

1.17 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation. Provide manufacturer's instructions with shop drawings.

1.18 CERTIFICATIONS

- A. Submit certifications of compliance indicated in the Contract Documents.
- B. Certifications shall be complete and exact, they shall be properly authenticated by the written signature, in ink, of an owner, officer or duly authorized representative of the person, firm or organization issuing such certification and they shall guarantee that the materials or equipment are in complete conformance with the requirements of these specifications.

1.19 COLORS AND PATTERNS

- A. Unless the precise color and pattern are specified, whenever a choice of color or pattern is available in a specified product, submit accurate color and pattern charts for Engineer's and Owner's review and selection.

1.20 MANUFACTURER'S SERVICE CENTER

- A. The product of a manufacturer who does not maintain an adequate nearby service center and a sufficient stock of spare parts are subject to rejection by Engineer solely on that basis.
- B. With each submission, submit information on manufacturer's facilities and give complete details of his service policies and capabilities, and a general idea of the stock of spare parts available. Submit this information in the form of a certification. Also include names, addresses and telephone numbers of at least three of the service center's present customers who are in the area of the project.

1.21 TEST RESULTS AND INSTALLATION

- A. Whenever field startup services are specified, the Contractor shall obtain from the manufacturer and submit to the Engineer Manufacturer Startup Reports (MSR's). The report shall detail the results of the field visit and all special conditions resulting from the startup.
- B. Whenever field or factory tests are required on materials, equipment and systems, such tests shall be performed and the test results submitted to Engineer in the form of a MSR.
- C. Do not deliver to the project or incorporate into the work any materials or equipment for which Engineer has not completed his review and found same to be in general conformance with the Contract Documents.
- D. Submit MSR's within thirty (30) calendar days after the date of the startup or factory test.

1.22 SPARE PARTS LIST

- A. Prepare a list of all spare parts specified to be provided in other Sections. Compile the total list for the purposes of reviewing actual spare parts delivered versus spare parts specified to be provided. The list shall reference the Section, model number, and quantity to be provided.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

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CONTRACTOR'S COMPANY NAME
ADDRESS

SUBMISSION TRANSMITTAL FORM

CLIENT NAME: Riverhead Water District

PROJECT TITLE: Rehabilitation of Plant No. 4 - Contracts E & M

H2M PROJECT NO.: RDWD1904

Product, Item, or System Submitted:			
Submission Date:		Submission Log No.:	
Specification Section:		Paragraph Reference:	
Contract Drawing Reference(s):			
Manufacturer's Name:			
Manufacturer's Mailing Address:			
Manufacturer's Contact Information:	<i>Name</i>	() <i>Tel. no.</i>	<i>Email</i>
Supplier's Name:			
Supplier's Mailing Address:			
Supplier's Contact Information:	<i>Name</i>	() <i>Tel. no.</i>	<i>Email</i>
This item is a substitution for the specified item:	___ No		___ Yes
Contrator's Approval Stamp with Signature & Date	<u>Contractor's Brief Comments or Remarks</u> (attach separate letter as needed):		
	By making this submission, we represent that we have determined and verified all field measurements and dimensions, field construction criteria, site and building constraints in terms of limitations in moving the item into the enclosed space, materials, catalog and model numbers and similar data and that we have checked and coordinated this submission with other work at or adjacent to the installed location in accordance with the requirements contained in the Contract Documents.		

END OF SECTION 013300

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Codes
- B. Governing agencies
- C. Permits

1.02 CODES

- A. Comply with the requirements of the various codes referred to in these Specifications. Such codes shall be the date of the latest revision in effect at the time of receiving bids.
- B. If there is a conflict between local, state, and/or Federal regulatory requirements, seek a consultation with the State Department of Labor. Resolve conflicts to the satisfaction of the State Department of Labor prior to commencing work.
- C. Electrical Work: Conform to the requirements of the National Electrical Code (NEC) unless otherwise shown or specified. The Owner will be the sole judge of the interpretation of these rules and requirements.

1.03 GOVERNING AGENCIES

- A. All work shall conform to and be performed in strict accordance with all governing agencies such as, but not limited to:
 - 1. Occupational Safety and Health Act - OSHA
 - 2. State Department of Environmental Conservation
 - 3. State Building Code
 - 4. State Fire Code
 - 5. National Fire Protection Association - NFPA
 - 6. National Electrical Code
 - 7. State Plumbing Code
 - 8. New York State Energy Code
 - 9. County Department of Health
 - 10. Town Codes, Rules, Laws and Ordinances
 - 11. Sewer District Sewer Use Code
 - 12. Local Water District
 - 13. Electric Utility
 - 14. Gas Utility

1.04 PERMITS AND INSPECTIONS

- A. Representatives of the Owner shall have access to the work for inspection purposes. The Contractor shall provide facilities suitable to the Owner to facilitate inspections of the installed work.
- B. Obtain and pay for all permits, fees, licenses, certificates, inspections and other use charges required in connection with the work.
- C. Such permits include, but are not limited to:
 - 1. Transportation and disposal of construction debris
 - 2. Building permits that are required by the municipality where the work is located. Arrange for inspections of the work by the municipal building department before closing in the

installed work, if so required. Work will not be accepted for payment until such inspections are performed and accepted by the building department.

- D. Obtain a New York Board of Fire Underwriters inspection and certificate.

1.05 LISTINGS

- A. Equipment and materials for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark. Alternately, ETL Testing Laboratories, Inc. Product Safety Testing Listing is acceptable if the listed product has been tested to the applicable UL Standard.

1.06 FIRE RESISTANT CONSTRUCTION MATERIALS AND ASSEMBLIES

- A. Conform to the fire rating classifications based upon the test methods and acceptance criteria in the Standard, Fire Tests of Building Construction and Materials for which Underwriters' Laboratories, Inc. (UL) provides listings.
- B. Materials and assemblies shall comply with the acceptance criteria, detailed description of the assembly, its performance in the fire test and other pertinent details such as specification of materials, Classification coverage, and alternate assembly details.
- C. Alternatively, fire resistance rating classifications by other issuing organizations listed in the Fire and Building Codes are acceptable.

1.07 COORDINATION WITH ELECTRIC UTILITY COMPANY

- A. Comply with the utility company requirements for the incoming electric service.

1.08 COORDINATION WITH GAS UTILITY COMPANY

- A. Comply with the gas utility company requirements including inspection for the incoming gas service.

1.09 COORDINATION WITH WATER UTILITY

- A. Comply with the water utility requirements for water and fire service connections. Obtain and pay for all necessary permits from the water utility. Obtain authority to connect to the existing water mains.
- B. Pay the water utility's charges for the connections.

1.10 COORDINATION WITH SANITARY SEWER UTILITY

- A. Comply with the public utility requirements for the connection of sanitary sewer lines to the public utility services. Obtain and pay for all necessary permits from public sewer department. Obtain authority to connect to their existing sanitary sewers.

1.11 COORDINATION WITH TELEPHONE UTILITY COMPANY

- A. Comply with the utility company requirements for the incoming telephone service.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 014100

PART 1 - GENERAL

1.01 ABBREVIATED SUMMARY

- A. This Section explains the format of the specifications.

1.02 SPECIFICATION FORMAT

- A. The Specifications are generally arranged according to the Construction Specifications Institute (CSI) format. Most of the technical requirements are specified in the technical specifications of the document, which are grouped into forty-eight (48) major divisions. Most of the legal and administrative requirements are included in Division 1, General Conditions, Information For Bidders, and the Contract (agreement).
- B. Technical sections are arranged in numerical order, however section numbers may not be consecutive from section to section.
- C. Page numbering is subordinate to each section.
- D. Most sections are generally broken down into three (3) parts:
 - 1. PART 1 - GENERAL
 - 2. PART 2 - PRODUCTS
 - 3. PART 3 - EXECUTION
- E. Not all these parts may be used and in some cases, the title of some of the parts may be different than listed above. Paragraph numbers are subordinate to each part.
- F. The Contractor is advised that the format described here is flexible in nature.
 - 1. There is some overlapping of specified information between various portions of the Specifications.
 - 2. In all cases, the entire requirements of the Contract Documents for the project shall apply.
- G. Explanations:
 - 1. Many technical sections begin with a paragraph titled "SECTION INCLUDES", "DESCRIPTION", or similar wording.
 - a. In these paragraphs, a brief listing of the specified products may appear or a brief description of the work generally specified in that section is presented.
 - b. These descriptions or listings are not all inclusive, but merely are provided as an aid in locating subject matter.
 - c. In some cases special cost related items of work are called to the attention of the Contractor in these opening paragraphs.
 - 2. "RELATED SECTIONS" or "RELATED WORK" or similar wording paragraphs list or reference related work specified elsewhere in the Contract Documents. Such listing is not all inclusive, rather, they are merely an aid to the Contractor in locating some of the other Specification Sections wherein work is specified which has a particularly close interrelationship with the work specified in that section.

- a. It shall be understood that all of the Work, and all of the Specifications and other portions of the Contract Documents, are interrelated, and that the total of all requirements set forth in all of the Contract Documents shall be met.
 - b. Equipment suppliers and manufacturers shall be advised of the requirements for making submittals and delivering products, as specified in Division 1 sections, even if said sections are not referenced therein that section.
3. "REGULATORY REQUIREMENTS" or "REFERENCES" or similar wording paragraphs describe standards, laws, guidelines, regulations, and standards related to workmanship and installation of the products specified which shall be followed by the Contractor in completing the work specified therein that section as if it was written there in that section. All such requirements and references shall be latest issue in effect at the time of the bid opening.
4. When a "GUARANTEE" or "WARRANTY" paragraph appears in the section it is calling attention to a guarantee which extends beyond the period of the Contractor's Guarantee called for in the administrative portion of the Contract Documents or it states special requirements specific to the equipment, systems or products specified in that section.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 014223

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for monitoring the quality of the constructed project.
- B. Work of this Section also includes services of an independent testing laboratory for quality assurance testing.
- C. The services of the testing laboratory will be paid for out of the cash allowance included by the Contractor in the price as bid in accordance with the requirements contained herein and in Section 012100 - Allowances.

1.02 REFERENCES

- A. ASTM C1077 - Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- B. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- C. ASTM D4561 - Practice for Quality Control Systems for an Inspection and Testing Agency for Bituminous Paving Materials.
- D. ASTM E699 - Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E6.

1.03 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or workmanship that is more precise.
- C. Perform work by persons qualified to produce workmanship of specified quality.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- E. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

1.04 QUALITY ASSURANCE - TESTING LABORATORY

- A. In order to establish compliance with the Contract Documents, materials shall be tested, examined and evaluated before they are incorporated into the work. During and after installations, additional tests, examinations, and evaluations shall be made to determine continued compliance throughout the course of the work.
- B. Testing laboratory shall be a reputable, experienced firm that is capable of performing all of the required testing and authorized to operate in the state in which the project is located.
- C. Perform all sampling and testing in accordance with specified procedures and use the materials, instruments, apparatus, and equipment required by the codes, regulations and

standards. Where specific testing requirements or procedures are not described, perform the testing in accordance with all pertinent codes and regulations and with recognized standards for testing.

- D. In the event that samples and test specimens are not properly taken, handled, stored or delivered or if other requirements of this Section are not complied with, Engineer reserves the right to delegate any or all of this work to others, or to take whatever action deemed necessary to ensure that sampling and testing are properly accomplished, for which all costs shall be borne by Contractor.
- E. Engineer reserves the right to disapprove the use of a specific testing laboratory, even after prior approval, if the laboratory fails to meet or comply with the requirements of this Section. If this should occur, immediately discharge the testing laboratory and retain the services of a different laboratory acceptable to Engineer.
- F. The testing laboratory shall meet the following criteria:
 - 1. Be capable of performing all of the required tests.
 - 2. Be regularly engaged in performing the types of services required.
 - 3. Have adequate facilities, materials, equipment, and personnel to perform the services.
 - 4. Have an adequately trained, experienced and qualified staff.
 - 5. Have at least one registered professional engineer licensed in the state in which the project is located who shall be capable of performing field tests, supervising laboratory testing and interpreting test results. The professional engineer shall be thoroughly knowledgeable in materials, soils, asphalt paving and concrete.
 - 6. Shall be able to be on the Project site within two hours after being notified.
 - 7. Comply with the requirements of ASTM C1077, ASTM D3740, ASTM D4561, ASTM E548 and ASTM E699.
 - 8. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.05 REFERENCE STANDARDS

- A. Conform to reference standards by date that the project was last bid.
- B. Obtain copies of standards when required by Contract Documents.
- C. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 SUBMITTALS

- A. Within fifteen (15) calendar days from the date of the Notice to Proceed, submit documentation from three (3) testing laboratories that clearly indicates experience, location, qualifications of staff, and descriptions of any limitations or restrictions of the firm.
 - 1. Include a price schedule for standard tests and a billing rate schedule for technician classifications.
 - 2. Based upon this information, the Engineer will select one firm to be the primary testing laboratory and one firm to act as a standby.
- B. Certified copies of each test report shall be mailed directly to the Engineer. The Contractor shall arrange with the laboratory to secure copies.

- C. Each report shall be in writing and shall include the testing method used, the test results, the specified results, the exact location of where the test specimens were taken, the date taken, Project identification, Contractor's name and other pertinent information required for a complete and meaningful test report.
- D. Each report shall be signed and certified by a responsible officer of the testing laboratory.
- E. E-mail reports directly to Engineer within 24 hours after the sample is taken, except in those instances when tests cannot be immediately performed because of required curing, incubation periods, or lengthy testing procedures.
- F. The laboratory shall verbally communicate test results when requested by the Engineer. This does not eliminate nor replace the requirements for a written report.

1.07 SCHEDULING - LABORATORY SERVICES

- A. Except where otherwise specified, the Engineer will determine the number of samples to be taken, the date and time samples will be taken and tests made, the number and type of tests to be performed, who will collect the samples, how they will be handled and stored and when laboratory personnel are required on site.
- B. Engineer will notify Contractor of his decision to take samples and/or have tests made and provide him with the pertinent information. Contractor is responsible for notifying the testing laboratory and for having the testing performed, on schedule.
- C. In addition to the above, Contractor shall make his own arrangements for the sampling and testing of materials he proposes to incorporate into the work. This shall not be paid for out of the cash allowance.
- D. Notify Engineer at least 72 hours in advance of the times at which scheduled samples or tests will be conducted.
- E. If samples and/or tests cannot be taken or performed when required, delay the work until such time that they can be accomplished. Where possible, any work that has been installed but has not been sampled or tested as required, shall be tested by other means. Upon Engineer's request, uncover any work, which has been buried or covered, and perform special tests designated by Engineer. If the work cannot be tested by other means, Engineer may declare the work unacceptable. All costs associated with noncompliance and for special testing shall be borne by the Contractor and not be paid for out of the cash allowance.
- F. Should the testing laboratory be scheduled to take or collect samples or to perform tests, and finds that it is unable to do so as a result of delays in construction, inclement weather, or any other reason, reschedule the tasks for a date acceptable to Engineer. Costs associated with times testing laboratory is unable to perform scheduled services shall be borne by the Contractor and will not be paid for under the allowance.
- G. Plan all work and operations to allow for the taking and collection of samples and allow adequate time for the performance of tests. Delay the progress of questionable work until the receipt of the certified test reports.

1.08 TESTING REQUIREMENTS

- A. Dry Paint Thickness Measurement: Perform dry paint thickness using calibrated SSPC Type 2 fixed probe gages.

1.09 TESTING SCHEDULE

A. Dry Paint Thickness Measurement:

1. Make five (5) separate spot measurements spaced evenly over 100 square feet of area.
2. For structures exceeding 1000 square feet of finished surface, three 100 square feet areas shall be randomly selected by the Engineer plus one 100 square foot area for each additional 1000 square feet of finished surface. This requirement shall be subject to change as required by the Engineer.

1.10 FIELD OBSERVATION OF CONTRACTOR'S WORK

- A. The Engineer will provide periodic observation of the Contractor's work.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions. Verify that the existing substrate is capable of structural support or attachment of new Work being applied or attached. Examine and verify specific conditions described in individual specification sections. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance. Seal cracks or openings of substrate prior to applying next material or substance.
- B. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 FIELD QUALITY CONTROL

- A. Allow representatives of the testing laboratory access to the work at all time. Provide all equipment, labor, materials, and facilities required by the laboratory to properly perform its functions. Cooperate with and assist laboratory personnel during the performance of their work.
- B. Test specimens and samples shall be taken by the person(s) designated in other Sections, or as directed by Engineer. Conduct field sampling and testing in the presence of Engineer. Provide all materials, equipment, facilities and labor for securing samples and test specimens and for performing all field-testing.

END OF SECTION 014500

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section supplements the General Conditions.
- B. The Work of this Section includes temporary facilities, utilities, and controls to be furnished by the Contractors for this project as it is specified herein.
- C. This Section is made a part of all Construction Contracts associated with the project. It contains specific references to the particular Contractor supplying said product or service. If no reference is provided then the requirement applies to all Prime Construction Contractors.
- D. Temporary electric shall be provided by the Prime Electrical Contractor as specified in Section 015113 located in the Contract Documents for Contract E except as required herein.

1.02 CARE AND PLACEMENT

- A. All temporary and permanent facilities and controls and all other elements on the project site shall meet all standards of the Occupational Safety and Health Act of 1970 and subsequent revisions. Each Contractor shall comply with all requirements of the Act.
- B. Each Contractor shall take every precaution and shall provide such equipment and facilities as are necessary or required for the safety of its employees and persons at the site.
- C. In the event of damage to existing and/or temporary facilities then immediately make all repairs and replacements to an equal condition prior to the event.

1.03 QUALITY PERFORMANCE

- A. Comply with and perform all work in accordance with the requirements of local authorities and utility companies having jurisdiction, and all applicable codes, regulations and ordinances.
- B. Secure approvals from the appropriate jurisdictions and utility companies on all repairs, relocations, connections, disconnections and the Work.
- C. All barricades, warning signs, lights, temporary signals and other protective devices shall conform with "Manual on Uniform Traffic Control Devices for Streets and Highways", US Government Printing Office.

1.04 SUBMITTALS

- A. Each Contractor shall provide a list of contact numbers as follows:
 - 1. Contractor's superintendent and office project manager (home, beeper, cellular, office, fax, trailer, and email address).
 - 2. All subcontractors.
 - 3. All utility companies.
 - 4. Emergency services such as fire department, police, and ambulance.
 - 5. Contractor shall also submit the following:
 - a. Name and qualifications of person or persons who shall be available to render first aid.
 - b. Names, addresses and telephone numbers of personnel who can be telephoned and act on behalf of Contractor in the event of emergencies or other problems requiring prompt attention during winter shutdown, holidays, nights and other periods when the Contractor's superintendent may be absent from the project site.

1.05 CONTRACTOR'S RESPONSIBILITY

- A. Each Contractor shall be responsible for the installation, performance, maintenance, and repair of all temporary facilities and controls specified herein this Section as originally provided.
- B. The Owner reserves the right to immediately correct a Contractor caused action, if in the opinion of the Owner, the situation may result in the immediate loss of life, property, and degradation of the environment. The costs for actions taken by the Owner shall be deducted from money due or to become due the Contractor. Amounts in excess shall be paid by the Contractor.
- C. If the Contractor caused situation is not deemed immediate, then the Contractor shall, within 24 hours of receipt of written and/or verbal notice, correct the defect or unsatisfactory condition.
- D. The Owner may repair, correct, replace, or install temporary facilities to correct the situation if the Contractor fails to perform within the allowed time. The costs to make the corrections shall be deducted from money due or to become due the Contractor. Amounts in excess shall be paid by the Contractor.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The Owner may use temporary power lines, pipes, roadways or other facilities that each Contractor furnishes, installs, and maintains (then removes at the completion of the work), during the period of construction.
- B. The location of all temporary power lines, roadways, and other necessary temporary facilities shall be subject to the approval of the Engineer, and these shall be located and operated so as not to interfere with the operation of the facilities.

2.02 WATER FOR CONSTRUCTION PURPOSES

- A. Each Contractor shall obtain water from the nearest potable water source as designated by the Owner.
- B. The Owner will pay for water usage for general construction activities such as dust control and for sanitary purposes, like hand washing.
- C. Potable water, used for pipe exfiltration testing, process tank testing, storage tank testing, or elevated water storage tank testing, will not be paid for by the Owner. The Contractor shall include the costs for water for this purpose in the price as-bid.
- D. Each Contractor shall install his or her own backflow prevention device at the supply point where it is connected to the Owner's system.
 - 1. The water purveyor shall approve the device.
 - 2. The device shall be tested and certified as functioning properly.
 - 3. Post the certification in a location acceptable to the water purveyor.
- E. A water meter shall also be installed on any water service lines used to supply water for exfiltration testing.
- F. Each Contractor shall exercise measures to conserve water.

- G. Provide insulation and heat tracing to prevent freezing of temporary piping. Drain hoses at the end of each use.
- H. All Contractors, subcontractors, and personnel involved in the project shall be permitted to use water for construction purposes as provided under this paragraph.

2.03 SANITARY FACILITIES

- A. Each Contractor shall provide and maintain his or her own temporary toilet facilities and enclosures.
- B. These facilities shall be maintained in a strictly sanitary manner and be screened from the general public.
- C. All facilities shall be in accordance with the Occupational Safety and Health Act (OSHA) standards and all other applicable local codes.
- D. The locations of such facilities shall be determined by the Engineer or the Owner .
- E. All applicable codes and regulations regarding the maintenance and method of waste disposal for these facilities will be strictly enforced. These facilities shall be of the portable type.
- F. The Owners sanitary facility will not be available for use by any contractor.
- G. Comply with the requirements also contained in Section 015719 - Environmental Protection.

2.04 HEAT

- A. Each Contractor shall provide and pay for heating devices and fuel as required to maintain adequate heat for specific construction operations; i.e. painting, application of coatings, etc. where so specified elsewhere in these specifications.
- B. Each Contractor shall heat buildings to properly apply paint in accordance with Section 099100 requirements.
- C. Maintain minimum ambient temperature of 40 degrees F in areas where construction is in progress, unless otherwise indicated in specifications or as required by proposed working conditions and manufacturer's installation/application instructions.

2.05 VENTILATION

- A. Each Contractor shall ventilate enclosed areas to assist in the curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors or gases.
- B. Each Contractor shall ventilate buildings to safely apply paint in accordance with Section 099100 requirements.

2.06 BARRIERS AND PROTECTION

- A. Each Contractor shall provide railings, barricades, signs, fences and other protective devices to prevent unauthorized entry to construction areas, to allow for the Owner's safe use of the site and to protect existing facilities and adjacent structures from damage from the work.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing buildings.

- C. Provide protection for plant life designated to remain.
- D. Protect vehicular traffic, stored materials, public utilities, site and structures from damage.
- E. Provide warning signs, detour signs and other traffic control devices to insure the safety of plant operators and to adequately direct traffic around the work. Illuminate barricades, obstructions, and warning signs from sunset to sunrise.

2.07 TEMPORARY FENCING

- A. The Contractor is responsible for performance compliance with OSHA standards.
- B. Each Contractor shall provide temporary safety fence around all open excavations or other dangerous conditions on the construction site.
 - 1. All temporary safety fencing shall be designed and erected in compliance with OSHA standards, but in no case less stringent than these specifications for fencing.
 - 2. Fence is to be bright orange in color, a minimum of 4 feet high, and properly secured using 1" diameter steel pipe at 4'-0" on-center as support posts.
 - 3. Stake each support post to a depth of 18" and tamp securely into place.
 - 4. Each post shall be plumb.
 - 5. Secure fencing to posts using heavy-duty 12" long cable ties or tie wire.
 - 6. The fence and supports shall remain the property of the Contractor and be promptly removed at the appropriate time.

2.08 TEMPORARY HANDRAILS AND SCAFFOLDS

- A. All temporary handrailing and scaffolds shall be designed and erected in compliance with OSHA standards. Each Contractor is responsible for performance compliance with OSHA standards.
- B. Handrails shall be securely installed and maintained in accordance with OSHA regulations until the permanent railing or grating has been permanently installed and approved by the Engineer.
- C. All scaffolding and platforms shall be erected in a safe and substantial manner complying with OSHA requirements.
- D. All temporary handrails and scaffolds shall be designed by a professional engineer licensed in the state where the project is being constructed.
 - 1. The design drawings and details shall be stamped by the licensed engineer and submitted for record purposes.
 - 2. The Contractor's design engineer shall visit the site to certify that the handrailing and/or scaffolds have been erected pursuant to the stamped design.

2.09 EROSION CONTROL

- A. Each Contractor shall provide measures to keep the ground surface well drained, but avoid erosion of embankments, excavations, the project site, and adjacent areas.
- B. Each Contractor shall comply with all local codes, rules, and regulations concerning soil erosion.
 - 1. Use hay bales or silt fences to control erosion to the satisfaction of the Engineer and regulatory agencies. Use hay bales or silt fences to stop silt and sediment from reaching surface waters, parking lots and roads.
 - 2. Leave erosion control methods in place until ground cover is established or until date of substantial completion.
- C. Each Contractor shall install erosion control measures as shown on the Drawings.

- D. Comply with the requirements also contained in Section 015719 - Environmental Protection.

2.10 DUST CONTROL

- A. Each Contractor shall provide measures to control dust resulting from the work.
- B. Control dust at locations and in such quantities and frequencies as required to prevent dust from becoming a nuisance to the surrounding area.
- C. In the event the Contractor does not adequately provide for dust control, or should insufficient quantities of dust control agents be placed and Contractor fails to place additional quantities within 4 hours after Engineer's direction, Owner will perform the required work by whatever means deemed expedient and all expenses incurred by Owner will be charged to and paid by Contractor.
- D. Take care in selecting and applying dust control agents so as not to make roadways or walkways slippery, muddy or hazardous. Dust control agents shall be acceptable to the Engineer.
- E. Each Contractor shall provide all roadways with dust control.

2.11 RUBBISH REMOVAL

- A. Each Contractor shall be responsible for overall rubbish removal.
- B. Burning of rubbish and trash will not be permitted.
- C. The Contractor shall clean up trash as specified in Section 011400 - Work Restrictions or more often if the trash interferes with the work of others, presents a hazard or if directed by the Engineer.
- D. Dispose of rubbish and waste materials in accordance with state regulations and local ordinances.
- E. Each Contractor shall also place rubbish containers at locations selected by the Engineer.
 - 1. Furnish adequately sized rubbish containers from the date of initial mobilization to the date of final payment.
 - 2. As a minimum, the Contractor shall furnish two (2) 55-gallon general trash containers. Secure the top of each container to the container.
 - 3. Secure the container itself so that it does not get blown about the site.
- F. Each Contractor shall be responsible for maintaining the site free of trash.

2.12 SNOW REMOVAL

- A. Each Contractor shall be responsible for maintaining roads, walkways, sidewalks, and parking areas/lots free of snow. Provide snow plowing during and after each snow fall equal to or greater than 1.0 inch as reported by the local weather service.
- B. Any damage resulting from the Contractor's snow clearing operations shall be immediately repaired at no additional cost to the Owner.

2.13 ENCLOSURES

- A. Each Contractor shall provide and maintain temporary enclosures, sheds, or fenced-in areas to accommodate protection for products, material and equipment.
- B. Store equipment that cannot be exposed to outdoors in accordance with Section 016500 - Product Delivery, Storage and Handling.

2.14 SECURITY

- A. Each Contractor shall provide security and facilities to protect work from unauthorized entry, vandalism and theft.
- B. Coordinate with Owner's security program, if applicable.
- C. Each Contractor has full responsibility for the working area until final acceptance and payment.
- D. Each Contractor shall maintain the perimeter fence that pre-existed prior to the start of construction. A temporary perimeter fence shall be required at all times during the construction and until the new perimeter fence is installed, or until the project is accepted by the Owner.
- E. It shall be each Contractor's responsibility to lock all gates to the site, and on the access road, at the end of each work day.
- F. All on-site employees shall bear, at all times, an identification badge, conspicuously worn, which shall include, at a minimum, a passport or similar size photograph, the name of the employee and the name of the company.
- G. Any employee working on site without a photo identification badge will be instructed to leave the site.
- H. All company vehicles shall be conspicuously identified, through sufficiently sized lettering on both the passenger and driver sides, with the company name, address and telephone number.
 - 1. All employee owned vehicles shall have an 8-1/2 inch by 11 inch sign with the company name, address and telephone number placed on the dashboard on the driver side.
 - 2. Vehicles may be subject to search by the Owner or owner's representatives.
 - 3. Any vehicle that does not have the company name, address and telephone number will not be permitted on the Owners' property.
- I. Submit to the Owner a complete listing of all employees that will or might be performing work at the project site.
 - 1. Furthermore, provide sufficient information as may be required for the Owner to conduct background checks, in accordance with the Fair Credit Reporting Act.
 - 2. Background checks may be performed at the discretion of the Owner due to the sensitive nature of the work and the extensive, and sometimes unsupervised, access to Owner property and buildings.
 - 3. The Contractor shall be required, on request from the Owner, at any time prior to or during the work, to provide releases from its employees and officers to the Owner, H2M, and a background search firm, hired by either the Owner or H2M, to conduct background checks in accordance with the Fair Credit Reporting Act and applicable state law.

2.15 PARKING

- A. Do not allow heavy construction vehicle parking on existing pavement, if existing pavement is not scheduled for replacement or restoration.

- B. Provide and maintain access to fire hydrants, building entrances, process tanks, doors and the work in general.
- C. Each Contractor shall have his or her employees and subcontractors park in areas designated by the Owner/Engineer.
- D. If designated on the Contract Drawings, then only use those areas for parking.

2.16 DAMAGES

- A. Each Contractor, with the prior approval of the Owner/Engineer, shall promptly repair any damage, directly or indirectly caused by the Contractor's operations.
- B. All repairs shall be to the complete satisfaction of the Owner and equal in quality to that which pre-existed.

2.17 FIRST AID FACILITIES & EMERGENCY TELEPHONE NUMBERS

- A. Each Contractor shall provide and maintain adequately equipped first aid facilities in a location or at locations that are readily accessible to workmen, Engineer and visitors to the site.
- B. Provide at least one on-site employee who is properly trained in first aid and who shall be available to render first aid whenever construction is in progress.
- C. Provide a list of emergency telephone numbers as specified above.
- D. Post the list of emergency telephone numbers as directed by the Engineer.

2.18 POLLUTION CONTROL

- A. Do not permit pollutants, such as chemicals, fuels, lubricants, calcium chloride, sewage, water containing sediments and other deleterious, poisonous, toxic or oxygen demanding substances to enter or leach into streams, lakes, wetlands, other surface waters, into groundwater, or into the air.
- B. In waters used for public water supply or used for trout, salmon or other game or forage fish spawning or nursery, control measures must be adequate to assure that turbidity in the receiving water will be increased not more than 10 standard turbidity units (s.t.u.) in the absence of other more restrictive locally established limitations, unless otherwise permitted by the State.
- C. In no case shall the classification for the surface water be violated, unless otherwise permitted by the State.
- D. In water used for other purposes, the turbidity shall not exceed State limits.

2.19 REMOVALS

- A. Remove all items provided under this Section except as otherwise specified.

PART 3 - EXECUTION

3.01 PROTECTION OF EXISTING UTILITIES AND PUBLIC WORKS

- A. Maintain and protect existing utilities and public works including, but not limited to, conduits, sewers, water mains, electric and telephone conductors or conduits, and gas mains encountered during the construction.

- B. In the event that it is not possible to cross over, under, around or otherwise avoid the existing utility, the owner of the utility shall be notified that the utility must be altered or moved.
- C. In the event that damage shall result to any service pipe for water or gas, or any private or public sewer or conduit, the Contractor shall immediately, and at its own expense, repair same to the satisfaction of the Engineer.
- D. Any contents from the pipes, sewers or conduits shall be immediately removed and disposed in accordance with applicable laws.

3.02 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

- A. Remove temporary above grade or buried utilities, equipment, facilities and materials, immediately following substantial completion and prior to release of retainage.
- B. Remove underground installations to a minimum depth of 2 feet.
- C. Regrade site to restore to existing slope and elevation, and restore the surface.
- D. Clean and repair damage caused by installation or use of temporary work.
- E. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.
- F. Remove temporary parking and access roads.
- G. Regrade area to existing slope and elevation and restore the surface to its existing condition.
- H. Final payment will not be processed until all removals have been completed to the satisfaction of the Owner/Engineer.

3.03 PROTECTION OF EXISTING PROPERTY

- A. Protect existing structures and finishes during performance of the work.
- B. Protect existing trees and plants during performance of the work.
- C. Do not deposit excavated materials or store materials around trees or plants or attach guy wires to trees.

END OF SECTION 015000

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Control of environmental pollution and damage that the Contractor must consider for air, water, and land resources in preparing a bid and while constructing the project. This Section includes management of site aesthetics, noise, solid and liquid waste and wastewater, and other pollutants that may be generated by the Contractor.
- B. Include all costs associated with environmental protection as specified herein and as specified in other Sections of these specifications in the total price bid.

1.02 DEFINITIONS

- A. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:
 - 1. Adversely effect human health or welfare,
 - 2. Unfavorably alter ecological balances of importance to human life,
 - 3. Impact wetlands,
 - 4. Effect other species of importance to man, or;
 - 5. Degrade the utility of the environment for aesthetic, cultural, and historical purposes.
- B. Definitions of Pollutants:
 - 1. Sediment: Soil and other debris that has been eroded and transported by runoff water.
 - 2. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
 - 3. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.
 - 4. Debris: Combustible and noncombustible wastes, such as leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
 - 5. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalies, herbicides, pesticides, organic chemicals, and inorganic wastes.
- C. Sanitary Wastes:
 - 1. Sewage: Domestic sanitary sewage and human and animal waste.
 - 2. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PROTECTION OF ENVIRONMENTAL RESOURCES

- A. Protect environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this Contract. Confine activities to areas defined by the Contract Documents.
- B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from the Engineer. Do not fasten or attach ropes, cables, or guys to trees for anchorage unless specifically authorized, or where special emergency use is permitted.

- C. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under this Contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey to all personnel the purpose of marking and protecting all necessary objects.
- D. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
1. Box and protect from damage existing trees and shrubs to remain on the construction site.
 2. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
 3. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.
- E. Reduction of Exposure of Unprotected Erodible Soils: Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use. Form earthwork to final grade as shown. Immediately protect side slopes and back slopes upon completion of rough grading.
1. Temporary Protection of Disturbed Areas: Construct diversion ditches and berms to retard and divert runoff from the construction site to protected wetlands areas as defined in the Clean Water Act and federal, state and local regulations.
 2. Erosion and Sedimentation Control Devices:
 - a. Construct or install all temporary and permanent erosion and sedimentation control features as shown or specified in the Contract Documents and as required by the Owner pursuant to direction of the regulatory authority.
 - b. Maintain temporary erosion and sediment control measures such as berms, dikes, drains, hay bales, erosion control fencing, sedimentation basins, grassing, and mulching, until permanent drainage and erosion control facilities are completed and operative.
 3. Manage borrow areas on and off Owner property to minimize erosion and to prevent sediment from entering nearby property, watercourses and local streets.
 4. Manage and control spoil areas on and off Owner property to limit spoil to areas shown on the Environmental Protection Plan and prevent erosion of soil or sediment from entering nearby property, watercourses or streets.
 5. Protect adjacent areas from degradation by temporary excavations and embankments.
- F. Handle and dispose of solid wastes in such a manner that will prevent contamination of the environment.
1. Place solid wastes (excluding clearing debris) in containers that are emptied on a regular schedule.
 2. Transport all solid waste off Owners' property and dispose of waste in compliance with Federal, State, and local requirements.
 3. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
 4. Handle discarded materials other than those included in the solid waste category as directed by the Engineer.
- G. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this Contract.

- H. Washing and Curing Water: Do not allow wastewater directly derived from construction activities to enter water areas. Collect and place wastewater in retention ponds allowing the suspended material to settle, the pollutants to separate, or the water to evaporate.
- I. Control movement of materials and equipment during construction to prevent violation of water pollution control standards of the Federal, State, or local government.
- J. Monitor water areas affected by construction.
- K. Protection of Fish and Wildlife Resources:
 - 1. Keep construction activities under surveillance, management, and control to minimize interference with, disturbance of, or damage to fish and wildlife.
- L. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources.
 - 1. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the State and Federal emission and performance laws and standards.
 - 2. Maintain ambient air quality standards set by the Environmental Protection Agency and State, for those construction operations and activities specified.
- M. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.
- N. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinkle, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.
- O. Hydrocarbons and Carbon Monoxide: Control monoxide emissions from equipment to Federal and State allowable limits.
- P. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.
- Q. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the Engineer. Maintain noise-produced work at or below the decibel levels and within the time periods specified in accordance with OSHA and local ordinances, whichever is more restrictive.
 - 1. Perform construction activities involving repetitive, high-level impact noise only between 8:00 a.m. and 5:00 p.m. unless otherwise permitted by local ordinance or by the Engineer.
 - 2. Repetitive impact noise on the property shall not exceed the following dB limitations:
 - 3. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this Contract, consisting of, but not limited to, the following:
 - a. Use shields or other physical barriers to restrict noise transmission.
 - b. Provide soundproof housings or enclosures for noise-producing machinery.
 - c. Use efficient silencers on equipment air intakes.
 - d. Use and maintain efficient intake and exhaust mufflers on internal combustion engines.
 - e. Line hoppers and storage bins with sound deadening material.

- f. Conduct truck loading, unloading, and hauling operations so that noise is kept to a minimum.

END OF SECTION 015719

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section includes the general requirements for products that are to be furnished, installed, or otherwise incorporated into the project.

1.02 QUALITY ASSURANCE APPLIES TO ALL PRODUCTS

- A. In addition to the Contractor's warranties and guarantees on materials and equipment required under the General Conditions of the Contract and the Technical Specifications contained hereinafter, the Contractor shall also be responsible for all materials, equipment, and products that have or is planned to be incorporated into the work.
 - 1. The Contractor shall be responsible for the finished work and that it accurately and completely complies with these Contract Documents.
 - 2. The Contractor shall be responsible for work performed by subcontractors, equipment suppliers, and material vendors.
 - 3. The Contractor shall be satisfied as to the product's performance before it is ordered for installation. At the Contractor's option, he/she shall have tested each product to determine compliance with these specifications.
- B. The Engineer may check all or any portion of the work and the Contractor shall afford all necessary assistance to the Engineer in carrying out such checks.
 - 1. Such checking by the Engineer shall not relieve the Contractor of any responsibilities for the accuracy or completeness of the work.
 - 2. Such checking is a courtesy service being provided by the Owner and does not relieve the Contractor of his/her responsibilities under this Construction Contract.
- C. If witnessed shop tests or inspections are required at the point of manufacture, the Contractor shall keep the Engineer advised as to the progress of the work to allow inspection at the proper time and place. Provide at least two (2) weeks advance notice before scheduled shop tests.
- D. Should a dispute arise as to the quality of workmanship, equipment or material performance, then the final decision regarding acceptability with these Contract Documents shall be that of the Owner.
- E. At the request of the Engineer, the Contractor shall promptly provide the services of a competent representative of the manufacturer at the project site, fully equipped and prepared to answer questions, perform tests, make adjustments and to prove compliance with the Contract Documents free of all additional charges. Proof of compliance shall be the responsibility of the Contractor, and such special visits to the project site by the manufacturer shall not be eligible under any cash allowances or stipulated man-hours necessary to startup the system and/or train the Owner as may be specified in the Technical Specifications.

1.03 QUALITY ASSURANCE - EQUIPMENT

- A. Erect and install products under the supervision of a competent and experienced superintendent. The method of installation, including anchorage, clearances, and tolerances for rotating assemblies, methods of support for equipment and adjacent piping, shall be as recommended by the equipment manufacturer unless detailed on the Drawings or specified.
- B. All material furnished shall be new, and guaranteed free from defects in workmanship, installation, and design.
- C. Design and fabricate equipment in conformance with ANSI, ASTM, ASME, ASHRAE, IEEE, NEC and NEMA Standards.

1. Equipment shall withstand the stresses that may occur during fabrication, testing, transportation, installation and conditions of operation.
 2. Pumps shall conform to the requirements of the Hydraulic Institute.
 3. Equipment shall comply with the latest OSHA regulations and the ANSI Safety Standards.
- D. Equipment shall be products of manufacturers who produce evidence of their ability to promptly furnish any and all interchangeable replacement parts as may be needed at any time within the expected life of the equipment.
- E. Manufacturers shall also have readily available access to suitable and accurate testing facilities for performing the required shop tests.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Equipment shall have been in successful regular operation under comparable conditions for a period of at least five (5) years.
1. This time requirement does not apply when the manufacturer posts an Owner/Engineer acceptable Performance Bond or Letter of Credit for the duration of the time period that will guarantee replacement of the equipment in the event of failure.
 2. The bond shall be in a form that is acceptable to the Owner's legal council.
- B. The Owner reserves the right to reject any material or equipment manufacturer who, although he appears to be qualified and meets the technical requirements, does not provide satisfactory evidence indicating adequate and prompt post-installation repair and maintenance service, as required to suit the operational requirements of the Owner.
- C. Whenever it is required that the Contractor furnish materials or manufactured articles or shall do work for which no detailed specifications are set forth, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable on the market from firms of established good reputation, or, if not ordinarily carried in stock, shall conform to the usual standards for first-class materials or articles of the kind required.
- D. Perform work in full conformity and harmony with the intent to secure the best standard of construction and equipment of the work as a whole or in part.
- E. Items of any one type of material or equipment shall be the product of a single manufacturer.
1. For ease of the Owner in maintaining and obtaining service for equipment and for obtaining spare parts from as few places as possible, to the maximum extent possible, use equipment of a single manufacturer.
 2. The Engineer reserves the right to reject any equipment from various manufacturers if suitable equipment can be secured from fewer manufacturers and to require that source of materials be unified to the maximum extent possible.
- F. Substitute equipment shall not be fabricated nor installed until after written decision to accept request is received from the Engineer.

2.02 CONTROL PANELS, MCC'S AND SWITCHBOARDS

- A. All control panels, motor control centers, and switchboards shall be fabricated with pilot lights, selector switches, PLC, graphics display panels, elapsed time meters and other components that shall match.
1. This does not require that all components be one manufacturer, but does require that the like components be of the same manufacturer.

2. The Contractor shall coordinate the shop drawing submittals to indicate that all components have been selected on this basis.
 3. This requires the Contractor to advise each control panel supplier that product options are limited in this regard.
- B. Replacement of unlike products delivered to the job site shall be the responsibility of the Contractor.
- C. All costs associated with the replacement shall be borne by the Contractor.

2.03 NAMEPLATES

- A. Each unit of equipment shall have the manufacturer's name or trademark on a stainless steel nameplate securely affixed in a conspicuous place.
- B. The manufacturer's name or trademark may be cast integrally with stamp, or otherwise permanently marked upon the item of equipment.
- C. Such other information as the manufacturer may consider necessary for complete identification shall be shown on the nameplate.

2.04 FABRICATIONS

- A. Insofar as possible, shop prefabricate all items complete and ready for installation.
- B. Accurately fabricate all items to the details shown on the Drawings and on the shop drawings found in compliance with the Contract Documents.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prior to work under any Section, carefully inspect the work of all other prime trades and verify that all such work is in conformance with the Contract Documents and is complete to the point where the work under that Section may properly commence.
- B. Avoid the need to remove and replace work and to avoid unnecessary cutting and patching.
- C. Inspect all surfaces to be sure that they have been properly prepared before applying new work to such surfaces.
- D. Verify that all work can be installed in strict accordance with the drawings and the approved shop drawings. Immediately report discrepancies to Engineer.
- E. Do not proceed with the work under any Section until these conditions are obtained.

3.02 INSTALLATION

- A. Furnish and install materials and equipment in accordance with the instructions of the applicable manufacturer, fabricator or processors, except as otherwise provided in the Contract Documents.
- B. All work shall be done in a workmanlike manner and set to proper lines and grades. The work shall be square, plumb and/or level as the case may be.

- C. Where performance criteria are specified, do all work necessary to attain the required end results.

3.03 FIELD QUALITY CONTROL

- A. Neither observations by Engineer nor inspections, tests or approvals by other persons shall relieve the Contractor from his obligations to perform the work in accordance with the requirements of the Contract Documents.
- B. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any work to specifically be inspected, tested or approved by some public body, the Contractor shall assume full responsibility therefore, pay all costs in connection therewith, and furnish the Engineer with the required certificates of inspection, testing or approval.
- C. The Owner reserves the right to independently perform laboratory tests on random samples of material or performance tests on equipment delivered to the site.
 - 1. These tests, if made, will be conducted in accordance with the appropriate referenced standards or specification requirements.
 - 2. The entire shipment represented by a given sample, samples or piece of equipment may be rejected on the basis of the failure of samples or pieces of equipment to meet specified test requirements.
 - 3. All rejected materials or equipment shall be removed from the site, whether stored or installed in the work, and the required replacements shall be made, all at no additional cost to Owner.

3.04 ADJUST AND CLEAN

- A. Upon the completion of installations, and as a condition of its acceptance, visually inspect all work, adjust all components for proper alignment and touch-up abrasions and scratches to make them completely invisible.
- B. Thoroughly examine all materials and equipment with protective or decorative finishes for defects and damage prior to being covered.
 - 1. In the case of buried items of work, restore protective surface covers so as to conform to the Contract Documents prior to being backfilled, buried or embedded, as the case may be.
 - 2. In the case of exposed items of work, for which a decorative finish is required, all scratches, discoloration's, unmatched colors, disfigurements and damages shall be repaired and touched-up so as to provide a neat, clean finish, and be uniform in color.

3.05 UNCOVERING WORK

- A. Unless otherwise specified or directed by Engineer, no work shall be covered until it has been observed, tested, photographed, measured, and authorized to be covered by Engineer.
- B. Tie distances to above ground physical structures as reference points to all underground utilities, conduits, pits, manholes, valves, and pipelines shall be obtained by the Contractor prior to covering the work. Immediately comply with the Engineer's direction to uncover the work if tie distances were not obtained.
- C. If any work has been covered with Engineer's consent and Engineer considers it necessary or advisable that covered work be observed or tested, the Contractor, at Engineer's request, shall uncover, expose or otherwise make available for observation, or testing as Engineer may

require, that portion of the work in question, furnishing all necessary labor, material and equipment.

1. If it is found that such work is defective, the Contractor shall bear all the expenses of such uncovering, exposure, observation, and testing of satisfactory reconstruction, including compensation for additional engineering services and an appropriate deductive change order shall be issued.
2. If, however, such work is not found to be defective, the Contractor shall be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, testing and reconstruction if he makes a claim therefore as provided in the General Conditions.

3.06 DEFECTIVE WORK

- A. The repair, removal, replacement and correction of defective work is a part of this Contract and shall be promptly performed in accordance with the requirements set forth in the General Conditions or other portions of the Contract Documents. All costs in connection with the correction of defective work shall be borne by the Contractor.
- B. Products that fail to maintain the performance or other salient requirements of the Contract Documents, shows undue wear, or other deleterious effects during the maintenance period, shall be considered defective.

END OF SECTION 016100

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The Section includes the transportation, handling, storage and protection of products that are to be incorporated into the work.
- B. The procedures for turning equipment over to the Owner for installation by others is also included herein.

1.02 GENERAL

- A. Items shall be delivered as complete assemblies direct from the manufacturer with all internal wiring, piping, valving, and control devices intact except where partial disassembly is required by transportation regulations, protection of components, or where physical constraints may exist or be created for the setting of the item.
- B. Coordinate the disassembly and reassembly requirements with the manufacturer. Determine the need and extent of reassembly prior to bid.
 - 1. All labor, material and equipment costs associated with the disassembly and reassembly of the product shall be included in the Contract Price.
 - 2. Where reassembly of equipment is necessary, then the manufacturer shall provide reassembly instruction at the project site.
 - 3. A technician shall be present during the entire reassembly procedure and the manufacturer shall certify, in writing, that the unit was reassembled properly in accordance with instructions provided by the manufacturer and that all as-specified warranties remain in effect.
 - 4. The manufacturer's reassembly inspection time shall be in addition to the field service time specified and shall be included in the Contract Price. This time shall not be eligible for payment under any cash allowance item.
- C. In the case where equipment is to be installed by others, then the supplying contractor shall be responsible for its reassembly. If reassembly is necessary and the unit(s) are to be set inside an enclosure or building, reassemble the equipment inside said enclosure. The equipment once reassembled shall be turned over to the installing contractor as specified below.

1.03 PACKING

- A. Transport products in containers, crates, boxes or similar means such that the products are protected against damage that may occur during transportation.
- B. All parts shall be packaged separately or in container where parts of similar systems are grouped.
- C. Part numbers shall be indicated on the individual part. Use indelible ink to mark part numbers.
- D. All equipment shipments shall be included with a parts list showing a description (name) of the part and the manufacturer's part number.
 - 1. The parts list shall be shipped in a plastic zippered envelope with the words "Parts List" lettered on it in indelible ink.
 - 2. The parts list shall be placed inside the shipping container so that it is on the top of the contents.
- E. Equipment shall be shipped with storage, handling and installation instructions.

1. The Engineer reserves the right to withhold payment for equipment delivered to the site until such time as the storage, handling and installation instructions are supplied by the manufacturer.
 2. In the case where operation and maintenance manuals have been provided by the manufacturer, which includes the installation instructions, then the installation instructions shall also be included with the equipment shipment.
- F. All control panels shall be wood crated.
1. All sides of the control panel shall be covered with 3/4" plywood.
 2. The control panel number or name shall be printed on all sides of the crate in 1' high black lettering.
 3. The manufacturer's name, Contractor's name and project name shall also be printed on the front of the crate.
 4. All control panels and centers shall be packaged with three (3) copies of the approved wiring diagram inside the control panel enclosure in a separate plan holder attached to the inside door. The words "APPROVED FOR CONSTRUCTION" shall be indicated on each page of the wiring diagram.
- G. Delicate instruments and devices, reagents, chemicals, and glassware shall be shipped in packaging normally provided by the manufacturer.
- H. The Contractor shall require the manufacturer to be responsible for the proper packing of all products.

1.04 SHIPPING AND DELIVERY

- A. Product deliveries shall be accompanied with a bill of lading indicating the place of origination and the Contractor's purchase order number.
- B. Inspect shipments immediately upon delivery, to assure compliance with requirements of the Contract Documents and those products are undamaged.
- C. Promptly remove damaged material and unsuitable items from the job site.
- D. Provide equipment and personnel to handle products by methods to prevent soiling; disfigurement or damage.

1.05 STORAGE

- A. Store sensitive products and all spare parts in weather tight, climate controlled enclosures in an environment favorable to product.
- B. Store and protect products in accordance with the manufacturer's instructions.
- C. All other products that are to be installed underground or products such as pipe, valves, and fittings shall be stored outdoors but shall be blocked off the ground and covered with impervious sheet coverings.
- D. Store fabricated products above the ground on blocking or skids.
- E. Store loose granular materials in well-drained areas on solid surfaces to prevent mixing with foreign matter.
- F. Provide adequate ventilation to avoid condensation.

- G. In accordance with manufacturer's instructions protect bearings, couplings, shafts, rotating components, and assemblies. Protection of said equipment shall be continuous until the time the equipment is placed into permanent service.
- H. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- I. Do not store volatile liquids in any building on site.
- J. Storage of products shall be the responsibility of the supplying contractor. The installing contractor shall take all necessary precautions to protect the equipment being furnished by others.
- K. Store with seals and labels intact and legible.

1.06 EQUIPMENT INSTALLED BY OTHERS

- A. All products, except products noted on the Drawings or specified, shall be furnished and installed under this Contract.
 - 1. Only noted or specified products shall be furnished under this Contract for installation by others.
 - 2. If it is not noted on the Drawings or specified, then the product shall be furnished and installed under the Contract.
- B. The Contractor shall furnish these products to the Owner. These products shall be stored as specified above.
- C. The Owner will then advise the installing contractor that the product(s) are ready for installation.
 - 1. In the case where the product is stored in a proper enclosure, but not stored inside the building to be constructed under this project, then the installing contractor shall move the product into the building to a location adjacent to the final location shown on the Drawings.
 - 2. In all cases, the installing contractor shall be responsible for moving from storage, uncrating, anchoring, mounting and installing the product as required by the Contract Documents.
- D. The Contractor and installing contractor(s) shall be present at the time the equipment is turned over to the Owner. Immediately thereafter, the Owner will turn the product over to the installing contractor for installation.
- E. The Owner, Contractor, Engineer and the installing contractor shall inspect the condition of the product at this time.
 - 1. Any defects in the product will be noted and the Contractor will be advised to make all repairs immediately.
 - 2. The installing contractor shall still be required to install the product if the damage is deemed cosmetic by the Engineer.
 - 3. The manufacturer's installation instructions or wiring diagram shall be turned over to the installing contractor at this time by the Contractor.
 - 4. Any damage occurring to the product during moving, setting and mounting the unit(s) shall be the responsibility of the installing contractor.
 - 5. The Contractor is advised to take photographs to document the condition prior to it being turned over to the installing contractor.
 - 6. The installing contractor is advised to take photographs to document the condition prior to its acceptance.

- F. The supplied unit(s) remain the property of the Contractor until final acceptance of the work.
- G. Any damage caused to the unit(s) due to improper installation, workmanship, and non-compliance with the manufacturer's written installation instructions shall be the responsibility of the contractor who caused said damage. The burden of proof shall rest with the supplying Contractor.
- H. In the event the Contractor discovers misuse, abuse or improper installation of the unit(s) by the installing contractor, then he shall immediately notify the Engineer in writing. The Engineer will investigate the accusations and make a determination. The Engineer's determination shall be binding and agreed to by both parties.
- I. If the Engineer's determination substantiates the accusations of the Contractor, then the Contractor shall install the unit(s), the costs for which will be paid for as extra work. All costs associated with the extra work change order, including engineering and attorney fees of the Owner and Contractor will be deducted from money due the installing contractor.

1.07 PROTECTION OF WORK

- A. The Contractor shall protect the installed work. All costs for protection shall be borne by the Contractor. Provide coverings as necessary to protect installed products from damage, from traffic and subsequent construction operations. Remove when no longer needed.
- B. Cover and protect equipment from dust, moisture or physical damage. Protect finished floor surfaces prior to allowing equipment or materials to be moved over such surfaces. Maintain finished surfaces clean, unmarred and suitably protected until accepted by the Owner.
- C. Additional time required to secure replacements and to make repairs will not be considered by the Engineer to justify any extension in the Contract Time of Completion. In the event of the damage, promptly make replacement and repairs to the approval of the Engineer at no additional costs.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 016500

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work of this Section includes the following:
 - 1. Starting systems
 - 2. Testing, adjusting, and balancing
 - 3. Updating of manufacturer's operations and maintenance manuals and wiring diagrams
- B. Work of this Section also includes stipulated man-hours that shall be provided by the **Prime Electrical Construction Contractor** for startup participation of equipment and systems.

1.02 STARTING SYSTEMS

- A. The Contractor shall coordinate, schedule, and sequence the start-up of various equipment and systems.
- B. Where the start-up of a system or piece of equipment is dependent upon the start-up of other system(s) or equipment, then the Contractor shall schedule and sequence the start-ups to coincide.
- C. Notify the Engineer at least 14 calendar days prior to the start-up of each item or system so that he can schedule the startup with the Owner, utilities, and other Prime Contractors.
- D. Where applicable, verify that each piece of equipment or system has been checked for proper:
 - 1. lubrication,
 - 2. drive rotation,
 - 3. belt tension,
 - 4. motor starter heater size,
 - 5. fuse size,
 - 6. water pressures,
 - 7. terminal connections,
 - 8. control sequence,
 - 9. for conditions which may cause damage or delay the start-up procedure.
- E. Verify that the equipment has been installed in accordance with the manufacturer's requirements.
- F. Complete all pre-startup checklists that may be required by the system vendor.
 - 1. In the event that start-up activities are delayed as a result of the Contractor's failure to properly check the completed installation and a manufacturer's representative is on the job site waiting for corrections to be made, then the Engineer may, at his/her sole discretion, postpone start-up until such time as the corrections have been made without any extra costs.
 - 2. The Owner may deduct from money due the Contractor the excess cost of engineering associated with having the Engineer present during the start-up.
 - 3. The deduction shall be equal to the Engineer's effective billing rate times the total number of hours delayed during the start-up activities.
- G. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- H. Verify that wiring and support components for equipment are complete and tested.
- I. Execute start-up under supervision of applicable Contractor's personnel in accordance with manufacturer's instructions.

- J. The Contractor shall have the job site superintendent present during all start-up activities.
- K. Provide manufacturer's authorized technician at the site when specified and in accordance with the requirements contained in Section 014500 - Quality Control.
- L. Submit manufacturer's start-up reports (MSR's) in accordance with Section 013300.

1.03 STIPULATED STARTUP PARTICIPATION FOR PRIME ELECTRICAL CONSTRUCTION CONTRACTOR

- A. The **Prime Electrical Construction Contractor** shall provide the services of the job site foreman or superintendent who shall participate in the startup of equipment or systems that were furnished by others so as to achieve proper and sustained service.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 017500

PART 1 - GENERAL

1.01 SUMMARY

- A. Testing of piping.
- B. Testing of tanks vented to atmosphere.
- C. Pipe leakage testing shall comply with the conditions noted in the Schedule.

1.02 DEFINITIONS

- A. Leakage (or exfiltration) - The quantity of water to be supplied into the newly laid pipe, any valved section thereof, manhole, or other appurtenance, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.
- B. Infiltration - The quantity of water that enters into any pipe, manhole, or other appurtenance when the static groundwater elevation is at the maximum elevation above the pipe or appurtenance as specified hereinafter.

1.03 QUALITY ASSURANCE

- A. Prior to Substantial Completion, pressure pipes and non-pressure pipes shall meet specific leakage requirements. These leakage requirements shall be satisfied by the basic materials alone. Where joint fillers and the like have been specified, primarily to protect jointing materials, and secondarily to provide a factor of safety, they shall not be applied until after leakage tests have been completed and have been accepted by Engineer.
- B. Engineer will witness tests. Tests not witnessed will be considered as not having been performed.
- C. Do not close or cover up work until it has been observed for proper and satisfactory construction and installation in compliance with the Contract Documents. Should incomplete or unacceptable work be covered, the Contractor shall, at his/her own expense, uncover all work so that it may be properly observed. After such observations, repair and replace the work that was found defective, unsatisfactory, and not in accordance with the Contract Documents. After such repair and replacement, bring all work to completeness and status as it was before it was closed and covered, all at the Contractor's own expense. Submit for review and approval proposed corrective action to correct failed systems.
- D. Successful completion of required tests shall be in no way interpreted as relieving the Contractor of responsibility for defects that become apparent subsequent to the time of testing. It shall be the sole right of the Engineer to determine whether defects exist. Retest all portions of the work deemed necessary by the Engineer prior to Substantial Completion.

1.04 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Provide details and specifications on testing apparatus.
- C. Provide certified test results on forms approved by the Engineer.

1.05 SEQUENCING AND SCHEDULING

- A. Notify Engineer and governing agencies, if necessary, at least 48 hours in advance of a scheduled test so that the test may be witnessed.

- B. Test underground pipe after backfilling.
- C. At Engineer's discretion, additional sections of pipelines may be required to be tested as soon as pipe is laid and prior to backfilling when working conditions or the standard of workmanship have been altered.

PART 2 - PRODUCTS

2.01 TESTING APPARATUS

- A. Provide labor, plugs, measuring equipment, and other apparatus, complete, to perform testing.
- B. Provide clean water, air, nitrogen, and other materials as required to accomplish testing.
- C. Provide plugs and caps capable of withstanding test pressures.
- D. Provide temporary flanges, plugs, bulkheads, thrust blocks, weighing, bracing and other items necessary to prevent joints from separating, and to prevent injuries or damage.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Plug open ends, adequately block bends, tees, ends, and other fittings, and do whatever is necessary to brace piping system so that it will safely withstand the pressures developed under the tests and so that no damage or injury shall occur to the pipeline, people or property.
- B. Before tests are conducted, isolate, or remove any regulator, gauge, trap, or other apparatus or equipment that may be damaged by test pressures.

3.02 GENERAL

- A. Trapped Air: Trapped air may cause a false indication of the rate of leakage. Points of concern include ends of lines, stubs, house connections and high points in pipelines. No credit will be made for this condition and no adjustment will be made to the allowable leakage. When trapped air is suspected of causing a test failure, do whatever is necessary to evacuate the air and repeat tests until the actual leakage is equal to or less than allowable rate of leakage.
- B. Water Absorption: No credit will be given for absorption of water in pipe and manhole walls. If necessary, fill pipes and manholes with water well in advance of testing and allow them to soak in order to eliminate or minimize the effects of absorption.

3.03 TESTS FOR NON-PRESSURE PIPING

- A. General:
 - 1. Leakage shall be determined by exfiltration testing. The Engineer reserves the right to also require infiltration testing.
 - 2. Air testing is not permitted.
 - 3. Leakage testing shall include the main non-pressure pipe, house connections, and appurtenances on the section of pipeline being tested.
 - 4. Limit pipeline test sections to runs between adjacent structures. Manholes may be tested simultaneously with pipes.
 - 5. Adequately plug ends of house connections, stubs, and openings from which water may escape.
 - 6. Use clean water for exfiltration tests.

7. Determine groundwater levels by installing piezometers, test holes or test pits at intervals not to exceed 1,000 feet.
- B. Pipe Exfiltration Test:
1. The minimum water level required for testing is 4 feet above the crown of the upstream (highest) end of the pipe being tested or 2 feet above the maximum groundwater level along the test section, whichever is greater.
 2. Install a watertight plug in the downstream end of the pipe.
 3. Fill upstream reservoir with water and conduct test for six (6) hours.
 4. Upon satisfactorily completing the test, remove the downstream plug in the presence of Engineer. Do not touch nor remove anything until approved by Engineer.
 5. Maximum allowable exfiltration is one hundred (100) gallons per inch diameter per mile per day.
- C. Pipe Infiltration Test:
1. The minimum head of groundwater required for infiltration testing is 2 feet above the crown of the pipe at the upstream end but must in all cases reach its normal level.
 2. Infiltration may be measured with an approved graduated container capable of intercepting all inflow, by a pipeline V-notch weir, or by other approved methods. When using instream type measuring devices, do not measure flows until steady state conditions are established.
 3. Maximum allowable infiltration is one hundred (100) gallons per inch diameter per day per mile of pipe.
 4. Where groundwater level is at least 2 feet above the highest manhole joint, manholes may be included in the test. No visible leakage will be permitted in manholes.

3.04 TESTS FOR PRESSURE PIPES

- A. Leakage testing shall include the main exiting pipe, service connections, and other appurtenances on the section of pipeline being tested.
- B. Test pipes prior to applying insulation and before they are concealed or furred-in.
- C. Provide all necessary gauges. Gauges shall be standard pressure type with a minimum 4-1/2 inch diameter dial and a pressure range not in excess of 150% of the maximum required test pressure. Gauges shall be liquid-filled.
- D. Provide and maintain at the site a gauge stand with an approved laboratory calibrated test gauge. Periodically check test gauge used for testing against the test gauge, and whenever requested by Engineer.
- E. Where it is necessary for testing, tap pipes and insert approved plugs after testing is completed.
- F. Provide a hand or motor driven compressor to maintain the required test pressure constant throughout the duration of the test. If a water pump is used, pump water from a container with a known volume of water. If an air or inert gas pump is used, leakage shall be determined and calculated by the cycling of the pump.
- G. Provide test gauges at each end of the line being tested.
- H. Conduct leakage test in accordance with the requirements contained in the Schedule.

3.05 ALLOWABLE LEAKAGE

- A. The maximum allowable leakage for the various piping systems is presented in the schedule.

- B. It is the intent of this Contract to secure piping systems without leakage.
 - 1. Each section of pipe and within each structure shall not exceed the allowable leakage.
 - 2. It is also the intent to secure a piping system free from visible drips, streams and leaks. Therefore, even if a portion of the system meets the requirements for allowable leakage, visible leaks are not permitted and shall be repaired.
- C. Leakage tests will be considered satisfactorily passed when the rate of leakage is equal to or less than the stipulated allowances, there is no evidence of visible leaks, and there is no evidence of other system defects.

3.06 TEST FOR TANKS VENTED TO ATMOSPHERE

- A. Prior to testing liquid holding tanks open to the atmosphere, backfill to finished grade. Piping and equipment within the tank that might affect the watertightness of the tank shall be completely installed and operable.
- B. Isolate each individual tank for testing.
 - 1. Fill with clean, potable water to the maximum operating level.
 - 2. After a suitable stabilization period, the maximum operating level shall be reestablished and a twenty-four (24) hour leakage test shall be performed.
 - 3. During the test, no water shall be added to or taken from the tank. The drop in the water level shall be recorded at the end of the period.
 - 4. The allowable loss is no more than 1/4-inch per eight hours.
 - 5. Leaks shall be repaired by methods and materials approved by the Engineer prior to the start of the corrective action.
 - 6. Leakage shall be corrected prior to the performance of equipment testing.
 - 7. During the testing of each individual tank, as outlined in this paragraph, all immediately adjacent tanks shall be empty of water.
- C. After each individual tank has passed the leakage test, all tanks within each complex shall be filled with water to the normal operation level to check complex structural integrity and the hydraulics of operation.

3.07 RETESTING

- A. Pipes, tanks and manholes not passing the tests shall have all defects corrected with methods approved by the Engineer to the inspection and satisfaction of Engineer, and shall be retested and re-corrected as often as is necessary until the test requirements have been met.
- B. It is the intent of this Contract to obtain work meeting test requirements on their own and solely through the use of the normal integral sealing components.
 - 1. Joint leaks shall not be stopped using concrete, caulking, mortar, or other patching materials.
 - 2. Leaking pipe joints shall be re-jointed and leaking manhole joints shall have joints reset, or replaced if necessary.
- C. Methods other than rejoining, resetting or replacing joint seals shall require the written approval of Engineer.

3.08 SCHEDULE

LEAKAGE TESTING REQUIREMENTS

SERVICE	FLUID	PRESSURE	DURATION (HRS.)	ALLOWABLE LEAKAGE (NOTE 1)		
				UNDERGROUND		EXPOSED
				INFIL.	EXFIL.	
NON-PRESSURE PIPING	WATER	4FT.	6	100	100	NONE
PRESSURE PIPING	WATER	(NOTE 2)	(NOTE 2)	0	0	0

SCHEDULE NOTES:

1. Maximum allowable leakage in gallons/day/inch diameter/mile of pipe, or gallons/day/inch diameter/mile for manholes. Where a percentage is shown, the loss shall not exceed the percentage of the starting test pressure.
2. Maintain 100 psi or two times operating pressure, whichever is greater, for 2 hours.

END OF SECTION 017550

PART 1 - GENERAL

1.01 SUBMITTALS

- A. Submit the following documents to the Engineer before Substantial Completion:
 - 1. Project Record Documents as specified in Section 017839.
 - 2. Operations and Maintenance Manuals prepared in accordance with Section 017823 and be updated as a result of start-up activities.
 - 3. Manufacturer's Start-up Reports (MSR's) for all equipment and systems where manufacturer field time is specified.
 - a. Each MSR shall be signed by the field technician(s) who attended the start-up.
 - b. If the manufacturer is taking exception to the installation or if the warranty is voided, he shall provide a statement to that effect and provide reasons and justification to explain the company's position.
 - 4. One binder containing original counterparts of all warranties, guarantees, bonds, or affidavits as specified in the Technical Specification Sections. These documents shall contain the original signatures and be placed in a plastic sheet protector, one document per protector.
 - 5. Spare parts checklist itemizing all spare parts furnished under the Contract summarized by Section.
 - 6. Electrical Underwriter's Certificate where the prime construction contract includes electrical construction or where this Contract is for a Prime Electrical Construction Contract.
- B. Submit the following items to the Engineer with the final application for payment:
 - 1. Final Application for Payment prepared by the Engineer for Contractor's execution showing final amount of Contract including change orders.
 - 2. Maintenance Bond prepared in accordance with the Contract or General Conditions.
 - 3. Utility company signoffs and inspection approvals, if applicable.
 - 4. Federal, state, county, town and local signoffs and inspection approvals, where applicable.
- C. All documents shall be complete, signed, dated, and notarized (where applicable) and be subject to the Engineer's acknowledgment of receipt or approval.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 017800

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies the requirements for Operations and Maintenance Manuals required to be prepared by system suppliers and equipment manufacturers.
- B. The Contractor shall submit Operations and Maintenance Manuals for all equipment.
- C. Where the technical specifications call for the submission of manuals, said manuals shall be prepared in accordance with the requirements contained herein. It being understood that manuals shall be submitted for all equipment even if it is not specifically called out in the specifications.

1.02 MANUAL CONTENTS AND FORMAT

- A. All paper Operations and Maintenance Manuals shall be as specified hereinafter.
- B. The binder shall be 8 1/2" x 11", metal hinge, vinyl, large capacity by National or Equal. It shall show the name of the manufacturer or supplier and project name on the spine of the binder.
- C. A cover shall be provided showing the names of the Owner, Engineer, Contractor, and Manufacturer.
 - 1. It shall show the Contractor's order number and manufacturer's project number.
 - 2. The address of the manufacturer, service station telephone number, project title, contract number, and year shall also be shown.
- D. Provide tabbed color dividers for each separate product and system.
 - 1. The name of the product shall be typed on the tab.
 - 2. A separate tab shall also be provided for information such as troubleshooting instructions, spare parts list, etc.
- E. An index shall be provided in the back of the binder, with a separate tab, providing a quick way for the operator to find key and important topics contained in the manual.
- F. A separate listing for all charts, graphs, tables, figures and shop drawings shall be provided directly following the table of contents.
- G. Each manual shall contain one (1) copy of all shop drawings deemed in compliance with the Contract Documents by the Engineer submitted for the equipment or system for which the manual is prepared.
 - 1. Only these shop drawings shall be included in the manual.
 - 2. All shop drawings larger than 8 1/2" x 11" shall be folded and placed in a heavy duty, top loading plastic sheet protector with the title of the drawing showing; one (1) drawing per protector page.
- H. For systems being furnished with control panels, each manual shall contain a catalog cut for every electrical device installed inside the control panel or motor control center.
- I. Where emergency generator(s) are included as work of this Contract, the manufacturer's standard manual will be allowed if the manual clearly shows the instructions for the particular model of generator. Cross out chapters and paragraphs that do not apply to the Owner's generator.
- J. Where manuals are prepared for treatment systems for water, a process chapter, written in plain language for the operators, shall be prepared by the manufacturer providing the following:

1. A general discussion regarding the theory of the process.
 2. A specific discussion relating the theory to the project as designed and constructed. Provide capacities, sizes, loading rates, application criteria, design values, and design assumptions.
 3. Provide model numbers for equipment comprising the system.
 4. Provide figures, tables, and graphs to assist the operator in understanding the operation of the treatment system.
 5. Where operator interfaces are provided, provide step-by-step instructions for changing a process control variable such as set points.
 - a. The instructions shall be numbered and written such as "press", "hold" "scroll", etc.
 - b. Each operator interface instruction sheet shall be laminated and placed in the binder.
 - c. Another laminated sheet shall be provided and placed inside the control panel.
- K. Each manual shall contain the following as a minimum:
1. Table of contents
 2. Final version of the warranty statement approved by the Engineer
 3. Nameplate data of each component, year of installation, contract number and specification number
 4. Name, address and telephone number of the manufacturer and the manufacturer's local representative(s)
 5. Installation instructions
 6. Operation instructions including adjustments, the interrelation of components and the control sequence describing break-in, start-up, operation and shutdown
 7. Emergency operating instructions and capabilities
 8. Maintenance requirements include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair and reassembly instructions; and alignment, adjusting, balancing, and checking instructions
 9. Troubleshooting guide and corrective maintenance (repair) procedures for all electrical and mechanical equipment. These guides shall list the most frequent and common problems, together with the symptoms, possible causes of the trouble, and remedies
 10. Drawings (pictures or exploded views) which clearly depict and identify each part, suitable for assembly and disassembly of entire system and each component
 11. Wiring and control diagrams, if applicable
 12. Panelboard circuit directories including electrical service characteristics, if applicable
 13. Part list with current prices; ordering information; and recommended quantities of spare parts to be maintained in storage
 14. Charts of valve tag numbers, with location and function of each valve, keyed to the process and instrumentation diagram prepared as part of the Contract Documents
 15. Name, address, and telephone number of nearest parts supply house and nearest authorized repair service center.
 16. List of recommended spare parts and the recommended number of each per unit and per group of units.
- L. All electronic Operations and Maintenance Manuals shall be as specified hereinafter.
1. All files shall be in Adobe PDF format and submitted on compact discs.
 2. Files shall be organized by specification section and then by product.
 3. An electronic index and list of all charts, graphs, tables, figures, and shop drawings shall be included.
 4. All information provided in the paper Operations and Maintenance Manual shall be included in the electronic version.
- M. Submit one (1) copy of a preliminary draft manual at least fourteen (14) calendar days prior to the date set for start-up.
1. The Engineer will review the manual for content and compliance with these specifications.
 2. Written comments will be provided, but the manual will not be returned.

3. The manual will be used at start-up, to record changes that should be made to the final manual.
 4. The manual will be retained on the site until such time as the final, updated manual is provided.
- N. Two (2) weeks after the date the unit was placed into service and the Owner has gained beneficial use, submit five (5) paper copies and two (2) electronic copies of the final updated Operations and Maintenance Manual. Refer to Section 017500 - Starting and Adjusting for requirements related to updating the manual(s).
- O. Where installation instructions are not included with the manual, they shall be shipped at least ten (10) days prior to the date the equipment is scheduled for installation.

1.03 RETAINAGE

- A. The Engineer will retain from payment due the Contractor, for failure to submit manuals as specified, an amount equal to 2% of the scheduled value for the equipment or system for which the manual applies. This Contract requirement only applies when a manual is specified to be provided in the Technical Specifications for a particular system or piece of equipment.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 017823

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section includes:
 - 1. Maintenance of documents
 - 2. Recording of record information
 - 3. Submission of record documents
- B. Work of this section also includes the furnishing of underground pipeline documentation.

1.02 PLANS AND SPECIFICATIONS FURNISHED TO THE CONTRACTOR

- A. One (1) complete set of Contract Documents (plans, specifications and addenda) will be furnished to the Contractor in electronic portable document format (PDF).

1.03 MAINTENANCE OF DOCUMENTS

- A. The Contractor shall maintain at the site one (1) set of the following: drawings, specifications, addenda, change orders, approved shop drawings, test reports, operations and maintenance manuals, and shop drawing log.
- B. The Contractor shall make these documents available for use by the Owner, Engineer, regulatory agencies and other parties designated by the Owner.
- C. Provide a drawing rack for storage of plans.
- D. Maintain these documents in a clean, dry, legible condition throughout the entire contract period.

1.04 RECORDING OF RECORD INFORMATION

- A. Affix a stamp to each Contract Drawing and Shop Drawing reading as follows: "RECORD DOCUMENT" - "NAME OF PROJECT" - "CONTRACTOR NAME" in 2-inch high printed letters. The stamp shall be specifically prepared for this project.
- B. Keep the record documents current as the work progresses. Record information concurrent with construction progress.
- C. Do not permanently conceal any work until required information has been recorded.
- D. Legibly mark the Contract Plans to record actual construction, including, but not limited to the following:
 - 1. All as-built work.
 - 2. All approved field changes and conditions.
 - 3. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - 4. Location of underground conduits, boxes, devices. Wire sizes (AWG) and types installed. Number of active and spare wires in each conduit and conduit size (applicable where work involves electrical construction).
 - 5. Tied-down location of all underground process lines and buried valves.
- E. Shop Drawings: Maintain as record documents. Legibly mark-up to show changes made due to field conditions encountered during construction.

1.05 PROJECT RECORD DOCUMENTS

- A. Maintain a complete and accurate log of control and survey work as it progresses.
- B. The General Contractor shall on completion of major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction, site work and underground facilities installed as work of Contract G.
- C. The Contractor's surveyor site drawings shall also show the location of property line perimeter fence. The property line of the site shall be indicated on the plans.
- D. If applicable, the primary electric service, gas service, and communication lines installed by the respective utility shall also be located on the record drawings prepared by the Contractor's surveyor.

1.06 SUBMITTAL OF RECORD DOCUMENTS

- A. The Contractor shall deliver to the Engineer three (3) full-size sets of drawings and one (1) PDF electronic copy detailing as-built chemical treatment installations, one (1) month prior to the date of startup of the plant site as outlined in the construction schedule. These shall be submitted to the Health Department by the Engineer for certification of installation and inspection. Drawings shall be submitted by the Contractor to the Engineer in accordance with the requirements of this Section.
- B. At Substantial Completion, the Contractor shall deliver one (1) preliminary record set of as-built documents to the Engineer with all changes conspicuously ballooned or otherwise emphasized.
- C. The work will not be considered substantially complete until such time as the preliminary record documents are delivered and acceptable to the Engineer. Mark this set "Preliminary Record Drawings".
- D. Prior to Final Completion, the Contractor shall conform the preliminary record drawings to the comments made by the Engineer. The Contractor shall provide one (1) set of full-scale paper as-built drawings and one (1) electronic copy in portable document format (PDF).
- E. As-built drawings shall be the same size as the Contract Drawings, with 1/2-inch margins space on three sides and a 2-inch margin on the left side for binding.
- F. Each drawing shall bear in the title box the words "FINAL RECORD DRAWINGS" and the name of the Contractor in heavy black lettering 1/2 inch high and be certified as complete and accurate.
- G. As a convenience, Engineer will make available to the Contractor electronic media of the Contract Drawings for the sole purpose of the Contractor preparing as-built drawings.
- H. Electronic media made available is without guarantee of compatibility with the Contractor's software or hardware.
 - 1. If the Contractor wishes to take advantage of this offer, the Contractor will be required to execute an indemnification and hold harmless agreement with the Engineer.
 - 2. Electronic media will be provided free of charge on disc in a zipped format.
 - 3. Electronic media shall be returned to the Engineer upon acceptance of the as-built drawings by the Owner.

1.07 RELATED DOCUMENTS

- A. Provide certificate of release of liens if requested by the Engineer.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 017839

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The Section includes the requirements for delivering spare parts specified to be furnished under the provisions of the Contract Documents.

1.02 QUALITY ASSURANCE

- A. Spare parts shall be delivered as complete assemblies direct from the manufacturer such that the part is fully functional and ready to be installed.

1.03 DELIVERY, STORAGE AND HANDLING OF SPARE PARTS

- A. Comply with the requirements of Section 016500 for packing, delivery, storage and handling requirements for all parts delivered to the site of the work.
- B. All spare parts required to be furnished under a Section of the Specifications shall be packaged in one separate box, crate or container with the words "SPARE PARTS" lettered on all sides of the container.
- C. The equipment name or system name for which the spare parts are being provided shall also be lettered on the container.
- D. A separate packing list for the spare parts shall be included in the container.
- E. The Contractor shall store all spare parts indoors immediately upon delivery of the spare parts to the site. Spare parts will not be accepted by the Owner/Engineer if the spare parts have been stored outdoors for more than 8 hours upon delivery to the site.
- F. The storage location shall be secure.

1.04 TURN OVER OF SPARE PARTS

- A. Spare parts shall be turned over to the Owner/Engineer approximately two (2) weeks prior to the Engineer's preparation of the Final Punch List.
 - 1. Spare parts will not be accepted until this time.
 - 2. The Certificate of Substantial Completion will not be issued until all spare parts are delivered.
- B. The following procedure shall be followed:
 - 1. The Contractor shall provide a formal letter of transmittal listing the name or description of the part, part number, model number, manufacturer (or supplier), and system component name and the Section where it was specified to be provided.
 - 2. Two (2) counterparts of the letter shall be provided.
 - 3. The Contractor shall turn each part individually over to the Owner/Engineer.
 - 4. The Owner/Engineer will initial next to the part description on each counterpart of the transmittal letter.
 - 5. The initials represent that the part was received.
 - 6. One transmittal counterpart will be returned to the Contractor.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 017843

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work of this Section includes the requirements for demonstrating and training of installed systems, equipment, and products.

1.02 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual specification sections require field services to be provided, said services shall be provided by qualified, authorized and factory trained representative(s) of the manufacturer (supplier).
- B. Field services shall generally consist of:
 - 1. installation supervision,
 - 2. verify terms of the manufacturer's warranty,
 - 3. equipment and system calibration,
 - 4. startup supervision,
 - 5. and operation and maintenance instructions to the Owner's employees.
- C. Such services do not include service time to correct a factory fault, correct problems resulting from a factory wiring or control logic error, or errors caused by poor or improper installation by the Contractor.
- D. Sale representatives are not acceptable.
- E. The times specified to be provided by the manufacturer does not relieve the manufacturer from providing sufficient service time to place the equipment or systems into satisfactory operation and to obtain the specified performance. The manufacturer shall provide, as a minimum, the times specified in the Specification Sections.
- F. Where manufacturer services are specified for control panel or control center startup, the representative shall be experienced and trained to work on and field rewire such devices.
 - 1. Field representatives for control panel startup shall understand the control sequence specified and, in the case of programmable logic controllers, are able to make revisions to the factory program using handheld programming devices or laptop computers.
 - 2. The time spent by the representative to correct a PLC program shall not be included in the time specified for startup.
- G. Submit manufacturers' startup reports (MSR's) in accordance with the requirements contained in Section 013300 - Submittals.

1.03 SUBMITTALS

- A. Manufacturer's Startup Reports

1.04 QUALITY CONTROL

- A. The Contractor shall adhere to all instructions provided by the manufacturer's authorized representative.
- B. All verbal instructions necessary to satisfy performance of the equipment or the system shall be immediately provided by the Contractor. The manufacturer shall document all verbal orders in writing at a time suitable to the Contractor.

- C. All written instructions provided in operation, maintenance, and installation guides and manuals, provided by the manufacturer of such equipment and or system, shall be complied with by the Contractor.
- D. The Contractor shall comply with all manufacturer requirements such that written or implied warranties remain in full force during the time period so specified elsewhere in the technical specifications.
- E. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. Actions and/or non performance by the Contractor that may void manufacturer warranties shall not constitute a release of the specified warranty, and all warranty claims made by the Owner shall be paid for by the Contractor as if the manufacturer's warranty was still in effect.

1.05 SCHEDULING - FIELD SERVICES

- A. The Contractor shall arrange field service on dates acceptable to the Owner and Engineer.
- B. The service visits shall be scheduled at least 2 weeks in advance so that the Owner and Engineer can adequately staff the date.
- C. Operator training will not be allowed until such time as the Manufacturer's Operation and Maintenance Manuals have been supplied and approved by the Engineer.
 - 1. The field service technician shall review the contents of the manual with designated employees of the Owner.
 - 2. Field services will not be deemed provided until the MSR is provided.

1.06 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel prior to date of Substantial Completion.
- B. Utilize manufacturer's and vendor's Operation and Maintenance Manuals as basis for instruction. Review contents of the manual with the Owner's personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of the equipment or of the system.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- E. The Contractor shall arrange to have the manufacturer's Operation and Maintenance Manuals updated with information that has been added during start-up activities.
- F. The final manual shall contain the most recent information and reflect all operational and maintenance aspects of the final installed and functioning system or equipment component of the system.
- G. Any changes to control panel wiring diagrams or interconnection wiring schematics shall be made and new prints provided as an update to previously approved manuals.
- H. Manufacturer field time shall be as specified in individual Sections of the Technical Specifications.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 017900

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Removal of portable equipment from work areas.
- B. Protection of existing equipment and building.

1.02 SCHEDULING

- A. Schedule Work to coincide with availability of site access.
- B. Complete new piping installations prior to connections to existing piping.
- C. Coordinate removal of equipment connected to electrical systems.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PROTECTION OF EXISTING WORK

- A. All existing structures, piping, utilities or materials stored in the well pump station shall be protected against damage as may be required by the Engineer. The Contractor shall be responsible for any damage to the existing or installed works and appurtenances during construction operations and such damage shall be corrected by replacing the items damaged to their original condition and position at the Contractor's cost and expense and to the satisfaction of the Engineer.

3.02 PREPARATION PRIOR TO WORK

- A. All portable equipment shall be removed from the area of the well inside the buildings. Equipment shall be stored as directed by the Engineer.
- B. Existing equipment which can not be removed from the building shall be protected from damage by the Contractor's operation. Walls, floor and equipment shall be adequately covered by plywood or other protective materials for the duration of the contract. No holes are permitted to be cut through the walls of the pump station, nor is the roof, any walls or other permanent part of the pump station to be removed to facilitate work under this Contract. The Contractor shall protect existing water piping and water containing equipment from freezing.
- C. All existing equipment in the pump rooms shall be protected from damage by the Contractor's operation.
- D. The Contractor shall be required to restore the pump rooms and equipment to a condition equal to what it was prior to the Contractor starting work. Any equipment that is damaged shall be replaced at the Contractor's cost.

3.03 CLEANING UP

- A. The Contractor shall keep the project site free from waste materials and rubbish during the progress of the work and shall make a thorough cleaning of the building and site when the work is completed. Cleaning shall be done to the satisfaction of the Engineer.

- B. After completion of the contract, the Contractor will be required to clean up the site of all spoil, clays, gravel, etc. and level off all trenches and pits and dispose of all material as directed by the Engineer and leave the site in as good condition as at the beginning of the contract.
- C. All material used to protect the pump station shall be removed. All portable equipment shall be reinstalled in the pump station and all piping shall be reconnected. The pump station shall be restored to its prior condition and shall be left broom cleaned.
- D. Buildings, grounds, paving, sidewalk, etc. shall be restored and left in a condition at least equal to that existing prior to the beginning of the work.

END OF SECTION 020100

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.

1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition shall remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.05 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.
 - 6. Review procedures for turning over salvaged materials to the Owner and protected off-site storage of materials to be reused in the work of the project..

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.

- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting the public, pedestrian access and circulation areas and property , for environmental protection , for dust control and , for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Inventory: Submit a list of items to be removed, salvaged and delivered to Owner prior to start of demolition.
- E. Photographs or Video: Submit before Work begins.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.07 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.08 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.09 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use and is included in this Division of the specifications . Examine report and / or the appropriate specification section to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
 3. Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.
 2. Provide a Fire Watch or other method acceptable to the authority having jurisdiction should the existing fire protection facilities have to be shut down during the work.
 3. Do not disable or disrupt building fire or life safety systems without five (5) days prior written notice to Architect.

1.10 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned

collapse of any portion of structure or adjacent structures during selective building demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs .
1. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary."
- B. Existing Services/Systems to be removed, relocated, or abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Arrange to shut off indicated utilities with utility companies. Provide 5 days notice to the Architect prior to any utility shut-downs.
 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap, plug or reconnect remaining piping with same or compatible piping material.
 - b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - c. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug or reconnect remaining ducts with same or compatible ductwork material.
- C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.03 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building. Maintain existing required widths of egress pathways throughout.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

3.04 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner or as indicated on Drawings.
 5. Protect items from damage during transport and storage.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.05 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 1 inch (19 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.06 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.07 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.08 SELECTIVE DEMOLITION SCHEDULE

- A. Remove, store, relocate, salvage and protect the following materials and equipment:
 - 1. Existing Items to Be Removed: Items indicated on contract drawings and items listed in technical specifications sections.
 - 2. Existing Items to Be Removed, relocated and/or Salvaged: Items required to be removed, relocated salvaged and/or stored to complete the work as indicated or called for in these construction documents.
- B. Existing Items to Remain: to complete and conform to the work of the project shall be as indicated on the contract drawings and items listed in the technical specification sections..

END OF SECTION 024119

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Fiberglass reinforced plastic grates and supports.
 - 2. All appurtenances and accessories necessary to provide a complete installation.
- B. References:
 - 1. ASTM E84: Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM D635: Rate of Burning and/or Extent of Time of Burning of Self-Supporting Plastics in a Horizontal Position.
 - 3. Fiberglass reinforced plastic ladders shall comply with OSHA 1910.27 "Fixed Ladders".

1.02 SUBMITTALS

- A. Product Data: Submit product data on specified component products.
- B. Shop Drawings: Indicate design load parameters, dimensions, adjacent construction, material, thicknesses, fabrication details, required clearances, field jointing, tolerances, colors, finishes, methods of support and anchorages.
- C. Samples: Submit one sample, 6 inches (150 mm) in length, illustrating color, texture and finish for each of the following: railings.
- D. Fabricator's Installation Instructions: Provide information indicating special procedures required and perimeter conditions requiring special attention.
- E. Independent laboratory test reports indicating that grating being supplied is in compliance with ASTM E84. Certification must be for the composite material being supplied on this project. Data indicating resin performance only will not be accepted.

1.03 QUALITY ASSURANCE

- A. A single manufacturer shall furnish all system components. This requires the supplier to be responsible for the development, design, fabrication, delivery and assembly of the complete system.
- B. Consideration will only be given to manufacturers who can demonstrate that their grating system complies with these Specifications. The manufacturer must successfully demonstrate to the Architect/Engineer that they have had a minimum of ten (10) years of successful and documented experience in the design, manufacture, and installation of grating systems of the size, quality, performance and reliability specified.
- C. The installation contractor shall have at least five (5) years of successful and documented experience in the installation of the grating systems and structural shapes being installed under this Contract.
- D. Design materials and bracing under direct supervision of a Professional Structural Engineer experienced in the design of this work registered in the State in which the project is located. Shop drawings shall bear seal and signature of said Structural Engineer.

1.04 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered on site in original, unbroken packaging bearing the label of the manufacturer.

- B. Adhesives, resins, catalysts, and hardeners shall be packaged independently, and they shall be labeled and stored in a dry indoor storage area separate from the FRP materials. Storage area temperature shall remain between 70 and 85 degrees Fahrenheit for the entire storage period.
- C. All materials shall be carefully handled to prevent abrasion, cracking, chipping, twisting, and other deformations or damage.
- D. Store materials in an enclosed area free from contact with soil or water.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Strongwell - Bristol Division: "Extren Series 525".
- B. FIBERGRATE COMPOSITE STRUCTURES, INC.: "Fibergrate".
- C. GATOR-GRATE by FOWLER FIBERGLASS GRATING, INC.
- D. IKG FIBERGLASS SYSTEMS
- E. Approved equal.

2.02 MATERIALS

- A. All FRP products shall have a maximum ASTM E84 flame spread rating of 25.
- B. All FRP products shall have a tested burn time of less than 30 seconds and an extent of burn rate of less than or equal to 10 millimeters per ASTM D635.
- C. All FRP products shall be electrically non-conductive.
- D. Grating shall be constructed of pultruded structural fiberglass reinforced plastic shapes, utilizing a synthetic surfacing veil for maximum chemical and ultraviolet resistance. Minimum glass content shall be 60%, comprising of both longitudinal strands and continuous strand mat so aligned as to provide both longitudinal and transverse strength and prevent splitting due to laminar shear. Grating systems shall have a flame spread rating of 25, or less per ASTM E84. Color shall be "Safety Yellow".
- E. Structural Shapes
 - 1. Where shown on the Plans, structural shapes shall be fiberglass reinforced polyester, manufactured by the pultrusion process. FRP shapes shall be furnished with UV inhibitor coatings, a fire retardant isophthalic polyester resin system, and a surface veil.
 - 2. FRP shapes shall be furnished with the following mechanical properties:

<u>Property</u>	<u>Structural Shape</u>	<u>Flat Sheet</u>
<u>Longitudinal Direction</u>		
Tensile Strength (psi)	30,000	20,000
Compressive Strength (psi)	30,000	24,000
Flexural Strength (psi)	30,000	35,000
Shear Strength (psi)	4,500	N/A

<u>Transverse Direction</u>		
Tensile Strength (psi)	7,000	7,500
Compressive Strength (psi)	15,000	15,500
Flexural Strength (psi)	10,000	13,000
Shear Strength (psi)	N/A	N/A
Modulus of Elasticity (psi x 10x10 ⁶)	2.6	N/A
Density (lbs./cu. in.)	0.062-0.070	0.060-0.068
Coef. of Thermal Expansion (in./in./°F)	4.4 x 10x10 ⁻⁶	8.0 X 10x10 ⁻⁶
Color	Gray or Yellow	Gray or Yellow

F. Grating

1. Where shown on the Plans, grating shall be fiberglass reinforced polyester, manufactured by the pultrusion process.
2. Grating shall consist of continuous "I" shape bearing bars, and pultruded cross rods. Cross rods shall be furnished with spacer elements, to resist twisting and movement of the bearing bars along the cross rods.
3. Gratings shall be furnished with UV inhibitor coatings, a premium grade vinyl ester resin for maximum chemical protection, and a surface veil.
4. Grating shall be designed to withstand a uniform distributed load of 100 psf, with a clear span of 4'-0", and with a maximum deflection of 0.25".
5. FRP grating bars shall be furnished with a non-skid, fine grained, quartz/epoxy surface.
6. Gratings shall be furnished in front of the tank for concrete containment area as shown on the plans:
 - a. Duragrid Series "I" 4000
 - b. Bearing Bar Shape- "I" Configuration
 - c. Depth of Bearing Bars 1.0"
 - d. Width of Top Flange - 0.6"
 - e. Width of Open Space - 0.4"
 - f. Open Area - 40%
 - g. Spacing of Cross Rods - 12" o.c.

2.03 FABRICATION

- A. Do not proceed with fabrication until approval of shop drawings.
- B. Installation of FRP members shall be as shown on the Plans, and as recommended by the manufacturer.
- C. Drill holes in members as required. Ream holes as necessary, and sand all drilled holes to a smooth finish.
- D. Furnish flat washers at both ends of bolted connections.
- E. Where members are drilled or cut, apply a brushed coating of resin, supplied by the manufacturer, to the drilled or cut sections.
- F. Seal cut edges and holes with grating manufacturer's vinyl ester resin system.
- G. Grating panels shall have no exposed dry glass or voids containing dry glass.
- H. Cure components prior to shipment and remove material which may be toxic to plant or animal life or incompatible with adjacent building materials.
- I. Brace shape with stiffeners to maintain shape as required.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions under provisions of Division 01 Section "Submittal Procedures".
- B. Verify that substrate is ready to receive work and dimensions are as indicated on approved shop drawings.
- C. Beginning of installation means installer accepts existing substrate conditions.

3.02 INSTALLATION

- A. Install fabrications in accordance with approved shop drawings and fabricator's instructions.
- B. Install fiberglass reinforced plastic gratings with base and hold-down clips.

3.03 TOLERANCES

- A. Maximum Variation from True Position: 1/8 inch (3 mm).
- B. Maximum Offset from True Alignment: 1/8 inch (3 mm).

3.04 FIELD QUALITY CONTROL

- A. Follow manufacturer's recommendations for cutting and drilling of products.
- B. Field cuts on all FRP products shall be coated with vinyl ester resin per the manufacturer's instructions.
- C. Grating embedment angles shall be installed level.
- D. Ladders shall be plumb.

3.05 CLEANING

- A. Clean components of foreign materials.
- B. Clean fabrications in accordance with fabricator's instructions.

3.06 PROTECTION

- A. Protect finished work from damage until project is accepted by the Owner.

END OF SECTION 068211

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Exterior coating.
- C. Piping, Valves and Fittings.

1.02 RELATED SECTIONS

- A. Section 013300 - Submittals
- B. Section 016100 - Basic Product Requirements
- C. Section 016500 - Product Delivery, Storage and Handling
- D. Section 221113 - Facility Piping

1.03 REFERENCES

- A. ANSI/NSF 61 - Drinking Water System Components - Health Effects
- B. AWWA - C115 - Standard for Flanged Pipe
- C. NACE No. 2/SSPC SP10 - Near-white Blast Cleaning.
- D. NACE No. 3/SSPC SP6 - Commercial Blast Cleaning.
- E. SSPC PA - 1 - Shop, Field, and Maintenance Painting of Steel
- F. SSPC PA 2 - Method for Measuring of Dry Paint Thickness with Magnetic Gages
- G. SSPC VOL 1 - Good Painting Practices - 2002 4th Edition latest edition
- H. SSPC VOL 2 - Systems and Specifications - 2005 Edition latest edition
- I. SSPC SP 3 - Power Tool Cleaning
- J. SSPC SP 2 - Hand Tool Cleaning
- K. SSPC VIS 1-89 - Visual Standard for Abrasive Blast Cleaned Steel.
- L. ASTM D4417-03 – Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
- M. ASTM E1216-99(2005) - Standard Practice for Sampling for Particulate Contamination by Tape Lift
- N. NACE SP0188-99 Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates

1.04 SUBMITTALS

- A. Submit under provisions of Section 013300.

- B. Product Data: Provide material data sheets (MDS) and material safety data sheets (MSDS), issued by the manufactures, for all materials and accessories that are to be used.
- C. Samples: Provide a color chart for paint color selection by the Owner and Engineer for approval prior to all aspects of painting.
- D. Manufacturer's instructions: Indicate surface preparation and paint application.
- E. Submit a detailed plan on the method(s) to be employed to protect adjacent equipment and surfaces including, but not limited to, the following:
 - 1. Method of surface preparation.
 - 2. Method of paint application.
 - 3. Quality Control Plan for all phases of construction operations.
- F. Submit detailed daily reports weekly, to include the following:
 - 1. The daily work location, date, start time and finish time, ambient conditions including wet bulb temperature, dry bulb temperature, and steel surface temperature, including hold point inspection observations.
 - 2. All surface preparation operations including location, date, start time and finish time.
 - 3. The date, start time and finish time for all painting operations, including location, wet bulb temperature, dry bulb temperature, and steel surface temperature, of the each coat applied.
 - 4. The name, type, batch numbers, manufacturer's name and amount of coatings used for each application.
- G. The Contractor shall submit to the Engineer letters from manufacturers certifying that the paint being supplied for this project conforms completely to specifications.

1.05 REGULATORY REQUIREMENTS

- A. All coatings shall comply with VOC regulations as promulgated by the Ozone Transport Commission, effective January 2005.

1.06 CERTIFICATES

- A. The Contractor shall submit to the Engineer, immediately upon completion of the job, certification from the manufacturer indicating that the quantity of each coating purchased was sufficient to properly coat all surfaces.
- B. Certification shall make reference to the square footage figures provided to the manufacturer by the Contractor.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to the site under provisions of Sections 016100 and 016500.
- B. All materials furnished by the Contractor shall be brought to the job site in the original sealed and labeled containers of the paint manufacturer and shall be subject to inspection by the Engineer.
- C. Every container of coatings materials shall have the batch number imprinted on the can, as well as the Federal Specification Number. Colors, where not specified, shall be as selected by the Engineer or Owner.

- D. Store all materials as recommended by the manufacturer. Any materials stored improperly shall be removed from the site immediately. Maintain storage location and temperature log at storage site available for inspection.
- E. The Contractor shall supply the Owner with two (2) one gallon paint kits of each of the exterior, intermediate and finished coats in each color.

1.08 WARRANTY

- A. Provide a 1-year labor and manufacturer's materials warranty for the coating systems.
- B. Warranties are to be submitted in writing to the Engineer prior to product delivery.
- C. Any defects, failures, breakdowns, or discrepancies of the paint or coatings, that reveal themselves within the 1-year warranty period after acceptance of work shall be promptly repaired at no additional cost to the Owner.
- D. Touch up procedures shall be issued by the engineer for areas of coating defects, breakdowns, or discrepancies to be repaired, only if the accumulative areas are less than five square feet, or if the engineer permits.
- E. Remove the entire coating in the area where failure occurs. Touch-up work will not be permitted. The surface is to be prepared as originally scheduled.

PART 2 - PRODUCTS

2.01 COATING REQUIREMENTS

- A. All coating systems submitted for use shall be new for the project described. Two component coating materials shall be mixed in accordance with the manufacturer's data sheet. No partial kits shall be permitted to be used.
- B. All coating systems submitted for use shall conform and meet the minimum requirements specified by the Engineer for:
 - 1. Adhesion - ASTM-D-3359 and 4541
 - a. Minimum 900 psi as measured with a Type 2 tester
 - 2. Hardness - ASTM-D-3363, 2583, and 2240
 - a. Exterior Finish Coating - No gouging or scratching with an 8H or less pencil
 - 3. Flexibility - ASTM-D-522 and FED-STD-6221
 - a. Exterior Finish Coating - No less than 34% elongation, average of three tests
 - b. Impact Resistance - ASTM-D-2754
 - c. Exterior Coating - No visible cracking or delamination of film after 34 inch pounds or less direct impact.
 - 4. Abrasion Resistance - ASTM-D 968 and 4060
 - a. No More than 100 mg loss after 1000 cycles

2.02 MANUFACTURERS

- A. TNEMEC COMPANY, INC
- B. PPG INDUSTRIES
- C. SHERWIN WILLIAMS

- D. Coating substitutions shall be permitted only after receiving written approval from the Engineer prior to bid.

2.03 MATERIALS - CARBON STEEL AND BLACK IRON PIPING

- A. TNEMEC Paint System - Three full coats, one stripe coat.
1. Tnemec Series 94H2O, Hydro-Zinc, 2.5 - 3.5 mils DFT
 2. Tnemec Series 27FC Typoxy Stripe Coat (Contrasting Color)
 3. Tnemec Series 27FC Typoxy, 3.0 - 5.0 mils DFT
 4. Tnemec Series 72 Low VOC Acrylic Urethane, 2.5 - 5.0 mils DFT
- B. PPG Paint System - Three full coats, one stripe coat.
1. PPG Amercoat 68MCZ, 2.5 - 3.5 mils DFT
 2. PPG Amerlock 2/400 Epoxy Stripe Coat (Contrasting Color)
 3. PPG Amerlock 2/400 Epoxy, 3.0 - 5.0 mils DFT
 4. PPG Amercoat 450H, 2.5 - 5.0 mils DFT
- C. SHERWIN-WILLIAMS Paint System - Three full coats, one stripe coat.
1. Sherwin-Williams Corothane 1 Galvapak B65G11, 2.5 - 3.5 mils DFT
 2. Sherwin-Williams Macropoxy 646 Stripe Coat (Contrasting Color)
 3. Sherwin-Williams Macropoxy 646, 3.0 - 5.0 mils DFT
 4. Sherwin-Williams Acrolon 218HS, 2.5 - 5.0 mils DFT

2.04 MATERIALS - DUCTILE IRON PIPING

- A. TNEMEC Paint System - Two full coats, one stripe coat.
1. Tnemec Series 27FC Typoxy, 4.0 - 6.0 mils DFT
 2. Tnemec Series 27FC Typoxy Stripe Coat (Contrasting Color)
 3. Tnemec Series 72 Low VOC Acrylic Urethane, 3.0 - 5.0 mils DFT
- B. PPG Paint System - Two full coats, one stripe coat
1. PPG Amerlock 2/400 Epoxy, 4.0 - 6.0 mils DFT
 2. PPG Amerlock 2/400 Epoxy Stripe Coat (Contrasting Color)
 3. PPG Amercoat 450H, 3.0 - 5.0 mils DFT
- C. SHERWIN-WILLIAMS Paint System - Two full coats, one stripe coat
1. Sherwin-Williams Macropoxy 646, 4.0 - 6.0 mils DFT
 2. Sherwin-Williams Macropoxy 646 Stripe Coat (Contrasting Color)
 3. Sherwin-Williams Acrolon 218HS, 3.0 - 5.0 mils DFT

2.05 MATERIALS - PVC

- A. TNEMEC Paint System - Two full coats
1. Tnemec Series 115 Uni-bond, 2.0 - 4.0 mils DFT
 2. Tnemec Series 1028 or 1029 Enduratone, 2.0 - 3.0 DFT
- B. PPG Paint System - Two full coats
1. PPG Amerlock Sealer, 1.5 mils DFT
 2. PPG Amercoat 220, 2.0 - 5.0 mils DFT
- C. SHERWIN-WILLIAMS Paint System - Two full coats
1. Sherwin-Williams DTM Primer/Finish, 2.5 - 5.0 mils DFT
 2. Sherwin-Williams DTM Acrylic Semi-Gloss, 1.5 - 2.5 mils DFT

2.06 ACCESSORIES

- A. Seam Sealer/Caulk: Shall be as recommended by the coating manufacturer.

2.07 TESTING

- A. The Engineer shall have the right to take random samples of paint from the painter's bucket as it is being applied to the steel structure, tank or mechanical piping. These samples will be sent to the paint manufacturer for analysis to determine constituents and type of coating.
- B. No material of any kind shall be used until it has been inspected and accepted by the Engineer. All materials rejected shall be immediately removed from the work and not again offered for inspection.

2.08 ACCESSORY MATERIALS

- A. Provide all required ladders, scaffolding, drop cloths, maskings, scrapers, tools, sandpaper, cleaning solvents, and remove waste as required to perform the work to achieve the results specified herein. Materials not specifically indicated but required to achieve the finishes specified shall be of commercial quality and as recommended by the manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Contractor shall verify existing ambient condition and substrate conditions prior to proceeding with any work and submit to Engineer/representative prior to requesting Engineer's/representative's verification.
- B. Contractor shall verify substrate is properly prepared, properly cleaned, and or properly coated in accordance with project specifications prior to proceeding with any additional work and prior to requesting Engineer's/representative's verification.
- C. Should the contractor request verification from Engineer/representative and work is not in conformance with requirements contractor shall pay \$500 per occurrence to cover the costs to the owner.

3.02 PREPARATION - GENERAL

- A. Surface Preparation Schedule:
 - 1. Carbon Steel: Shall be abrasive blast cleaned to SSPC SP-6 (commercial blast cleaning) to achieve an angular surface profile between 1.5 - 3 mils.
 - 2. Ductile Iron: All damaged primer and or connections shall be cleaned to SSPC SP-3 (Power Tool Cleaning)
 - 3. Galvanized Steel: Shall be cleaned in accordance with SSPC SP-1 (Solvent Cleaning) and may also require SSPC SP-7 (Brush off Blasting) as deemed necessary by the engineer or owner.
 - 4. Copper & PVC: Shall be cleaned in accordance with SSPC SP-1 (Solvent Cleaning) and SSPC SP-2 (Hand Tool Cleaning) to achieve a uniformly scarified surface.
- B. Cleaned surfaces, when viewed without magnification, shall be free of all visible paint oil, grease, dirt, mill scale, rust, oxides, corrosion products and other foreign matter as noted in Chapter 2, SSPC Painting Manual Volume 2.

- C. Pit filler shall be applied to all voids that are greater than $\frac{1}{4}$ of the original steel surface thickness.
- D. The pit filler shall be applied prior to the application of the first coat and in accordance with manufacturer's instructions. If the manufacturer's instructions differ from the project specifications, the more stringent will apply.
- E. All areas shall be cleaned prior to any coating application. All surfaces to be painted shall be dry.
- F. Weld projections or irregular portions of welds, or any steel defects that would interfere with the proper coating shall be ground smooth, as directed.

3.03 APPLICATION

- A. Apply coating in strict conformance with the manufacturer's instructions and requirements. If the manufacturer's instructions differ from the project specifications, the more stringent will apply.
- B. Before coating is applied to surfaces, steps shall be taken, either by circulation of dry air or by the application of heat, to dry the metal surfaces completely.
- C. No coatings shall be applied when the surface temperature is less than 5 degrees Fahrenheit (3 degrees Celsius) above the dew point.
- D. No coatings shall be applied when the relative humidity is above 85% or as recommended by manufacturer.
- E. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer. Do not apply exterior coatings when unfavorable weather conditions are forecast within 24 hours of application.
- F. No surfaces shall be coated that are not in compliance with SSPC surface preparation standards or any other part of the project specifications.
- G. All coatings shall be applied at the rate specified. Deficiencies in film thickness shall be corrected with the proper surface preparation and application of an additional coating or as directed by the Engineer. Coatings in excess of the specified range shall be corrected at the direction of the Engineer.
- H. All coating applications shall be inspected and approved by the Engineer prior to the application of any succeeding coats. All coats shall be applied to the dry film thickness specified.
- I. The minimum and maximum total dry film thickness shall be as indicated in this section. The Mil Gauge shall be calibrated in accordance with the National Institute of Standard and Technology. The Contractor shall have available on the job site a satisfactory magnetic type Mil Gauge for measuring film thickness.
- J. A brush applied stripe coat, of different color, shall be applied to all weld seams, edges, seams, or any non conforming surfaces deemed necessary by the Engineer. The stripe coat shall be applied after the first coat but prior to the second coat.
- K. The coating shall be applied as a continuous film of uniform thickness. Any holidays or areas missed in the application shall be recoated within the maximum re-coat time or be corrected with the proper surface preparation and cleaning prior to the application of the subsequent coating.

- L. All coatings that are specified shall only be acceptable in the number of coats specified in the contract documents.
- M. Color Coding of Process Piping shall be in accordance with Ten States Standards as follows:

Service	Color
Raw Water	Olive Green
Potable Water	Dark Blue
Lime	Light Green

3.04 CLEANING

- A. All surfaces shall be free of all dirt, oil, debris, or any other foreign matter prior to the application of any coating.
- B. The Contractor shall maintain his work area in a neat, orderly fashion. Accumulation of debris, muck, rust, scale, etc., shall be frequently (not to exceed 1 week) cleaned up and removed from the site. Thinners used to clean equipment shall be held in sealed containers and removed from the site to an approved disposal area by the Contractor. Provide certificates from the disposal site indicating that the material has been properly disposed of.
- C. Upon completion of the work, all excess material, rigging, empty containers, cables, tarps, etc., shall be removed from the site. Buildings and grounds shall be left in as good condition as when work was started.

3.05 FIELD QUALITY CONTROL

- A. The Engineer will inspect the painting as it is being performed.
- B. The Engineer reserves the right to accept each phase of the work before further work may be conducted, to halt all Work deemed to be improper or not in compliance with project specifications, and to require the contractor to promptly correct all improper practices or deficient work. Contractor shall notify the Engineer's/representative's 24 hours minimum prior to the following:
 - 1. Prior to the start of work
 - 2. Immediately following surface preparation
 - 3. Immediately prior to each coating or lining application
 - 4. Following the application of each coat
 - 5. Following the curing of the coating or lining
- C. The Engineer reserves the right to conduct any testing, both destructive and nondestructive, at any time for inspection or evaluation purposes.
- D. Any expenses incurred for corrective measures required as the result of improper practices and/or defective or deficient work shall be borne by the contractor and the extent of these corrective measures shall be at the discretion of the engineer.
- E. The contractor shall provide safe access to all areas, including but not limited to, equipment, containers and spaces for inspection at any time as deemed necessary by the engineer or his representative
- F. Sufficient lighting shall be provided to ensure proper safety conditions and permit inspection.

- G. All manholes and other tank openings shall remain open as necessary during cleaning, painting and curing operations.

END OF SECTION 099744

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Right-to-know tank and chemical system signs.

1.02 REFERENCES

- A. NFPA 704.

1.03 RELATION SECTIONS

- A. Section 101416 - Building Signage
- B. Section 220553 - Identification for Mechanical Piping & Equipment

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Seton Name Plate Co., New Haven, CT.
- B. Approved Equal.

2.02 MANUFACTURED UNITS

- A. Right to Know Signage:
 - 1. Interior signage shall be fiberglass.
 - 2. Exterior signage shall be suitable for outdoor installation and UV protected.
 - 3. Size 15 by 15 inches for exterior signage; 10 by 7 inches for interior signage.
 - 4. Mounting holes through sign or self adhesive for direct mounting on tank.
 - 5. List chemical identity, NFPA hazard warning and personal protective items that shall be used.
 - 6. Provide right to know signs for each of the following:

<u>Chemical</u>	<u>NFPA Rating</u>
Calcium Hydroxide	3H, 0F, 0R, 0X
- 7. Provide 14-inch by 10-inch fiberglass sign at storage tank; Quantity - 2:
 - a. Chemical being stored
 - b. Facility name
 - c. NYSDEC Chemical bulk Storage number
- 8. Provide NYS CBS & NCDH tank ID signs for all chemical bulk storage tanks. Signs shall contain information including Facility name, NYSDEC CBS #, NYSDEC & NCDH Tank ID#, Design Capacity and Working Capacity required by local and state regulations. Signs shall be installed directly on tanks indicating capacity of tank. Install at remote fill location (exterior) and on tank (interior).
- 9. Provide No Smoking sign at entrance to Nitrate Filter Building and Well 1-4 chemical room (exterior).

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install identification signs on or immediately adjacent to tanks with stainless steel hardware and as directed by engineer/owner.
- B. Install exterior warning signs at each entrance.
- C. Use stainless steel hardware to mount signs on exterior walls. Engineer shall determine location of each sign adjacent to building entrance.

END OF SECTION 104300

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Safety equipment and supplies associated with use of lime.

1.02 REFERENCES

- A. ANSI Z87.1.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. LAB SAFETY SUPPLY, JANESVILLE, WI.
- B. Or approved equal.

2.02 MATERIALS

- A. Face Shield:
 - 1. Ratchet Suspension System
 - 2. Polycarbonate Face Shield
 - 3. Compliance with ANSI Z87.1
 - 4. Order No. 6955
 - 5. Quantity: Two (2) per location
- B. Splash Goggles:
 - 1. Polycarbonate Lens
 - 2. Indirect Vent
 - 3. Fog Free
 - 4. Compliance with ANSI Z87.1
 - 5. Order No. 54876
 - 6. Quantity: Two (2)
- C. Rubber-coated Apron:
 - 1. Lightweight
 - 2. PVC-coated
 - 3. Cotton ties and loop neck
 - 4. Size: 35" x 45"
 - 5. Color: Yellow
 - 6. Order No. 1606
 - 7. Quantity: Two (2)
- D. Rubber Gloves:
 - 1. Unlined natural rubber gloves
 - 2. Length: 18-inches
 - 3. 0.05-inch gauge
 - 4. Size 10
 - 5. Order No. 6680
 - 6. Quantity: Two (2) pair.

- E. HAZ-MAT Spill Kit:
 - 1. PVC Carrying Bag.
 - 2. Polypropylene Socks
 - 3. Polypropylene Mats
 - 4. Disposable bag, gloves
 - 5. Order No. SPC Hazwik Chemical Spill Kit
 - 6. Quantity: Two (2)

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install one set of complete equipment as indicated in 2.02 A-F at each of two (2) locations indicated by the Engineer/Owner. Provide stainless steel or FRP rack with hooks for hanging equipment. Install rack(s) in location(s) as directed by Engineer.

END OF SECTION 104310

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Pipe hangers for various installed pipe systems.

1.02 SUBMITTALS

- A. Submit under provisions of Section 013300

1.03 REFERENCES

- A. Underwriters Laboratories - UL Listing.
- B. ASTM B633 - Specification for Electrodeposited Coatings of Zinc on Iron and Steel
- C. ASTM A123 - Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip
- D. ASTM A653 - Specification for Steel Sheet, Zinc-Coated by the Hot-Dip Process
- E. ASTM A1011 - Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability (Formerly ASTM A570)
- F. MSS SP58 - Manufacturers Standardization Society: Pipe Hangers and Supports- Materials, Design, and Manufacture
- G. MSS SP69 - Manufacturers Standardization Society: Pipe Hangers and Supports- Selection and Application
- H. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices

1.04 QUALITY ASSURANCE

- A. Hangers and supports used in fire protection piping systems shall be listed and labeled by Underwriters Laboratories.
- B. Steel pipe hangers and supports shall have the manufacturers name, part number, and applicable size stamped in the part itself for identification.
- C. Hangers and supports shall be designed and manufactured in conformance with MSS SP 58.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Anvil International (Grinnell)
- B. Cooper B-Line, Inc.
- C. Carpenter and Patterson
- D. Fee and Mason
- E. Hilti

- F. Elcen
- G. Piping Technology and Products, Inc.
- H. Or Approved Equal

2.02 MATERIALS

- A. Pipe Hangers & Supports:
 - 1. All pipe hangers and supports for stainless steel piping systems shall be of stainless steel construction.
 - 2. All pipe hangers and supports for copper tubing piping systems shall be of stainless steel construction. Provide dielectric/isolation wrapping or pipe insulation where dissimilar metals meet.
 - 3. All pipe hangers and supports for black iron piping systems shall be of stainless steel construction. Provide dielectric/isolation wrapping where dissimilar metals meet.
 - 4. All pipe hangers and supports for PVC piping systems shall be of galvanized steel construction, except where piping is used for chemical treatment.
 - 5. All pipe hangers and supports for chemical lines including [sodium] [calcium] hypochlorite and caustic soda shall be of stainless steel construction.
 - 6. All pipe hangers and supports for chemical lines including brine solution and regenerate piping shall be of stainless steel construction.
 - 7. All pipe hangers and supports for Rigid galvanized piping systems shall be of galvanized steel construction.
- B. Trapeze Hangers: Where three or more non-chemical lines of pipe run parallel, support them with galvanized trapeze hangers, Grinnell Figure 46. Trapeze to be supported by a minimum of two galvanized rods with Figure 60 washer plates. For top loading only.
- C. Concrete Inserts: Anvil International Figure 282, MSS SP-58 (Type 18), galvanized, universal concrete inserts, adequately sized and correctly positioned to support full load operating systems.
- D. C-Clamps: Anvil International Figure 86, MSS SP-58 (Type 23) galvanized with set screw and lock nut. Use these for attaching hangers to steel beams. Welding hanger rods to steel members is not permitted. Provide retaining clip for C-Clamps.
- E. Malleable Beam Clamps: Anvil International Figure 218, MSS SP-58 (Type 30), galvanized. Use these for attaching hangers to bar joists. Provide retaining clip for all beam clamps.
- F. Clevis Hanger (4" diameter Piping or Less): Anvil International Figure 67, MSS SP-58 (Type 5), galvanized. Use these for attaching hangers to bar joists, column or wall.
- G. Clevis Hanger (4" diameter or Greater D.I. Piping): Anvil International Figure 590, MSS SP-58 (Type 1), galvanized.
- H. Pipe saddle support: Pipe saddle with U-bolt and threaded pipe adjuster. Cooper B-Line Figure 318A, MSS SP-69 (Type 37), stainless steel. Pipe stand: Cooper B-Line Figure 316T, stainless steel.
- I. All hangers and supports shall be UL Listed. Cooper B-Line Figure 318A & 316T,
- J. Provide threaded rod in accordance with manufacturer instruction.

2.03 FINISHES

- A. Indoor Finishes
 - 1. Hangers and clamps for support of bare copper piping shall be coated with copper colored epoxy paint, B-Line Dura-Copper®. Additional PVC coating of the epoxy painted hanger shall be used where necessary.
 - 2. Hangers for other than bare copper pipe shall be zinc plated in accordance with ASTM B633 OR shall have an electro-deposited epoxy finish.
 - 3. Strut channels shall be pre-galvanized in accordance with ASTM A653 SS Grade 33 G90 OR have an electro-deposited green epoxy finish.
- B. Outdoor and Corrosive Area Finishes (Chemical Room)
 - 1. Hangers and strut located outdoors shall be hot dip galvanized after fabrication in accordance with ASTM A123. All hanger hardware shall be hot dip galvanized or stainless steel. Zinc plated hardware is not acceptable for outdoor or corrosive use.
 - 2. Hangers, strut, and clamps located in corrosive areas shall be type [304] [316] stainless steel with stainless steel hardware.
 - 3. Provide dielectric/isolation wrapping in systems of dissimilar metals.

PART 3 - EXECUTION

3.01 SCHEDULES - HANGER SPACING

- A. Copper Pipe
 - 1. Not more than 10'-0" o.c.
- B. Black Iron and Galvanized
 - 1. 1/4 to 1-1/4 inches - 5'-0" o.c.
 - 2. 2 to 2-1/2 inches - 8'-0" o.c.
 - 3. 3-inches and above - 10'-0" o.c.
- C. PVC Pipe
 - 1. 1/2 to 1-inch - 4'-0" o.c.
 - 2. 1 1/4 to 8-inches - 5'-0" o.c.

3.02 INSTALLATION

- A. Support pipes on specified hangers so that equipment, pumps, and fittings do not bear weight of pipe.
- B. Do not use perforated metal, strap iron, or band iron.
- C. Do not make offsets in hangers.
- D. Maximum allowable spacing of pipe hangers for horizontal piping is listed above. Space hangers and brackets at close intervals where necessary to maintain levels, slopes, and drainage, or to prevent sagging.
- E. Place hangers within 12 inches of each horizontal elbow.
- F. Use hangers with 1-1/2 inch minimum vertical adjustment.
- G. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

- H. Allow for forces imposed by expansion joints, satisfy structural requirements and maintain proper clearances with respect to adjacent piping, equipment and structures. Hangers for insulated pipes shall be sized to accommodate insulation thickness.
- I. Support cast iron pipe under each section and at each hub.
- J. Keep the different types of hangers to a minimum and provide hangers that are neat, without complicated bolting and with the number of parts of each hanger and its anchor kept to a minimum.
- K. Make accurate weight balance calculations to determine the required supporting forces at each hanger or support location and the pipe weight load at each equipment connection.
- L. Pipe hangers shall be capable of supporting the pipe in all conditions of operation. They shall allow free expansion and contraction of the piping, and prevent excessive stress resulting from transferred weight being induced into the pipe or connected equipment.
- M. All hangers and supports that are not galvanized shall be painted or shop primed.
- N. Provide means of preventing dissimilar metal contact such as plastic coated hangers, copper colored epoxy paint, or non adhesive isolation tape- B-Line Iso-pipe. Galvanized felt isolators sized for copper tubing may also be used, B-Line B3195CT.
- O. Support horizontal cast iron pipe adjacent to each hub.
- P. Install hangers to provide a minimum of 1/2 inch space between finished covering and adjacent work.
- Q. Place a hanger within 12 inches of each horizontal elbow.
- R. Support Provide neoprene protection where dissimilar metals come into contact.
- S. Maximum allowable spacing of pipe supports for vertical piping independently of connected horizontal piping. Support vertical pipes at every floor. Wherever possible, locate riser clamps directly below pipe couplings or shear lugs.
- T. Where several pipes can be installed in parallel and at the same elevation, provide trapeze hangers as specified. Trapeze hangers shall be spaced according to the smallest pipe size, or install intermediate supports according to schedule in section 3.01B.
- U. Do not support piping from other pipes, ductwork or other equipment that is not building structure.
 - 1. Where horizontal piping movements are greater than 1/2 inch, or where the hanger rod angularity from the vertical is greater than four degrees from the cold to hot position of the pipe, the hanger pie and structural attachments shall be offset in such a manner that the rod is vertical in the hot position.
- V. In the part of the building which is steel-framed, attach hangers to the building structural steel beams. Where hangers do not correspond with the building structural steel beams, provide supplemental steel members continuously welded or bolted to the building structural steel beams.
- W. In the parts of the building which is a concrete structure, attach hangers to the concrete structure by installing anchors into the concrete.

END OF SECTION 220529

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Stencils
- B. Pipe markers
- C. Tags

1.02 REFERENCES

- A. ASME A13.1 - Scheme for the Identification of Piping Systems

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Submit list of wording, symbols, letter size and color coding for mechanical identification.
- C. Submit valve chart and schedule, including valve tag number, location, function and valve manufacturer's name and model number.
- D. Product Data: Provide manufacturers catalog literature for each product required.
- E. Manufacturer's Installation Instructions: Indicate special procedures and installation.

PART 2 - PRODUCTS

2.01 STENCILS

- A. Manufacturers:
 - 1. SETON NAMEPLATE CO., New Haven, CT, Model SPS.
- B. Stencils: With clean cut symbols and letters of following size:
 - 1. 3/4 to 1-1/4 inch (20-30 mm) Outside Diameter of Insulation or Pipe: 8 inch (200 mm) long color field, 1/2 inch (15 mm) high letters.
 - 2. 1-1/2 to 2 inch (40-50 mm) Outside Diameter of Insulation or Pipe: 8 inch (200 mm) long color field, 3/4 inch (20 mm) high letters.
 - 3. 2-1/2 to 6 inch (65-150 mm) Outside Diameter of Insulation or Pipe: 12 inch (300 mm) long color field, 1-1/4 inch (30 mm) high letters.
 - 4. 8 to 16 inch (200-250 mm) Outside Diameter of Insulation or Pipe: 24 inch (600 mm) long color field, 2-1/2 inch (65 mm) high letters.
 - 5. Equipment: 2-1/2 inch (65 mm) high letters.
- C. Stencil Paint: Semi-gloss enamel, colors conforming to ASME A13.1.

2.02 PIPE MARKERS

- A. Manufacturers:
 - 1. SETON NAMEPLATE CO., New Haven, CT., Set Mark Pipe Markers.
 - 2. BUNTING, Pittsburgh, PA, Wrap-Mark.
- B. Color: Conform to ASME A13.1.

- C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed. For the following piping systems:
 - 1. Raw water - pre-treatment
 - 2. Raw Water - post- treatment
 - 3. Blow Off/Waste piping
 - 4. Water Service
 - 5. Drain
 - 6. Lime Piping
- D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
- E. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches (150 mm) wide by 4 mils (0.10 mm) thick, manufactured for direct burial service.

2.03 TAGS

- A. Manufacturers
 - 1. SETON NAMEPLATE CO., New Haven, CT.
 - 2. Metal Tags: Brass with stamped letters.
 - 3. Tag Size Minimum: 1-1/2 inch diameter.
 - 4. Chart: Typewritten letter size.
- B. Signage: Factory fabricated, flexible, semi-rigid plastic; minimum information indicating PID identification, contents, volume, installation date and right to know information, for the following piping systems:
 - 1. Lime Tank (1)

PART 3 - EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Prepare surfaces in accordance with paint manufacturers recommendations.

3.02 INSTALLATION

- A. Apply stencil painting in accordance with paint manufacturer's application instructions.
- B. Install plastic pipe markers in accordance with manufacturer's instructions at intervals of 8'-0" on center, or after any change in direction. Minimum of one marker per pipe section.
- C. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- D. Install underground plastic pipe markers 6 to 8 inches (150 to 200 mm) below finished grade, directly above buried pipe.
- E. Identify piping, concealed or exposed, with plastic pipe markers or stenciled painting. Use tags on piping 3/4 inch (20 mm) diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet (6

m) on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

F. Install tags with stainless steel/brass S hooks on corrosion resistant chain.

G. Identify valves in main and branch piping with tags.

END OF SECTION 220553

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Black iron piping, valves and accessories
- B. Copper piping, valves and accessories
- C. Cross linked polyethylene tubing (PEX) and accessories
- D. PVC piping, valves and accessories
- E. Reinforced flexible tubing and accessories
- F. Stainless steel piping, valves and accessories
- G. Corporation stops
- H. Pressure regulating valves
- I. Relief valves

1.02 RELATION SECTIONS

- A. Section 220529 - Hangers and Supports for Piping
- B. Section 220553 - Identification for Mechanical Piping and Equipment
- C. Section 221119 - Plumbing Specialties
- D. Section 312333 - Trenching
- E. Section 331110 - Disinfection of Water Facilities

1.03 REFERENCES

- A. ASME B16.3 - Malleable Iron Threaded Fittings
- B. ASME B16.22 - Wrought Copper and Bronze Solder-Joint Pressure Fittings
- C. ASME B16.23 - Cast Copper Alloy Solder - Joint Drainage Fittings -DWV
- D. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV
- E. ASME B31.3 - Process Piping
- F. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
- G. ASTM A120 - Pipe, steel, black and Hot-Dipped Zinc Coated (Galvanized), Welded and Seamless, for Ordinary Uses
- H. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service
- I. ASTM A403 - Wrought Austenitic Stainless Steel Fittings

- J. ASTM B42 - Seamless Copper Pipe
- K. ASTM B88 - Seamless Copper Tube
- L. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications
- M. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
- N. ASTM D1785 - Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120
- O. ASTM D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
- P. ASTM D2467 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
- Q. ASTM D2241 - Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)
- R. ASTM D2564 - Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings
- S. ASTM D2737 - Standard Specification for Polyethylene (PE) Plastic Tubing
- T. ASTM D2855 - Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings
- U. ASTM F876 Standard Specification for Crosslinked Polyethylene (PEX) Tubing
- V. ASTM F877 Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot and Cold-Water Distribution Systems
- W. ASTM F1960 Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) Tubing
- X. AWWA C800 - Underground Service Line Valves and Fittings
- Y. AWWA C901 - Polyethylene Pressure Pipe and Tubing, 1/3" to 3", for Water Service

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, hydrants and accessories.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with the local water utility company requirements.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 016500.

- B. Deliver and store items in shipping containers with labeling in place.

1.07 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 017839.
- B. Accurately record actual locations of piping mains, valves, connections and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- D. Provide manufacturer's standard warranty for all applicable items under provisions of Section 017800.

PART 2 - PRODUCTS

2.01 BLACK IRON PIPING, VALVES AND ACCESSORIES

- A. Standard weight, Schedule 40, threaded ends, conforming to ASTM A53. Fittings shall be malleable iron, screwed type conforming to ASME B16.3.
- B. Transitions from black iron to poly-tubing shall be made with barbed fittings and stainless clamps, or approved equal.
- C. Ball Valves: All 316 stainless steel body, ball and retainer, reinforced RPTFE stem, seat and retainer seal, 304 stainless steel lever with vinyl grip, rated for 125 psi minimum working pressure, threaded connections, Series 76F-100-A Apollo Valve as manufactured by CONBRACO INDUSTRIES, INC.
- D. Check Valves: All 316 stainless steel construction, including body, tail piece, guide and spring, glass filled RPTFE ball check, rated for 125 psi minimum working pressure, threaded connections, Series 62-100 Apollo Valve as manufactured by CONBRACO INDUSTRIES, INC.

2.02 COPPER PIPING, VALVES AND ACCESSORIES

- A. All exposed small copper piping shall be Type "K" hard drawn copper tubing. All underground piping shall be soft annealed Type "K" copper tubing with compression fittings.
- B. All brass valves and fittings installed on potable water supply piping shall be made of "low-lead" materials (UNS Copper Alloy C89833 or C89520) and have a maximum lead content of 0.25 percent by weight. All low lead brass fittings shall be stamped or embossed with a mark indicating that the product is manufactured from low-lead alloys.
- C. Check valves shall be swing check renewable BUNA-N disc, all bronze, STOCKHAM Figure B-319Y (threaded end) or Figure B-309Y (solder end) - 250 to 300 psi non-shock water.
- D. Ball valves for copper piping/tubing and galvanized piping shall be renewable reinforced Teflon seats, adjustable packing gland, non-blowout stem with run port opening. Ball valves shall be STOCKHAM Figure T or S-285 (threaded or soldered ends).

2.03 CROSSLINKED POLYETHYLENE TUBING AND ACCESSORIES

- A. Manufacturer: IPEX, Vanguard or approved equal.

- B. Crosslinked polyethylene (PEX-Aluminum-PEX) manufactured to CTS-OD sizes, with a standard thickness of SDR-9. Manufactured in accordance with ASTM F876 and ASTM F877 and tested for compliance by an independent third-party agency.
- C. Fittings for PEX piping shall be brass. Connections shall be fastened via stainless steel ring clamp.

2.04 PVC PIPING, VALVES AND ACCESSORIES

- A. PVC piping for all interior and exterior applications shall be polyvinyl chloride, Class 1245-B, Schedule 80, and shall conform to ASTM Specifications D2267, D2241, D1784 and D1785. All PVC piping shall conform to NSF-61 and be approved for potable water applications. Pipe shall be as manufactured by A.M. BEYERS or CHARLOTTE PIPE COMPANY or approved equal. Fittings for PVC piping shall conform to ASTM D2467 and be slip type and shall be of the same schedule approved for use by the pipe manufacturer. Pipe shall bear the trademark of the manufacturer.
- B. Transitions from PVC to poly-tubing shall be made with barbed fittings and stainless clamps, or approved equal.
- C. Ball valves shall be double union/double block with PVC body, ball, insert and stainless steel rod and stem with Teflon seats, Tru-Bloc by NIBCO CHEMTROL, SPEARS or approved equal.
- D. Check valves shall be of the true union ball check type with a PVC body construction. The valves shall be rated at 150 psi. The valves shall be manufactured by HAYWARD CO., SPEARS or approved equal.
- E. Strainers shall be Y type, of size indicated, PVC body with 40 mesh cylindrical stainless steel screen and shall be as manufactured by HAYWARD CO. or approved equal.
- F. Pressure relief/backpressure valves shall be molded in-line valves with PVC body construction. Valves shall have a setting range from 5 to 100 psi and be compatible with chemicals in application. Valves shall be as manufactured by PLAST-O-MATIC VALVES, INC., WALLACE & TIERNAN, WALCHEM, or approved equal.
- G. Globe valves shall be of thermoplastic construction rated to 150 psi with EPDM seals and flanged connections. Valves shall be as manufactured by ASAHI-AMERICA, NIBCO or approved equal.
- H. Unions shall be UL listed, Oring unions with Teflon gaskets by HAYWARD CO. or approved equal.
- I. Threads and dimensions: ANSI B1.1 and B18.2.
- J. All wetted parts of PVC piping, valves and accessories shall be compatible with treatment chemicals.
- K. Thread lubricant: Crane "Formula 425", or equal. (NOTE: Approved Teflon tape may be used).
- L. Gaskets: Full face, 1/8-inch thick neoprene rubber.
- M. Solvent welded joints for chemical piping shall be made using solvent cement that meets or exceeds ASTM F493, compatible with PVC pipe and fittings. Solvent cement shall be Low V.O.C., Heavy Duty Gray Industrial solvent cement by Oatey; Model EP42 or specifically approved equal.

- N. Pressure connections to pressure switches, recorders, and indicating gauges shall be equipped with a snubber.

2.05 REINFORCED FLEXIBLE TUBING

- A. PVC tubing with nylon inner braided reinforcing made from FDA approved materials, 65 Durometer, 175 psi working pressure for 1/2 to 1-1/2 inches ID. Install high pressure fittings with double stainless steel clamps for all connections to tubing.
- B. HDPE translucent tubing, compatible with chemical transported, minimum 190 psi working pressure at 70F for 1/2" to 3/4" O.D. Install high pressure PVC compression fittings all connections to tubing.

2.06 STAINLESS STEEL PIPING AND ACCESSORIES

- A. Standard weight, Schedule 40, two-ferrule type tube fitting connections, conforming to ASTM A269. All tubing, fittings, and valves shall be 316 stainless steel.

2.07 CORPORATION STOPS

- A. Manufacturers:
 - 1. MUELLER COMPANY, Model No. H-15000.
 - 2. FORD METER BOX COMPANY, Model No. FB600
- B. Ball valve type, water service bronze body with AWWA standard thread inlet and copper AWWA outlet, complete with straight coupling nuts.
- C. All connections greater than 1" shall utilize a threaded saddle with stainless steel bands.

2.08 PRESSURE REGULATING VALVES

- A. Manufacturer:
 - 1. WATTS, Series 263A (3-way).
 - 2. Approved equal.
- B. Valves shall be of brass construction with Buna-N disc/diaphragm, inlets/outlet size to match piping, maximum working pressure 300 psi, adjustable range 3 psi to 50 psi.
- C. Provide with pressure gauge and slotted adjusting screw.

2.09 RELIEF VALVES

- A. Air Release/Vacuum Valves
 - 1. Manufacturer:
 - a. CRISPIN, "AL" series
 - b. Approved equal
 - 2. Valve shall comply with ANSI/AWWA C512 Standards.
 - 3. The body and valve shall be constructed of cast iron conforming to ASTM A126, Class B.
 - 4. Spherical stainless steel float shall seal against a renewable Buna-N resilient seat.
- B. Pressure relief & Backpressure / Anti-siphon valves
 - 1. Manufacturer:
 - a. PLAST-O-MATIC VALVES, INC.
 - b. GRIFFCO, PRG2050P & BPV05OP
 - c. Approved equal

2. Valves shall be molded in-line type with PVC body construction.
3. Valves shall have a setting range from 5 to 120 psi and be compatible with chemicals in application. Size in accordance with the Plans.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Clean inside of piping and tubing before installation. Keep installed piping clean and protect ends from foreign matter by capping or plugging.
- B. Install piping and tubing so that it does not interfere with opening of doors or apparatus, access to equipment or any portion of electrical equipment.
- C. Run piping and tubing in straight lines and square with building. Install rise plumb. Make offsets only where indicated and where necessary.
- D. Install pipes so that expansion and contraction will not cause undue stress or strain to pipes or equipment. Provide offsets and expansion joints as shown on drawings.
- E. Provide flanges and unions throughout the piping systems to make installation and removal of piping and equipment convenient. Make provisions for servicing and removal of equipment without dismantling piping.
- F. Support pipe in accordance with provisions of Section 220529.
- G. Install non-conducting dielectric connections wherever joining dissimilar metals.
- H. Install valves with stems upright or horizontal.
- I. Install water service lines in accordance with water utility standards.
- J. All copper piping shall be cut square, burrs removed and reamed after cutting. Fitting sockets and tube ends shall be thoroughly cleaned to a bright finish. All solder joints shall be fluxed and soldered using 95-5 tin and antimony solder and water soluble flux.
- K. All copper tubing connections shall be compression type.
- L. Joints between PVC and Black Iron/Galvanized Pipe (wherever necessary), shall be made with screwed fittings or screwed companion flanges.
- M. PVC piping and fittings connections to treatment equipment and at ends of runs shall have screw type joints. In all other locations, solvent welded slip type joints shall be used.
- N. Solvent welded joints shall be made using solvent cement that meets or exceeds ASTM F493, compatible with PVC pipe and fittings. Solvent cement shall be Heavy Duty Industrial orange solvent cement by Oatey, or specifically approved equal.
- O. Install PVC pipe in such a manner that it is not forced out of line by pipe supports, hangers or other supporting members. Pipe hangers shall be clevis or strap type.
- P. PEX piping and fittings connections shall be joined via stainless steel ring clamp.
- Q. Threaded joints where specified shall be made using standard hand or machine pipe threading tools. Dies must be sharp and in good condition to assure a clean and smooth threading operation from start to finish. Threads shall be full cut and perfect. Protective pads of leather, rubber or felt shall be employed to prevent damage to pipe walls by chuck and/or vise jaws. A

slightly tapered wood plug shall be tapped snugly into the pipe for the length of thread to prevent distortion of the pipe wall by the die.

- R. Threaded pipe joints shall be made up using Teflon base compounds placed on the pipe threads. Do not place compound on threads of fittings. NO WICKING WILL BE PERMITTED.
- S. All fittings, except couplings, shall be supported and valves shall be braced to resist torque during valve manipulation.
- T. All piping shall be free of traps and graded to permit complete drainage.
- U. Connect reinforced flexible tubing to transition couplings with stainless steel clamps and/or compression fittings in accordance with tubing manufacturer's installation instructions.

3.02 SERVICE CONNECTIONS AND TAPPING

- A. Maintain a 10 foot (3 m) horizontal separation and an 18 inch (460 mm) vertical separation of water main from sewer piping.
- B. Thoroughly clean water main to be tapped to remove all dirt and scale.
- C. Tap main on the side toward the line to be connected to the tap.
- D. Equipment utilized for tapping shall be as recommended by the manufacturer of the corporation stop.
- E. Maintain a minimum of 4'-6" (1.4 m) cover over the copper service pipe.
- F. Install new copper service pipe in one continuous piece. Splicing will not be permitted.
- G. Install parallel lines in neat fashion maintaining a minimum of 8" wall to wall separation. Each service line shall penetrate foundation separate from all other utility penetrations. Record origin of all service lines penetrating foundation.
- H. Cuts made in copper service tubing for installation of valves or connection to the building shall be square, reamed and all burrs removed.
- I. Solder used for service line fittings shall be lead-free, with a maximum lead content of 0.2 percent.
- J. Install curb stop at locations specified and install curb box directly above the curb stop with the cover at or slightly above grade.
- K. Connect copper service piping to building service piping with compression fitting.

3.03 FIELD QUALITY CONTROL

- A. Flush piping prior to conducting pressure testing.
- B. Piping shall be pressure tested with air before piping is concealed. All joints shall be checked for leakage while under air pressure by swabbing, utilizing a soap and water solution, and leaks found shall be repaired and rechecked. Pressure of air during testing shall be at least 50 percent higher than normal working pressure. Piping shall be tested for pressure and leakage in accordance with Section 017550.
- C. Before piping and valves are concealed, recheck it for leaks.

- D. Rework or replace defective and leaking joints, and joints which are otherwise unsatisfactory. Peening, caulking and doping are not permitted.
- E. The Contractor shall furnish all labor, materials and equipment necessary to accomplish all testing and repairs.

3.04 VALVE ACCESS

- A. Locate shutoff and control valves for easy access and operation. Where valves are located in enclosed spaces provide and install access doors.

3.05 TESTING

- A. All small piping shall be tested for pressure and leakage, in accordance with AWWA Specification C600.

3.06 EXTRAS

- A. Provide District with three (3) 100-foot sections of poly-tubing (one for each chemical treatment system). Size appropriately, as indicated on the drawings.

END OF SECTION 221113

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavation and backfill for electrical work.
- B. Demolition of existing electrical systems.
- C. Primary power wiring and distribution system.
- D. Secondary power wiring and distribution system.
- E. Wiring devices.
- F. Electrical control systems and interlock wiring.
- G. Wiring for built-in equipment.
- H. Motor Control Centers.
- I. Distribution panels and switches.
- J. Instrumentation and Controls.

1.02 RELATED WORK

- A. Foundations and pads required for equipment furnished under this division of specifications.
- B. Field painting, except such painting as is required to maintain shop coat painting and factory finish painting.
- C. Flashing and sealing of conduits through outside walls.
- D. Cutting and patching for electrical work, except for errors and omissions under this Division.

1.03 QUALITY ASSURANCE

- A. It is understood that the rights and benefits given the Owner by the guarantees found in the technical specifications are in addition to and not in derogation of any rights or benefits found in the special and general provisions of the contract.
- B. Electrical equipment provided under this Division shall be turned over in operating condition. Instruction on further operation and maintenance shall be included in the operating and maintenance instructions.

1.04 REFERENCES

- A. Perform work in accordance with standards listed below. Where these specifications are more stringent, they take precedence. In case of conflict, obtain a decision from the Engineer.
 - 1. NFPA-70: National Electrical Code
 - 2. NFPA-101: Life Safety Code
 - 3. New York State Energy Code
 - 4. New York State Building Code
 - 5. Applicable New York State Administrative Code
 - 6. Applicable Town Ordinances.
 - 7. Electric utility rules and regulations.

8. Telephone utility rules and regulations.

1.05 PERMITS AND FEES

- A. The Contractor shall obtain and pay for all permits, construction charges, fees, licenses, certificates, inspections and other use charges required in connection with the work.
- B. Such permits include, but are not limited to:
 1. Transportation and disposal of debris.
 2. Temporary Electrical Services and Permanent Electrical Service.
 3. Telephone Service.
 4. Electrical Inspectors, Inc., or a pre-approved electrical inspection agency.
 5. Road opening permits.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. All materials and equipment used in carrying out these specifications shall have UL listing and label. Specifications and drawings indicate name, type, or catalog numbers of materials and equipment to be used as standards. Proposals shall be based on these standards. Contractor may use materials and equipment equivalent to those specified, subject to Engineer's approval.

PART 3 - EXECUTION

3.01 COORDINATION

- A. Carefully examine specifications, drawings and project site to be thoroughly familiar with items which require electrical connections and coordination. Electrical drawings are diagrammatic and shall not be scaled for exact sizes.
- B. Notify other Contractors of any deviations or special conditions necessary for the installation of work. Interferences between work of various contractors to be resolved prior to installation. Work installed not in compliance with specifications and drawings and without properly checking and coordinating as specified above shall, if necessary, be removed and properly reinstalled without additional cost to the Owner. Engineer to be mediating authority in all disputes arising on project.
- C. Equipment shall be installed in accordance with manufacturer's recommendation. Where conflicts occur between contract documents and these recommendations, a clarification shall be requested of the Engineer for decision before preceding with such work.
- D. Insofar as it is possible to determine in advance, advise masonry tradesmen to leave proper chases and openings. Place all outlets, anchors, sleeves, and supports prior to pouring concrete or installation of masonry work. Should the Contractor neglect doing this, any cutting and/or patching required to be done is at this Contractor's expense.
- E. FIRE ALARM – For any facilities that utilize an existing fire alarm system, the contractor shall coordinate with the owner and fire alarm monitoring company prior to removing or disabling any devices. It shall be the contractor's responsibility to provide fire watch as per the latest addition of the Fire Code of New York State. The contractor shall provide fire watch for all areas of a facility while occupied and unoccupied when any device or part of the fire alarm system is de-activated or put into "test mode".

3.02 CUTTING AND PATCHING

- A. Repair or replace routine damage caused by cutting in performance of work under this Division.
- B. Correct unnecessary damage caused due to installation of electrical work, brought about through carelessness or lack of coordination.
- C. Holes cut through floor slabs to be core drilled with drill designed for this purpose. All openings, sleeves, and holes in slabs to be properly sealed, fire proofed and waterproofed.
- D. Repairs to be performed with materials which match existing materials and to be installed in accordance with appropriate sections of these specifications.

3.03 TESTS

- A. On completion of work, installation shall be completely operational and entirely free from ground, short circuits, and open circuits. Perform a thorough operational test in presence of the Engineer. Balance all circuits so that feeders to panels are not more than 10% out of balance between phases with all available load energized and operating. Furnish all labor, materials and instruments for above tests.
- B. Furnish Engineer with a copy of such tests including identification of each circuit and readings recorded, also the main service ground resistance test as described in Section 260526 of these specifications. Test information to include ampere readings of all panels and major circuit breakers, isolation resistance reading of motors and transformers.

3.04 IDENTIFICATION OF EQUIPMENT

- A. Properly identify the following:
 - 1. Motor Control Centers including all individual devices.
 - 2. Distribution panels.
 - 3. Disconnect switches.
 - 4. Individually mounted circuit breakers.
 - 5. Relays.
 - 6. Pilot lights and control switches.
 - 7. Service entrance equipment and main circuit breaker.
- B. Use permanently attached black phenolic plates with 1/4-inch white engraved lettering on the face of each, attached with two sheet metal screws.
- C. Panelboard identification plates shall indicate panel by name.

3.05 INSTALLATION

- A. The Contractor shall carefully move and replace existing equipment, appliances and all related items, as required to conduct proposed work.
- B. Install and conduct all work per applicable NEC, State and local codes.

END OF SECTION 260000

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.
- B. Removal of all existing control equipment in MCC's and instrumentation panels.

1.02 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of temporary work.

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition work, safety of structure and dust control.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct egress width to exits.
- E. Do not turn off electric equipment without authorization from Owner.
- F. Conform to procedures applicable when discovering hazardous or contaminated materials.
- G. Obtain a utilities mark-out of all buried underground utilities for telephone, electric, gas, sewer and water, including all customer owned utilities.

1.04 SCHEDULING

- A. Schedule Work to coincide with new construction.

PART 2 - PRODUCTS

2.01 NOT USED.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify field circuiting arrangements at all Plant No. 4.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities.
- C. Demolition drawings are based on visual field observation. Report discrepancies to the Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing condition.

3.02 PREPARATION

- A. Coordinate utility service outages with Utility Company.

- B. Provide power, wiring and connections to maintain all existing power, control and telemetry systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction, as indicated on drawings.
- B. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.
- D. Repair adjacent construction and finishes damaged during demolition and extension work.
- E. Provide caps and filler plates/plugs for all openings in equipment and enclosures after removal of conduits.
- F. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- G. Remove demolished materials from site as work progresses.
- H. Completely remove and dispose of all electrical power, control, and telemetry feeds including conduits, conductors, boxes and supports not scheduled to remain after new construction is tested and operational.
- I. Where existing devices and equipment are called to be removed, Contractor shall maintain circuit continuity to all existing devices and equipment remaining on that circuit. Contractor shall provide all required conduit, conductors and boxes as required.

3.04 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment which remain or are to be reused.
- B. Remove temporary work.

END OF SECTION 260010

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Wires and cables.
- B. In general, the wires and cables included under this Section shall include, but not be limited to, the following:
 - 1. 600V power and control cable
 - 2. Instrumentation wires
 - 3. Communication cables
- C. All conductors to be continuous from origin to panel or equipment termination without splices.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electric Code.
- B. NECA Standard of Installations.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.

1.04 QUALITY ASSURANCE

- A. Products used in the work of this Section shall be produced by manufacturers regularly engaged in the manufacturing, installing and servicing of similar items with a history of successful production acceptable to the Engineer as specified herein and in accordance with the General Conditions.
- B. Contractor shall submit the following information pertaining to the manufacturer(s):
 - 1. Complete literature, performance, and technical data describing the proposed equipment and listing of items made by the manufacturer.
 - 2. Location of closest service office from which this equipment shall be serviced.
 - 3. Location of closest parts inventory for item installation.

1.05 COORDINATION

- A. Coordination:
 - 1. Coordinate wire and cable required with the equipment being furnished by others for the satisfactory operation of the equipment or system.
 - 2. Review installation procedures under other sections and contracts and coordinate them with the work specified herein.
 - 3. Notify other prime contractors in advance of the installation of the work included to provide them with sufficient time for installation and coordination of interrelated items that are included in their contracts and that must be installed in conjunction with the work included in this Section.

1.06 PROJECT CONDITIONS

- A. Verify that embedded conduit, in masonry and concrete, is installed as shown on the Drawings prior to the work being enclosed by others.
- B. The Contractor shall be present at all concrete pours made by the General Contractor.

- C. Conductor sizes are based on copper at 75°C.
- D. Wire and cable routing shown on Drawings is approximate unless dimensioned or specifically called for such as where conduit is to be embedded in concrete or masonry. Route wire and cable as required to meet project conditions and shall be routed above ceilings, directly under joists, in pipe trenches, where available, and in masonry. Where exposed conduit is permitted, it shall be run to maximize wall space.
- E. Field verify destination location to determine cable routing.
- F. Where wire and cable routing is not shown for proposed destination, determine exact routing and lengths required. Routing shall be reviewed with the Engineer.

PART 2 - PRODUCTS

2.01 CONDUCTORS

- A. Install products in accordance with manufacturer's recommendations.
- B. Single copper conductors with 600-volt insulation.
- C. Minimum size of feeder conductors and grounds shall be No. 12 AWG.
- D. Insulation: No. 12 AWG and No. 10 AWG, provide ANSI/NFPA 70, Type THWN-2 for interior circuits and Type XHHW-2 for exterior circuits (any circuit that is run exterior building for any length).
- E. Use solid conductor for feeder and branch circuits, 10 AWG and smaller.
- F. All conductors shall include complete set of manufacturer's markings for insulation and conductor size.
- G. Manufacturers shall be ANACONDA, TRIANGLE, ROME, or approved equal.
- H. Provide white colored neutral conductors; provide black, color coded phase conductors; provide green colored ground conductors.

2.02 300 VOLT INSTRUMENTATION SIGNAL CABLE - FOR INDOOR USE

- A. Indoor Application:
 - 1. The 300-volt instrumentation signal cable for indoor use shall consist of single or multiple twisted pairs or triads of coated, stranded copper conductors with polyvinyl chloride (PVC) insulation and nylon jacket. Each individual pair or triad of wires shall have an aluminum/polyester tape shield with a tinned copper drain wire. For multiple pair or triad cables, an overall aluminum/polyester tape shield with a tinned copper drain wire shall enclose the individual wire assemblies. The overall jacket shall be PVC. Cables shall have a 105°C rating.
 - 2. The conductors shall be annealed, tin-coated copper with Class B stranding per ASTM B8. Minimum size conductor shall be AWG No. 16.
 - 3. The insulation shall be PVC. The insulation thickness shall be 15 mils.
 - 4. Individual Conductor Insulation: The jacket over each individual wire shall be nylon and shall have a thickness of 4 mils.
 - 5. The shield for each individual pair or triad shall be an aluminum/polyester tape. The shield shall be 1.35 mils thick and shall be overlapped to provide 100% coverage. The shield shall also contain a 7-strand tinned copper drain wire which shall be a maximum of two

sizes smaller than the conductors. All individual shields shall be completely isolated from each other.

6. The overall shield for multiple pair or triad cables shall be an aluminum/polyester tape. The shield shall be 2.35 mils thick and shall be overlapped to provide 100% coverage. The shield shall also contain a 7-strand tinned copper drain wire which shall be the same size as the conductors.
7. The overall jacket shall be PVC and shall meet the requirements of UL 13.
8. The jacket thickness shall be as follows:

Wire Size	No. of Pairs	No. of Triads	Jacket Thickness
16 AWG	1	-	35 Mils
16 AWG	2,4	-	50 Mils
16 AWG	8,10,12	-	60 Mils
16 AWG	-	1	35 Mils
16 AWG	-	2,4	50 Mils
16 AWG	-	8	60 Mils
16 AWG	-	12	70 Mils

9. Manufacturers and their products shall be equal to:
 - a. Cablec APVIC
 - b. Okonite A Type P-OS and Type SP-OS
 - c. Or approved equal

B. Outdoor Use in Conduits:

1. The 300-volt instrumentation signal cable for outdoor use in conduits shall consist of single or multiple twisted pairs or triads of coated, stranded copper conductors with polyvinyl chloride (PVC) insulation and nylon jacket. Each individual pair or triad of wires shall have an aluminum/polyester tape shield with a tinned copper drain wire. For multiple pair or triad cables, an overall aluminum/polyester tape shield with a tinned copper drain wire shall enclose the individual wire assemblies. The overall jacket shall be chlorinated polyethylene (CPE). Cables shall have a 105°C rating.
2. The conductors shall be annealed, tin-coated copper with Class B stranding per ASTM B8. Minimum size conductor shall be AWG No. 16.
3. The insulation shall be PVC. The insulation thickness shall be 15 mils.
4. The jacket over each individual wire shall be nylon and shall have a thickness of 4 mils.
5. The shield for each individual pair or triad shall be an aluminum/polyester tape. The shield shall be 1.35 mils thick and shall be overlapped to provide 100% coverage. The shield shall also contain a 7-strand tinned copper drain wire which shall be a maximum of two sizes smaller than the conductors. All individual shields shall be completely isolated from each other.
6. The overall shield for multiple pair or triad cables shall be an aluminum/polyester tape. The shield shall be 2.35 mils thick and shall be overlapped to provide 100% coverage. The shield shall also contain a 7-strand tinned copper drain wire which shall be the same size as the conductors.
7. The overall jacket shall be CPE and shall meet the requirements of UL 13.
8. The jacket thickness shall be as follows:

Wire Size	No. of Pairs	No. of Triads	Jacket Thickness
16 AWG	1	-	35 Mils
16 AWG	2,4	-	50 Mils
16 AWG	8,10,12	-	60 Mils
16 AWG	-	1	35 Mils
16 AWG	-	2,4	50 Mils
16 AWG	-	8	60 Mils

Wire Size	No. of Pairs	No. of Triads	Jacket Thickness
16 AWG	-	12	70 Mils

9. Manufacturers and their products shall be as follows:
 - a. Cablec APZIC
 - b. Okonite AOkobon Type P-OS and Type SP-OS
 - c. Or approved equal

2.03 4-PAIR CATEGORY 6 UNSHIELDED TWISTED PAIR CABLE

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
 1. Belden Corporation, Carmel, IN (800) 246-2673.
 2. Avaya, Basking Ridge, NJ (800) 344-02232.
 3. Berk-Tek, Incorporated, New Holland, PA (800) 237-5835.
 4. CommScope, Hickory, NC (800) 982-1708.
 5. Draka Comteq, Franklin, MA (888) 541-7100.
 6. General Cable, Highland Heights, KY (800) 424-5666.
 7. Mohawk/CDT Leominster, MA (978) 537 9961.
 8. NORDX/CDT, Worcester, MA (800) 331-0779.
 9. Superior Essex, Atlanta, GA. (800) 685-4887.
 10. Tyco Electronics, Harrisburg, PA (800) 522-6752.
- B. Conductors: 4 twisted pair - 24 AWG, solid copper w/ RJ-45 connector ends
 1. Individually insulated plenum rated conductors under common plenum rated sheath unless entire cable is installed within conduit/EMT or if area where cable is installed is not considered a return air plenum according to any applicable codes.
 2. Complies with individual characteristics established in ANSI/TIA/EIA-568-B, and all addendums for Category 6 cable performance specification.
 3. Overall Nominal Diameter: .365 x .165 in.
 4. Nominal Impedance: 100 ohms plus or minus 15 percent.
 5. Certified capable of performing to minimum 350 MHz.
- C. Mechanical Characteristics
 1. Operating temperature: -20°C to +80°C
 2. Bulk cable weight: 29 lbs./1000 ft.
 3. Maximum recommended pulling tension: 45 lbs.
 4. Minimum bend radius: 1 in.
- D. Flame test: UL1666 Riser
- E. Electrical Characteristics:
 1. Nom. Mutual Capacitance @ 1 KHz 15.0 pF/ft
 2. Maximum Capacitance Unbalance (pF/100 m) 49.2 pF/100 m
 3. Nominal Velocity of Propagation 70 %
 4. Maximum Delay (ns/100 m) 510 @ 100MHz ns/100 m
 5. Maximum Delay Skew (ns/100m) 25 ns/100 m
 6. Maximum Conductor DC Resistance @ 20 Deg. C 9 Ohms/100 m
 7. Maximum DCR Unbalance @ 20 Deg. C 3 %
 8. Max. Operating Voltage - UL 300 V RMS

2.04 MECHANICAL CONNECTORS

- A. Conductor tapping connectors shall be BURNDY Servit split bolt, Series KS and KS3, or approved equal.

- B. Split bolt connectors shall use BURNDY Type SC Servit cover on indoor applications.
- C. Terminal lugs shall be BURNDY Universal Terminal Series. Terminal lugs shall be sized for proper ampacity and proper number of conductor holes. Each conductor shall occupy only one hole on a terminal lug.
- D. Conductor tapping connectors for multiple conductors shall be BURNDY Series V-Tap with V-Tap covers, and V-Blok mounting platforms.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General:
 - 1. Make terminations in accordance with cable manufacturers instructions for the particular type of wire and cable.
 - 2. Splices are not allowed in the underground duct and manhole systems. If splices are required, the Contractor shall obtain approval in writing from the Engineer prior to splicing.
 - 3. All splices shall be in made in terminal boxes.
- B. Wire and Cable Sizes: The sizes of wire and cable shall be as shown on the Contract Drawings, or if not shown, as approved by the Engineer. Minimum size wire shall be No. 12 AWG for all power, lighting and receptacle circuits. Wires for control circuits shall be No. 14 AWG minimum. Wire for instrumentation circuits shall not be smaller than No. 16 AWG. If due to field routing the voltage drop exceeds 2.5%, the size of conductors shall be increased such that 2.5% is the maximum voltage drop incurred.
- C. Number of Wires: The number of wires indicated on the Contract Drawings for the various control, indications, and metering circuits were determined for general schemes of control and for particular indication and metering systems. Coordinate wiring schemes with equipment schematics.
- D. Wiring Identification: All wiring shall have a unique wire number and be labeled at both ends. Wire numbers shall correspond with the equipment terminal wire numbers. Where no wire numbers are indicated, the Contractor shall assign wire numbers. Wire numbers shall not be duplicated.
- E. Cable Identification Tags: The Contractor shall furnish all labor and materials and affix in a permanent way to each cable in manholes, cable compartments and vaults, junction boxes, pull boxes and points of termination, a laminated plastic tag, bearing clearly printed, the cable number indicated on the Contract Drawings or some other approved identification number or symbol. All cables shall be temporarily tagged with its full ID number immediately after it has been pulled.
- F. Wiring Supplies: Only electrical wiring supplies manufactured under high standards of production and meeting the approval of the Engineer shall be used. Friction tape shall be in accordance with ASTM D69.
- G. Training of Cable: Furnish all labor and material required to train cables around cable vaults within buildings and in manholes in any outdoor underground duct system. Sufficient length of cable shall be provided in each manhole and vault so that the cable can be trained and racked in an approved manner. In training or racking, the radius of bend of any cable shall be not less than the manufacturer's recommendation. All manhole cables shall be arc and fireproofed.
- H. Connections at Control Panels, Limit Switches and Similar Devices:

1. Where stranded wires are terminated at panels, and/or devices connections shall be made by solderless lug, crimp type ferrule or solder dipped.
 2. Where enclosure sizes and sizes of terminals at limit switches, solenoid valves, float switches, pressure switches, temperature switches, and other devices make 7-strand, No. 12 AWG, wire terminations impractical, the Contractor shall terminate external circuits in an adjacent junction box of proper size and shall install No. 14 AWG stranded wires to the junction box in a conduit.
- I. Pulling Temperature: Cable shall not be flexed or pulled when the temperature of the insulation or of the jacket is such that damage will occur due to low temperature embrittlement. When cable will be pulled with an ambient temperature within a three day period prior to pulling of 40°F or lower, cable reels shall be stored during the three day period prior to pulling in a protected storage with an ambient temperature not lower than 55 degrees F and pulling shall be completed during the work day for which the cable is removed from the protected storage.
- J. Color Coding:
1. Conductor jacket shall be color coded as follows:

AC POWER

480V/277 Volt 3 phase	208Y/120 Volt 3 phase (PSEGLI)	208Y/120 Volt 3 phase (NEC)	240/120 Volt 3 phase (PSEGLI)	240/120 Volt 3 phase (NEC)
Phase A Brown	Phase A Blue	Phase A Black	Phase A Blue	Phase A Black
Phase B Orange	Phase B Black	Phase B Red	Phase B Black	Phase B Orange (HiLeg)
Phase C Yellow	Phase C Red	Phase C Blue	Phase C Orange	Phase C Blue
Neutral White	Neutral White	Neutral White	Neutral White	Neutral White
Ground Green	Ground Green	Ground Green	Ground Green	Ground Green

2. Control (Per ICEA Method 1, K-2):

WIRE NUMBER	COLOR
1	Black
2	Red
3	Blue
4	Orange
5	Yellow
6	Brown
7	Red With Black
8	Blue With Black
9	Orange With Black
10	Yellow With Black
11	Brown With Black
12	Black With Red
13	Blue With Red
14	Orange With Red
15	Yellow With Red

WIRE NUMBER	COLOR
16	Brown With Red
17	Black With Blue
18	Red With Blue
19	Orange With Blue

3. DC Power
 - a. Positive Lead - RED
 - b. Negative Lead - BLACK
 4. Instrumentation Signal
 - a. Pairs - Black and White
 - b. Triads - Black, Red and White
 5. Equipment Ground - GREEN
- K. Instrumentation Cable Installation:
1. Where instrumentation cables are installed in panels, etc., arrange wiring to provide maximum clearance between cables and other conductors. Instrumentation cables shall not be installed in same bundle with conductors of other circuits.
 2. Grounding of cable shield shall be accomplished at one point only, unless otherwise required by instrumentation systems manufacturer.
 3. Special instrument cable shall be as specified or recommended by the vendor of the equipment or instruments requiring such wiring. Installation, storage, terminations, etc., shall be per manufacturer's recommendations.

3.02 IDENTIFICATION

- A. Identify wire and cable under provisions of Section 260553.
- B. Identify each conductor with its circuit number.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014500.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- D. Field Testing:
 1. Wires and cables shall be tested before being connected to motors, devices or terminal blocks.
 2. If tests reveal defects or deficiencies, the Contractor shall make the necessary repairs or shall replace the cable as directed by the Engineer, without additional cost to the Owner.
 3. All tests shall be made by and at the expense of the Contractor who shall supply all testing equipment.
- E. Continuity Tests: All cables, wires and shields shall be tested for continuity. Testing for continuity shall be by test light or buzzer.
- F. Insulation-Resistance Tests:
 1. 600V power and control cables and wires shall be tested for their insulation-resistance values. Test shall utilize a megohmmeter with applied voltage to be 1000VDC for one (1) minute. Insulation-resistance test shall be performed on each conductor with all other conductors grounded. The resistance value shall be 20 megohms or greater.

2. 300V instrumentation signal cable shall be tested from conductor to conductor, conductor to ground, and conductor to shield using a digital volt-ohm meter. The resistance value shall be 10 megohms or greater.

END OF SECTION 260519

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Grounding electrodes and conductors.
- B. Equipment grounding conductors.
- C. Bonding.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electric Code.

1.03 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

PART 2 - PRODUCTS

2.01 COMPONENTS

- A. Ground clamps: OZ ELECTRICAL MANUFACTURING COMPANY, Type "CG", or equal by STEEL CITY or APPLETON.
- B. Raceways, conductors, outlet boxes, pull and junction boxes to be furnished in accordance with applicable sections of these specifications.
- C. Rod Electrode: Copper, 3/4-inch diameter, 10 feet long.
- D. Wire: Copper, sized to meet NFPA 70 requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General:
 - 1. Clean all conductive surfaces on equipment to be grounded, to assure good electrical continuity.
 - 2. Effectively bond all grounding conductors to grounding rod electrodes, equipment enclosures and ground busses.
 - 3. Locate all grounding attachments away from areas subject to physical damage. Provide protective covering as required.
 - 4. Install service entrance building ground as per NEC and LIPA requirements.
 - 5. Service entrance shall be bonded to street side of first flange or coupling of incoming main water line with heavy duty ground clamp. Bonding conductor to be sized in accordance with NFPA 70.
 - 6. Building steel shall be bonded to ground bus on main service with a conductor the same size as in B.1 below.
 - 7. Install new service grounds and grounding systems for new service as per LIPA and NEC requirements.
 - 8. Generators shall have a dedicated grounding system for a separately derived system for switching neutrals.

- B. Feeder/Branch Circuits:
 - 1. All circuits shall have a separate green grounding conductor in conduit sized in accordance with NFPA 70. Minimum size of conductor shall be No. 12 AWG.
 - 2. Flexible conduit will not be approved as achieving continuity of ground. All flexible conduit to have a jumper wire sized to ampacity of branch breaker and to be connected to conduit system on both ends; this applies to fixtures, motors, controls, etc.
- C. Transformers:
 - 1. Transformers shall be grounded and grounding conductors and conduits sized in accordance with NFPA 70.

3.02 TEST

- A. Test ground on main service. Ground system resistance shall be no greater than 10 ohms using test equipment similar to a "Biddle" test. Test data to be submitted to the Engineer for approval and such approved test data to become a part of the Record Documents.

END OF SECTION 260526

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. System of supporting devices and hangers for support or bracing for conduit, electrical equipment, safety switches, fixtures, panelboards, outlet boxes, junction boxes and cabinets.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electric Code.

1.03 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

PART 2 - PRODUCTS

2.01 EQUIPMENT REQUIREMENTS

- A. Provide appropriate corrosion-resistant supporting devices and hangers for electrical equipment, as manufactured by ERICO PRODUCTS, INC., CADDY FASTENERS, STEEL CITY, MINERALLAC or equivalent.
 - 1. "Z" purlin clips.
 - 2. Conduit clips.
 - 3. Beam clamps (universal and vertical flange).
 - 4. Beam clamps (set screw type).
 - 5. Combination push-in conduit clips.
 - 6. Combination conduit hanger clamps.
 - 7. Flexible conduit clips.
 - 8. Special combination conduit clips.
 - 9. One hole steel straps.
 - 10. Conduit hangers.
- B. Provide materials, sizes and types of anchors, fasteners and supports to carry the loads of equipment, wire in conduit and conduit.

2.02 CHANNEL SUPPORT SYSTEM

- A. Channel systems and supports shall be manufactured by KINDORF/THOMAS & BETTS, or approved equal.
- B. Channels shall be 1-1/2" x 1-1/2".
- C. Channels and all associated accessories and bolts shall be hot dipped galvanized.
- D. Channels shall have 9/16" bolt holes on 1-1/2" centers.
- E. Provide end caps for all channels.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Secure conduits to within 3 feet of each outlet box, junction box, cabinet, fitting, etc., and at intervals not to exceed 10 feet in accordance with currently effective edition of the National Electric Code.
- B. In seismic zones, support conduits 1 inch and smaller at 6 foot intervals.
- C. Install clamps secured to structure for feeder and other conduits routed against structure. Use drop rods and hangers to support conduits run apart from the structure.
- D. Provide and install suitable angle iron, channel iron or steel metal framing with accessories to support or brace electrical equipment including safety switches, fixtures, panelboards, etc.
- E. Paint all supporting metal not otherwise protected, with rust inhibiting primer and then with a finish coat if appropriate to match the surrounding metal surfaces. Prepainted or galvanized support material is not required to be painted or repainted.
- F. Do not use chains, perforated iron, baling wire or tie wire for supporting conduit runs. Use of clips to support conduit to top of t-bar ceiling grid will not be permit-ted.
- G. Obtain permission from Engineer before drilling or cutting structural members.
- H. Install surface mounted cabinets and panelboards with a minimum of four anchors.
- I. Do not fasten supports to pipes, ducts, mechanical equipment and conduit.
- J. Install products in accordance with manufacturer's instructions.

END OF SECTION 260529

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Conduit system with associated couplings, connectors and fittings. Conduits to be mechanically and electrically continuous from outlet to outlet and from outlets to cabinets, pull or junction boxes.
 - 1. Conduit Use - Rigid Galvanized Conduit:
 - a. All interior and exterior circuits above and below ground.
 - 2. Conduit Use - PVC coated rigid galvanized conduit.
 - a. All circuits in the Lime Room.
 - b. All circuits surface mounted on the walls adjacent to the chlorine storage tank and pumps.
 - 3. Conduit Use - Flexible Liquid-tight Metal Conduit:
 - a. Connecting motors, generators and other equipment subject to vibration, maximum length - 3 feet.
 - b. Passing through building expansion joints.
- B. Device Boxes: Provide each fixture switch, receptacle and other wiring device with a box of appropriate size and depth for its particular location use unless indicated otherwise.
- C. Pull boxes, junction boxes and wire troughs

1.02 REFERENCES

- A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
- B. ANSI/NFPA 70 - National Electric Code.
- C. NECA Standard of Installation.
- D. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- E. NEMA TC 3 - PVC Fittings for use with Rigid PVC conduit and tubing.
- F. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
- G. ANSI/NEMA OS1 - Sheet-steel outlet boxes, device boxes, covers and box supports.
- H. NEMA 250 - Enclosures for electrical equipment (1000 volts maximum).

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.

1.04 REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc.
- B. Conform to requirements of ANSI/NFPA 70.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 017839.

- B. Accurately record actual routing of all conduits.

1.06 FIELD SAMPLES

- A. Provide under provisions of Section 014500.
- B. Provide field sample of conduit two each at 2 feet in length.
- C. Provide field sample of expansion/deflection fitting, two each.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect, and handle products in accordance with manufacturers' recommendations.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing abovegrade. Provide appropriate covering.

1.08 PROJECT CONDITIONS

- A. Verify all conduit routings by field measurements.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system. Provide all required sweeps, boxes and fittings.

PART 2 - PRODUCTS

2.01 RIGID GALVANIZED CONDUIT

- A. Rigid conduit shall be hot dipped, galvanized, or electro-galvanized steel by Wheatland, Triangle, Republic or approved equal.
- B. Associated couplings, connectors and fittings shall be as manufactured by THOMAS & BETTS CORP., O.Z. GEDNEY CO., EFCOR or approved equal. Catalog numbers used below are those of THOMAS & BETTS CORP. based on 3/4-inch size and are considered standards by which equivalents are to be judged.
- C. ERICKSON couplings, Series 676 or approved equal, shall be used where neither length of conduit can be rotated.
- D. Conduit connectors shall be threaded type. Set screw and compression type connections ARE NOT acceptable.
- E. Sealing fitting locknuts shall be Series 142SL.
- F. Steel or malleable iron insulated bullet hub, Series 370-379, complete with sealing "O" ring. DO NOT use "die cast" material.
- G. Entrance ells shall be Series 1491 or approved equal.
- H. Combination coupling shall be Series 531 for connecting rigid galvanized conduit to electrical metallic tubing.

2.02 PVC COATED METAL CONDUIT

- A. PVC Coated Metal Conduit shall be PLASTI-BOND RED by Robroy Industries or equal.
- B. Description: NEMA RN 1; galvanized rigid steel conduit with external PVC coating, 40 mil thick and red urethane internal coating.
- C. Fittings and Conduit Bodies: ANSI/NEMA FB 1; galvanized steel fittings with external PVC coating and red urethane internal coating to match conduit.

2.03 DUCT SEAL

- A. RectorSeal or approved equal.
- B. Model #: 81881

2.04 FLEXIBLE LIQUID-TIGHT METAL CONDUITS AND FITTINGS

- A. Liquid-tight flexible metal conduit shall be ANACONDA or approved equal.
- B. Description: Interlocked steel construction with PVC jacket.
- C. Provide flexible liquid-tight conduits and fittings as manufactured by THOMAS & BETTS CORP., O.Z. GEDNEY CO. or approved equal. Catalog numbers used below are those of the THOMAS & BETTS CORP., based on 3/4" size and are to be considered as standards by which equivalents are to be judged. All conduit shall be liquid-tight flexible type, UL type UA, or suitable for exposure to continuous or intermittent moisture.
- D. Flexible liquid-tight connectors shall be Series 5333 or approved equal.

2.05 OUTLET AND DEVICE BOXES

- A. Acceptable Manufacturers: Raco, General Electric or approved equal.
- B. Sheet Metal Outlet Boxes - All concealed boxes shall be NEMA OSI, galvanized steel:
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported. Provide 1/2" male fixture stubs where required.
- C. Concrete Ceiling Boxes: Concrete type.
- D. Cast Boxes: All exposed surface mounted boxes shall be NEMA FB1, Type FD, cast fer alloy. Provide gasketed cover by box manufacturer.

2.06 PULL BOXES

- A. All pull boxes used for this project shall be minimum LIPA B-3-6 or specifically approved equal for all customer installed power and control circuits.
- B. Provide H-20 Cast-Iron Traffic Load Cover. Cover shall have 3" high logo "Electric".

2.07 JUNCTION BOXES

- A. Acceptable Manufacturers: RACO, GENERAL ELECTRIC or approved equal.
- B. Sheet metal boxes: NEMA OS1, galvanized steel.

- C. Covers: Galvanized steel.

2.08 WIRE TROUGH

- A. Wireways shall be manufactured by Square D, Class 526, rain tight trough or approved equal.
- B. Wireway shall be completely enclosed with removable covers.
- C. Construction: 16 Gauge Galvanized Steel. 8-inch and 12-inch wire trough shall be 14-gauge galvanized steel.
- D. Finish: ANSI-49 epoxy paint applied by cathodic electro-deposition paint process over a corrosion resistant phosphate preparation.
- E. UL listed.

2.09 EXTERIOR WIRE TROUGH

- A. Wireways shall be manufactured by SQUARE D, Class 526, rain tight.
- B. Wireway shall be completely enclosed with removable covers.
- C. Construction: Wireway shall be constructed of Type 304 stainless and shall have stainless steel screw clamps, and oil resistant gaskets.
- D. All hardware, bolts, brackets, and supports shall be constructed of Type 304 stainless steel.

2.10 ELECTRICALLY CONDUCTIVE CORROSION-RESISTANT THREAD COMPOUND

- A. KOPR-SHIELD or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION OF CONDUITS

- A. Minimum size of conduits shall be 3/4-inch.
- B. Minimum conduit depth shall be 24" below grade, measured to the top of the conduit on exterior underground installations.
- C. Conduit joints shall be cut square, threaded, reamed smooth, and drawn up tight so conduit ends will butt in couplings, connectors and fittings.
- D. All threaded conduits and fittings shall have KOPR-SHIELD compound applied to all threads prior to assembly.
- E. Make bends or offsets with standard ells or field bends with an approved bender.
- F. Run concealed conduits in direct line with long sweep bends or offsets. Run exposed conduits parallel to and at right angles to building lines. Group multiple conduit runs in banks.
- G. Secure conduits to all boxes and cabinets with double locknuts and bushings so system will be electrically continuous from service to all outlets.
- H. Install conduit in accordance with NECA Standard of Installation.

- I. Cap ends of conduits to prevent entrance of water and other foreign material during construction.
- J. Complete all conduit systems before pulling conductors.
- K. Support conduits under provisions of Section 260529.
- L. Provide approved expansion joints or fittings and bonding jumpers where conduits in concrete pass through building expansion joints.
- M. Provide cable supports in conduits rising vertically in accordance with the National Electric Code, Article 300-19.
- N. Provide No. 12 AWG copper pull wires or nylon cord in all empty conduits. Steel wire not acceptable as pull wire.
- O. Install conduit to preserve fire resistance rating of partitions and other elements.
- P. Ground and bond conduit under provisions of Section 260526.
- Q. Where neither length of conduit can be rotated, ERICKSON couplings Series 676 shall be used.
- R. In areas where enclosed and gasketed fixtures and weatherproof devices are specified, where rigid conduit enters a sheet metal enclosure, junction box and outlet box, and not terminated in a threaded hub, a steel, or malleable iron nylon insulated bullet hub, complete with recessed sealing "O" ring, shall be used, Series 370-379 . DO NOT use die cast material.
- S. In concrete slabs block up conduit from forms and securely fasten in place. All conduits in slabs shall be installed below concrete slab.
- T. Where conduits running overhead pass through building expansion joints, install flexible liquid tight conduit of same size with sufficient slack to allow conduits on either side of expansion joint to move a minimum of 3-inches in any direction. Provide supports as required on each side of expansion joint, all in accordance with seismic requirements of specific area.
- U. Failure to route conduit through building without interfering with other equipment and construction shall not constitute a reason for an extra charge. Equipment, conduit and fixtures shall fit into available spaces in building and shall not be introduced into building at such times and manner as to cause damage to structure. Equipment requiring servicing shall be readily accessible.
- V. Arrange supports to prevent misalignment during wiring installation.
- W. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- X. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.
- Y. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- Z. Do not attach conduit to ceiling support wires.
- AA. Arrange conduit to maintain headroom and present neat appearance.

- AB. Route exposed conduit parallel and perpendicular to walls.
- AC. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- AD. Route conduit in and under slab from point-to-point.
- AE. Do not cross conduits in slab.
- AF. Maintain adequate clearance between conduit and piping.
- AG. Maintain 12-inch clearance between conduit and surfaces with temperatures exceeding 104°F (40°C).
- AH. Bring conduit to shoulder of fittings; fasten securely.
- AI. Use conduit hubs with sealing locknuts to fasten conduit in damp and wet locations.
- AJ. Install no more than equivalent of three 90-degree bends on interior locations between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2-inch size.
- AK. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- AL. Do not use dissimilar strap or clamp supports. Provide dielectric tape, fittings, straps, and bushings where dissimilar metals are used.
- AM. Where fittings for liquid-tight flexible conduit are brought into an enclosure with a knockout, a gasket assembly, consisting of one piece "O" ring, with a Buna-R sealing material, Series 5200, shall be installed on outside of box. Fittings shall be made of either steel or malleable iron only, and shall have insulated throats or insulated bushings.
- AN. A copper ground wire sized in accordance with NEC shall be installed on the inside of the conduit as a jumper around flexible conduit to assure a continuity of ground.
- AO. Install a copper jumper across all flexible conduit including lighting fixtures, controls and other utilization equipment.
- AP. Install liquid-tight flexible conduit in such a manner as to prevent liquids from running on surface toward fittings.
- AQ. Allow sufficient slack conduit to reduce the effect of vibration.
- AR. Complete all conduit systems before pulling the conductors.
- AS. Support in accordance with requirements of National Electric Code.

3.02 INSTALLATION OF BOXES

- A. Install boxes concealed in finished walls.
- B. Locate boxes to prevent moisture from entering or accumulating within them.
- C. Support boxes independently of conduit, as required by the National Electric Code.
- D. Provide 4" x 1-1/2" octagonal, 4" x 1-1/2" square or 4" x 2-1/8" square ceiling outlet boxes.

- E. Where required to hang a specific fixture, provide a fixture stud of the no-bolt, self-locking type on ceiling outlets.
- F. Provide 2-1/2" x 3-3/4" one gang masonry boxes for switches and receptacles installed concealed in concrete block walls. For increased cubic capacity, provide 3-1/2" x 3-3/4" one gang masonry boxes. Where more than two conduits enter the box from one direction, provide 4" square boxes with square cut device covers not less than 1" deep specifically designed for this purpose. Use round edge plaster rings only if the block walls are to be plastered. Use sectional or gang-type outlet boxes only in drywall construction.
- G. Provide 4-11/16" square outlet boxes with square cut device corners for block walls or round edge plaster rings for plastered walls for telephone outlets. Single gang device boxes are not acceptable.
- H. Provide fittings with threaded hubs for screw connections and with the proper type covers for switches and receptacles served by exposed conduit. Use pressed steel outlet only for ceiling fixture outlets.
- I. Provide condulets with threaded hubs and covers and with proper configurations for all changes of direction of exposed conduits. Standard conduit ells may be used if they do not interfere or damage or mar the appearance of the installation.
- J. Use boxes of sufficient cubic capacity to accommodate the number of conductors to be installed, in accordance with the National Electric Code.
- K. Effectively close unused openings in boxes with metal plugs or plates.
- L. Set boxes so that front edges are flush with finished surfaces.
- M. Support boxes from structural members with approved braces.
- N. Install blank device plates on outlet boxes left for future use.
- O. Provide bushings in holes through which cords or conductors pass.
- P. Install boxes so that the covers will be accessible at all times.
- Q. Electrical boxes may be installed in vertical fire resistive assemblies classified as fire/smoke and smoke partitions without affecting the fire classification, provided such openings occur on one side only in each framing space and that openings do not exceed 16 square inches. All clearance between such boxes and the gypsum board shall be completely filled with joint compound or approved fire-resistive compound. The wall shall be built around outlet boxes larger than 16 square inches so as not to interfere with the wall rating.

3.03 INSTALLATION OF PULL BOXES, JUNCTION BOXES AND WIRE TROUGHS

- A. Provide junction boxes as shown on Drawings and otherwise where required, sized according to number of conductors in box or type of service to be provided. Minimum junction box size 4-inch square and 2-1/8-inches deep. Provide screw covers for junction boxes.
- B. Install boxes in conduit runs wherever necessary to avoid long runs or too many bends. Do not exceed 100-foot runs without pull boxes. Install pull boxes at all 90-degree bends.
- C. Rigidly secure boxes to walls or ceilings. Conduit runs will not be considered adequate support.

- D. Install boxes with covers in accessible locations. Size boxes in accordance with the National Electric Code.
- E. Do not install pull boxes or junction boxes for joint use of line voltage and signal or low voltage controls unless all conductors are insulated for the highest voltage being used in the same box.
- F. Coordinate installation of exterior pull boxes with General contractor to establish elevations of finished grades and pavements. All castings shall have chimney adjustment of + 6".

3.04 CONDUIT LOCATIONS

- A. Route all horizontal conduit runs concealed in above finished ceilings, where applicable.
- B. Surface mounted conduits will only be allowed in pipe trenches and existing block walls. Surface mounted conduits shall only be permitted for vertical runs. All horizontal runs shall be installed above finished ceilings.
- C. All conduit and wiremold shall be primed and painted to match existing adjacent wall color.
- D. Contractor shall not route conduits over pump motors, roof hatches and trolley beams which would prevent removal of pump motors.

END OF SECTION 260533

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Nameplates and labels.
- B. Wire and cable markers.
- C. Conduit markers.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Product Data: Provide catalog data for nameplates, labels and markers.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Underwriters Laboratories, Inc. Include instructions for storage, handling, protection, examination, preparation and installation of product.

1.04 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.01 NAMEPLATES AND LABELS

- A. Nameplates: Engraved three-layer laminated plastic, white letters on black background.
- B. Locations:
 - 1. Motor Control Centers.
 - 2. Distribution panelboards.
 - 3. All control switches and pilot light devices.
- C. Letter Size:
 - 1. Use 1/4 inch (6 mm) letters for identifying all control pilot lights.
- D. Labels: Embossed adhesive tape, with 3/16" (5mm) white letters on black background. Use for identifying existing equipment, distribution panels, switchboards, disconnect switches, and individual electrical devices.

2.02 WIRE MARKERS

- A. Manufacturers:
 - 1. 3M ELECTRICAL SPECIALTY DIV., Product Scotch Code.
 - 2. THOMAS & BETTS CORP., Product E-Z Code.
 - 3. Substitutions shall be permitted only after receiving written approval from the Engineer.

- B. Description: Epoxy film tape type wire markers.
- C. Locations: Each conductor at panelboards, auxiliary gutters, pull boxes, outlet and junction boxes, circuit breakers and each load connection.
- D. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
 - 2. Control Circuits: Control wire number indicated on interconnection diagrams on drawings.

2.03 CONDUIT MARKERS

- A. Manufacturers:
 - 1. THOMAS & BETTS CORP.
 - 2. Substitutions shall be permitted only after receiving written approval from the Engineer.
- B. Description: Self-sticking vinyl; black letters on orange background.
- C. Location: Furnish markers for each conduit longer than 6 feet (1.8 m).
- D. Spacing: 20 feet (6 m) on center.

2.04 UNDERGROUND WARNING TAPE

- A. Manufacturers:
 - 1. THOMAS & BETTS CORP., Model NAF-0700.
 - 2. Substitutions shall be permitted only after receiving written approval from the Engineer.
- B. Description: 6 inch (150 mm) wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

3.02 APPLICATION

- A. Install nameplate and label parallel to equipment lines.
- B. Secure nameplate to equipment front using screws, rivets or adhesive.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Apply conduit markers at 20 foot (6 m) intervals.
- E. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches (75 mm) below finished grade.

3.03 ELECTRICAL EQUIPMENT IDENTIFICATION

- A. The Contractor shall identify all existing circuits in existing distribution panels, switchboards and disconnect switches to remain.
- B. Label all circuits identifying the load served including all individual circuit breakers.

- C. Label all new circuit breakers and switches used for new feeder and branch circuits.
- D. Contractor shall furnish a minimum of 5 custom engrave three-layer laminated plastic labels with up to 20 words per label as directed by the engineer/owner in addition to the required labels for all pilot devices, switches, controls and timers.

END OF SECTION 260553

PART 1 - GENERAL**1.01 SCOPE**

- A. The contractor shall furnish short-circuit and protective device coordination studies as prepared by the equipment manufacturer being furnished on the project. **Third Party Studies Shall Not Be Acceptable.**
- B. The contractor shall furnish an Arc Flash Hazard Analysis Study per the requirements set forth in the current version of NFPA 70E - Standard for Electrical Safety in the Workplace. The arc flash hazard analysis shall be performed according to the IEEE Standard 1584-2002, the IEEE Guide for Performing Arc-Flash Calculations.
- C. The scope of the studies shall include new distribution equipment supplied under this contract.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of the Contract.

1.03 REFERENCES

- A. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - 1. IEEE 141 - Recommended Practice for Electric Power Distribution and Coordination of Industrial and Commercial Power Systems
 - 2. IEEE 242 -Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems
 - 3. IEEE 399 - Recommended Practice for Industrial and Commercial Power System Analysis
 - 4. IEEE 241 -Recommended Practice for Electric Power Systems in Commercial Buildings
 - 5. IEEE 1015 - Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems.
 - 6. IEEE 1584 -Guide for Performing Arc-Flash Hazard Calculations
- B. American National Standards Institute (ANSI):
 - 1. ANSI C57.12.00- Standard General Requirements for Liquid-Immersed Distribution, Power, and .Regulating Transformers
 - 2. ANSI C37.13- Standard for Low Voltage AC Power Circuit Breakers Used in Enclosures
 - 3. ANSI C37.010- Standard Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis
 - 4. ANSI C 37.41- Standard Design Tests for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches and Accessories.
- C. The National Fire Protection Association (NFPA)
 - 1. NFPA 70 -National Electrical Code, latest edition
 - 2. NFPA 70E- Standard for Electrical Safety in the Workplace

1.04 SUBMITTALS FOR REVIEW/APPROVAL

- A. The studies shall be submitted to the design engineer prior to receiving final approval of the distribution equipment shop drawings and/or prior to release of equipment drawings for manufacturing. If formal completion of the study may cause delays in equipment shipments, approval from the Engineer may be obtained for a preliminary submittal of data to ensure that the selection of device ratings and characteristics will be satisfactory to properly select the distribution equipment. The formal study will be provided to verify preliminary findings.

1.05 SUBMITTALS FOR CONSTRUCTION

- A. The results of the short-circuit, protective device coordination and arc flash hazard analysis studies shall be summarized in a final report. A minimum of five (5) bound copies of the complete final report shall be submitted. For large system studies, submittals requiring more than five (5) copies of the report will be provided without the section containing the computer printout of the short- circuit input and output data. Electronic PDF copies of the report shall be provided upon request.
- B. The report shall include the following sections:
 - 1. Executive Summary including Introduction, Scope of Work and Results/Recommendations.
 - 2. Short-Circuit Methodology Analysis Results and Recommendations
 - 3. Short-Circuit Device Evaluation Table
 - 4. Protective Device Coordination Methodology Analysis Results and Recommendations
 - 5. Protective Device Settings Table
 - 6. Time-Current Coordination Graphs and Recommendations
 - 7. Arc Flash Hazard Methodology Analysis Results and Recommendations including the details of the incident energy and flash protection boundary calculations, along with Arc Flash boundary distances, working distances, Incident Energy levels and Personal Protection Equipment levels.
 - 8. Arc Flash Labeling section showing types of labels to be provided. Section will contain descriptive information as well as typical label images.
 - 9. One-line system diagram that shall be computer generated and will clearly identify individual equipment buses, bus numbers used in the short-circuit analysis, cable and bus connections between the equipment, calculated maximum short-circuit current at each bus location, device numbers used in the time-current coordination analysis, and other information pertinent to the computer analysis.

1.06 QUALIFICATIONS

- A. The short-circuit, protective device coordination and arc flash hazard analysis studies shall be conducted under the responsible charge and approval of a Registered Professional Electrical Engineer skilled in performing and interpreting the power system studies.
- B. The Registered Professional Electrical Engineer shall have a minimum of five (5) years of experience in performing power system studies.
- C. The approved engineering firm shall demonstrate experience with Arc Flash Hazard Analysis by submitting names of at least ten actual arc flash hazard analyses it has performed in the past year.
- D. The engineering firm shall have a minimum of twenty-five (25) years of experience in performing power system studies.

1.07 COMPUTER ANALYSIS SOFTWARE

- A. The studies shall be performed using EasyPower for Windows (PTW) software program.

PART 2 - PRODUCT**2.01 STUDIES**

- A. The contractor shall furnish an Arc Flash Hazard Analysis Study per NFPA 70E -Standard for Electrical Safety in the Workplace, reference Article 130.3 and Annex D. This study shall also include short-circuit and protective device coordination studies.

2.02 DATA

- A. Contractor shall furnish all data as required for the power system studies. The Engineer performing the short circuit, protective device coordination and arc flash hazard analysis studies shall furnish the Contractor with a listing of required data immediately after award of the contract. The Contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to the release of the equipment for manufacturing.
- B. Source combination may include present and future motors and generators.
- C. Load data utilized may include existing and proposed loads obtained from Contract Documents provided by Owner, or Contractor.
- D. If applicable, include fault contribution of existing motors in the study. The Contractor shall obtain required existing equipment data, if necessary, to satisfy the study requirements.

2.03 SHORT-CIRCUIT ANALYSIS

- A. Transformer design impedances shall be used when test impedances are not available.
- B. Provide the following:
 - 1. Calculation methods and assumptions
 - 2. Selected base per unit quantities
 - 3. One-line diagram of the system being evaluated that clearly identifies individual equipment buses, bus numbers used in the short-circuit analysis, cable and bus connections between the equipment, calculated maximum short-circuit current at each bus location and other information pertinent to the computer analysis
 - 4. The study shall include input circuit data including electric utility system characteristics, source impedance data, conductor lengths, number of conductors per phase, conductor impedance values, insulation types, transformer impedances and X/R ratios, motor contributions, and other circuit information as related to the short-circuit calculations.
 - 5. Tabulations of calculated quantities including short-circuit currents, X/R ratios, equipment short-circuit interrupting or withstand current ratings and notes regarding adequacy or inadequacy of the equipment rating.
 - 6. Results, conclusions, and recommendations. A comprehensive discussion section evaluating the adequacy or inadequacy of the equipment must be provided and include recommendations as appropriate for improvements to the system.
- C. For solidly-grounded systems, provide a bolted line-to-ground fault current study for applicable buses as determined by the engineer performing the study.
- D. Protective Device Evaluation:
 - 1. Evaluate equipment and protective devices and compare to short circuit ratings
 - 2. Adequacy of switchgear, motor control centers, and panelboard bus bars to withstand short circuit stresses

3. Contractor shall notify Owner in writing, of any circuit protective devices improperly rated for the calculated available fault current.

2.04 PROTECTIVE DEVICE TIME-CURRENT COORDINATION ANALYSIS

- A. Protective device coordination time-current curves (TCC) shall be displayed on log-log scale graphs.
- B. Include on each TCC graph, a complete title with descriptive device names.
- C. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which the device is exposed.
- D. Identify the device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.
- E. Plot the following characteristics on the TCC graphs, where applicable:
 1. Electric utility's overcurrent protective device
 2. Medium voltage equipment overcurrent relays
 3. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands
 4. Low voltage equipment circuit breaker trip devices, including manufacturer's tolerance bands
 5. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves
 6. Medium voltage conductor damage curves
 7. Ground fault protective devices, as applicable
 8. Pertinent motor starting characteristics and motor damage points, where applicable
 9. Pertinent generator short-circuit decrement curve and generator damage point
 10. The largest feeder circuit breaker in each motor control center and applicable panelboard.
- F. Provide adequate time margins between device characteristics such that selective operation is provided, while providing proper protection.
- G. Provide the following:
 1. A One-line diagram shall be provided which clearly identifies individual equipment buses, bus numbers, device identification numbers and the maximum available short-circuit current at each bus when known.
 2. A sufficient number of log-log plots shall be provided to indicate the degree of system protection and coordination by displaying the time-current characteristics of series connected overcurrent devices and other pertinent system parameters.
 3. Computer printouts shall accompany the log-log plots and will contain descriptions for each of the devices shown, settings of the adjustable devices, and device identification numbers to aid in locating the devices on the log-log plots and the system one-line diagram.
 4. The study shall include a separate, tabular printout containing the recommended settings of all adjustable overcurrent protective devices, the equipment designation where the device is located, and the device number corresponding to the device on the system one-line diagram
 5. A discussion section which evaluates the degree of system protection and service continuity with overcurrent devices, along with recommendations as required for addressing system protection or device coordination deficiencies.
 6. Contractor shall notify Owner in writing of any significant deficiencies in protection and/or coordination. Provide recommendations for improvements.

2.05 ARC FLASH HAZARD ANALYSIS

- A. The arc flash hazard analysis shall be performed according to the IEEE 1584 equations that are presented in NFPA70E-2009, Annex D. The arc flash hazard analysis shall be performed in conjunction with the short-circuit analysis (Section 2.03) and the protective device time-current coordination analysis (Section 2.04)
- B. The flash protection boundary and the incident energy shall be calculated at significant locations in the electrical distribution system (switchboards, switchgear, motor-control centers, panelboards, busway and splitters) where work could be performed on energized parts.
- C. Circuits 240V or less fed by single transformer rated less than 125 kVA may be omitted from the computer model and will be assumed to have a hazard risk category 0 per NFPA 70E.
- D. Working distances shall be based on IEEE 1584. The calculated arc flash protection boundary shall be determined using those working distances.
- E. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short circuit and coordination study model. Ground overcurrent relays should not be taken into consideration when determining the clearing time when performing incident energy calculations
- F. The short-circuit calculations and the corresponding incident energy calculations for multiple system scenarios must be compared and the greatest incident energy must be uniquely reported for each equipment location in a single table. Calculations must be performed to represent the maximum and minimum contributions of fault current magnitude for normal and emergency operating conditions. The minimum calculation will assume that the utility contribution is at a minimum. Conversely, the maximum calculation will assume a maximum contribution from the utility. Calculations shall take into consideration the parallel operation of synchronous generators with the electric utility, where applicable as well as any stand-by generator applications.
 - 1. The Arc-Flash Hazard Analysis shall be performed utilizing mutually agreed upon facility operational conditions, and the final report shall describe, when applicable, how these conditions differ from worst-case bolted fault conditions.
- G. The incident energy calculations must consider the accumulation of energy over time when performing arc flash calculations on buses with multiple sources. Iterative calculations must take into account the changing current contributions, as the sources are interrupted or decremented with time. Fault contribution from motors should be decremented as follows:
 - 1. Fault contribution from induction motors should not be considered beyond 5 cycles.
- H. For each piece of ANSI rated equipment with an enclosed main device, two calculations shall be made. A calculation shall be made for the main cubicle, sides, or rear; and shall be based on a device located upstream of the equipment to clear the arcing fault. A second calculation shall be made for the front cubicles and shall be based on the equipment's main device to clear the arcing fault. For all other non-ANSI rated equipment, only one calculation shall be required and it shall be based on a device located upstream of the equipment to clear the arcing fault.
- I. When performing incident energy calculations on the line side of a main breaker (as required per above), the line side and load side contributions must be included in the fault calculation.
- J. Mis-coordination should be checked amongst all devices within the branch containing the immediate protective device upstream of the calculation location and the calculation should utilize the fastest device to compute the incident energy for the corresponding location.

- K. Arc Flash calculations shall be based on actual overcurrent protective device clearing time. A maximum clearing time of 2 seconds will be used based on IEEE 1584-2002 section B.1.2. Where it is not physically possible to move outside of the flash protection boundary in less than 2 seconds during an arc flash event, a maximum clearing time based on the specific location shall be utilized.
- L. Provide the following:
 - 1. Results of the Arc-Flash Hazard Analysis shall be submitted in tabular form, and shall include device or bus name, bolted fault and arcing fault current levels, flash protection boundary distances, working distances, personal-protective equipment classes and AFIE (Arc Flash Incident Energy) levels.
 - 2. The Arc-Flash Hazard Analysis shall report incident energy values based on recommended device settings for equipment within the scope of the study.
 - 3. The Arc-Flash Hazard Analysis may include recommendations to reduce AFIE levels and enhance worker safety.

PART 3 - EXECUTION

3.01 FIELD ADJUSTMENT

- A. Contractor shall adjust relay and protective device settings according to the recommended settings table provided by the coordination study.
- B. Contractor shall make minor modifications to equipment as required to accomplish conformance with short circuit and protective device coordination studies.
- C. Contractor shall notify Owner in writing of any required major equipment modifications.

3.02 ARC FLASH LABELS

- A. Contractor shall provide a 4.0 in. x 4.0 in. Brady thermal transfer type label of high adhesion polyester for each work location analyzed.
- B. The labels shall be designed according to the following standards:
 - 1. UL969 - Standard for Marking and Labeling Systems
 - 2. ANSI Z535.4- Product Safety Signs and Labels
 - 3. NFPA 70 (National Electric Code)- Article 110.16
- C. The label shall include the following information:
 - 1. System Voltage
 - 2. Flash protection boundary
 - 3. Personal Protective Equipment category
 - 4. Arc Flash Incident energy value (cal/cm²)
 - 5. Limited, restricted, and prohibited Approach Boundaries
 - 6. Study report number and issue date
- D. Labels shall be printed by a thermal transfer type printer, with no field markings.
- E. Arc flash labels shall be provided for equipment as identified in the study and the respective equipment access areas per the following:
 - 1. Floor Standing Equipment - Labels shall be provided on the front of each individual section. Equipment requiring rear and/or side access shall have labels provided on each individual section access area. Equipment line-ups containing sections with multiple incident energy and flash protection boundaries shall be labeled as identified in the Arc Flash Analysis table.

2. Wall Mounted Equipment- Labels shall be provided on the front cover or a nearby adjacent surface, depending upon equipment configuration.
 3. General Use Safety labels shall be installed on equipment in coordination with the Arc Flash labels. The General Use Safety labels shall warn of general electrical hazards associated with shock, arc flash, and explosions, and instruct workers to turn off power prior to work.
- F. Labels shall be field installed by the Contractor. The technician providing the installation shall have completed an 8-Hour instructor led Electrical Safety Training Course with includes NFPA 70E material including the selection of personal protective equipment.

3.03 ARC FLASH TRAINING

- A. The Contractor shall train the owner's qualified electrical personnel of the potential arc flash hazards, associated with working on energized equipment (minimum of 4 hours). The training shall be certified for continuing education units (CEUs) by the International Association for Continuing Education Training (IACET) or equivalent. The trainer shall be an authorized OSHA Outreach instructor.
- B. The Contractor shall offer instructor led and online NFPA 70E training classes.

END OF SECTION 260574

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Surge protection device.

1.02 RELATED SECTIONS

1.03 STANDARDS

- A. The specified suppressor shall be designed, manufactured, tested and installed in compliance with:
 - 1. American National Standards Institute and Institute of Electrical and Electronic Engineers (ANSI/IEEE C62.11, C62.41 and C62.45).
 - 2. Federal Information Processing Standards Publication 94 (FIP PUB 94).
 - 3. National Electrical Manufacturer Association (NEMA LS-1).
 - 4. National Fire Protection Association (NFPA 20, 70, 75 and 78).
 - 5. Underwriters Laboratories (UL 1449).
 - 6. CAN/C22.2 No. 8-M1986; CSA Electrical Certification Notice No. 516.
 - 7. The system individual units shall be UL listed under UL 1449 Standard for Transient Voltage Surge Suppressions (TVSS) and the surge ratings shall be permanently affixed to the TVSS.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. MCG ELECTRONICS, INC., Deer Park, New York.
- B. Approved equal.

2.02 MANUFACTURED UNITS

- A. Surge suppression shall be series Surge Free Model No. SF402XT.

2.03 SYSTEM REQUIREMENTS

- A. The specified surge protective device shall provide effective high energy surge diversion for application ANSI/IEEE C62.41-1991 Location Category C3 environments. Testing per ANSI/IEEE C62.45-1992 using ANSI/IEEE C62.41 Category C3 waveforms and amplitudes. UL 1449 listing. The specified surge protective device shall provide:
 - 1. 400,000 transient amps, per phase of surge protection.
 - 2. Peak surge current ratings must be independently tested and verified.
 - 3. All mode protection, L-N, L-G, L-L, N-G.
 - 4. Integral disconnect with safety dead front.
 - 5. Each MOV protected from over-current, thermal overload and monitored individually.
 - 6. Self diagnostics with comprehensive LED bar graph on front panel showing the exact % level of protection available.
 - 7. Audible fault alarm with silence switch.
 - 8. Event counter, indication of time and date of last event (battery backup for time and date).
 - 9. Remote alarm relay contacts (surge protected), Form C.
 - 10. Micro-Z low impedance installation cable.
 - 11. Twenty year warranty on entire system.
 - 12. LIFETIME "NO NONSENSE" WARRANTY ON FIELD REPLACEABLE POWER MODULES AND FUSES.

B. Environmental Requirements:

1. Magnetic Fields: Connection shall be made using low impedance Micro-Z cabling provided with the suppressor for maximum magnetic field cancellation. Unit shall be shunt-installed with no series connected elements.
2. Operating Temperature: Operating temperature range shall be -40° to +71° C (-40° to +160° F).
3. Storage Temperature: Storage temperature range shall be -40° to +85° C.
4. Relative Humidity: Operation shall be reliable in an environment with 0% to 95% non-condensing relative humidity.
5. Operating Altitude: The system shall be capable of operation up to an altitude of 13,000 feet above sea level.
6. Operating Voltage: Maximum continuous operating voltage shall be no less than 115% and no greater than 140% of the nominal rated line voltage.
7. Power Frequency: The power frequency range shall be 47 to 440 Hertz.

C. Electrical Requirements:

1. Unit Operating Voltage Requirements:

Voltage:	Description:	Joules (8/20us):	Vpeak L-N (20kV, 10kA):	Vpeak L-N (6kV, 500A):
277/480 VAC	3phase, 4W + gnd, wye	93600	1096V	1000V

2. Unit shall be installed in parallel with the protected equipment. No series connected protective elements shall be used.
3. The maximum surge current capacity per phase of the specified system, based on the standard IEEE 8/20 microsecond waveform, shall be at least: 1 Event at 400 kA. The surge life (8/20us) shall be at least 10,000 @ 15 kA occurrences. The transient suppression capability shall be bi-directional and suppress both positive and negative impulses.
4. The suppressor shall be capable of interrupting a 200 kA, short circuit current delivered from the AC power line. The interrupt capability must be confirmed and documented by a recognized independent testing laboratory.
5. The suppressor shall be designed so as to minimize the internal surge path impedance. Direct point-to-point internal wiring is inherently inductive and not acceptable. Connection to the power service shall be constructed for best performance.
6. Equipment shall be as manufactured by MCG Electronics, Inc.: Model: SF400XT-Family or engineering department approved equal with supporting test data.

D. Protection System Components:

1. Replaceable modules: The suppressor shall be constructed using field replaceable protection modules. The suppressor shall have individually fused and monitored 40mm Metal Oxide Varistors (MOV's), including neutral to ground protection mode. Each module will provide five times (5X) redundant protection, with three modules per each phase and five fuses per module. The status of each module shall be locally monitored with a green LED that becomes red in a fault condition. The transient peak rating of the fuse shall be coordinated with the Ipeak handling capability of the MOV so that the surge path capability is not limited by the series fusing. In addition, each MOV shall incorporate a thermal disconnect means to remove a shorted MOV safely from the protection system.
2. Self-Diagnostics: Red, green and yellow solid state LED indicators shall be provided on the hinged front cover to indicate protection status. An illuminated green LED indicates power is present at the protector on all phases, and an illuminated red LED shall indicate that one or more of the modules have reduced protection. An illuminated yellow LED shall indicate a suppression event. Both front panel and internal LEDs are required to provide

power and fault indications in the event of even the loss of a single fuse or MOV. Relay operation shall be in a fail-safe operating mode (i.e., continuously energized so that power failure, reduced protection, or a break in the remote monitoring line will cause a fault indication at the remote monitor).

3. Remote Alarm Capability: Relay alarm contacts shall be provided for remote alarm monitoring capability of unit status. Form C normally open and normally closed contacts shall be provided with voltage and current limiting protection.
4. Audible Alarm: The specified system shall be equipped with an audible alarm which shall be activated when any one or more of the modules has a reduced protection condition. A mute option shall be provided for the audible alarm.
5. Advanced Diagnostic LED Display: A front panel, microprocessor controlled LED display, in the form of a bar graph, will indicate the protection status of each MOV on each phase including neutral to ground. A event counter will display number of suppressed transient events with a time and date stamp.
6. Integral Disconnect: Unit shall be provided with dead front disconnect to remove power from protector for maintenance access. The disconnect should not be accessed from the front panel unless the unit meets the minimum clamp voltage requirements.
7. NEMA 12 Enclosure: 14 gauge steel, with stainless steel hardware.

PART 3 - EXECUTION

3.01 INSTALLATION AND MAINTENANCE

- A. The unit shall be factory installed on the motor control center by the Motor Control Center manufacturer, in accordance with the manufacturer's printed instruction to maintain warranty. Provide all mounting hardware and accessories required. All local and national codes must be observed.
- B. Units shall be installed as close as possible to the bus to which it is connected using low impedance Micro-Z cabling.
- C. A 3-pole disconnect/circuit breaker shall be provided to insure safety of maintenance personnel.

3.02 TWENTY YEAR WARRANTY

- A. Manufacturer to provide twenty (20) year warranty to cover repair or replacement with a new device. Manufacturer to provide no cost replacement of fused protection modules for the life of the suppressor.

END OF SECTION 261823

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Dry type transformers.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electric Code.
- B. NEMA ST20 - Dry Type Transformers for General Applications.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Provide outline and support point dimensions of enclosures and accessories, unit weight, voltage, KVA and impedance ratings and characteristics, tap configurations, insulation system type and rated temperature rise.

1.04 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Dry type transformers shall be manufactured by General Electric Type QL.
- B. Approved equal.

2.02 EQUIPMENT REQUIREMENTS

- A. Three-phase and Single-phase general purpose dry type transformers be self-cooled, with ratings (KVA) as indicated on the drawings.
- B. Shall meet or exceed DOE 2016 efficiency requirements.
- C. Copper windings.
- D. Sound levels not to exceed the following:
 - 1. 0-9 KVA: 40 db.
 - 2. 10-50 KVA: 45 db.
 - 3. 51-150 KVA: 50 db.
 - 4. 151-300 KVA: 55 db.
 - 5. 301-500 KVA: 60 db.
 - 6. 501-700 KVA: 62 db.
- E. Three-phase transformers rated above 15 KVA to be insulated with UL listed Class 220 rated materials; and have a maximum average full load temperature rise of 115 degrees C.

- F. Transformers to have voltage ratios as indicated on drawings. Transformers between 15 KVA and 300 KVA to be provided with six 2-1/2% full capacity taps, two above and four below primary rated voltage.
- G. Nameplate: Include transformer connection data.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install transformers in accordance with manufacturer's recommendations.
- B. Provide both primary and secondary protection as shown on drawings.
- C. Set transformer plumb and level.
- D. Provide grounding and bonding in accordance with provisions of Section 260526.
- E. Transformers shall be factory installed in the Motor Control Center by the manufacturer of Motor Control Center where indicated on drawings.

3.02 FIELD QUALITY CONTROL

- A. Check for damage and tight connections prior to energizing transformer.
- B. Measure primary and secondary voltage and make appropriate tap adjustments.

END OF SECTION 262200

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Distribution panelboards.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electric Code.
- B. NECA Standard of Installation.
- C. NEMA AB1 - Molded Case Circuit Breakers.
- D. NEMA PB1 - Panelboards.
- E. NEMA PB1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- F. NEMA ICS2 - Industrial Control Devices, Controllers and Assemblies.
- G. NEMA KS1 - Enclosed Switches.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, and circuit breaker arrangement and sizes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. New Panelboards
 - 1. Panelboards shall be manufactured by Siemens.
 - 2. Approved equal.

2.02 PANELBOARD REQUIREMENTS

- A. Provide panelboards of circuit breaker, dead-front safety type, UL labeled, and meeting all applicable requirements of the National Electrical Manufacturers Association.
- B. Provide panelboards with lugs (both main lugs and branch circuit lugs) suitable and UL approved for both aluminum and copper conductors.
- C. Provide electrically isolated neutral bars.
- D. Provide separate ground bars complete with lugs or connectors on bar.
- E. Provide key operated door and door lock. Door shall prevent access to operate circuit breakers.
- F. Provide panelboards with sequence phased bus bars or distributed phase bussing for voltage and phase as indicated on drawings.
- G. Refer to drawings for numbers of branch circuits, their ratings, number of poles, arrangements, etc.

- H. Provide typed circuit directory cards.
- I. Provide front filler plates for unused breaker knockouts.
- J. Refer to drawings for Ratings and Features.
- K. All bus bars, including ground bars shall be tin-plated copper.
- L. All circuit breakers shall be bolt-on type.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Ground separate ground bars to panel boxes and to the main service entrance ground bus with a code-sized grounding conductor installed in the same conduit as the phase and neutral conductors under provisions of Section 260526.
- B. Install all circuits using a common neutral bus bay in accordance with the National Electric Code. Balance all circuits to achieve not greater than 7% unbalanced neutral current in panel feeders.
- C. Provide six circuit breaker handle lock-on devices for each lighting and miscellaneous power panelboard for installation by the contractor on circuits as directed by the Engineer to prevent unauthorized personnel from turning off circuits to controls, unit heaters, autodial alarm system, etc. Provide spare lock-on devices over to the Engineer.
- D. Install panelboards in accordance with NEMA PB 1.1.
- E. Install panelboards plumb.
- F. Height: 6 feet (2 m) to top of panel board.
- G. Provide typed circuit directory for each branch circuit panelboard. Handwritten circuit directory cards will not be accepted. Revise directory to reflect circuiting changes required to balance phase loads.
- H. Provide a typed circuit directory in accordance with NEC sections 110.22 and 408.4. Circuits shall be labeled with detailed information describing the switches function and equipment location.
- I. For all existing circuits terminated to a new panelboard, contractor shall trace out and update the circuit directory in accordance with NEC sections 110.22 and 408.4. Include all costs for this work in base bid.
- J. Revise directory to reflect circuiting changes required to balance phase loads.
- K. Provide engraved plastic nameplates under the provisions of Section 260553.
- L. Panelboards shall be factory installed in the motor control center by the manufacturer of Motor Control Center where indicated on drawings.

3.02 FIELD QUALITY CONTROL

- A. Maintain proper phasing for multi-wire branch circuits.

- B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION 262400

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Switches, receptacles, thermostats, device plates and other wiring devices as indicated on Drawings.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electric Code.
- B. NEMA WD1 - General Purpose Wiring Devices.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Provide manufacturer's catalog information showing dimensions, colors and configuration.

1.04 REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.01 SWITCHES

- A. Manufacturers: HUBBELL, BRYANT, GENERAL ELECTRIC.
- B. Single pole, 20 amp, 120/277 VAC, NEMA WD-1, heavy duty, UL20.
- C. Device Plate: Stainless steel.

2.02 RECEPTACLES

- A. Manufacturers: HUBBELL, BRYANT, GENERAL ELECTRIC.
- B. 20 amp, 125 VAC, NEMA WD-1, heavy duty.
- C. 20 amp, 125 VAC, NEMA WD-1, heavy duty, ground fault circuit interrupter.
- D. Duplex type.
- E. Device Plate: Stainless steel.

2.03 EMERGENCY KILL MUSHROOM SWITCH

- A. Acceptable Manufacturers: SQUARE D Model No.: 9001KR9P1RH1321 or approved equal.
- B. Operator: 2-POSITION MAINTAINED PULL-MAINTAINED PUSH ILLUMINATED FLASHING mushroom head pushbutton. Switch head shall only be flashing in the "pushed" position.
- C. Mushroom Head: 2-1/4-inch diameter head.
- D. Nameplate: Large 2.92-inch square, Red nameplate with engraved logo "Emergency Stop", unless noted otherwise on drawings.

- E. Enclosure: Heavy duty, one opening, sheet steel enclosure, NEMA 12.

2.04 LINE VOLTAGE THERMOSTAT

- A. Acceptable Manufacturers: HONEYWELL, Model No. T651A3018, or approved equal.
- B. Heating/Cooling Rated
- C. Ratings: 120 volts, 22 amps resistive SPDT switch.
- D. Temperature Range: +44° to + 86° F.

2.05 CHEMICAL RECEPTACLES AND PLUG ENDS

- A. Acceptable Manufacturers: HUBBEL or approved equal.
- B. 20A, 125 VAC, NEMA L5-20R, Safety-Shroud twist lock receptacle Model No. HBL2310SR.
- C. 20A, 125 VAC, NEMA L5-20P, Safety-Shroud twist lock plug Model No. HBL2311S.
- D. 30A, 125 VAC, NEMA L5-30R, Safety-Shroud twist lock receptacle Model No. HBL2610.
- E. 30A, 125 VAC, NEMA L5-30P, Safety-Shroud twist lock plug Model No. HBL2611S.

2.06 MANUAL MOTOR RATED THERMAL SWITCH

- A. Acceptable Manufacturers: SQUARE D, Class 2510, Type KG1A, Type KG2C (3-pole, 600V) or approved equal.
- B. Contractor shall coordinate voltage, phase and current rating with equipment.

2.07 TELEPHONE/DATA OUTLETS

- A. Provide combination telephone/data jacks compatible with RJ-45 and RJ-11 cable connections.
- B. Provide "Decora" type with matching vinyl cover plate.
- C. Colors shall be selected by the Owner.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Mounting:
 - 1. Mount all switches 46-inches above finished floor to center line of switch unless noted otherwise.
 - 2. Mount all receptacles 18-inches above finished floor to center line of receptacle unless noted otherwise.
 - 3. Install switches with OFF position down.
- B. Polarity: Properly wire all receptacles so that the hot wire, the neutral wire and the ground wire connect to the proper terminal on all receptacles.

- C. Grounding: Install all devices in boxes specified under Section 260533 and install a No. 12 green ground wire from device grounding terminal to the outlet box in accordance with the National Electric Code.
- D. Install device plates on switch, receptacle and blank outlets in full contact with wall surface.
- E. Provide new SO cord for all chemical pumps and install plug end to match receptacle.

3.02 FIELD QUALITY CONTROL

- A. Inspect each wiring device for defects.
- B. Operate each wall switch with circuit energized and verify proper operation.
- C. Verify that each receptacle device is energized.
- D. Test each receptacle device for proper polarity.
- E. Test each GFCI receptacle device for proper operation.

END OF SECTION 262726

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Disconnect switches.
- B. Fuses.
- C. Enclosed Circuit Breakers.

1.02 REFERENCES

- A. NEMA KS-1 - Enclosed Switches.
- B. ANSI/UL 198C - High Intensity Capacity Fuses, Current Limiting Types.
- C. ANSI/UL 198E - Class R Fuses.
- D. FS W-S 865 - Switch, Box (Enclosed), Surface Mounted.
- E. NEMA AB1 - Molded Case Circuit Breakers.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Include outlet drawings with dimensions and equipment ratings for voltage, capacity, horsepower and short circuit current ratings.

1.04 RELATED SECTION

- A. Section 260553 - Identification for Electrical Systems.

1.05 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.01 DISCONNECT SWITCHES

- A. Disconnect switches shall be GENERAL ELECTRIC, heavy-duty Type TH or approved equal.
- B. 75°C conductor ratings.
- C. Ratings: 600VAC
- D. Quick-break, quick-make, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- E. Suitable for use as service entrance equipment.
- F. UL listed for Class R 200,000 RMS amps, symmetrical IC.

- G. Class R fusing kit.
- H. Enclosures: Refer to drawings.

2.02 FUSES

- A. Fuses shall be Littlefuse KLNK Class RK1 or approved equal.
- B. Fuses shall be rated for 600 volts AC.
- C. Interrupting Rating: 200,000 RMS amps.

2.03 MOLDED CASE CIRCUIT BREAKERS

- A. Install molded case circuit breakers for Main Circuit Breaker, Generator Circuit Breaker and Panel Circuit Breakers.
- B. Molded Case Circuit Breaker:
 - 1. Manufacturer: SIEMENS
 - a. 125 Amp, 3 Pole Type ED6.
 - b. 250 Amp, 3 Pole Type HFD6.
 - c. 400Amp, 3 Pole Type HJD6.
 - d. 600Amp, 3 Pole Type HLD6.
 - e. 800Amp, 3 Pole Type HMD6.
 - 2. AIC Rating: 65,000 amperes.
 - 3. Thermal magnetic with interchangeable trip
- C. Enclosure
 - 1. Manufacturer: SIEMENS
 - 2. Rating: NEMA 1 (for interior use) or NEMA 4X Stainless Steel (for exterior use).
 - 3. External Throw.
 - 4. Suitable for Service Entrance Equipment (where applicable).

2.04 EXTRA MATERIALS

- A. Provide one complete set based on number of poles of spare fuses for each fused disconnect switch. Provide to Owner.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Temporary Lifting Provisions: Removed temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- C. Provide switches/enclosed circuit breakers at locations as indicated on drawings.
- D. Refer to disconnect switch schedule on drawings for ampacity ratings, fuse sizes, number of poles and enclosure ratings.
- E. Install fuses in fusible devices.

- F. Install engraved nameplates on each switch and enclosed circuit breaker identifying the following:
 - 1. Switch designated.
 - 2. Load served.
 - 3. Power origination.
 - 4. Fuse size as indicated on drawings.

3.02 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit breaker trip ranges.

END OF SECTION 262816

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Motor starters.

1.02 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Include electrical ratings, dimensions, mounting, materials, running overcurrent protection, branch circuit overcurrent protection, wiring diagrams, starting characteristics, interlocking and accessories.
- C. Submit 5 copies of a summary list to the Engineer indicating and identifying each motor controller installed, including catalog numbers for the correct size of protective devices for the motor controllers.

1.03 REFERENCES

- A. ANSI/NFPA 70 - National Electric Code.
- B. NEMA No. ICS-1, General Standards for Industrial Control and Systems; No. ICS-2, Industrial Control Devices, Controllers and Assemblies; No. ICS-6, Enclosures for Industrial Control and Systems.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with NEMA ICS 2.3.

1.05 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

1.06 EXTRA MATERIALS

- A. Ten (10) spare pilot light bulbs.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Solid State Reduced Voltage Starter (RVSS):
 - 1. WEG SSW-06.
 - 2. Specifically approved equal.
- B. Full Voltage Non-Reversing and Reversing (FVNR):
 - 1. SIEMENS, Class 14.
 - 2. Specifically approved equal.

2.02 MOTOR STARTERS

- A. Motor starters shall have the following features:
 - 1. Enclosed type as shown on the Drawings.

2. Circuit breakers within the motor controller enclosures shall have external operating handles with lock-open padlocking provisions and shall indicate the ON and OFF positions.
 3. Motor Control Circuits:
 - a. Shall operate at not more than 120 volts.
 - b. Shall be grounded except as follows:
 - 1) Where isolated control circuits as shown.
 - 2) Where manufacturers of equipment assemblies recommend that the control circuits be isolated.
 - c. Incorporate a separate, heavy duty, control transformer within each motor controller enclosure to provide the control voltage for each motor operating over 120 volts.
 - d. Incorporate overcurrent protection for control power transformers in accordance with NFPA 70.
 4. Overload Current Protective Devices:
 - a. SIEMENS, Solid State Model ESP100 overloads for all contactors including bypass contactors. Provide only SIEMENS thermal overloads on all output contactors for variable speed drives.
 - b. One for each pole.
 - c. Manual reset on the door of each motor controller enclosure to reset Motor from any condition which tripped motor, such as high pressure, overload or incomplete valve cycle.
 - d. Correctly sized for the associated motor's rated full load current.
 5. Provide three (3) N.C. and (3) N.O. auxiliary contacts, H-O-A, O-C-A, sequence selectors selector switches, pilot lights, and other devices and accessories as shown on the Drawings for each starter.
 6. Elapsed non-resettable time meters as indicated on the Drawings. As manufactured by Fourth Dimension, 2-1/2" diameter minimum.
 7. Ammeters and 4 position phase selector switch (3-1/2" Square minimum) as manufactured by SIMPSON.
 - a. Well No. 4-1 and 4-2: 0-200 amps.
 8. Provide current and potential transformers for all three phases for ammeters and voltmeters.
 9. Voltmeters and seven position selector switch (3 1/2" square minimum) as manufactured by SIMPSON.
 10. Enclosures:
 - a. Shall be the NEMA Type 1.
 - b. Where the types of motor controller enclosures are not indicated, they shall be the NEMA types which are the most suitable for the environmental conditions where the motor controllers are being installed.
 - c. Doors mechanically interlocked to prevent opening unless the breaker or switch within the enclosure is open.
 - d. Thoroughly clean and paint the enclosures at the factory with manufacturer's prime coat and standard finish.
 11. Pilot lights shall be press-to test 30.5 mm Heavy Duty Oiltight pushbuttons.
 12. Pushbuttons and selector switches shall be 30.5 mm Heavy Duty Oiltight.
- B. Motor controllers incorporated with equipment assemblies shall also be designed for the specific requirements of the assemblies.

2.03 SOLID STATE REDUCED VOLTAGE STARTER

- A. Solid state reduced voltage starter and accessories to be factory installed in the motor control center.

- B. The starter shall be rated for 200-575V +/- 10%, 50-60Hz +/- 10%. Control Voltage shall be rated for 100-240V +/- 10%.
- C. The starter shall provide the following standard "starting" modes:
 - 1. Linear Torque control for Start.
 - 2. Variable Torque control for Start.
 - 3. Pump Control.
 - 4. Current Limit Start.
 - 5. Voltage ramp Start.
 - 6. Voltage ramp Start with current limit Start.
 - 7. Full Voltage Start.
 - 8. Remote analog control.
 - 9. Soft Start with Selectable Torque Boost.
 - 10. Slow Speed time controlled.
 - 11. Slow Speed external controlled.
 - 12. Dual Ramp Start.
- D. The Controller shall provide the following standard "stopping" modes:
 - 1. Linear Torque control for Stop.
 - 2. Variable Torque control for Stop.
 - 3. Pump Control.
 - 4. Voltage ramp Stop.
 - 5. Coast to Stop.
 - 6. Remote analog control Stop.
 - 7. DC injection Braking.
 - 8. Slow Speed time controlled.
 - 9. Slow Speed external controlled.
 - 10. DC-Brake at slow speed.
 - 11. Dual Ramp Stop.
 - 12. Accurate position stop control.
 - 13. Bypass control (Sequence Stop).
- E. The starter shall provide the following additional features:
 - 1. Jogging forward and reverse.
 - 2. 4 parameters sets (externally selectable)
 - 3. Analog output (programmable and selectable - 0-1VDC or 4-20mA)
 - 4. Built-in Display (w/ optional Remote Display).
- F. The starter shall provide the following standard "Operation" interfaces:
 - 1. Integral Keyboard.
 - 2. Remote.
- G. The starter shall provide the following optional Operation interfaces:
 - 1. Serial communication RS 232/485 Modbus RTU.
 - 2. Profibus DP.
 - 3. DeviceNET.
 - 4. Interbus-S.
 - 5. Lonworks.
 - 6. FIP IO.
 - 7. Saflink.
 - 8. External Display for mounting on enclosure door.
- H. The starter shall provide the following Protection features. The protection shall be maintained when bypass contactor is supplied.

1. Motor Thermal Overload.
 2. Soft Start thermal over temperature.
 3. PTC input
 4. Motor Shaft Torque (Max) machine process protection.
 5. Motor Shaft Torque (Min) machine process protection.
 6. Phase Imbalance.
 7. Phase reversal.
 8. Over voltage.
 9. Under voltage.
 10. Locked Rotor.
 11. Excessive Starts per hour for application.
 12. Phase loss input/output.
 13. Motor output loss.
- I. The starter shall provide the following standard Monitoring functions. The monitoring functions shall be maintained when bypass contactor is supplied.
1. Three Phase Current (average).
 2. Three Phase Voltage (average).
 3. Current in L1, L2, L3.
 4. Voltage between L1-L2, L1-L3, L2-L3.
 5. Shaft Power in kW/HP (selectable).
 6. Motor thermal capacity.
 7. Power factor.
 8. Torque in Lbs./ft. or Nm (selectable).
- J. The starter shall provide the following standard Alarm functions. The alarm functions shall be monitored during bypass contactor operation.
1. Line failure.
 2. Phase imbalance.
 3. Over temperature-motor.
 4. Over temperature-Soft Starter.
 5. Shorted SCR.
 6. Open SCR.
 7. Locked Rotor.
 8. Motor Output loss.
 9. Overload - Shaft Torque.
 10. Underload - Shaft Torque.
 11. Phase imbalance.
 12. Over voltage.
 13. Under voltage.
 14. Excessive Starts.
 15. Phase reversal.
 16. Event list 15 latest alarms.
- K. The starter shall be of modular construction, consisting of a Control Module and Power Stack.
- L. All PCB's shall be compatible with the full range power stack.
- M. All phases should be controlled during start/stop.
- N. The power stack shall consist of six SCR's mounted on a heatsink assembly for ratings up to and including 1250 amps.
- O. The starter shall be DIN Rail mountable up to 145A.

- P. DIN Rail mountable units should be mountable without space at side.
- Q. Starters 180A and larger shall allow for convenient connection of bypass contactor without modification of standard assembly.
- R. Starter Control Module:
1. Mechanical features:
 - a. The control module assembly shall consist of a power supply, logic control circuitry, silicon controlled rectifier (SCR) firing circuitry. I/O circuitry, a digital programming keypad, dual LED Displays.
 - b. The PCB's shall be designed for integral mounting on the control module and shall be compatible with the full range of current ratings - 30 amps to 1250 amps.
 - c. The control modules shall be easily removed from the power stack, without the need to disassemble associated printed circuit board assemblies.
 - d. Control terminals shall be easily accessible and located on the front bottom of the device. The terminals shall be UL rated for 300 Volts, 15 amps maximum, and accept a maximum of two wires.
 - e. Digital parameter adjustment shall be provided through a built-in keypad. Analog potentiometer adjustments, DIP or rotary switches, or plug-in jumpers are not acceptable.
 - f. Dual built-in alphanumeric, LED displays shall be provided for controller set-up, diagnostics, status and monitoring. The Control Keypad and Display shall have the option for remote mounting.
 - g. The starter shall two green lights for running and start/stop.
 - h. A serial communication port shall be provided as standard. Communication protocol interface modules shall be built in option available for connection to Remote I/O, Devicenet, PROFIBUS, Interbus S, Lonworks, FIP IO and RS 232/485 Modbus RTU.
 - i. A minimum of three auxiliary contacts shall be provided for customer use. These shall be programmable as follows:
 - 1) One form C (SPDT): Fault (dedicated).
 - 2) Two single pole NO: Multifunction (programmable). Ratings: 8A at 250VAC, 2000VA Inrush, B300 NEMA.
 2. Electrical features:
 - a. The PCB shall provide digital microprocessor control and supervision of all controller operation, including SCR pulse firing control.
 - b. The PCB power supply shall be self-tuning to accept control power input from 100 to 240, 50/60 Hz.
 - c. The SCR firing circuitry shall incorporate a latch circuit for three-wire control.
 - d. Reverse operation of the motor shall be standard in the jog mode without the use of a reversing contactor.
 3. User Adjustments:
 - a. The two acceleration start ramps shall have individual adjustments from 1 to 60 seconds.
 - b. The two acceleration stop ramps shall have individual adjustments from 2 to 120 seconds.
 - c. The initial torque setting shall be adjustable from 0 to 200% of motor torque.
 - d. The end torque setting shall be adjustable from 50 to 200% of motor torque.
 - e. Current limit starting shall be adjustable from 150% to 500% of the motor's full load current.
 - f. A selectable Torque Boost feature shall be available to set a current level from 300-500% of the motor's full load current rating. The time period shall be adjustable from 0.1 to 2.0 seconds.
 - g. Locked rotor function shall be adjustable between 1 to 10 seconds.
 - h. Slow speed shall be adjustable up to 60 seconds or up to 100 external pulses.

4. Protection Diagnostics:
 - a. Motor protection shall be as follows:
 - 1) Meets applicable standards and codes as a motor thermal overload protection device.
 - 2) Shaft Power measurement without the use of external electro-mechanical sensors.
 - 3) Overload trip classes of 10, 20 and 30 shall be provided and user programmable.
 - 4) Electronic thermal memory shall be provided for enhanced motor protection.
 - 5) Shaft overload and underload protection shall be available through the controller.
 - 6) All protections shall remain in effect if bypass contactor is supplied.
 - b. When fault conditions are detected, the controller shall inhibit starting or shut down SCR pulse firing.
5. Pump Control:
 - a. The standard feature pump control shall be implemented to provide closed loop control of a motor to match the specific torque requirements of centrifugal pumps for both starting and stopping. This shall aid in eliminating the phenomena commonly reference to as "water hammer". Methods utilizing Soft Start with Soft Stop shall not be acceptable.
 - b. Closed loop control with linear ramps shall be achieved without using external sensors or feedback devices.
 - c. Pump stop shall be initiated without the need for a dedicated Pump Stop input.
 - d. The Pump Stop times shall be user adjustable from 0 to 120 seconds.
- S. Starters rated for 30A to 145A shall consist of three modules. The three modules shall be mounted on a single heatsink. The heatsink shall be isolated from the power modules and shall have grounding provisions. Power modules rated 30A to 145A shall be encapsulated and shall include two power-switching semi-conductors and control module interface cables. Power connections on units 30-145 amps shall be bus bar type to accommodate wide range of cabling.
- T. Back-to-back SCR pairs shall be the only power switching semiconductor means acceptable. Diode/SCR combinations shall not be acceptable. Semi conductor fuses shall be required.
- U. Starter shall be built for continuous operation without need for bypass contactors, either external or internal, for any reason other than when the starter is mounted in a non ventilated enclosure.
- V. SCRs shall have the following minimum repetitive peak inverse voltage ratings: 200 to 575V: 1600V.
- W. For starters rated 30A to 145A, transient protection with snubber circuit including RC-net and capacitors against electrical noise shall be standard.
- X. Starters rated 180A and larger will include heavy duty MOV surge absorbers and R-C snubbers as standard.
- Y. Starters shall deliver its rated current in ambient temperature ranging from 0°C to +40°C. The starter shall be able to operate up to 50°C. The ambient storage temperature shall be -25°C to +70°C.
- Z. The starter shall be operable in relative humidity of 5 to 95%, non-condensing.
- AA. The starter shall be suitable for operation up to altitudes of 3000 feet (1000 meters) without derating.
- AB. The starter shall perform without malfunction from showering arc tests of 500V to 1500V (NEMA ICS 2-230).

- AC. The starter shall perform without malfunction when subjected to 3000V surges at a rate of 100 bursts per second for 10 seconds (IEEE STD 472).

2.04 FULL VOLTAGE STARTERS

- A. All Full Voltage Starters shall be NEMA rated for the load it serves.
- B. Manufacturers: SIEMENS, Class 14.

2.05 MISCELLANEOUS CONTROLS AND EQUIPMENT

- A. Provide phase failure/phase reversal relays and voltage sensitive relays for undervoltage and overvoltage protection for all phases. Relays shall be SIEMENS, or approved equal. The Contacts for these relays shall be in series with all Motor Starter Control Circuits.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation shall be in accordance with NFPA 70 and as shown on the Drawings.
- B. All starters shall be factory installed in Motor Control center.

3.02 DESCRIPTION OF CONTROL, SOLID STATE STARTER/ISOLATION INPUT/OUTPUT/BYPASS CONTACTORS

- A. Refer to the Description of Controls specification for control requirements of all motor controllers. Contractor is responsible for coordinating with system integrator for proper operation of motor controllers and all associated equipment. Any discrepancies shall be brought to the attention of the Engineer immediately for final coordination.
- B. In the AUTOMATIC position the H-O-A selector switch will provide control power to the motor starter circuit through the isolation and output contactors and solid-state starter. Once motor is fully started via solid-state starter, the bypass contactor shall be energized and the motor shall run via this contactor.
- C. In the HAND position the H-O-A switch the motor shall start and run whether or not the automatic control "ON" contacts are energized. Motor shall be started and stopped as in "A" above.
- D. In the AUTOMATIC position of the bypass-automatic selector switch, the switch shall provide control power to the HAND-OFF-AUTOMATIC (H-O-A) selector switch and the motor shall be controlled as described in A & B above. In the bypass position the selector switch shall provide control power to the H-O-A selector switch to maintain either automatic or manual control with the addition of disabling both the isolation and output contactor and the solid-state starter from the running/starting sequence. In bypass position, the motor shall start and run via bypass contactor (full voltage starter).

3.03 DESCRIPTION OF CONTROL, VARIABLE SPEED DRIVES/ISOLATION/OUTPUT/BYPASS CONTACTORS

- A. Refer to the Description of Controls specification for control requirements of all motor controllers. Contractor is responsible for coordinating with system integrator for proper operation of motor controllers and all associated equipment. Any discrepancies shall be brought to the attention of the Engineer immediately for final coordination.

- B. In the AUTOMATIC position the H-O-A selector switch will provide control power to the motor starter circuit through the isolation and output contactors and variable speed drive. The bypass contactor will be electrically and mechanically interlocked via the bypass starter.
- C. In the HAND position the H-O-A switch the motor shall start and run whether or not the demand is called for based on level controls. Motor shall operate as in A above except speed control will be via the speed control potentiometer.
- D. In the AUTOMATIC position of the bypass-automatic selector switch, the switch shall provide control power to the HAND-OFF-AUTOMATIC (H-O-A) selector switch and the motor shall be controlled as described in A & B above. In the bypass position the selector switch shall provide control power to the H-O-A selector switch to maintain either automatic or manual motor control with the addition of disabling both the isolation and output contactor and the variable speed drive from the running/starting sequence. In bypass position, the motor shall start and run via bypass contactor (full voltage starter) which is electrically and mechanically interlocked via the bypass contactor.

END OF SECTION 262913

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Motor control centers.

1.02 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Include electrical ratings, dimensions, mounting, material, running overcurrent protection, branch circuit overcurrent protection, wiring diagrams and accessories.
- C. Provide detailed control drawings on 24" x 36" blueprints for all motor controls which shall include all interface wiring between motor controls and instrumentation drawings as described in Section 265012 - Description of Controls. Provide point to point wiring diagrams showing interface between motor controls and instrumentation drawings.
- D. Provide detailed scaled 1/2" = 1'-0" drawings of motor control center including instrumentation and control drawings on 24" x 36" blueprints for floor plans showing MCC layout, locations and clearances.
- E. Provide detailed scaled 3/4" = 1'-0" elevation drawings of motor control center including instrumentation and controls. Elevation drawings shall show all switches, pilot lights, timers, keypads, timers and meters including scaled locations of all knockouts and cutouts on exterior of enclosures for review and approved by Engineer.
- F. Provide detailed scaled 3/4" = 1'-0" elevation drawings of motor control center including instrumentation and controls for interior mounting of all equipment. Drawings shall show sealed locations of all drives, starters, contactors, relays, protective devices, circuit breakers, fuses, wiring, timers, terminal blocks and cable connection points.
- G. Provide catalog cuts for each device including pilot lights, switches, timers, breakers, fuses, meters, protective devices, etc.

1.03 REFERENCES

- A. National Electrical Manufacturers Association (NEMA) - No. ICS-1, General Standards for Industrial Control and Systems; No. ICS-2, Industrial Control Devices, Controllers and Assemblies; No. ICS-6, Enclosures for Industrial Control and Systems.
- B. ANSI/NFPA 70 - National Electrical Code.
- C. ASTM D 178 - Specification for Rubber Insulating Matting.
- D. Underwriters Laboratories, Inc. (UL) - No. 845, Motor Control Centers, Electric.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. SIEMENS: Tiastar.
- B. Specifically Approved Equal. Substitute manufacturers shall be responsible to fit MCC line-up as detailed on drawings to the exact dimensions detailed on the drawings. Motor Control Center manufacturer shall provide applicable U.L. labeling for all sections shown on drawings and for complete installation of all equipment specified to be packaged into the Motor Control

Center. All equipment specified to be installed in Motor Control Center shall be factory installed by Motor Control Center manufacturer. No exceptions.

2.02 MOTOR CONTROL CENTERS

- A. Motor control centers shall be in accordance with UL, NEMA, NEC and as shown on the Drawings.
- B. Motor control center shall be same manufacturer for motor controls and all instrumentation and control cubicles.
- C. Motor control center is based on SIEMENS system Tiastar dimensions. Contractor shall be required to meet dimension requirements if substitution is proposed.
- D. Motor control centers shall be complete, floor mounted, metal enclosed, grounded, indoor type. The motor control centers shall be NEMA Standard, Class 11, Type C except where other NEMA Standard classes and types are shown on the Drawings.
- E. Ratings shall be 65,000 AIC for all motor control centers.
- F. Shall conform to the arrangements and details of the Drawings and to the spaces designated for installation. All MCC door enclosures shall open 90° with all accessories mounted. All doors shall be hinged left hand side.
- G. All MCC doors shall be removable with a wiring plug harness for quick removal of doors with disconnecting wire terminations.
- H. Design the centers to withstand the mechanical stresses caused by rough handling during shipment in addition to the electrical and mechanical stresses which will occur during operation of the centers.
- I. Coordinate components of the centers and their arrangements electrically and mechanically. The components and the control wiring shall conform to the approved shop drawings as furnished for the various applicable electrical and mechanical sections of the specifications.
- J. Assemble, connect and wire the centers at the factory in accordance with the NEMA Standard class and type for each of the centers.
- K. Thoroughly clean, phosphatize and paint the metal surfaces at the factory with primer and baked enamel or lacquer finishes.
- L. Shall have the following features:
 - 1. Standard Vertical Sections:
 - a. Approximately 90 inches high, front and rear line-up, fabricated by a single manufacturer.
 - b. Rugged steel assemblies with bracing, reinforcing gussets and jig-welding to assure rectangular rigidity. The sections shall be completely metal-enclosed, including their bottoms.
 - c. Steel shall not be less than code gauge, leveled.
 - d. Bolts, nuts and washers shall be rustproof metal.
 - e. Spaces within the sections shall be suitable and adequate.
 - f. Mount the sections on adequate structural steel supports at the factory, front and rear, for the full length of each center. Install the centers so the supports will rest on top of the concrete floor surfaces except where concrete pads are indicated. Anchor the centers with bolts, not less than 1/2-inch diameter.

- g. Each present and future motor controller shall have an individual door with hinges and latches.
- h. End panels shall be screw-removable to facilitate future additions.
- i. Removable panels shall have screws which remain in the panels when the panels are removed. Screws shall be received by self-aligning, self-retaining nuts attached within the assemblies.
- j. Isolated vertical full height wiring troughs.
- 2. Bus Bars and Interconnections:
 - a. Shall be copper, rated as indicated on drawings. Minimum size shall be 800 amps.
 - b. Shall be totally enclosed.
 - c. Bus bar joints and interconnection joints shall be plated, constant high-pressure type with high strength copper-silicon bolts and nuts.
 - d. Provide continuous bars through dead corner cubicles to adjoining cubicles.
 - e. Insulation:
 - 1) High strength polyester glass or equal.
 - 2) High track-resistance.
 - 3) High impulse and dielectric strength, especially at elevated temperatures, for withstanding the maximum short circuit currents.
 - 4) High flame-retardant, self-extinguishing.
 - 5) NEMA Standard for 65°C temperature rise shall apply.
 - f. Shall have horizontal main buses and vertical buses for connecting the motor controllers, circuit breakers and switches. All three phases and neutral bus bars shall be extended across the entire width of the motor control center.
 - g. Shall have an adequate ground bus which extends across the entire width of each center.
 - h. Bus bars shall be designed to extend to additional sections when so shown on the Drawings in addition to extending through dead corner cubicles.
 - i. Temperature rises shall not exceed the NEMA Standards.
- 3. Completely equipped spaces for future motor controllers, circuit breakers and switches.
- 4. Motor Controllers:
 - a. Stab-on type except for large ratings which require bolted connections.
 - b. Shall conform to the applicable requirements in Section 262913. Include built-in H-O-A selector switches and red and green pilot lights.
 - c. Products of a single manufacturer, SIEMENS, or approved equal.
 - d. Interchangeable for the same ratings in all of the motor control centers being installed for this contract.
 - e. Disconnecting contact devices:
 - 1) Silver plated copper, full-floating, self-aligning, self-coupling, designed for cleaning action during engaging and disengaging movements.
 - 2) Adequate flexibility between the stationary and movable components.
 - 3) Adequate pressure maintained on the contacts.
 - 4) Shall engage silver plated buses.
 - f. Doors mechanically interlocked to prevent their opening unless the disconnect is opened. Incorporate "defeater" mechanisms for inspection by qualified personnel.
 - g. External operating handles with lock-open pad-locking provisions and ON and OFF position indicators.
- 5. Identify each motor controller, circuit breaker and switch with a separate nameplate of laminated black phenolic resin with white core and engraved lettering not less than 3/16-inch high. Identify each motor by its number or other designation and indicate function fulfilled by the motor. Identify pilot light with ON and OFF designation.
- 6. Line Monitoring Devices:
 - a. The motor control center shall be equipped with a three phase monitoring relay to interlock each starter upon phase failure, phase loss or phase reversal. The phase monitor shall be manufactured by SIEMENS, Class 47.

- b. A separate line voltage monitor shall be included in the motor control center for each motor to interlock motor when either undervoltage, overvoltage phase loss or phase reversal occurs.
- M. Test the motor control centers at the factory to assure that the centers do not have any defects.
- N. Electrical Matting: Dielectric strength 30,000 volts, 2 feet wide, 1/4 inch thick corrugated ASTM D 178 Type 2, Class II.
- O. Provide Eagle Cycle-Flex Timer for backspin timer mounted on motor control center enclosures as indicated on drawings.
- P. All circuit breakers shall be rated 65,000 AIC. AIC based on stand alone ratings. Manufacturers rating using combined systems ratings to use lower AIC rated breakers is not acceptable.
- Q. Pilot Lights shall be LED type with push-to-test capabilities. No incandescent pilot lights shall be permitted. Pilot lights shall be of the same manufacturer/model throughout MCC and Instrumentation and Control Cubicle.
- R. Push buttons and selector switches shall be 30.5 mm heavy duty oiltight.

2.03 POWER MONITOR

- A. Manufacturer: ACCUENERGY
 - 1. Model No: ACUVIM II Series.
 - 2. 480 volt.
- B. Quantity: One (1) required, 480V, 3 phase 4w.
- C. Provide current and potential transformers for all three phases and neutral for digital ammeters/voltmeters.
- D. The power monitor shall incorporate a vacuum display and keypad to allow the user to read the following parameters:
 - 1. Voltage V1, V2, V3.
 - 2. Current I1, I2, I3, In, Iavg.
 - 3. Power P1, P2, P3, Psum.
 - 4. Reactive Power Q1, Q2, Q3, Qsum.
 - 5. Apparent Power S1, S2, S3, Ssum.
 - 6. Frequency.
 - 7. Power Factor.
 - 8. Energy.
 - 9. Reactive Energy.
 - 10. Apparent Energy.
 - 11. Demand.
 - 12. Load Features.
 - 13. Four Quadrant Powers.
 - 14. Power Quality.
 - 15. Voltage Harmonics.
 - 16. Current Harmonics.
 - 17. Voltage Crest Factor.
 - 18. Current K Factor.
 - 19. Voltage Unbalance Factor.
 - 20. Current Unbalance Factor.

21. Max/Min Statistics with Time Stamps.
- E. Power monitor shall have the following features:
 1. Alarms
 2. I/O Option Module
 3. Anti-tampering Seal
 4. Data Logging (8mb)
 5. Automatic Frequency adaption.
 6. Power Quality Event Logging.
 7. Communication
 - a. Modbus RTU Protocol and DNP 3.0 via RS485
 - b. Ethernet (Modbus TCP, HTTP, SMTP, SNTP)
 - c. Profibus DP
 - d. BACnet IP, BACnet MS/TP
 - e. Dual RS485 Communication Ports
 8. 0.2% accuracy.
- F. Power monitors shall be factory installed on the Switchboard enclosure doors as indicated on drawings.
 1. The power monitor shall be installed in ATS cabinet on the load side and shall monitor Utility power only.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with NEC and manufacturer's instructions, and as shown on the Drawings.
- B. Install electrical matting to extend 24 inches beyond end of motor control center. Cut matting clear of obstructions.
- C. Install clear lexan window to allow visual indication of surge protection status.

END OF SECTION 262915

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Variable frequency controller.

1.02 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Shop Drawings: Include front and side views of enclosures with overall dimensions and weights shown; conduit entrance locations and requirements; and nameplate legends.
- C. Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.
- D. Test Reports: Indicate field test and inspection procedures and test results.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.
- F. Manufacturer's Field Reports: Indicate start-up inspection findings.
- G. Manufacturer's recommended spare parts list.

1.03 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and tested by Underwriters Laboratories, Inc. as suitable for purposes specified indicated.

1.04 EXTRA MATERIALS

- A. Provide two of each fuse size and type.
- B. Provide one complete set of spare logic boards for each system provided.

PART 2 - PRODUCT

2.01 MANUFACTURERS

- A. Yaskawa IQPump.
- B. Approved equal.

2.02 DESCRIPTION

- A. Provide enclosed variable frequency controllers suitable for operating the indicated loads. Conform to requirements of NEMA ICS 3.1.
- B. Minimum efficiency at full load: 98 percent.

2.03 ENVIRONMENT RATINGS

- A. Operating Ambient: 0 degrees C to 40 degrees C.
- B. Relative Humidity: 5 to 95% non-condensing, all power ratings.
- C. Altitude: 3,300 feet (1,000 meters) maximum without derating.
- D. Vibration: 0.006 inches (0.152 mm) displacement, 1G peak.
- E. Shock: 15G peak for 11ms duration (+/-1.0 ms).

2.04 INPUT POWER RATINGS

- A. Voltage: 460V AC +/-10%
- B. Frequency: 48 to 62 Hz
- C. Phase: 3-phase
- D. Motor Horsepower: Refer to drawings for H.P. sizes
- E. Line Transient Protection: Line transients up to 5,000 volts peak. 320 Joules phase-to-phase 380 Joules phase-to-ground.
- F. Logic Power Ride-Thru: 2 seconds or longer -- subject to the integrity of user supplied external circuits.
- G. Drive Characteristics: Drive shall use isolated gate bi-polar technology.
- H. Control Logic Noise Immunity: Showering arc transients from 350 to 2,000 volts peak.
- I. Voltage: **Drive Rating BOO3-B200**
0 to applied input voltage, 230V AC, maximum output voltage cannot exceed applied input voltage.
- J. Frequency Range: 0 to 250 Hz with local programmable minimum and maximum limits
- K. Frequency Resolution: **Digital**
Preset speeds (serial interface or pulse train input) to 0.005 Hz of set frequency within the minimum and maximum limits.
Analog
Equal divisions between minimum and maximum limits to the nearest 0.005 Hz as a function of signal type.

Local speed pot, 1003 divisions.
Remote speed pot, 633 divisions.
4 to 20 mA input (TB2, Terminals 4 and 6), 726 divisions.
- L. Frequency Regulation: Digital Frequency Source: 0.0013% of set frequency, 0 to 40°C temperature range.
- M. Volts-per-Hertz: Fully programmable - Minimum 1 to 14.3 V/Hz through local programming.
- N. Intermittent Overload Capability: Programmable MOPC from 50 to 150% of rated output current for up to 1 minute maximum.
- O. Carrier Frequency: Carrier frequency shall be adjustable up to 15 KHz. No exceptions.

2.05 DRIVE ACCESSORIES

- A. Display: Provide integral digital display to indicate output voltage, output frequency, and output current. Display shall be flush mounted on VFD enclosure door.

- B. Elapsed Time Meter: Non-resettable 6 digit.
- C. Input Signal: - 20 mA DC.
- D. Disconnecting Means: Include integral circuit breaker on the line side of each controller.
- E. One (1) 0 to 30 mA D.C. ammeter to monitor 4-20 mA input signal from PID controller. (3-1/2" square minimum).
- F. Hand-Off-Automatic Selector Switch.
- G. Drive-Bypass Selector Switch
- H. Ten (10) turn speed control pot.
- I. Isolation contactor (NEMA Rated).
- J. Output/Bypass contactors (NEMA Rated).
- K. Start Delay Timer: Eagle Cycle-Flex.
- L. Auxiliary NO and NC contacts.
- M. Three (3) programmable preset speeds to be initiated through contact closure.
- N. Lightning/surge arrestor with individual line to line and individual line to ground protection. Clamping voltage levels shall be specifically sized for the applied system voltage.
- O. Provide solid state overload relay on load size of bypass contactor and thermal overload relay on load side of output contactor as manufactured by SIEMENS.
- P. Fast-acting fuses on load side of main circuit breaker sized in accordance with manufacturers recommendations.
- Q. Isolated 4-20 mA input for follower signal input.
- R. Smart Keypad: Key pad shall have 1K memory for downloading information to any drive. Removable flush mounted on enclosure door.
- S. 4-20 mA scaled output proportional to drive speed. Input to PLC.
- T. Drive shall have three inputs for preset speeds initiated by remote contacts.
- U. Drive shall have speed contacts to close when speed is reached and be input to the PLC.
- V. Drive shall have fault and not in Auto Contacts and shall be input to the PLC.

2.06 VARIABLE SPEED DRIVE SYSTEM

- A. The variable speed drive system shall include a diode bridge converter, filter network and a transistorized inverter section. Base driver signals used to control firing of the power transistors shall be designed with optically-coupled-isolators for optimum drive protection. The output must be sinusoidal wave, pulse width modulated, voltage wave form for reduced harmonic heating in the motor. The systems shall include all the necessary control circuits, synchronizing the equipment and protective devices as required by design. The drive unit shall be able to

withstand a phase-to-phase and a phase-to-ground short without damage to the drive unit. The systems protection as a minimum shall provide the following:

Current Limit:	115% of rated current
Overcurrent:	180% of rated output current IET (trip fault)
Shortcircuit:	Phase-to-phase (trip fault)
Overvoltage:	High D.C. bus voltage (trip fault)
Undervoltage:	20% below line voltage (trip fault)
Momentary Power Failure:	30 to 500 milliseconds
Burn-out:	D.C. bus fuse protection or 3 phase input fusing
Terminal Strip for Remote Alarms:	Fault contact (Form C)
Digital Indication Individual Fault Condition:	Overcurrent of a transistor. Output overcurrent or shortcircuit. Overcurrent while running. Thermal overload. Overvoltage of the D.C. bus due to regeneration. Overvoltage of the D.C. bus due to high line voltage. Overtemperature of the enclosure. Ground fault.
LED Indication:	D.C. bus capacitor charge
Stall Protection:	Prevents current limit activation during overload condition to prevent stall
Ground Fault:	Detects output shortcircuit due to a ground (trip fault)
Voltage Limit:	Prevents the overvoltage of the D.C. bus during deceleration
Accel & Decel Time:	Fully programmable.

The control shall contain system adjustments. The adjustments shall be by potentiometers. The potentiometer shall be accessible through the front portal door on the unit which prevents exposure to lethal voltage to the operator.

The system parameters shall be shown on the digital display meter before, during and after the adjustment. The digital display shall indicate the actual setting of the adjustment, not percentage of setting. The following adjustment shall be provided:

Acceleration:	0.1 to 60 seconds
Deceleration:	0.1 to 60 seconds
Upper Frequency Limit:	0 to 80 Hz
Lower Frequency Limit:	0 to 80 Hz
Auto Reference Bias:	0 to 80 Hz
Auto Reference Gain:	0 to 80 Hz

The unit shall be self-protecting to prevent any misadjustments by the operator. The upper limit cannot be set below the lower limit, and will signal the operator of this misadjustment.

2.07 DESIGN

- A. Employ microprocessor based inverter logic isolated from power circuits.
- B. Employ IGBT inverter system.
- C. Adjustable carrier frequency up to 15 KHz.
- D. Employ switching power supply operating off DC link.
- E. Design for ability to operate controller with motor disconnected from output.
- F. Design to attempt five automatic restarts following fault condition before locking out and requiring manual restart.
- G. In the event of sustained power loss, the control shall shut down safely without component failure. In the event of momentary power loss, the control shall shut down safely without component failure. Upon return to power the system shall automatically return to normal operation, being able to restart into a rotating motor, regaining positive speed control without power failure.

2.08 FABRICATION

- A. Wiring Terminations: Match conductor materials and sizes indicated.
- B. Enclosure: NEMA 250, Type 1.
- C. Finish: Manufacturer's standard enamel.

2.09 SOURCE QUALITY CONTROL

- A. Inspect and production-test each product specified in this section.
- B. Test shall include simulated operation.
- C. Notify engineer at least five (5) days prior to test. Owner or Engineer may witness test.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Controllers shall be factory installed in Motor Control Center by same manufacturer of Motor Control Center.
- B. Install controller in accordance with manufacturer's written instructions and NEMA ICS 3.1.
- C. Tighten accessible connections and mechanical fasteners after placing controller.
- D. Install fuses in fusible switches.
- E. Select and install overload heater elements in controllers to match installed motor characteristics.

- F. Provide engraved plastic nameplates under the provisions of Section 260553.
- G. Provide neatly typed label inside each motor controller door identifying motor served, nameplate horsepower, full, load amperes, code letter, service factor, and voltage/phase rating.

3.02 ADJUSTING

- A. Make final adjustments to installed drive to assure proper operation of system. Obtain performance requirements from installer of driven loads.

3.03 DEMONSTRATION

- A. Demonstrate operation of controllers in automatic and manual modes.
- B. Provide the services of the manufacturer's trained personnel to completely check the VFD system installations and adjust the drive for operation. An additional period shall be included for trained personnel at the time of acceptance and field tests. A minimum amount of six days and three trips shall be required for this work.
- C. Manufacturer's trained personnel, after initial field startup shall remove all logic PC boards for the pump program logic and install and adjust a spare set of PC boards. These boards shall remain in the drives and the initial boards shall be provided as spares.
- D. Service Contract - Provide a one-year service contract for the pump control system. Service contract shall include the services of a manufacturer trained engineer to provide preventive maintenance service and calibration of the equipment. At least four routine service trips shall be made as scheduled by Owner. In addition, whenever trouble occurs with the system, a serviceman shall come and repair/replace defective parts at no additional cost. All parts required for repair shall be included at no additional cost. This service contract shall take effect one year after acceptance of the equipment and after the one-year guarantee period has lapsed.

END OF SECTION 262923

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Charger/rectifier unit.
- B. Inverter unit.
- C. Batteries.

1.02 REFERENCES

- A. IEEE 519 - Guide for Harmonic Control and Reactive Compensation of Static Power Converters.
- B. NEMA PE 1 - Uninterruptible Power Systems.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. NFPA 70 - National Electrical Code.

1.03 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data.
- B. Operation Data: Description of operating procedures.
- C. Maintenance Data: Description of servicing procedures; list of major components; recommended remedial and preventive maintenance procedures; spare parts list.

1.04 WARRANTY

- A. Provide one (1) year warranty, including parts and factory service.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. APC American Power Conversion Corp. - Model BR1000G: 1000VA

2.02 UNINTERRUPTIBLE POWER SUPPLY

- A. Components:
 - 1. Batteries.
 - 2. Rectifier/charger to maintain battery charge and to provide input to inverter when utility power is available.
 - 3. Inverter to provide power to load during normal operation.
 - 4. Static switch to transfer load automatically and without disturbance between inverter and utility power.
 - 5. Manual switch to bypass static switch for maintenance.
 - 6. Monitors, sensors and control circuits.
 - 7. Design Standards: IEEE 519 and NEMA PE 1.

2.03 SYSTEM RATINGS AND OPERATING CHARACTERISTICS

- A. Performance Requirements.

- B. System Configuration shall be the non-redundant, line-interactive type. All power connections, in and out, AC and DC, shall enter from the bottom or rear of the UPS cabinet. Compression-type terminal blocks shall be standard connections.
- C. System Operation.
- D. During normal operation, utility power is delivered to the load through the tap-switching power conditioner, while DC is delivered to recharge the batteries through the bi-directional converter. At the same time, the bi-directional on-line converter provides the regulation of voltage to the UPS output. AC output provided to load should be galvanically isolated from input including neutral.
- E. In case of UPS failure, when any part of the converter system fails so as to adversely affect the quality of the UPS performance, 100% of the load shall be automatically be provided by the power conditioner through the power transformer.
- F. The manual bypass switch shall be a standard feature, selecting clean, regulated AC from the UPS output, or raw AC power from the UPS input terminal blocks.
- G. When the utility power suffers and outage, or when it is out of tolerance as described in Item J (below), the battery bank shall supply DC power without any switching required and thus maintain the UPS in action. During such operation, the load power shall remain within the limits set in Item K (below).
- H. Battery charging shall be automatic based upon battery state of charge. The charging current is limited to prevent damage to the batteries, which will be the specially sealed, maintenance-free type.
- I. Summary of Characteristics - The characteristics specified in this section are the minimal ones to be considered.
- J. Input to UPS:
 - 1. Nominal Voltage: 120 VAC + 20%, -30%, 1-phase, 3-wire, plus ground.
 - 2. Frequency: 60 Hz +3 Hz.
 - 3. Input Power Factor: Between .9 leading and .8 lagging at full loads and nominal input voltage.
 - 4. Input Current Distortion: Less than 5% at full load and nominal input voltage.
- K. Output to UPS:
 - 1. Voltage: 120 VAC, 1-phase, 3-wire, including ground.
 - 2. Voltage Regulation:
 - 3. +3% for all load conditions.
 - 4. Wave Form: Sine wave.
 - 5. Frequency: 60 Hz +0.1% Slew Rate: 1 Hz/sec, synchronized to input +0.5, +1.0, +2.0 or +3.0 Hz selectable.
 - 6. Harmonic Distortion: Maximum 5% RMS total harmonic distortion (THD) and maximum of any single harmonic of 3%.
 - 7. Audible Noise: 50 dBA at 1 meter.
 - 8. Efficiency: 95% AC to AC.
- L. Battery System:
 - 1. A sealed maintenance-free battery, full wired and enclosed in a matching cabinet shall be provided. Provide optional battery ½ pack for a total battery run time of 11 minutes at full load.

M. Equipment: Environment:

1. Temperature and Humidity: The UPS shall be capable of operating between +10°C and 40°C, with a relative humidity between 0 and 95%, non-condensing. The non-operating temperature range shall be between -20° and +60°C.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install inside instrumentation cubicle.

3.02 WARRANTY AND SERVICE REQUIREMENTS

- A. Manufacturer shall warrant the UPS to be free from defects in design, material and workmanship under normal use and service for a period of one (1) year from shipment.
- B. Manufacturer shall guarantee a maximum response time of 24 hours.

3.03 DEMONSTRATION

- A. Demonstrate proper operation of the uninterruptible power supply by simulating an outage.

3.04 INTERFACING WITH NEW CONTROL SYSTEMS

- A. Contractor shall provide power from the UPS receptacles to new UPS power terminal blocks located in the new and existing instrumentation and control cubicles. Label "UPS 120V control power".
- B. Contractor shall provide 120volt power feeds for the following electrical equipment.
 1. Programmable logic controller.
 2. Indicator chart recorders power supply.
 3. All communication equipment.

END OF SECTION 263353

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Telemetry control system via broadband Ethernet service provider.

1.02 REFERENCES

- A. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

- A. Submit product data under provision of Section 013300.
- B. Submit installation instructions and operation and maintenance manuals after approval of shop drawing and prior to installation of equipment.
- C. Submit schematics and wiring diagrams for the new system and existing controls.

PART 2 - PRODUCTS

2.01 TELEMETRY SYSTEM INTEGRATION

- A. Contractor shall utilize existing broadband ethernet service at Plant No. 4 for communication of new CP with existing administration building including but not limited to incoming utility cabling and equipment, modem, firewall VPN appliance, and all associated accessories. Coordinate with Utility as required.
- B. Communication system shall be designed, tested and integrated by the single source instrumentation control system supplier.
- C. The contractor shall provide satisfactory evidence to the engineer that the instrumentation system supplier has demonstrable qualifications in performance of this kind of work with a minimum of five (5) years related experience to substantiate:
 - 1. That the instrumentation system supplier has been regularly engaged in providing similar services and equipment for a minimum of 5 years.
 - 2. That the instrumentation system supplier has provided installations of comparable scope and complexity, with references.
 - 3. That the instrumentation system supplier has a service center within 50 miles of the project location
 - 4. That the instrumentation supplier has an office within 50 miles of the project site complete with the following:
 - a. Spare parts including PLC's, power supplies, I/O cards and processors.
 - b. Office has a minimum of two (2) field technicians staffed full time at this office which provides 24-hour, 7 days a week service with a minimum response time of 2-hours.
 - c. Office has a minimum of two (2) PLC programmers staffed full time at this location.
 - d. Office has a minimum of two (2) electrical engineers staffed full time at this location experienced with SCADA systems, PLC's and knowledge of water supply system operations.
 - e. The Water Authority and Authority's engineer shall have the right to inspect office, spare part supply and meet and interview service technicians, PLC programmers and engineers as part of determining qualification of system integration.
 - f. No shop drawing submittals shall be made, nor any equipment delivered or installed with respect to instrumentation or control prior to the contractor having obtained written approval of the instrumentation system supplier.

- g. The contractor shall bear full responsibility for the telemetry system. The contractor shall have the instrumentation system supplier:
 - 1) Design the communication system and monitoring system described in these specifications.
 - 2) Prepare shop drawings for submittal by the contractor to the engineer.
 - 3) Provide the necessary information or modifications to the shop drawings to obtain approval.
 - 4) Supervise the installation.
 - 5) Perform debugging, testing, maintenance and operation of all radio communications and dial-up back-up modem systems.
- h. The communications and modem system supplier shall prepare for submission by the contractor, detailed point-to-point wiring diagrams. Engineering services shall be provided by the instrumentation system supplier during start-up and testing as required by other sections of the specification.
- i. The contractor shall require the instrumentation system supplier to verify all connections and operational features of all equipment controlled, directly or indirectly, by equipment furnished under this contract prior to submission of shop drawings, schematics shall show all remote connections and respective input/output terminals of all such equipment.
- j. The contractor shall have the instrumentation system supplier develop and provide details for installation of all field mounted communication equipment, transmitters, receivers, etc. per recommended practices of the equipment manufacturer and in a manner acceptable to the engineer. Such details shall include specific location, method of support and connection details, as a minimum.
- k. Qualified personnel of the communications and dial-up back-up modem system supplier shall be provided, as specified hereinafter, for the purpose of instructing the owner's personnel in the operation, maintenance and troubleshooting of all instrumentation systems and related equipment.
- l. It is the intent of this specification that all devices, insofar as practical shall be purchased from a single manufacturer to simplify maintenance and operation.

2.02 ETHERNET SWITCH

- A. General
 - 1. Provide an unmanaged Ethernet switch for connection to the network as shown in the Drawings and specified herein.
 - 2. Physical Features
 - a. Minimum copper ports: 5 - 10/100 TX RJ45 ports
 - b. Operating temperature: -40°C to 75°C
 - c. Power: 24 VDC
 - d. Enclosure: Metal case, DIN-rail mountable
 - e. Rating: UL Class 1, Division 2 Groups A, B, C, and D
- B. Network Features
 - 1. Auto sensing duplex and speed
 - 2. LED link/activity status indication
- C. Interfaces
 - 1. 5 TP (RJ45) Ports
 - a. Transmission Speed 10/100 Mbs
- D. Acceptable Manufacturers
 - 1. Moxa
 - 2. Phoenix Contact
 - 3. Hirschmann

4. Approved equal

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install a communication network system including network switches, VPN Appliances, UPS, surge protectors, wiring and accessories.
- B. All communication equipment shall be powered via the UPS.
- C. The communications system between the Plant PLC, OIT, and VPN appliance shall all be Ethernet.
- D. All devices (PLCs, Modems, Firewall VPN, and Ethernet Switches) on both ends and in between shall be programmed and configured to communicate via the telemetry network.
- E. Coordinate with utility as required.

3.02 MANUFACTURER'S FIELD SERVICE

- A. Provide operating instruction manuals which includes the following information:
 1. System specifications.
 2. Electrical power requirements.
 3. Application considerations.
 4. Assembly and installation procedures.
 5. Power up procedures.
 6. Troubleshooting procedures.
 - a. Provide two (2) eight (8) hour day of manufacturers operation and maintenance procedures for training District personnel. Training procedures shall include troubleshooting, adjustment, calibration and replacement procedures.

END OF SECTION 264010

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Programmable logic controllers.
- B. Input/output hardware.
- C. Programmer/programming requirements.

1.02 REFERENCES

- A. NEMA ICS 1 - General Standards for Industrial Control and Systems.
- B. NEMA ICS 2 - Standards for Industrial Control Devices, Controllers and Assemblies.
- C. NEMA ICS 3 - Industrial Systems.
- D. NEMA ICS 6 - Enclosures for Industrial Controls and Systems.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Submit shop drawings indicating layout of completed assemblies, interconnecting cabling, dimensions, weights, external power requirements and a complete I/O list of control points.
- C. Submit wiring and schematics diagrams for the new PLC's and existing controls.

1.04 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience, which maintains service facilities within 50 miles of project.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. ALLEN BRADLEY Model CompactLogix with 5380 Controller.
- B. Approved equal.

2.02 PROGRAMMABLE LOGIC CONTROLLER HARDWARE CHARACTERISTICS

- A. The Programmable Controller shall have downward compatibility whereby all new module designs can be interchanged with all similar modules in an effort to reduce obsolescence.
- B. The Controller shall have the capability of addressing up to 960 local discrete points or 240 local analog points. The digital calculations is based upon 32 points per module * 30 local modules (maximum for CompactLogix). The analog calculations is based upon 8 channels per module * 30 local modules (maximum for CompactLogix).
- C. The 30 maximum local I/O modules can be installed in up to 3 local I/O banks. Each bank will be a seamless extension to the local bank but will be electrically isolated from the other banks.

- D. The Programmable controller shall have the ability to be updated electronically to interface with new modules.
- E. All hardware of the Programmable Controller shall operate at an ambient temperature of 0 to 60 degrees C (32 to 140 degrees F), with an ambient temperature rating for storage of -40 to +85 degrees C (-40 to +185 degrees F).
- F. The Programmable Controller hardware shall function continuously in the relative humidity range of 5% to 95% with no condensation.
- G. The Programmable Controller shall have the ability to communicate with multiple distributed I/O racks or devices configured with multiple I/O modules. CIP Networks that allow distributed I/O ControlNet, EtherNet/IP, and DeviceNet.
- H. Connections can be made to other remote CompactLogix inputs and outputs over Devicenet.
- I. Connections can be made to other remote Point inputs and outputs bridging through Devicenet, EtherNet/IP, or ControlNet.
- J. Connections can be made to remote Flex inputs and outputs over Devicenet, ControlNet or EtherNet/IP. Each Flex I/O input and output module shall be mechanically joined to form an assembly. These assemblies with their respective modules shall contain up to 256 (8 modules x 32pts/module) unique points.
- K. Connections can be made to remote ControlLogix inputs and outputs over Devicenet, ControlNet or EtherNet/IP. For remote ControlLogix I/O, each input and output module shall be mechanically joined in a Chassis to form a bank. These banks with their respective modules shall contain up to 512 (16 modules x 32pts/module, using a 17 slot chassis) unique points.
- L. Real Time Produced/Consumed Connections can made and data seamless exchanged between multiple CompactLogix Controllers or CompactLogix controllers and any other Logix based controller.
- M. The Programmable Controller shall use multiple independent, asynchronous scans. These concurrent scans shall be designated for processing of input and output information, program logic, and background processing of other processor functions. Input and output devices located in the same backplane (local I/O) as the CPU will be produced at the rate of configured RPI (Requested Packet Interval).
- N. It shall be possible to communicate with distributed I/O racks or other PLCs via fiber optic cable by inserting fiber optic converters into the links. The fiber link must support distances between converters up to 6500 cable feet on "RIO" or 12 KM on ControlNet. Redundant fiber optic cabling shall be an option.
- O. The Programmable Controller shall have the ability to support multiple data communications links by using ControlNet, DeviceNet, Ethernet, and DH-485 networks.
- P. The Programmable Controller shall have at least one dedicated serial port, which supports RS-232-C signals. It shall be accessible in control logic and provide support for DF1 Master, DF1 Point to point, DF1 Slave and DH-485 communication protocols. Alternatively, it must be usable for programming and data monitoring purposes. The serial port will also provide support for ASCII communications.

2.03 MEMORY CHARACTERISTICS

- A. The program storage medium shall be of a battery backed RAM.

- B. Memory shall contain battery back-up capable of retaining all stored program data through a power failure. A low battery condition must be detectable in ladder logic, but shall not automatically generate a major fault. A low battery condition will generate a minor fault and will be detectable in ladder logic and will be indicated on a diagnostic indicator mounted on the front of the controller.
- C. The controllers shall provide the capability to use CompactFlash as nonvolatile memory storage. The CompactFlash card shall be available from the supplier as an industrial rated device suitable for use in the same environment as the controller. The CompactFlash shall support a Windows file system allowing multiple files to be stored on the card. The user can manually trigger the controller to save or load from CompactFlash and also configure the controller to load from CompactFlash on power up or when an issue is detected with the data in RAM. Additionally when memory is restored a user selectable option to be restored in Run mode or Program mode shall be provided.
- D. The operator should be able to backup volatile memory, including data, and program logic onto a CompactFlash storage device. In addition, the controllers current firmware should also be stored on the CompactFlash card.
- E. All user memory in the processor not used for program storage shall be allocable from main memory for the purpose of data storage. The Programmable Controller system shall be capable of storing 3 data types:
 - 1. Predefined.
 - 2. User-defined.
 - 3. Module-defined
- F. If contacts or entire rungs are intentionally deleted from an existing logic program, the remaining program shall be automatically repositioned to fill this void. Whenever contacts or entire rungs are intentionally inserted into an existing program, the original program shall automatically be repositioned to accommodate the enlarged program. All rung comments shall maintain their original links.
- G. It shall be possible to program application logic more than once into memory.
- H. The number of times a normally open (N.O.) and/or normally closed (N.C.) contact of an internal output can be programmed shall be limited only by the memory capacity to store these instructions.
- I. The number of times a timer or counter can be programmed shall be limited only by the memory capacity to store these instructions.
- J. Control logic programs shall have immediate access to the subelements of control structures by address and subelement mnemonic, such as timer accumulator value, timer done bit, or PID Process Variable value.
- K. Data in the controller should be user defined and tag based and not restricted to any fixed data register format.

2.04 INPUT/OUTPUT (I/O)

- A. Refer to Appendix A - PLC Inputs/Outputs at the end of this section.

2.05 SPECIFIC FUNCTION CHARACTERISTICS

- A. Program timers shall be available in both on-delay and off-delay with a time base selection of 0.01 seconds, and timer range from 0.01 to 327.67 seconds. Additional time bases and longer timing intervals can also be supported.
- B. Counters shall be available in both count up and count down with a range of -32,768 to 32,767.
- C. Sequencers shall have a minimum capacity of 16 bits by 100 steps and be cascadable, time-driven or event-driven.
- D. Shift registers shall be available with a minimum of 16 bit groups and be cascadable, time-driven or event-driven.

2.06 POWER SOURCE

- A. The PLC's power supply shall accept AC power of 85-132 volts at 60 Hz. It shall be capable of withstanding a power loss for a minimum of 20 milliseconds while still remaining in operation.
- B. Input power requirements for AC input power shall not exceed 180 VA.
- C. On AC powered PLC system with DC inputs, 200 mA at 24 VDC should be available to the user to power external 24 volt drives.

2.07 PROGRAMMABLE LOGIC CONTROLLER (CPU) HARDWARE

- A. The CPU shall be a self-contained unit, and will provide control program execution and support remote or local programming. This device will also supply I/O scanning and inter-processor and peripheral communication functions.
- B. The user program and data shall be contained in battery backed memory. The operating system firmware shall be contained in non-volatile memory.
- C. The operating system firmware can be updated via a separate update tool to allow for easy field updates. CompactLogix controllers that support CompactFlash shall allow the operating system to be updated using a suitably configured CompactFlash card.
- D. The controller memory should be 1.5MB.
- E. The CPU within the system shall perform internal diagnostic checking and give visual indication to the user by illuminating a "green" (OK) indicator when no fault is detected and a "red" (OK) indicator (Blinking or Solid) when a fault is detected.
- F. The front panel on the Controller shall include color indicators showing the following status information:
 - 1. Program or Run mode of the controller.
 - 2. The fault status of the controller.
 - 3. I/O Status.
 - 4. RS-232 activity.
 - 5. Battery Status.
 - 6. Force LED.
- G. The front panel of the Controller shall include a mounted keyswitch. The key shall select the following Controller modes: RUN - No control logic edits possible, program always executing; PROGRAM - Programming allowed, program execution disabled; and REMOTE - Programming

terminal can make edits and change processor mode, including test mode, whereby the logic executes and inputs are monitored, but edits are not permanently active unless assembled

- H. The Controller shall include a holder and a connector for a lithium battery. The battery shall provide power backup for user programs and data when the main power supply is not available.
- I. The front panel of the Controller shall include at least one 9-pin D-shell serial RS232 port, which supports DF1, DH-485 (messaging only no programming) and ASCII protocols.
- J. All system modules, local and remote chassis shall be designed to provide for free airflow convection cooling. No internal fans or other means of cooling, except heat sinks, shall be required.
- K. The Controller shall include an integrated Real Time Clock (RTU). This clock value should be in a form of a predefined tag and should be accessible via logic or remotely.

2.08 POWER SUPPLIES

- A. The Programmable Controller shall operate in compliance with an electrical service of 85 to 132 VAC or 120 to 220 VAC, single phase, in the frequency range from 47 to 63 Hz, or 16-32 VDC or 19.2 to 32 VDC.
- B. The manufacturer shall be able to provide as standard equipment a system power supply capable of converting AC standard low voltage line power to the DC power required to operate the Programmable Controller system.
- C. A single main power supply shall have the capability of supplying power to the CPU and local input/output modules. Other power supplies shall provide power to remotely located racks.
- D. The power supply shall automatically shut down the Programmable Controller system whenever its output power is detected as exceeding 125% of its rated power.
- E. The power supply shall monitor the incoming line voltage for proper levels. When the power supply is wired to utilize AC input, the system shall function properly within the range of 85 to 265 VAC. When the power supply is wired to utilize DC input, the system shall function properly within the range of 19.2 to 32 VDC. In addition, the power supply shall provide surge protection, isolation, and outage carry-over up to 2 cycles of the AC line.
- F. Design features of the Programmable Controller power supply shall include a diagnostic indicator mounted in a position to be easily viewed by the user. This indicator shall provide the operator with the status of the DC power applied to the backplane. In addition, a means of disabling power to the CPU shall be possible from a power disconnect switch mounted in a position easily accessible by the operator.
- G. At the time of power-up, the power supply shall inhibit operation of the processor and I/O modules until the DC voltages of the backplane are within specifications.
- H. In addition to the electronic protection described above the power supply shall offer a failsafe fuse that is not accessible by the customer.
- I. Provide one (1) spare power supply to District.

2.09 PROGRAM STORAGE

- A. The program storage medium shall be of solid-state RAM (volatile) type.
- B. Memory capacity shall be sized to allow for future programming expansion of 30% minimum.

- C. Memory shall contain battery backup capable of retaining all stored program data through a continuous power outage of 12 months under worst case conditions. The capability shall exist to remove all batteries from the system without removing system power.

2.10 INPUT/OUTPUT - GENERAL

- A. During normal operation, a malfunction in any remote input/output channel shall affect the operation of only that channel and not the operation of the CPU or any other channel.
- B. Circuit components for both remote input and output shall be mounted on plug-in modules and keyed to prevent module insertion into the wrong slot.
- C. Isolation shall be used between all internal logic and external power circuits. This isolation shall meet the minimum specification of 1500 vrms.
- D. It shall be possible to replace any input or output module without disturbing field wiring.
- E. Each I/O module shall contain a visual indicator to display ON/OFF status of individual input or output points.
- F. Discrete output modules shall be provided with self-contained fuses for overload and short circuit protection of the module.
- G. All field wiring to I/O modules shall be through a heavy duty terminal strip. Pressure-type screw terminals shall be used to provide fast, secure wire connections. All input/output modules shall be color coded and titled with a distinctive label.

2.11 INPUT/OUTPUT MODULES

- A. The programmable controller shall utilize discrete input/output hardware consisting of the following as required of this project:
 - 1. Inputs (Isolated type):
 - a. AC/DC input for devices which operate at 120 VAC, 50/60 Hz or 120 VDC, 220 VAC, 50/60 Hz or 220 VDC.
 - b. Isolated AC input which provides isolation of 120 VAC or 120 VDC input signals.
 - 2. Outputs (Isolated type):
 - a. AC output for devices which operate at 120 VAC, 50/60 Hz.
 - b. Isolated AC output which provides six (6) isolated outputs capable of switching 120 VAC or 220 VAC power.
 - c. Contact output which provides four (4) normally open and four (4) normally closed reed relay outputs.
 - 3. Provide thirty two (32) spare input and sixteen (16) spare output I/O points as spare including all rack for each PLC furnished as part of this project.

2.12 ANALOG INPUT/OUTPUT MODULES

- A. Analog input which accepts analog signals and converts them to 3-digit BCD, 4-digit BCD or 14-bit binary values. Digital resolution shall be available in 1 part in 256, 1 part in 1,000 (BCD), or 1 part in 4,096 (binary). Analog inputs shall be available in single-ended and sourcing and differential and differential isolated versions. Analog inputs shall be available in the following ranges:
 - 1. Voltage range: +1 to +5 VDC.
 - 2. Current range: 4 to 20 mA.

- B. Analog output converts a 3-digit BCD number, a 4-digit BCD number, or a 12-bit binary number into an equivalent single-ended analog output signal. Output isolation shall be available. Analog outputs shall be available in the following ranges:
 - 1. Voltage range: +1 to +5 VDC.
 - 2. Current range: 4 to 20 mA.
- C. Provide eight (8) additional input and eight (8) additional output I/O points as spare including all racks for each PLC and remote I/O furnished as part of this project.

2.13 PLC SOFTWARE CHARACTERISTICS

- A. The PLC's memory shall consist of data table and program logic areas. The PLC shall examine the status of its inputs prior to every program scan and store the status in the "Input" data table area of its memory. The PLC shall update the "Output" data table area of its memory during every program scan, and then set the real world outputs accordingly. The updating of inputs, program logic and outputs should be repeated continuously while the PLC is in the run mode. The user application program shall be stored in the program logic area of memory as a ladder diagram. The status of a group of inputs and/or outputs controlling an output or outputs shall be called a ladder diagram rung. The program shall consist entirely of ladder diagram rungs to carry out the control plan. The time that the PLC requires to scan 4,096 typical program instructions shall be less than or equal to 500 ms (milliseconds).
- B. Provide registered copy of latest edition of programming software and final accepted source code to District for each CPU furnished as part of this project.
- C. Inputs/Outputs: Refer to Specification 265011 - Programmable Logic Controller Appendix A - PLC Inputs/Outputs.

2.14 PLC SURGE PROTECTION

- A. PLC surge protection shall be provided for PLC circuits.
- B. Manufacturer shall be MCG ELECTRONICS, INC., Model PLC-15A-60V.
- C. Surge protection shall be for both AC power and 4-20 mA loop data lines.
- D. Provide surge protection for each new PLC including remote I/O.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions on PLC.
- B. Install PLC units the new Control Panel 'CP-1'.
- C. Install all analog and digital spare I/O. Label as spare.

3.02 PROGRAMMING

- A. The Contractor shall be responsible to develop, document, program and debug the control sequence and logic necessary to assure system operation as stipulated in the specifications and on the contract drawings. The ladder logic shall be directly programmed in the PLC's. This Contractor shall be responsible for complete programming and verification of performance to be consistent with the intended control operation.

3.03 MANUFACTURER'S FIELD SERVICE

- A. Provide operating instruction manuals with adequate information pertaining to the following:
 - 1. Source Code.
 - 2. System specifications.
 - 3. Electrical power requirements.
 - 4. Application considerations.
 - 5. Assembly and installation procedures.
 - 6. Power up procedures.
 - 7. Troubleshooting procedures.
 - 8. Programming procedures.
 - 9. Explanation of internal fault diagnostics.
 - 10. Shutdown procedures.
- B. Documentation: Provide two annotated copies of all working programs on CD as well as a printed program listing.
- C. Product Support Services: The Service Department of the Supplier shall have experienced representatives capable of providing telephone consultation, prompt on-site service and field replacement stock.

3.04 DEMONSTRATION

- A. Provide complete system demonstration and performance verification services.
- B. Demonstrate operation and programming of controllers. Provide as part of the start-up and demonstration service described in Section 265012, instruction for operating personnel, to be conducted at project site with manufacturer's representative.
- C. Customer Training Programs: Provide a customer training program designed to teach the owner's personnel in the understanding and application of the programmable controller. The training program shall include training manuals and "hands-on" programming experience on a programmable controller of the type provided under this contract.

END OF SECTION

**Specification 265011 - Programmable Logic Controller
Appendix A - PLC Inputs/Outputs
Water Authority of Western Nassau
Rehabilitation of Plant No. 4**

New Plant No. 4 GP-1 PLC I/O List						
Signal Type	No.	Description	Quantity	Range	Units	Notes
DI	1	Well No. 4-1 H-O-A Switch	3	N/A	N/A	
DI	2	Well No. 4-1 Normal/Bypass Selector Switch	2	N/A	N/A	
DI	3	Well No. 4-1 H-2 High Pressure Safety Switch	1	N/A	N/A	
DI	4	Well No. 4-1 Discharge Control Valve Limit Switch (Chemical Safety)	1	N/A	N/A	
DI	5	Well No. 4-1 Discharge Flow switch (Chemical Safety)	1	N/A	N/A	
DI	6	Well No. 4-1 Run (aux) (Chemical Safety)	1	N/A	N/A	
DI	7	Well No. 4-1 Overload	1	N/A	N/A	
DI	8	Well No. 4-1 Fault	1	N/A	N/A	
DI	9	Well No. 4-1 Reset	1	N/A	N/A	
DI	10	Well No. 4-1 Discharge High Pressure Safety Enable/Disable Selector	1	N/A	N/A	
DI	11	Well No. 4-1 Motorized Blowoff Valve O-S-C-A Switch	4	N/A	N/A	
DI	12	Well No. 4-1 Motorized Blowoff Valve "Closed"	1	N/A	N/A	
DI	13	Well No. 4-1 Motorized Blowoff Valve "Open"	1	N/A	N/A	
DI	14	Well No. 4-1 Discharge Control Valve "Open"	1	N/A	N/A	
DI	15	Well No. 4-1 Discharge Control Valve "Closed"	1	N/A	N/A	
DI	16	Well No. 4-1 Incomplete Valve Cycle	1	N/A	N/A	
DI	17	Well No. 4-2 H-O-A Switch	3	N/A	N/A	
DI	18	Well No. 4-2 Normal/Bypass Selector Switch	2	N/A	N/A	
DI	19	Well No. 4-2 Discharge Control Valve Limit Switch (Chemical Safety)	1	N/A	N/A	
DI	20	Well No. 4-2 Discharge Flow switch (Chemical Safety)	1	N/A	N/A	
DI	21	Well No. 4-2 Run (aux) (Chemical Safety)	1	N/A	N/A	
DI	22	Well No. 4-2 Overload	1	N/A	N/A	
DI	23	Well No. 4-2 Fault	1	N/A	N/A	
DI	24	Well No. 4-2 Reset	1	N/A	N/A	
DI	25	Well No. 4-2 Discharge High Pressure Safety Enable/Disable Selector	1	N/A	N/A	
DI	26	Well No. 4-2 Motorized Blowoff Valve O-S-C-A Switch	4	N/A	N/A	
DI	27	Well No. 4-2 Motorized Blowoff Valve "Open"	1	N/A	N/A	
DI	28	Well No. 4-2 Motorized Blowoff Valve "Closed"	1	N/A	N/A	
DI	29	Well No. 4-2 Discharge Control Valve "Open"	1	N/A	N/A	
DI	30	Well No. 4-2 Discharge Control Valve "Closed"	1	N/A	N/A	
DI	31	Well No. 4-2 Incomplete Valve Cycle	1	N/A	N/A	
DI	17	Panel P2 Normal Power Circuit Breaker Kirk-Key Position	1	N/A	N/A	
DI	18	Panel P2 Emergency Power Circuit Breaker Kirk-Key Position	1	N/A	N/A	
DI	18	Well No. 4-1 Chemical Pump E-Stop Pressed (C1P)	1	N/A	N/A	
DI	19	Well No. 4-2 Chemical Pump E-Stop Pressed (C1P)	1	N/A	N/A	
DI	20	Well No. 4-1 Lime Pump Running	1	N/A	N/A	
DI	21	Well No. 4-2 Lime Pump Running	1	N/A	N/A	
DI	22	Well No. 4-1 Sodium Hypochlorite Pump Running	1	N/A	N/A	
DI	23	Well No. 4-2 Sodium Hypochlorite Pump Running	1	N/A	N/A	
DI	24	Well No. 4-1 Zinc Orthophosphate Pump Running	1	N/A	N/A	
DI	25	Well No. 4-2 Zinc Orthophosphate Pump Running	2	N/A	N/A	
DI	26	High/Low pH	2	N/A	N/A	
DI	27	High/Low Cl2	1	N/A	N/A	
DI	28	CP-1 Alarm Reset Push Button	1	N/A	N/A	
DI	29	CP-1 Alarm Silence Push Button	1	N/A	N/A	
DI	30	LPS alarm	1	N/A	N/A	
DI	31	SPARE INPUT	1	N/A	N/A	
DI	32	SPARE INPUT	1	N/A	N/A	
DI	33	SPARE INPUT	1	N/A	N/A	
DI	34	SPARE INPUT	1	N/A	N/A	
DI	35	SPARE INPUT	1	N/A	N/A	
DI	36	SPARE INPUT	1	N/A	N/A	
DI	37	SPARE INPUT	1	N/A	N/A	
DI	38	SPARE INPUT	1	N/A	N/A	
DI	39	SPARE INPUT	1	N/A	N/A	
DI	40	SPARE INPUT	1	N/A	N/A	
DI	41	SPARE INPUT	1	N/A	N/A	
DI	42	SPARE INPUT	1	N/A	N/A	
DI	43	SPARE INPUT	1	N/A	N/A	
DI	44	SPARE INPUT	1	N/A	N/A	
DI	45	SPARE INPUT	1	N/A	N/A	
DI	46	SPARE INPUT	1	N/A	N/A	
DI	47	SPARE INPUT	1	N/A	N/A	
DI	48	SPARE INPUT	1	N/A	N/A	
DI	49	SPARE INPUT	1	N/A	N/A	
DI	50	SPARE INPUT	1	N/A	N/A	
DI	51	SPARE INPUT	1	N/A	N/A	

Specification 265011 - Programmable Logic Controller Appendix A - PLC Inputs/Outputs Water Authority of Western Nassau Rehabilitation of Plant No. 4 New Plant No. 4 CP-1 PLC I/O List										Abbreviations	
										DI:	Digital Input
										DO:	Digital Output
										AI:	Analog Input
										AO:	Analog Output
										MB:	Modbus
										EN:	Ethernet
Signal Type	No.	Description			Quantity	Range	Units	Notes			
DI	52	SPARE INPUT			1	N/A	N/A				
DI	53	SPARE INPUT			1	N/A	N/A				
DI	54	SPARE INPUT			1	N/A	N/A				
DI	55	SPARE INPUT			1	N/A	N/A				
DI	56	SPARE INPUT			1	N/A	N/A				
DI	57	SPARE INPUT			1	N/A	N/A				
DI	58	SPARE INPUT			1	N/A	N/A				
DI	59	SPARE INPUT			1	N/A	N/A				
DI	60	SPARE INPUT			1	N/A	N/A				
DI	61	SPARE INPUT			1	N/A	N/A				
DI	62	SPARE INPUT			1	N/A	N/A				
DI	63	SPARE INPUT			1	N/A	N/A				
DI	64	SPARE INPUT			1	N/A	N/A				
DI	65	SPARE INPUT			1	N/A	N/A				
DI	66	SPARE INPUT			1	N/A	N/A				
DO	1	CP-1 Audible Alarm			1	N/A	N/A				
DO	2	Well No. 4-1 Start/Stop Control			1	N/A	N/A				
DO	3	Well No. 4-1 Pretube Solenoid Valve			1	N/A	N/A				
DO	4	Well No. 4-1 Motorized Blowoff Valve Actuator Open Actuator			1	N/A	N/A				
DO	5	Well No. 4-1 Motorized Blowoff Valve Actuator Close Actuator			1	N/A	N/A				
DO	6	Well No. 4-1 Motorized Blowoff Valve Open/Close Status			2	N/A	N/A				
DO	7	Well No. 4-1 Motorized Blowoff Valve Fall (Incomplete Valve Cycle)			1	N/A	N/A				
DO	8	Tank Level			1	N/A	N/A				
DO	9	System Pressure			1	N/A	N/A				
DO	10	Pressure Tracking			1	N/A	N/A				
DO	11	General Alarm			1	N/A	N/A				
DO	12	PLC Run Status			1	N/A	N/A				
DO	13	PLC Fault Status			1	N/A	N/A				
DO	14	SPARE OUTPUT			1	N/A	N/A				
DO	15	SPARE OUTPUT			1	N/A	N/A				
DO	16	SPARE OUTPUT			1	N/A	N/A				
DO	17	SPARE OUTPUT			1	N/A	N/A				
DO	18	SPARE OUTPUT			1	N/A	N/A				
DO	19	SPARE OUTPUT			1	N/A	N/A				
DO	20	SPARE OUTPUT			1	N/A	N/A				
DO	21	SPARE OUTPUT			1	N/A	N/A				
DO	22	SPARE OUTPUT			1	N/A	N/A				
DO	23	SPARE OUTPUT			1	N/A	N/A				
DO	24	SPARE OUTPUT			1	N/A	N/A				
DO	25	SPARE OUTPUT			1	N/A	N/A				
DO	26	SPARE OUTPUT			1	N/A	N/A				
DO	27	SPARE OUTPUT			1	N/A	N/A				
DO	28	SPARE OUTPUT			1	N/A	N/A				
DO	29	SPARE OUTPUT			1	N/A	N/A				
DO	30	SPARE OUTPUT			1	N/A	N/A				
AI	1	Well No. 4-2 VFD Speed			1	0-60	Hz				
AI	2	Well No. 4-1 Discharge Flow Transmitter			1	TBD	gpm				
AI	3	Well No. 4-2 Discharge Flow Transmitter			1	TBD	gpm				
AI	4	System Pressure Transmitter			1	5-150	psi				
AI	5	Plant No. 4 Effluent Flow Transmitter			1	TBD	gpm				
AI	6	Chlorine Residual			1	TBD	N/A				
AI	7	pH Residual			1	TBD	N/A				
AI	8	SPARE INPUT			1	TBD	N/A				
AI	9	SPARE INPUT			1	TBD	N/A				
AI	10	SPARE INPUT			1	TBD	N/A				
AI	11	SPARE INPUT			1	TBD	N/A				
AI	12	SPARE INPUT			1	TBD	N/A				
AI	13	SPARE INPUT			1	TBD	N/A				
AI	14	SPARE INPUT			1	TBD	N/A				
AI	15	SPARE INPUT			1	TBD	N/A				
AI	16	SPARE INPUT			1	TBD	N/A				
AO	1	Well No. 4-2 VFD Speed Command			1	0-60	Hz				
AO	2	Well No. 4-1 Flow			1	TBD	gpm				
AO	3	Well No. 4-2 Flow			1	TBD	gpm				
AO	4	System Pressure			1	5-150	psi				
AO	5	Tank 10 Level			1	TBD	TBD				

Specification 265011 - Programmable Logic Controller Appendix A - PLC Inputs/Outputs Water Authority of Western Nassau Rehabilitation of Plant No. 4											
Abbreviations											
		DI:	Digital Input								
		DO:	Digital Output								
		AI:	Analog Input								
		AO:	Analog Output								
		MB:	Modbus								
		EN:	Ethernet								
New Plant No. 4 CP-1 PLC I/O List											
Signal Type	No.	Description	Quantity	Range	Units	Notes					
AO	6	Tank 58 Level	1	TBD	TBD						
AO	7	SPARE OUTPUT	1	TBD	TBD						
AO	8	SPARE OUTPUT	1	TBD	TBD						
AO	9	SPARE OUTPUT	1	TBD	TBD						
AO	10	SPARE OUTPUT	1	TBD	TBD						
AO	11	SPARE OUTPUT	1	TBD	TBD						
AO	12	SPARE OUTPUT	1	TBD	TBD						
AO	13	SPARE OUTPUT	1	TBD	TBD						
AO	14	SPARE OUTPUT	1	TBD	TBD						
AO	15	SPARE OUTPUT	1	TBD	TBD						
AO	16	SPARE OUTPUT	1	TBD	TBD						
Existing Administration Office Plant No. 4 PLC I/O List											
DI	1	Watchdog	1	N/A	N/A						
DI	2	Well No. 4-1 Off/Auto	1	N/A	N/A						
DI	3	Well No. 4-1 Pre Start	1	N/A	N/A						
DI	4	Well No. 4-1 Pre Stop	1	N/A	N/A						
DI	5	Well No. 4-2 Off/Auto	1	N/A	N/A						
DI	6	Well No. 4-2 Pre Start	1	N/A	N/A						
DI	7	Well No. 4-2 Pre Stop	1	N/A	N/A						
DI	8	Well No. 4-1 Fault	1	N/A	N/A						
DI	9	SPARE INPUT	1	N/A	N/A						
DI	10	SPARE INPUT	1	N/A	N/A						
DI	11	SPARE INPUT	1	N/A	N/A						
DI	12	SPARE INPUT	1	N/A	N/A						
DI	13	SPARE INPUT	1	N/A	N/A						
DI	14	SPARE INPUT	1	N/A	N/A						
DI	15	SPARE INPUT	1	N/A	N/A						
DI	16	SPARE INPUT	1	N/A	N/A						
AI	1	Tank 10 Level	1	TBD	N/A						
AI	2	Tank 58 Level	1	TBD	N/A						
DO	1	Watchdog	1	N/A	N/A						
DO	2	Well No. 4-1 Run	1	N/A	N/A						
DO	3	Well No. 4-2 Run	1	N/A	N/A						
DO	4	Plant No. 4 Pressure OK	1	N/A	N/A						
DO	5	Plant No. 4 Flow OK	1	N/A	N/A						
DO	6	General Alarm	1	N/A	N/A						
DO	7	Well No. 4-1 Not in Auto	1	N/A	N/A						
DO	8	Well No. 4-2 Not in Auto	1	N/A	N/A						
DO	9	SPARE OUTPUT	1	N/A	N/A						
DO	10	SPARE OUTPUT	1	N/A	N/A						
DO	11	SPARE OUTPUT	1	N/A	N/A						
DO	12	SPARE OUTPUT	1	N/A	N/A						
DO	13	SPARE OUTPUT	1	N/A	N/A						
DO	14	SPARE OUTPUT	1	N/A	N/A						
DO	15	SPARE OUTPUT	1	N/A	N/A						
DO	16	SPARE OUTPUT	1	N/A	N/A						
AO	1	Plant No. 4 Flow	1	N/A	gpm						
AO	2	SPARE OUTPUT	1	TBD	TBD						

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Programmable logic controller software development.

1.02 SUBMITTALS

- A. Submit PLC and Relay Logic Control drawings in accordance with Section 013300.
- B. Provide registered annotated copy of PLC programming including final accepted program to District for each PLC furnished as part of this project.
- C. Provide submittal drawings for PLC/Communication cubicles for each plant.

PART 2 - PRODUCTS

2.01 CONTROL SYSTEM INTEGRATION

- A. Instrumentation control system shall be integrated and manufactured by Eagle Control Corp., Yaphank, New York or approved equal. Instrumentation control system shall be provided by a single source supplier which includes manufacturing of the control panels, PLC programming, complete telemetry system, and operator terminals.
- B. The contractor shall provide satisfactory evidence to the engineer that the instrumentation system supplier has demonstrable qualifications in performance of this kind of work with a minimum of ten (10) years related SCADA experience to substantiate:
 - 1. That the instrumentation system supplier has been regularly engaged in providing similar SCADA services and equipment for a minimum of ten (10) years.
 - 2. That the instrumentation system supplier has provided at least five (5) SCADA installations of comparable scope and complexity, with references.
 - 3. That the instrumentation system supplier has a service center within 50 miles of the project location.
 - 4. No shop drawing submittals shall be made, nor any equipment delivered or installed with respect to instrumentation or control prior to the contractor having obtained written approval of the instrumentation system supplier.
 - 5. That the instrumentation supplier has an office within 50 miles of the project site complete with the following:
 - a. Spare parts including cabling, PLC's, power supplies, I/O cards and processors.
 - b. Office has a minimum of two (2) field technicians staffed full time at this office which provides 24-hour, 7 days a week service with a maximum response time of 2-hours.
 - c. Office has a minimum of two (2) PLC programmers staffed full time at this location.
 - d. Office has a minimum of two (2) electrical engineers staffed full time at this location experienced with SCADA systems, PLC's and knowledge of water supply system operations.
 - e. The Water District and District's engineer shall have the right to inspect office, spare part supply and meet and interview service technicians, PLC programmers and engineers as part of determining qualification of system integrator.
- C. The contractor shall bear full responsibility for the instrumentation and controls. The contractor shall have the instrumentation system supplier:
 - 1. Design the instrumentation system, communication system and monitoring system described in these specifications.
 - 2. Prepare shop drawings for submittal by the contractor to the engineer.
 - 3. Provide the necessary information or modifications to the shop drawings to obtain approval.

4. Supervise the installation.
 5. Perform debugging, testing, maintenance and operation of all instrumentation and control systems.
- D. The instrumentation system supplier shall prepare for submission by the contractor, detailed point-to-point wiring diagrams. Point-to-point wiring diagrams shall be provided for all existing electrical equipment to be interfaced with. Submittals not including this will be rejected. Engineering services shall be provided by the instrumentation system supplier during start-up and testing as required by other sections of the specification.
- E. The contractor shall require the instrumentation system supplier to verify all connections and operational features of all equipment controlled, directly or indirectly, by equipment furnished under this contract prior to submission of shop drawings, schematics shall show all remote connections and respective terminal numbers of all such equipment.
- F. The contractor shall have the instrumentation system supplier develop and provide details for installation of all field mounted control devices, communication equipment, transmitters, receivers, etc. per recommended practices of the equipment manufacturer and in a manner acceptable to the engineer. Such details shall include specific location, method of support and connection details, as a minimum.
- G. Qualified personnel of the instrumentation system supplier shall be provided, as specified hereinafter, for the purpose of instructing the owner's personnel in the operation, maintenance and troubleshooting of all instrumentation systems and related equipment.
- H. It is the intent of this specification that all devices, insofar as practical shall be purchased from a single manufacturer to simplify maintenance and operation.

2.02 CONTROL SYSTEM

- A. Contractor will not be furnished any record drawings of existing conditions for execution of this project. Contractor shall provide all required field investigation by system integrator to develop existing conditions record drawings and verify existing controls are operational. Once Contractor begins installation, no claims shall be made for existing conditions not operational.
- B. Control system integrator shall provide all relays, timers, pilot lights, selector switches and contactors required for operation of control system. IEC Contactors shall be required for all motorized butterfly valves/solenoid valves. Where contacts are required to interface with existing systems including caustic and oil level control panels, caustic tank leak/overflow alarm panels, pH, nitrate and chlorine analyzers, generator control panels, security panels, automatic transfer switches, existing blowoff valves, existing chemical treatment panels, variable frequency drives and starters; contractor shall provide new control boards, relays, wiring and controls as required to provide the required contacts for inputs/outputs as specified in the PLC I/O section and as required for system control.
- C. Contractor shall provide all wiring required for operation of control system as specified.
- D. Contractor shall provide all relays and controls for interfacing with new and existing I/O points. Provide IEC contactors for control of all valves and solenoids.
- E. Drawings do not show all required wiring and conduits. Contractor shall refer to specifications Section 265011 (Compact Logix) for description of I/O for circuits required. Provide shielded twisted pairs for analog I/O and minimum 2c-#14AWG for each digital I/O.
- F. Contractor shall provide minimum of two (2) 120 volt, 20 amps circuit from existing distribution system for all controls, at each location. Provide additional circuits for blowoff valves.

- G. Digital I/O and 120 volt power shall be permitted in common conduit.
- H. Analog signals shall be in dedicated conduit.
- I. Telephone circuits and Ethernet cables shall be in dedicated conduit. Minimum size shall be 3/4".
- J. Contractor shall program new PLC's such that when Well is set to run based on tank level, on loss of communication (Tank Level Signal) pumps shall be interlocked not to run after a time delay set through the graphic user interface (GUI) if communication is not restored.
- K. Contractor is responsible for coordinating control systems with equipment manufacturers for proper operation of all equipment. Any discrepancies shall be brought to the attention of the Engineer immediately for final coordination.

PART 3 - EXECUTION

3.01 WELL PUMP CONTROL

- A. Install a new PLC system including, I/O, GUI interface unit and communication equipment as described in Specification Section 264010, 265011 (Compact Logix) and 265013.
- B. The I/O units will be connected to new and existing instrumentation controls and/or termination boxes. Contractor to provide required relays, wires, conduits and connectors, schematics and wiring diagrams.
- C. The PLC will be used to transmit status and information to the main SCADA Control system and to control all equipment and change settings. The PLC's shall be programmed to communicate with the main SCADA system and the local plant GUI.
- D. The locations of the PLC and communication panel are indicated on contract drawings.
- E. At Plant No. 4 the GUI plant and global overview and controls screens shall be the same as the screens for the plant in the SCADA system PC.
- F. Control of the Wells shall be as follows:
 - 1. If the Well 4-1 Lead/Well 4-2 Lead selector switch (soft selector switch in GUI/SCADA) is in the Well 4-1 Lead position, Well 4-1 shall start and stop based on the operator adjustable lead pump setpoints and Well 4-2 shall start and stop based on the operator adjustable lag pump setpoints.
 - 2. If the Well 4-1 Lead/Well 4-2 Lead selector switch (soft selector switch in GUI/SCADA) is in the Well 4-2 Lead position, Well 4-2 shall start and stop based on the operator adjustable lead pump setpoints and Well 4-1 shall start and stop based on the operator adjustable lag pump setpoints.
 - 3. If the Tank Level/System Pressure/Pressure Tracking selector switch (soft selector switch in GUI/SCADA) is in the Pressure Tracking position and the Well 4-2 H-O-A selector is in the Auto Position Well 4-2 shall start and stop based on local pressure setpoints, and shall vary speed via VFD control to maintain an operator adjustable system pressure setting. Refer to section 3.02 of this specification for additional detail. When in Pressure Tracking, Well 4-1 shall be locked out and prevented from starting automatically, however it can still be started manually (hand position of Well 4-1 H-O-A selector switch).
 - 4. If the Tank Level/System Pressure/Pressure Tracking selector switch (soft selector switch in GUI/SCADA) is in the System Pressure position and the Well H-O-A selectors are in the Auto Position the Wells shall start and stop based on the local pressure setpoints (Lead and Lag). These setpoints can be set through the SCADA system and the local GUI.

5. If the Tank Level/Local Pressure/Pressure Tracking selector switch (soft selector switch in GUI/SCADA) is in the Tank position and the Well H-O-A selectors are in the Auto Position the Wells shall start and stop based upon the selected tank level setpoints (Lead and Lag). These setpoints can be set through the SCADA system and the local GUI.
6. If the Well H-O-A selector switch is in the Off position the well will not start.
7. The well pumps shall be automatically started and stopped when in the Automatic position of the H-O-A when the setpoint is reached. The well pump shall be automatically started and stopped in the automatic position of the H-O-A switch by selecting the prestart or prestop mode at the main SCADA station or local GUI ignoring the normal "on" and "off" contacts from the PLC. Once prestarted the well(s) will continue to run until the PLC stops the well based on elevated tank storage level or pressure or until the pre-stop button at the Main SCADA Station or local GUI is selected. The PLC shall have an adjustable start and stop time delay adjustable through the SCADA system or local GUI to prevent momentary fluctuations in tank level or pressure from starting and stopping the well.
8. Well pumps have an automatic blowoff control timing circuit. The blowoff control sequence shall be as follows when the blowoff valve is in the automatic position as selected on the open-close-stop-automatic valve selector switch:
 - a. Upon signal to start from the PLC, the prelube solenoid valve shall be energized open and the controls shall energize a manually adjustable prelube timer. This timer is external of the PLC. After the prelube timer elapses the prelube timer shall energize the manually adjustable blowoff timer and blowoff safety timer at the same time.
 - b. The well pump shall pump to blowoff (waste) for the amount of time as manually adjusted on the blowoff timer.
 - c. After the blowoff timer elapses the blowoff valve shall be energized to close.
 - d. A blowoff safety timer time delay control sequence shall be incorporated to allow sufficient time to acknowledge the blowoff valve is closed via a limit switch. After the blowoff safety timer elapses and the blowoff valve is not closed as sensed by the blowoff valve "closed" limit switch, the well shall shut down and indicate "Incomplete Valve Cycle" and will have to be manually reset.
 - e. Upon signal to stop the well pump(s) via tank level or pressure or turning the H-O-A selector switch from Auto or hand to "Off" or by selecting the prestop function in the SCADA or local GUI the blowoff valve shall be energized to open and the blowoff valve safety timer energized. Once the blowoff valve is in the full open position as acknowledged by the limit switch, it shall stop the well pump. If after the blowoff safety timer elapses and the blowoff valve limit switch is not initiated as open the well shall shutdown and indicate "Incomplete Valve Cycle" and will have to be manually reset.
 - f. When the blowoff valve open-close-stop-automatic selector switch is moved to the open position the valve shall open and travel stop when in the open position. When the selector is in the closed position the valve shall close and travel stop when in the closed position. When the selector switch is in the stop position the valve motor shall stop.
9. The well pumps shall have a high and low pressure cutout safety circuit internal to the PLC. If a high pressure still exists after an operator adjustable (via GUI/SCADA) time delay elapses, the well pump shall shut down and must be manually reset. The low pressure cutout is for alarm notification only and shall not turn the pump off. A separate operator adjustable time delay shall be provided for high and low pressure cutout to allow for individual time delays.
10. The well pumps shall have a backspin timing control sequence external of the PLC. After the well has stopped, a manually adjustable backspin timer shall be energized. During the preset time adjustment, the well cannot be started until the backspin timer elapses.
11. The well pump(s) shall operate in the same sequence in the "hand" position as in the automatic position, except that "hand" does not need an on signal from the PLC to start the well.

12. Upon any alarm related to the specified well pump the well and chemicals controls shall shut down and be manually reset locally on the CP and alarm screen acknowledged through the GUI or SCADA system.
 13. The well pumps shall have a bypass tank level safety enable/disable selector switch (soft) internal to the PLC, per well. When enabled, a high tank level alarm shall not shut down the well. The status of this selector switch shall be displayed on the plant overview screen in a conspicuous manner.
 14. There shall be a Tank 10/Tank 58 selector switch (soft) internal to the PLC to allow the operator to select which Tank the start/stop of the lead and lag wells will be based on when the Tank Level/System Pressure/Pressure Tracking selector switch is in the Tank Level position.
- G. All well pump control for prelube, blowoff, blowoff safety, high pressure cutout, and low pressure alarm shall be internal to the PLC. Well pump control for backspin shall be external of the PLC. Backspin timer shall prevent well from starting external of PLC.
- H. All status of new Plant No. 4 CP-1 PLC I/O points listed in Specification Section 265010 shall be graphically represented on the local GUI.
- I. All status of existing administration office Plant No. 4 PLC I/O points listed in Specification Section 265010 shall be maintained in order to operate as currently configured. Contractor shall modify existing program as required to communicate appropriate information from new PLC in Plant No. 4 CP-1 to existing PLC in administration building, and to existing SCADA PC in administration building. Refer to Specification 265011 - Programmable Logic Controller Appendix A - PLC Inputs/Outputs for additional detail.

3.02 PROPORTIONAL INTEGRAL DERIVATIVE CONTROL (WELL 4-2 SYSTEM PRESSURE TRACKING CONTROL)

- A. The proportional integral derivative controllers shall include an analog proportional controller to provide a continuous current output signal (0-20 or 4-20mA) to regulate the speed of the VFD. At minimum output (0 to 4 mA), the control output shall be programmable to be fully "on" or "off" depending on type of element used. At maximum output (20mA), control output shall be programmable to be fully modulated from its original position.
- B. The controller shall provide an output to the variable frequency drive to regulate the pressure level to a desired system setpoint set through the GUI. The controller shall combine adjustable proportional gain and integral functions to allow the process to attain the desired setpoint value within the shortest amount of time and with a minimum of overshoot by comparing the instantaneous difference between actual level and desired level (setpoint) as well as the recent history of difference between actual and desired pressures.
- C. LOOP GAIN controls shall be provided to adjust the overall gain of the control loop. PROP GAIN control shall be provided to tune the controller to the process dynamics.
- D. One PID loop control systems is required.

3.03 CHEMICAL ALARMS

- A. On high pH and chlorine levels the chemical treatment panels lock out the chemical pumps. These contacts shall also be input into the PLC and monitored and provide alarms. All alarms shall have an adjustable time delay set through the GUI and SCADA system. Alarms shall have enable/disable feature programmed in the SCADA system to send alarm (enable) or don't send the alarm (disable) only when the well is not running. When the well is running to system the enable and disable feature will not work and a high/low chlorine/pH alarm will always be sent.

An enable/disable relay shall be installed for the autodialer to not send alarm when the well is not running.

- B. On low chlorine and pH alarm the PLC shall generate an alarm only when the well is running to system via an adjustable time delay set through the GUI or SCADA system and shut the well off.

3.04 ALARMS

- A. All alarms shall have independent time delay setpoints set through the GUI and SCADA system prior to being posted to the alarm summary screen. This will allow the District to choose which are immediate and which shall require longer delays.

3.05 AC POWER LOSS

- A. The PLC shall monitor the input power to the UPS via a power monitor relay. If the relay senses no power the PLC shall sequence the pump to stop and de-energize the start signal contact.
- B. Upon power restoration pumps shall restart if tank level or pressure is calling for a start.

3.06 LOSS OF COMMUNICATION

- A. Where remote wells are using tank levels from remote sites and communication is lost the PLC shall initiate a stop well time delay adjustable through the GUI and SCADA. After the time delay the well shall stop. This shall also not apply if the well is operating off of local pressure.
- B. The SCADA system and GUI shall have a control selector switch to enable or disable an automatic switchover to pressure control after adjustable time delay set through the SCADA system or GUI after a communication loss. If the automatic switchover to pressure control is enabled the well shall be prestarted even if the well "on" pressure setting is not calling for a start. The well shall stop on the pressure stop setpoint. Once stopped the well shall not start until the "on" setpoint is reached. If the automatic switchover selector switch is in the disable mode the well shall not switchover to pressure control and must wait for a communication restore to operate on tank level.

3.07 ALARM MONITORING

- A. The PLC at each plant shall provide an alarm to the SCADA system and the local GUI, based on any alarm condition. The trigger alarm can be caused by high pressure, low level, incomplete valve cycle, overload, communication loss, PLC failure, AC power loss, etc. The detail of the alarm condition will be reported on the individual plant alarm page. After acknowledging the alarm, the alarm condition shall detail the reason for the alarm and what the operator needs to do to clear the alarm and assist diagnosing the problem.
- B. Contractor shall program alarm setpoint screens for high/low pH, nitrate and chlorine, high/low pressures at each plant, and high/low tank levels for each tank. All valves and time delays shall be set through GUI and SCADA system by operator. Coordinate with District as required.
- C. The control room PLC at the Administration Building upon receiving the information from the remote PLC will dial the number(s) set at the PC Dialing System. The PC will report the alarm message via pager with a pre-recorded text message for each individual alarm (i.e., Well No. 4-1 overload) and request acknowledgement of the person via telephone (dialing in) to the PLC receiving the call. The Superintendent or delegate shall have access to the dialing system (password) to be able to edit the pager numbers and enable and disable pagers and the alarm messages.

- D. The PC Dialing System can be edited to select the alarms, time, message, and the person(s) to be called (see Section 265013 for more detail on the alarms messages and on the Editing Dialing Page).

3.08 DEMONSTRATION

- A. Demonstrate operation of control system.
- B. Demonstrate procedure for changing set points and timer settings.

3.09 STARTUP & DEMONSTRATION SERVICE

- A. The Contractor shall engage the control system supplier/integrator to provide startup for the control system. A factory-trained engineer that is thoroughly familiar with the equipment supplied and its specific application on this project shall perform the startup service. The same factory trained engineer shall provide a minimum of two (2) eight (8) hour days for demonstration of the new control system to the Owner's personnel. The demonstration shall include all the plant's PLC and GUI, system communication and the SCADA system. This service shall proceed once the system is completely debugged and up and running and written acceptance issued.

3.10 CONTROL MODIFICATIONS

- A. The Contractor shall provide the services of the control system integrator to provide an additional five (5) eight (8) hour days of field programming changes as requested by the engineer based on start-up and field testing for the whole new system. Contractor shall make all requested control changes and incorporate into PLC programs and include changes as part of final closeout documentation. Control software changes shall include PLC, GUI or PC. Change notice will be provided by the engineer for each plant and/or system (PLC/GUI or SCADA).
- B. Per unit prices shall be indicated in the proposal. The District reserves the right to direct the Contractor to make changes at any plant and to make changes to enhance the system once the District has had the system on-line and alternative control sequences are desired. The District shall increase the contract amount or decrease the contract amount by the actual number of hours used based upon the per unit cost per hour as indicated in the proposal.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Operator Terminals.

1.02 REFERENCES

- A. NEMA ICS 1 - General Standards for Industrial Control and Systems.
- B. NEMA ICS 2 - Standards for Industrial Control Devices, Controllers and Assemblies.
- C. NEMA ICS 3 - Industrial Systems.
- D. NEMA ICS 6 - Enclosures for Industrial Controls and Systems.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Submit shop drawings indicating layout of completed assemblies, interconnecting cabling, dimensions, weights, and external power requirements.
- C. Submit scaled drawings of graphic screen generations including systems overview, controls settings, reports and alarms for approval by Engineer prior to development.
- D. Submit a written description of the alarms dialing scheduling/editing, reports editing and printing, access code and security, and communication from Plant No. 1 control room and the Treatment Building, for approval by Engineer prior to development.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. ALLEN BRADLEY Panelview Plus 7 Graphic Terminal

2.02 GRAPHIC USER INTERFACE (GUI)

- A. Operator Terminal shall have the following features:
 - 1. 15-inch Color Active Matrix, TFT 1024x768, 18-bit color graphics.
 - 2. Full Analog resistive Touch screen
 - 3. Connect directly to specified ALLEN BRADLEY PLC
 - 4. 512MB of Battery Backed Application Memory
 - 5. Panel mount design to fit into motor control center.
 - 6. NEMA 4x enclosure.
 - 7. Luminance of at least 300cd/m2
 - 8. Audio visual feedback each time a touch cell is depressed.
 - 9. Built-in diagnostics, including "PLC communications lost" and "battery test fail".
 - 10. Complete FactoryTalk and Windows CE Operating System to generate system graphics on the operator terminal. Provide one (1) copy of FactoryTalk software and Windows CE Operating System CD formats for each of the panelviews.
 - 11. Provide two (2) copies of Panelview screen development software to district.
 - 12. Provide cable to allow download/upload of panelview operator terminal to IBM PC computer.
 - 13. Provide cable to connect the operator terminal to the PLC at each site complete with connectors.

14. Provide access code security to be assigned to any screen.
15. Install GUI unit SCADA Control Panel (SCP) location as shown on plans.
16. Provide LED type pilot lights with push-to-test capabilities. No incandescent pilot lights shall be permitted. No incandescent bases shall be permitted.

PART 3 - EXECUTION

3.01 GUI FUNCTION

- A. The GUI terminal shall allow operator access to the operating system to view the system overview, view and acknowledge alarms, view and change the variable settings for the local plant only. Access code is required for changing setpoints, alarms acknowledge and resetting. The GUI shall provide an editing page to assign the password code to the superintendent and its delegates. Every employee shall be assigned his own access code.
- B. Tank levels and pressure set points, time delays and alarm settings can be changed on the screen. It is required that an access password and any change shall be recorded and automatically included in the GUI and vice-versa when any change in setting takes place.
- C. All setpoints changed will be recorded on the GUI including the date, time and the authorized person.
- D. All tank levels, well flows, and system pressures that are recorded via chart recorders shall also be recorded and trended on a dedicated GUI screen.
- E. SCREENS
 1. The Plant overview shall represent the process at the plant including information on all pumps, valves, pH, nitrate, and Chlorine levels, control schemes, and flow-pressure-level.
 - a. Within the process control pages representing the tank levels and pressure settings for the alarms and start/stop of the equipment at each location, the variables can be changed as per the process requirements. A separate Matrix control page shall be generated listing the on/off settings for tank/pressure on/off setpoints and what each pump is selected for (tank/pressure). The contractor shall use the capability of the GUI Software to create the graphics and information. The software shall provide state of the art tools to edit the settings and controls and shall represent the status of the equipment, pipes and valves by changing colors, text indicators next to the device and providing on line variable data.
 2. Trend screens indicating the individual and total pressures, levels and flows, run times shall be continuously available.
 3. A General alarm indicating individual alarms and records shall be provided as a separate screen. Upon an alarm the Alarm Screen button will flash indicating that an alarm has occurred.
 - a. Report pages and trend curves shall be provided for reference. The reports and trend curves shall be selectable at any time interval and can be printed by the operator. The GUI System shall have an edit report page to select the elements to be included in each report and to select if the report is going to be printed automatically (daily, weekly, monthly or yearly) or on request. The data shall be stored on an acceptable database management system (DBMS) software (i.e., MS Access) for easy and rapid access. The software shall allow the data to be presented in a custom format for printing on specialized forms for District use. The District shall provide the contractor with sample forms for this purpose.
 - b. Process Data:
 - 1) PLC Variables - The Operator Interface System (OIS) will read and write process variables in the PLC registers to control and monitor each plant.
 - 2) Data Files - The following files will be maintained:
 - (a) Alarm log, an ASCII file that records each configured alarm.

- (b) Alarm summary, a dBASE file that summarizes alarms.
 - (c) Alarm acknowledgement, a dBase file that summarizes who acknowledged each alarm.
 - (d) Report log, an RTF file that is written each time the report is run.
- 4. Graphic Pages:
 - a. The OIS and all the processes it monitors and controls will be presented to operators through screens (called graphics pages). Operators will navigate through graphics pages via touchscreen.
 - b. Menu Page - The menu page shall feature buttons to:
 - 1) Display the overview page for each plant representing the process and its variables.
 - 2) Matrix Page
 - 3) Display the control page for each plant with access to all control setpoints.
 - 4) Display the alarm pages.
 - 5) Display the network page.
 - 6) Display the reports page.
 - 7) Display the editing reports page.
 - 8) Graphic trends and summary.
 - c. Graphics pages shall be linked together in a display sequence, so that operators can move easily between pages without needing to redisplay the menu page.
 - d. Test Page - A test page shall be configured to test the communications and other processes during the configuration of the application.
 - e. Utility Page - The utility page will contain some tools which will allow maintenance of the system security database as well as some tools to access some high level programming functions during the system's development.
 - f. Alarm Pages - Equipment that often has fault conditions shall trigger alarms, for example, when tanks show low levels, and when the pump exceeds its operating pressure. Alarms shall be displayed on a separate alarm page and an alarm summary page will display a summary of all alarms. Operators will use commands on the alarm pages to handle alarms. Hardware alarms (faults within the Operator Interface System itself) will be reported on a hardware alarm page. All alarm pages will be displayed from buttons on the menu page.

3.02 REMOTE SCADA SYSTEM ACCESS

- A. Utilize existing IP address on existing admin building data network to allow remote access via existing Plant No. 4 VPN (Sonicwall TZ100). Coordinate with district IT personnel as required.
- B. All status of new Plant No. 4 CP-1 PLC I/O points listed in Specification Section 265010 shall be graphically represented on the local GUI.
- C. All status of existing administration office Plant No. 4 PLC I/O points listed in Specification Section 265010 shall be maintained in order to operate as currently configured. Contractor shall modify existing program as required to communicate appropriate information from new PLC in Plant No. 4 CP-1 to existing PLC in administration building, and to existing SCADA PC in administration building. Refer to Specification 265011 - Programmable Logic Controller Appendix A - PLC Inputs/Output for additional detail.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Main Circuit Breaker.
- B. Transformer Utility Meter
- C. Transformer to be mounted on a reinforced concrete pad/pull box.
- D. Primary and secondary conduits, conductors, excavation, concrete and backfill.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electric Code.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.

PART 2 - PRODUCTS

2.01 METERING EQUIPMENT

- A. Meter pans, meter, current transformers and ground fault circuit protection shall be on PSEGLI's approved lists of manufacturers and models.

2.02 COMBINATION TRANSFORMER PAD/PULL BOX

- A. Combination transformer pad/pull box shall be as per PSEGLI requirements.
- B. Conduit penetrations shall be provided for both primary and secondary penetrations into transformer and into pull box so that minimum ground cover is maintained in accordance with NEC and PSEGLI requirements. Enter primary and secondary conduits/conductors into transformer pullbox in accordance with PSEGLI requirements.

2.03 PULL BOXES

- A. Provide pull boxes including property line pull boxes as per PSEGLI requirements for both primary and secondary services.
- B. Provide PSEGLI approved type TS for all primary services and secondary services above 400 amperes.

2.04 CABLE

- A. Install new primary and secondary service conductors in conduit.
- B. Primary service conductors shall be 15 KV, copper size 1/0, type TR-XLPE with 220 mils insulation thickness as per PSEGLI requirements.
- C. Secondary service conductors shall be copper type XHHW-2 as per PSEGLI requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Coordinate primary and secondary service installation with PSEGLI prior to beginning work.
- B. Provide secondary service to incoming cubicle of motor control center via new trans-s utility meter. Coordinate service requirements with PSEGLI prior to commencing work.
- C. Contractor shall file application for new electrical service. Contractor shall coordinate with owner for all information related to the service application.

END OF SECTION 267173

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Removal and storage of subsoil.
- B. Cutting, grading, filling and rough contouring the site prior to placement of topsoil or pavement base for final grading.

1.02 REFERENCES

- A. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18 inch Drop.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Sieve Analysis: Submit a sieve analysis of all types of fill material to be used.

1.04 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of utilities remaining, by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Subsoil: Reused excavated material, graded, free of lumps, rocks and gravel larger than 3 inches in size, debris and contaminants.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify site conditions.
- B. Verify that survey benchmark and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours and datum.
- B. Identify known underground, aboveground and aerial utilities. Stake and flag locations.
- C. Coordinate the removal or relocation of utilities with the necessary utility companies.
- D. Protect above and below-grade utilities that are to remain.
- E. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.
- F. Protect benchmarks, existing structures, fences, sidewalks, paving and curbs from excavation equipment and vehicular traffic.

3.03 APPLICATION

- A. Excavate subsoil from areas to be further excavated or regraded. Do not excavate wet subsoil.
- B. Stockpile in area designated on site. Remove excess subsoil not being reused from site.
- C. Stockpile subsoil to a height not exceeding 8 feet. Cover to protect from erosion.
- D. When excavation through roots is necessary, perform work by hand and cut roots with sharp axe.
- E. Fill areas to contours and elevations with unfrozen subsoil material with allowances made for topsoil, aggregate base course or paving.
- F. Place and compact subsoil fill material in 12 inch lifts (compacted thickness). Compact to 92 percent maximum dry density in accordance with ANSI/ASTM D1557.
- G. Maintain optimum moisture content of fill materials to attain required compaction density.
- H. Make grade changes gradual. Blend slope into level areas.
- I. Remove surplus fill materials from site.

3.04 TOLERANCES

- A. Maximum Variation From Top Surface of Subgrade: 1 inch.

3.05 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014500.
- B. Perform tests and analysis of fill material in accordance with ANSI/ASTM D1557.
- C. Perform compaction tests at a rate of one for every 10 cubic yards of material placed.

END OF SECTION 312213

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavation for slabs-on-grade, paving and landscaping.
- B. Excavation for site structures.
- C. Site excavation.

1.02 QUALITY ASSURANCE

- A. Do not excavate wet or frozen materials without written approval from the Engineer.
- B. Provide safety barricades around open excavations.

1.03 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the work are as indicated.

1.04 COORDINATION

- A. Coordinate work under provisions of Section 013100.

PART 2 - PRODUCTS

2.01 NOT USED.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours and datum.
- B. Identify known underground, above ground and aerial utilities. Stake and flag locations.
- C. Notify utility company to remove or relocate utilities, if required.
- D. Protect above and below grade utilities which are to remain.
- E. Protect plant life, lawns and other features remaining as a portion of final landscaping.
- F. Protect bench marks, existing structures, fences, sidewalks, paving and curbs from excavation equipment and vehicular traffic.
- G. Notify the Engineer prior to commencement of excavation.

3.02 EXCAVATION

- A. Underpin adjacent structures that may be damaged by excavation work, including utilities and pipe chases.
- B. Excavate subsoil required to accommodate landscaping and construction operations to the limits as indicated on the plans.
- C. Machine slope banks to angle of repose or less, until shored.

- D. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- E. Hand trim excavation. Remove loose matter.
- F. Remove lumped subsoil, boulders, and rock.
- G. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- H. Correct unauthorized excavation at no extra cost to Owner in accordance with Section 312323.13.
- I. Stockpile excavated material in area designated on site and remove excess material not being reused from site.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014500.
- B. Provide for visual inspection of bearing surfaces.

3.04 PROTECTION

- A. Protect work under provisions of Section 015000.
- B. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- C. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION 312316

PART -1 GENERAL

1.01 SECTION INCLUDES

- A. Site structure backfilling to sub-grade elevations.
- B. Site filling and backfilling.
- C. Consolidation and compaction.
- D. Fill for over-excavation.
- E. Environmental testing.

1.02 REFERENCES

- A. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18-inch Drop.
- B. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Material Source: Submit name of imported material suppliers.
- C. Provide a letter certifying that each type of imported fill material has been provided by a NYSDEC certified clean fill source or has been tested in accordance with NYSDEC Unrestricted Soil Use Guidelines as defined in Subpart 375-6 Remedial Program Soil Cleanup Objectives.
- D. Test Reports: Submit sieve analysis and test results from NYSDEC Unrestricted Soil Use Guidelines for each type of imported fill to be used.

1.04 PROJECT CLOSEOUT SUBMITTALS

- A. Submit under provisions of Section 017200.
- B. Provide documentation on the contractor's letterhead certifying that all fill material utilized for this project came from approved sources and met the requirements of the NYSDEC Unrestricted Program Soil Use Guidelines.

PART 2 - PRODUCTS

2.01 IMPORTED FILL SOURCE

- A. All imported fill materials shall be provided by a NYSDEC certified clean fill source or meet the requirements of NYSDEC Unrestricted Soil Use Guidelines as defined in Subpart 375-6: Remedial Program Soil Cleanup Objectives.
- B. Test samples of imported fill in accordance with the following table:

Recommended Number of Soil Samples for Imported Soil			
Contaminant	VOC's	SVOC's, Inorganics & PCB's/Pesticides	
Soil Quantity (cubic yards)	Discrete Samples	Composite	Discreet Samples/Composite

0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
>1000	Add an additional 2 VOC and 1 composite for each additional 1000 cubic yards or consult with DER		

- C. Provide materials from the same source throughout the work. Change of source requires approval from the Engineer.

2.02 FILL MATERIALS

- A. Coarse Aggregate: Angular crushed or natural stone; washed, free of shale, clay, friable material, sand and debris; graded in accordance with ASTM D2487 Group Symbol GW or GP within the following limits

Sieve Size	Percent Passing
1-1/2-inch	100%
1-inch	90 - 100%
1/2-inch	0 - 15%
No. 200	0 - 1%

- B. Pea Gravel: Natural stone; washed, free of clay, shale, organic matter; graded in accordance with ASTM D2487 Group Symbol GC or GM, within the following limits:

1. Minimum Size: 1/4 inch.
2. Maximum Size: 5/8 inch.

- C. Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, or organic matter; graded in accordance with ASTM D2487 Group Symbol SW or SP, within the following limits:

Sieve Size	Percent Passing
No. 4	100
No. 14	10 - 100
No. 50	5 - 90
No. 100	4 - 30
No. 200	0

- D. Subsoil: Reused, excavated material, graded, free of lumps, rocks and gravel larger than 3 inches in size, debris and contaminants; no more than 15% passing the No. 200 sieve; no more than 30% retained on the 3/4" sieve.

- E. Drywell Collar Material: Clean sand and gravel containing less than 15% fine sand, silt and clay. Silt and clay fractions are not to exceed 5%. Native material may be reused if it meets this requirement.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions and substrate.
- B. Verify fill materials to be reused are acceptable.
- C. Verify items to be buried during backfilling process have been inspected prior to backfilling.

3.02 PREPARATION

- A. Compact subgrade to 92 percent maximum dry density in accordance with ANSI/ASTM D1557.
- B. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with sand or subsoil and compact to density equal to or greater than requirements for subsequent backfill material.

3.03 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 materials.
- C. Place and compact fill material in 12 inch lifts (compacted thickness). Compact to 92 percent maximum dry density in accordance with ANSI/ASTM D1557.
- D. Employ a placement method that does not disturb or damage structures or other items against which material is backfilled.
- E. Backfill against supported structures. Do not backfill against unsupported structures.
- F. Backfill simultaneously on each side of structure.
- G. Make grade changes gradual. Blend slope into level areas.
- H. Remove surplus backfill materials from site.
- I. Leave fill material stockpile areas completely free of excess fill materials.

3.04 TOLERANCES

- A. Maximum Variation From Top Surface of Backfilling Under Paved Areas: 1/4 inch.
- B. Maximum Variation From Top Surface of General Backfilling: 1 inch.

3.05 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014500.
- B. Perform field tests and analysis of fill material in accordance with ANSI/ASTM D1557.

- C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.
- D. Unless additional testing is required by the Engineer, compaction tests shall be taken at the following rates:
 - 1. Pavement Subgrade: One test per 5,000 square feet of subgrade immediately prior to placing subbase.

END OF SECTION 312323.13

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavate trenches for piping and utilities.
- B. Compacted bedding and backfill around and over piping and utilities to subgrade elevations.
- C. Backfilling and compaction.

1.02 REFERENCES

- A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18-inch Drop.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Test Reports: Submit a sieve analysis for backfill to be used.

1.04 QUALITY ASSURANCE

- A. Do not excavate wet or frozen materials without written approval from the Engineer.
- B. Do not backfill over or with wet or frozen materials.
- C. Provide safety barricades around open excavations.

1.05 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the work are as shown on plans.

1.06 COORDINATION

- A. Coordinate work under provisions of Section 013100.
- B. Coordinate trenching with installation of pipe or conduit.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Subsoil: Reused, excavated material, graded, free of lumps, rocks and gravel larger than 3 inches in size, debris and contaminants.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing site conditions and substrate.
- B. Verify fill materials to be reused are acceptable.
- C. Verify items to be buried during backfilling process have been inspected prior to backfilling.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Maintain and protect existing utilities remaining which pass through work area.
- C. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.
- D. Protect benchmarks, existing structures, fences, sidewalks, paving and curbs from excavation equipment and vehicular traffic. Any item damaged by the contractor shall be promptly repaired at the contractor's expense.
- E. Protect above and below grade utilities which are to remain.
- F. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with subsoil fill and compact to density equal to or greater than requirements for subsequent backfill material.

3.03 EXCAVATION

- A. Excavate subsoil required for piping.
- B. Cut trenches to the dimensions shown on the plans.
- C. Excavation shall not interfere with normal 45 degree bearing splay of foundations.
- D. Hand trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- E. Remove lumped subsoil, boulders, and rock.
- F. For trenches made in solid rock, excavate to a depth of 1 foot below the proposed pipe invert.
- G. Correct unauthorized excavation at no cost to Owner in accordance with Section 312323.13.
- H. Stockpile excavated material in area designated on site and remove excess material not being used from site. Remove excavated material from site.

3.04 BACKFILLING

- A. Support pipe and conduit during placement and compaction of fill material.
- B. For trenches made in solid rock, place an additional 1 foot of fill material under pipe or conduit.
- C. Place fill material to the dimensions and limits as shown on the plans.
- D. Place and compact fill material in 12 inch lifts (compacted thickness) for depths greater than 2 feet and 6 inch lifts (compacted thickness) for depths less than 2 feet. Compact to 92 percent maximum dry density in accordance with ANSI/ASTM D1557.
- E. Place fill material simultaneously on both sides of the pipe or conduit. Backfill to the dimensions and limits shown on the plans with reused subsoil.
- F. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- G. Place and compact material in continuous layers not exceeding 6 inches compacted depth.

- H. Employ a placement method that does not disturb or damage conduit or pipe.

3.05 TOLERANCES

- A. Maximum Variation From Top Surface of Backfilling Under Paved Areas: 1/4 inch.
- B. Maximum Variation From Top Surface of General Backfilling: 1 inch.

3.06 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014500.
- B. Perform field tests and analysis of fill material in accordance with ANSI/ASTM D1557.
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.
- D. Unless additional testing is required by the Engineer, compaction tests shall be taken at the springline of the pipe and after each lift at 100 foot intervals along the pipe run.

3.07 CLEANING

- A. Remove surplus backfill materials from site.
- B. Leave fill material stockpile areas completely free of excess fill materials.

3.08 PROTECTION

- A. Protect finished work under provisions of Section 015000.
- B. Recompress fills subjected to vehicular traffic.

END OF SECTION 312333

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Bollards.
- B. Footings and foundations.

1.02 REFERENCES

- A. ASTM A36 - Structural Steel.
- B. ASTM C33 - Concrete Aggregates.
- C. ASTM C150 - Portland Cement.
- D. ASTM C260 - Air-Entraining Admixtures for Concrete.
- E. ASTM C330 - Lightweight Aggregates for Structural Concrete.

1.03 SUBMITTALS FOR REVIEW

- A. Section 01330 - Submittals

PART 2 - PRODUCTS

2.01 MATERIALS

- A. A-36 structural steel tubing.

2.02 BOLLARDS

- A. Formed Steel Tubes: 1/4" thick, 6" diameter galvanized steel, concrete filled.
- B. PVC Bollard Cover: Manufactured by ULINE, Model H-3719Y. Color: Yellow.
- C. Quantity: As indicated on plans.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install units in accordance with manufacturer's instructions, without damage. Replace or repair damaged units.
- B. Install units in alignment with adjacent work.
- C. Install bollards in footings. Bollards shall be installed in locations as per PSEGLI requirements or in locations as directed by Engineer.
- D. Install bollard cover. Drill and tap steel bollard to accept two (2) galvanized screws to attach bollard cover at 4" AFG.

END OF SECTION 323000

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Electronic indicating recorder.

1.02 REFERENCES

- A. NEMA - National Electrical Manufacturers Association.

1.03 DESIGN REQUIREMENTS

- A. Accept 4-20 mA current input from pressure and flow transmitters.
- B. Electronic actuation.
- C. Circular chart recorder.
- D. Operating temperature range: 32°F to 125°F.
- E. NEMA 4X enclosure.
- F. Zero, span and gain adjustments.

1.04 PERFORMANCE REQUIREMENTS

- A. Indicator recorder accuracy ± 0.5 percent of span.
- B. Totalizer accuracy ± 0.1 percent of span.

1.05 SUBMITTALS

- A. Submit under provisions of Section 013300.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. FOXBORO, Model 740 R Digital Circular Chart Recorder.
- B. No equals will be accepted.

2.02 MANUFACTURED UNITS

- A. Weekly chart.
- B. Coordinate felt tip pen color for each process variable with District prior to ordering.
- C. 7-digit Digital Display of Flow and pressure.
- D. Integral totalizers for flow and remote totalizer output.
- E. 120V, 60Hz.
- F. 4-20 mA isolated input.
- G. 4-20 mA Isolated Retransmitted Output.

- H. Eight (8) Adjustable alarm Output Relays.
- I. Enclosure: Glass Door, NEMA 4X, case color grey.
- J. 28V DC power supply.
- K. Recorder Schedule:

	Inputs	Quantity
Well No. 4-1 & 4-2 Flow	2	1
Tank Level	1	1
System Pressure	1	1

2.03 ACCESSORIES

- A. Spare Parts: Provide 12 felt tip pens per indicator recorder.
- B. Provide 100 detailed charts per indicator recorder.
- C. Spare fuse.

2.04 CHART DETAIL

- A. All weekly Well flow charts shall have a range of 0-1500 gpm.
- B. All weekly pressure charts shall have a range of 0-150 PSI.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Run power supply, signal cable (shielded twisted pair) and alarm output Control Circuits in separate, dedicated conduits.
- B. Wire device in accordance with manufacturer's wiring schematic.
- C. Adjust zero, span and gain settings.
- D. Calibrate Recorder/Controller for flow, level, and pressure.
- E. Provide two (2) on/off toggle switches in each recorder to switch on/off the current alarm contact closures.
- F. Provide one (1) day of manufacturers field start-up services for Operations and Maintenance procedures for District personnel.

END OF SECTION 409323

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General requirements and methods for the removal of mercury flow and pressure transmitters.

1.02 REFERENCES

- A. Perform work in accordance with the standards listed below. Where these specifications are more stringent, they take precedence. In case of conflict, obtain a decision from the Engineer.
 - 1. NFPA - 70 - National Electric Code.
 - 2. NFPA - 101 - Life Safety Code.
 - 3. New York State Energy Code.
 - 4. New York State Building Code.
 - 5. New York State Department of Environmental Conservation - Hazardous Waste Regulations.
 - 6. Applicable New York State Administrative Code.
 - 7. All applicable OSHA and NIOSH Standards.
 - 8. Applicable Town Ordinances.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 COORDINATION

- A. Carefully examine specifications, drawings and project site to be thoroughly familiar with items which require electrical connections and coordination. Electrical drawings are diagrammatic and shall not be scaled for exact sizes.
- B. Notify Engineer of any deviations or special conditions necessary for the installation of work. Work installed not in compliance with specifications and drawings and without properly checking and coordinating as specified above shall, if necessary, be removed and properly reinstalled without additional cost to the Owner. Engineer to be mediating authority in all disputes arising on project.
- C. Contractor shall notify and make agreements with a hazardous waste transportation and disposal firm in writing to accept all hazardous waste to be removed from the site. The written agreement shall be provided by the Contractor to the District and Engineer before work is to take place.
- D. Contractor is to abide by all regulations of 6NYCRR and the U.S. Department of Transportation (USDOT) for the labeling and transport of all hazardous waste. The Contractor shall be considered liable for all hazardous waste once the mercury filled device has been removed from use or discarded.
- E. Contractor shall provide a detailed description of procedure for the removal of all components containing, intact with, or exposed to mercury to the engineer and or client. No work on the removal of such component is to take place until the approval of said procedure. The procedure which shall also contain the site safety plan and Spill Prevention Contingency Plan shall include:
 - 1. Description of the work to be performed for the clean up.
 - 2. Dates and times the work is to occur.
 - 3. Names of Project Manager and On-site Health and Safety Officer.
 - 4. Names of Field Supervisors and Technicians.

5. Project Manager's training and experience.
6. On-site Health and Safety Officer training and experience.
7. Supervisor training and experience.
8. Technician's training and experience.
9. Personnel assignments and responsibilities.
10. Notification procedures.
11. Decontamination procedures.
12. Equipment and materials which shall be dedicated to the work.
13. Other site relevant information such as proposed testing, certificates of calibration and ancillary clean up needs.

3.02 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for demolition work, safety of structure and dust control.
- B. Obtain required permits from authorities as needed.
- C. Notify attached authorities as necessary before starting work and comply with their requirements.
- D. Do not close or obstruct egress width to exits.
- E. Do not turn off any equipment without authorization from Owner.
- F. All contractor field personnel shall have completed 40 hours of Hazardous Waste Operations and Emergency Response Training as specified in Title 29 CFR 1910.120.
- G. Contractor shall be responsible for obtaining and paying for all required permits as well as the removal of mercury from the facility.
- H. Contractor shall agree that no part of the Contract shall be subcontracted without prior written consent of the District and Engineer. All subcontractors shall meet the bidders qualifications requirements specified herein and perform their work in accordance with all federal, state, and local regulations.
- I. Disposal sites shall meet the following minimum conditions:
 1. No USEPA Class 1 violations.
 2. Not on the USEPA NPL list.
 3. No current or pending enforcement actions by USEPA, state or local regulatory agencies.
 4. Must possess a RCRA Part B or Part A permit.
 5. Has not been denied a Part B or Part A permit.
 6. Has a preparedness and prevention program.
 7. Has a hazardous waste spill contingency plan.
 8. Has a personnel training program.
 9. Has a USEPA and state approval plan for facility closure and post closure approval, where applicable.
 10. Must adhere to land ban restrictions (only decontaminated glass may be land filled).

3.03 MONITORING REQUIREMENTS

- A. The Contractor shall perform testing/monitoring of the transmitter to be replaced within a 15 foot radius including floor drains and pipe trenches prior to starting work. A written report shall be provided to the Owner prior to starting any work. If either visible mercury is observed or the air level exceeds 0.01 mg/m³ of mercury with the room or building sealed (for a period of eight hours), no additional work shall take place and the Owner shall be notified immediately.

- B. The contractor shall perform clearance monitoring of the affected, specified areas of the building to verify the area(s) as being free from mercury contamination after transmitter removal. Air monitoring shall be performed with a properly calibrated Jerome Mercury Vapor Analyzer or equivalent monitoring instrument. The Contractor shall provide the engineer with a valid certificate of calibration of all monitoring equipment to be used in the site. Monitoring shall be included as part of all work.
- C. If either visible mercury is observed or the air level exceeds 0.01 mg/m³ of mercury with the room or building sealed (for a period of 8 hours), additional cleaning of building surfaces will be required at no additional cost to the Owner.
- D. After additional cleaning is completed, the Contractor shall test the areas that were remediated for mercury using mercury-indicating powder. Clean up shall continue until mercury levels are below federal, state, and local regulation limits.

3.04 LEAKS

- A. Under no circumstances shall the Contractor allow mercury to gain access into the surrounding surfaces, soils, building sumps or floor drains. The Contractor shall be responsible and shall bear the cost of cleaning up any leaks or spills that might occur as a result of the work and shall be responsible for related testing, clean-up, removal, transport and proper disposal, as well as remediation of any media impacted by the leak or spill, of those wastes.
- B. The Contractor shall provide timely notification of such actions as may be required by federal, state, regional, and local authorities.

3.05 REMOVAL REQUIREMENTS

- A. The Contractor shall provide all necessary personnel, materials and equipment. All removal and disposal activities will be conducted in accordance with all federal, state, and local regulations.
- B. The Contractor shall package and label all flow transmitters and contaminated waste designated for disposal.
- C. The Contractor shall not process the contaminated units at the facility. If a unit is leaking, the unit may be isolated and drained at the facility with written approval of the engineer. A leaking unit will adhere to all normal and emergency procedures. If conflicting, the more stringent procedure shall be used.
- D. The Contractor shall be prepared to perform field characterization, as necessary, for the purposes of disposal. The Contractor shall package and label the waste in accordance with the United States Department of Transportation (USDOT) hazardous materials classes, as defined in the Hazardous Materials Transportation Act, and the New York State Department of Environmental Conservation Hazardous Waste Regulations.
- E. The Contractor shall be responsible for preparing all manifest paperwork, to be signed by the client as the generator, for hauling and disposing of hazardous wastes and other materials in accordance with applicable federal, state and local regulations. Drums and containers used during clean up shall meet the appropriate DOT, OSHA, NYSDEC and EPA regulations for the waste they contain.

3.06 REQUIRED WORK

- A. The Contractor shall remove and properly dispose of mercury containing flow transmitters and the mercury contained within. Flow meter or flow transmitter removal includes the removal of the flow meter or transmitter, floor stand, mounted brackets, mercury, mercury chambers,

equipment anchor bolts, screws and supports. Materials not contaminated with mercury may be disposed of as construction debris.

3.07 PREPARATION

- A. All work areas must be clearly labeled and taped off from personnel not involved.
- B. All personnel involved should be properly protected from any hazards involved.
- C. All work and working conditions must adhere to all OSHA, state, and local requirements.
- D. Contractor shall provide all necessary personnel, equipment, and materials to complete entire scope of work.
- E. Contractor shall have all testing equipment, vacuums, remediation equipment and remediation personnel on site prior to removal of any mercury containing equipment.

END OF SECTION 409510

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Control relays to activate chemical feed equipment.
- B. Chemical Treatment Control Panels.

1.02 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Provide catalog information, parts list and wiring diagram.
- C. Submit operation and maintenance instructions under provisions of Section 017823.

1.03 OWNERS INSTRUCTIONS

- A. Provide the services of a manufacturers trained engineer for one day to check each system installation, calibrate equipment and to instruct Owner on operation and maintenance.

1.04 EXTRA MATERIALS

- A. Two of each size fuse in components.

PART 2 - PRODUCTS

2.01 CHEMICAL TREATMENT SAFETY CONTROL

- A. Power Relay to energize treatment receptacle control contacts for each treatment pump, rated 1 H.P., 120/240 volts single phase with weld resistant contacts.
- B. Each treatment pump receptacle shall be powered via a dedicated IEC Contactor Rated 1 HP, which will be energized via the treatment receptacle control contacts.
- C. Chemical Safeties for treatment shall be as shown on drawings.
- D. All components shall be installed in the MCC or Control Panel, as shown on drawings.
- E. All press-to-test pilot lights, and switches shall be flush mounted on door with press-to-test lights.
- F. Monitor shall be factory wired to numbered terminal strips and tested prior to shipment.
- G. Labels to identify each indicator light and switches.
- H. The chemical safety panel shall have a four-position selector switch to permit "off", "normal", "weld" and "device" operation. When positioned "off", chemical feeders shall be prevented from operating. In the "normal" position, the closure of all safety/flow detection devices will allow chemical feeders to operate. When a safety/flow detection device activates, a pilot light shall indicate its operation. Similarly, when the chemical feed pump is energized, a pilot light shall indicate its operation. If a chemical feed pump becomes powered in the "normal" mode and any one or all of the safety devices are not closed, an alarm bell shall sound for an adjustable time period, all power to chemical feed pumps shall be interrupted, a pilot light shall indicate a failure, and an auxiliary relay contact shall close. Chemical safety panel shall require operator to manually depress a reset button to repower chemical feeders and to reset alarms.

- I. The "weld" position shall allow testing of the power contactor's contacts for weld. During this test, individual push-buttons for each safety device are depressed. Should a power contactor contain a welded contact, pilot lights shall pinpoint the specific location. The procedure for electrically testing all pilot lights shall be performed by the weld test.
- J. The "device" position shall permit the operator to test the safety devices. By manually operating each device, the panel alarm bell shall double function as an audible continuity tester to indicate closed and open states. Visual verification shall be provided through panel pilot lights. All instructions for performing the above test procedures shall be silk screened on the panel face.
- K. All wiring shall be numbered, tagged, and terminated at 30 AMP heavy duty labeled terminal strips.
- L. All associated logic control and monitoring circuitry shall be configured utilizing control relays and timers of the octal base (or 11 pin base) plug in type. Each relay and timer shall be equipped with an LED or neon status indicator (visible with enclosure door open), and manual operators to facilitate testing and troubleshooting by Owner. Contact ratings shall be minimum 10 AMP, 24 volt.
- M. Install new controls to interface with well motor control circuits. Install relays and an adjustable 0 to 60 second time delay relay to provide a set of contacts that interface with the chemical treatment pump receptacles. The controls shall provide contacts that open/close based on the well pump to stop. This circuit shall de-energize the treatment safeties while the well pump is returning to blowoff before final shutdown. The adjustable time delay relay shall be mounted inside the enclosure.

PART - EXECUTION

3.01 INSTALLATION

- A. Install chemical treatment panels in locations indicated on drawings.
- B. Install isolated 4-20 mA DC chlorine residual and pH process variable instrument circuits in dedicated conduits.
- C. Install alarm contacts for system alarm high/low pH to chemical treatment panels. Install auxiliary alarm contact circuits from chemical treatment panels to PLC.
- D. Deliver remaining Extra Materials to site designated by Owner.

3.02 ADJUSTING

- A. Set low and high alarm set points as requested by Engineer.

3.03 DEMONSTRATION

- A. Demonstrate performance of system to operate monitoring systems and to operate chemical feed pump when alarm relay is energized.

END OF SECTION 409513

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Lime solution tank, mixer, shaft and impellers, and accessories.
- B. Lime slurry pump, piping, and accessories.
- C. Dust Collection and Exhaust System.

1.02 RELATED SECTIONS

- A. Section 220529 - Hangers and Supports for Piping.
- B. Section 221113 - Facility Piping.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Product Data: Submit product data on all components and accessories as mentioned herein.
- C. Shop Drawings: Indicate plan layout of equipment, pertinent dimensions, mounting details, construction details, required clearances, power requirements and wiring diagrams.
- D. Manufacturer's Installation Instructions: Indicate special procedures and conditions required for proper installation.

1.04 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Section 017823.
- B. Operation Data: Indicate proper operating instructions and procedures.
- C. Maintenance Data: Indicate types and methods of lubrication, cleaning, schedules, spare parts list and local parts supplier.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle products to the site under provisions of Section 016500.
- B. Do not remove manufacturer's packaging until product is ready to be installed.
- C. Do not store product directly on the ground.
- D. Store product on a firm, level surface.

1.06 COORDINATION

- A. Coordinate work under provisions of Section 013100.
- B. Coordinate the inspection of the system by the manufacturer with the complete installation of the system.
- C. Coordinate with all other adjacent electrical and mechanical work.

1.07 WARRANTY

- A. Provide manufacturer's standard warranty under provisions of Section 017800.
- B. Warranty to include coverage for materials.

PART 2 - PRODUCTS

2.01 LIME SOLUTION TANK

- A. General Description: Solution tank shall be 5'-6" in diameter and 4'-0" feet high exclusive of dished or conical bottom. Nominal capacity 800 gallon tank wall shall be of one piece construction. Provide flat hinged tank cover for manually charging lime to tank and all required openings. Four (4) sturdy legs shall be welded to the tank bottom to support the tank above floor. Provide enough clearance for installation of drain piping and associated drain equipment.
- B. Manufacturer:
 - 1. Highland Tank, Stoystown, PA.
 - 2. Sims Steel, Lindenhurst, NY.
 - 3. Specifically approved equal.
- C. Materials:
 - 1. 1/4" (minimum) thick steel welded and rolled sections.
 - 2. Steel plates, angles and other structural shapes shall conform to ASTM A36.
 - 3. Bolts and nuts shall conform to ASTM A325.
 - 4. Steel pipe fittings shall conform to ASTM A501.
 - 5. Welds, Welding Metal:
 - a. Welding electrodes for manual shielded metal-arc welding shall conform to ASTM A233, E 60 or E 70 Series. Bare electrodes and granular flux used in the submerged-arc process shall conform to Section 1.17.3 or AISC Specifications for Structural Steel for Buildings, June 1, 1989.
 - b. Electrodes shall be suitable for the positions, material and other conditions of use as recommended by AWS or the manufacturer.
- D. Accessories:
 - 1. Three (3) full couplings (size as per drawings) for pump suction and return and one (1) 2" full coupling for water supply with air gap above tank top.
 - 2. One (1) 2" drain pipe connection from extreme bottom of tank with nipple and pipe drain.
 - 3. Eighteen inch (18") square charging door in cover with full length hinge and handle.
 - 4. Internal baffles at quarter points to enhance mixing of the lime solution.
 - 5. Link seals for sealing two pump connections.
- E. Fabrication:
 - 1. Fabricate steel and aluminum items according to approved shop drawings and to applicable portions of AISC Specifications. Conceal welds where possible; grind exposed welds smooth and flush.
- F. Shop Painting and Protective Coating:
 - 1. Conform to Steel Structures Painting Council Specification 15-68T, Type 1, including preparation of painting.
 - 2. Coat in accordance with Section 099744 - Mechanical Piping Coating Systems of the solution tanks use only NSF and FDA approved coatings.
 - 3. Lime tank shall be painted white.

2.02 LIME SLURRY PUMP

- A. Install two (2) lime slurry pumps in the locations indicated on the Plans. Provide one (1) spare pump to the Owner.
- B. Lime slurry pump shall be designed to pump lime solution of 3 to 12 percent at the maximum rate of 53.5 gallons per hour against a maximum discharge pressure of 250 psi. Pump shall be hydraulically actuated with tubular diaphragm design, using pre-stressed diaphragm return. The pump shall be specifically designed to handle abrasive slurries.
- C. Pumping rate shall be adjustable by stroke length from 0 to 100 percent of maximum by manual crank and shall be continuously adjustable over a 10:1 range. Feed rate setting shall be adjustable to 0.25 percent of full scale.
- D. Head/check material shall be 316 stainless steel construction with polyurethane valve balls and ceramic or stainless steel seats. Valve body shall be PVC. Diaphragms shall be hypalon.
- E. Pump motor shall be standard NEMA foot mounted that is flexibly coupled to the gear reducer. Motor shall be mounted on a common base plate with the pump. Each pump shall be wired directly to its respective junction box for control source power.
- F. Pump shall be as manufactured by Jesco America Corporation Model 1730 or approved equal, 1/3 HP motor designed for operation at 120 volts, 1 phase, 60 Hz, inverter duty, TEFC enclosure. Pump shall be equipped with 10-foot length of cord with twist-lock plug for matching receptacle.
- G. 1-inch polyethylene tubing with nylon inner braided reinforcing made from FDA approved materials, 65 Durometer, 150 psi working pressure. Install high pressure fittings with stainless steel clamps for all connections to tubing.
- H. The following optional accessories offered by the manufacturer shall be standard equipment for this installation.
 - 1. Built-in hydraulic pressure relief valve and return piping.
 - 2. Backpressure valve for low discharge pressure.
 - 3. Automatic speed control by analog input signal.
 - 4. Automatic stroke length control.
 - 5. Food grade mineral oil.
 - 6. Hydraulic level detector.
 - 7. Jesco America Corporation Preventive Maintenance Kit.
 - 8. Single ball check valve with reversible seat on discharge of pump.
 - 9. Provide one (1) preventative maintenance kit for pump supplied.

2.03 TANK MIXER

- A. Gear Drive mechanical mixer with 316 stainless steel shaft and impellers.
- B. Provide minimum two (2) high efficiency 12.8" impellers suitable for mixing lime into solution. Provide stainless steel shaft and set bottom impeller 3-inches above tank bottom. Shaft shall be as sized to meet all dimensional and power constraints.
- C. Provide vibration dampening, as applicable.
- D. Mount: ball and socket type c-clamp, capable of angular adjustment.
- E. Motor: Gear drive, 20-280 RPM, 1/2 hp, 115V, single phase, TENV.

F. Manufacturer: SPX Corporation, Lightning Brand, Model EV6P50M.

2.04 DUST COLLECTION AND EXHAUST SYSTEM

- A. General Description: Dust collection exhaust system to include in-line, centrifugal exhaust fan, extraction arm, ductwork, mounting accessories and all related appurtenances installed as per the contract drawings. The Contractor shall wall mount the exhaust fan and telescoping arm as per the manufacturers recommendations. Contractor shall core drill existing masonry wall and install exhaust duct outside with exhaust vent cover and screen.
- B. Manufacturers:
1. Nederman Inc., Westland, MI
- C. Materials:
1. Exhaust fan to be N-Series, model N-16 by Nederman. Fan shall be single phase, 0.75 HP, 208 V, 60Hz with a max airflow of 750 cfm.
 2. Extraction Arm shall be 10ft length by Nederman, with appropriate ducting and mounting accessories. Contractor to provide automatic spring loaded butterfly damper with extraction arm.
 - a. Structure: The internal articulating support structure shall be assembled from rectangular and square extruded aluminum tube stock. The profile section between the swivel and first arm section shall be 2" x 1.25" x 0.11" thick. The upper and lower arm profiles shall be 1.35" x 1.35" x 0.07" thick. To provide proper arm balance and promote ease of operation a support spring shall be utilized on the first arm section. The support spring shall be rolled from 0.15" diameter spring steel. The mounting swivel assembly shall be 0.125" thick hi-grade cast aluminum with 360° rotation. The swivel gasket shall be made of PVC. The swivel assembly shall incorporate an adjustable vertical friction joint with a range of motion of 180°. An adjustable center elbow joint shall have a vertical range of motion of 230°. The articulating fume arm shall have an effective reach of 7ft. The arm shall include a bolt on duct connection flange. The duct connection flange shall be constructed of 22 gauge stamped steel with a black powder coat finish. A rubber gasket shall be
 - b. Flexible Hose: The blue external flexible hose shall be made of a woven glass fabric with an internal and external PVC lamination. The hose shall be supported by a spirally wound steel wire helix. The hose shall be capable of withstanding a maximum operating temperature of 160° F. The flexible hose shall be 6.25" diameter.
 - c. Integral Hood: The articulating arm shall, as a standard component, incorporate a capture hood. The capture hood shall be constructed of 0.10" thick polycarbonate plastic with a 10.5" x 14" flanged O.D. The hood shall incorporate a handle to permit easy mobility. The polycarbonate hood shall incorporate a polyamide damper. The damper blade shall be 0.10" thick. The damper shall be lockable, by means of a ratchet mechanism, in three different positions; 100% open, 50% open and fully closed. The hood shall have a flat bottom, which will allow it to be placed directly on a flat surface. The hood shall incorporate a four-way friction joint allowing a range of motion of 180° + 220°.
 - d. Friction Joints: All articulating joints shall incorporate friction discs and be adjustable for tension. Friction discs shall be made of an asbestos free brake lining material. All friction joints shall utilize hardware incorporating nylon lock nuts.
 - e. Mounting Bracket: A wall-mounting bracket shall be included with each articulating arm. The wall bracket shall be formed from 1.25" diameter x 0.095" thick tubular steel. The wall bracket shall be predrilled to match the bolt pattern of the arm.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate and conditions are ready to accept work of this section as required by the manufacturer.
- B. Beginning of installation means installer accepts existing substrate and conditions.

3.02 INSTALLATION

- A. Mount and install lime treatment system and accessories in accordance with manufacturer's installation instructions and approved shop drawings.

3.03 MANUFACTURER'S FIELD SERVICE

- A. Provide manufacturer's field services under provisions of Section 017500.
- B. Manufacturer shall provide a trained service technician for one day to verify proper installation, to start the system and to demonstrate operation of the feeder to the Owner's designated representatives.
- C. Schedule demonstration with the Owner.

3.04 PROTECTION

- A. Protect finished work under provisions of Section 015000.
- B. Protect system and equipment from damage until the project is accepted by the Owner.

3.05 SPARE PARTS

- A. The following spare parts shall be provided:
 - 1. One (1) standard manufacturer's preventative maintenance kit for each pump supplied.
 - 2. One (1) quart of pump lubricant.

END OF SECTION 444459.13

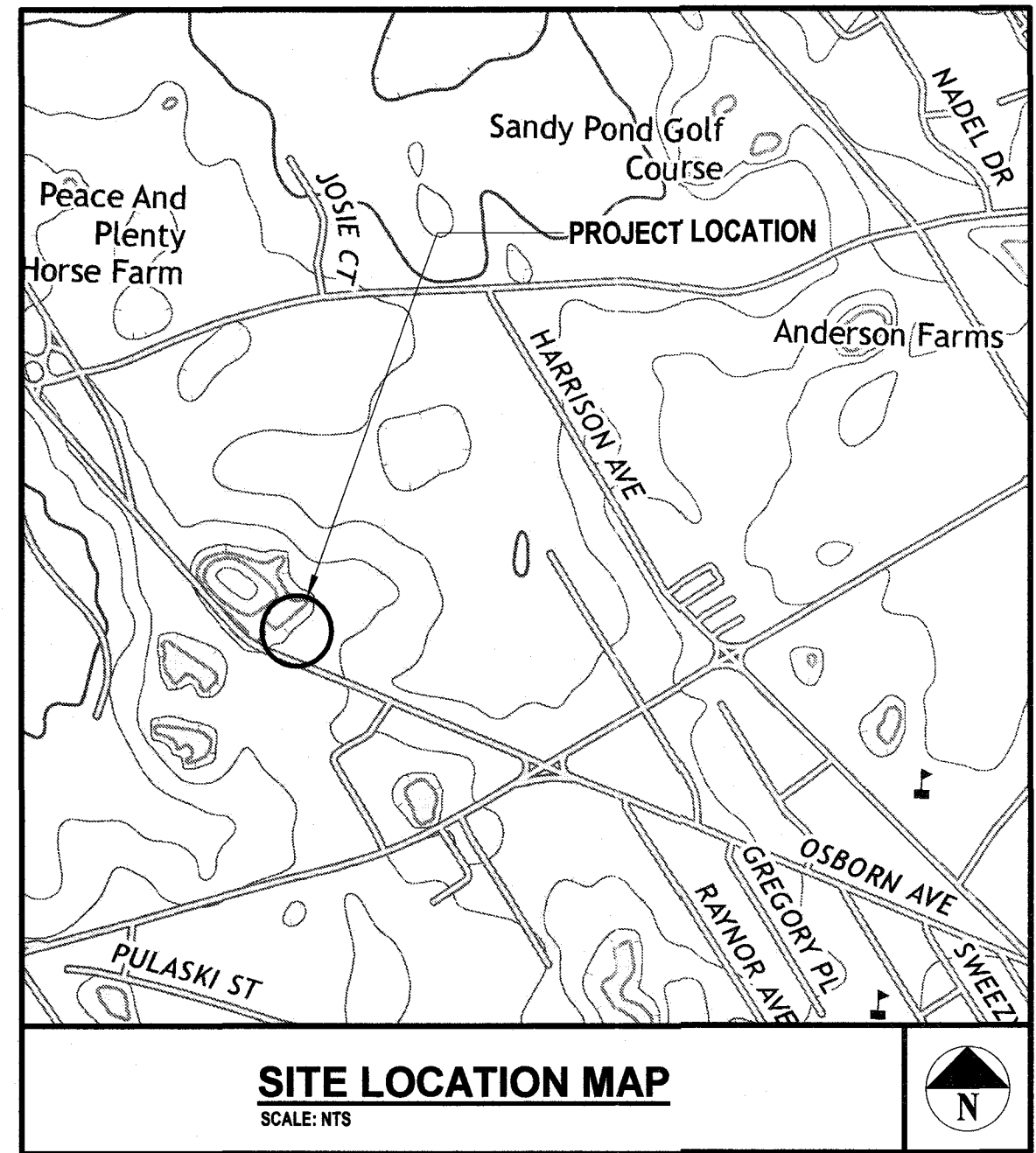
Riverhead Water District

Town of Riverhead
Suffolk County, New York

Rehabilitation of Plant No. 4

Contract E - Electrical Upgrades
Contract M - Lime System Replacement

RDWD1904
SEPTEMBER 2019



TOWN SUPERVISOR

Laura Jens-Smith

TOWN COUNCIL

Jodi Giglio
Timothy Hubbard
Catherine Kent
James Wooten

TOWN CLERK

Diane Wilhelm

SUPERINTENDENT

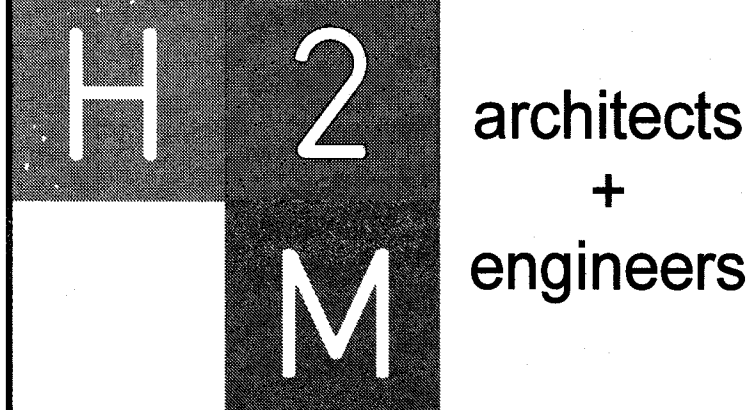
Frank Mancini

ASSISTANT SUPERINTENDENT

Thomas Kruger

PROJECT SHEET LIST

SHEET NO.	SHEET NAME
T0.0	TITLE SHEET
SP1.0	SITE PLAN AND GENERAL NOTES
M1.0	WELL HOUSE NO. 4 REMOVALS PLAN
M2.0	WELL HOUSE NO. 4 PROPOSED FLOOR PLAN
M3.0	LIME TANK AND DETAILS
E0.0	ELECTRICAL LEGENDS
E1.0	WELL HOUSE NO. 4 ELECTRICAL REMOVALS PLAN
E2.0	WELL HOUSE NO. 4 POWER PLAN
E3.0	WELL HOUSE NO. 4 ROOF POWER PLAN
E4.0	ELECTRICAL SINGLE LINE DIAGRAM
E5.0	ELECTRICAL MCC ELEVATION PLAN
E6.0	ELECTRICAL SCHEDULES
E7.0	ELECTRICAL DETAILS
E10.0	INSTRUMENTATION AND CONTROL LEGENDS
E11.0	INSTRUMENTATION AND CONTROL PLAN
E12.0	INSTRUMENTATION AND CONTROL DETAILS AND DIAGRAMS



538 Broad Hollow Road, 4th Floor East
Melville, NY 11747
631.756.8000 • www.h2m.com



DESIGNED BY: SLM	DRAWN BY: ACP	CHECKED BY:	REVIEWED BY:
PROJECT No: RDWD1904	DATE: SEPTEMBER 2019	SCALE:	AS SHOWN

CLIENT
Riverhead Water District

Rehabilitation of Plant No. 4

1124 Osborn Avenue
Riverhead, NY 11901

Dist:600 Sect:101 Block:03 Lot:001

STATUS
FINAL BID DOCUMENT

DRAWING No.
T0.0
SHEET No.
01
OF
16



- G1. CONTRACTOR SHALL INSPECT CONSTRUCTION SITE PRIOR TO SUBMISSION OF BIDS AND SHALL MAKE NO ADDITIONAL CLAIMS REGARDING SITE CONDITIONS THEREAFTER.
- G2. THE CONTRACTOR SHALL NOTIFY H2M ARCHITECTS + ENGINEERS AT LEAST 24 HOURS PRIOR TO THE COMMENCEMENT OF THE WORK (TELEPHONE (631) 756-8000). THE SAME NOTICE SHALL BE REQUIRED WHEN RESUMING WORK AFTER ANY STOPPAGE OR DELAY.
- G3. THE CONTRACTOR SHALL PERFORM DAILY CLEAN-UP OPERATIONS WHICH INCLUDE REMOVAL OF DEBRIS AND EXCESS CONSTRUCTION MATERIAL TO THE SATISFACTION OF THE OWNER AND THE ENGINEER.
- G4. DURING ALL NON-WORKING HOURS, THE CONTRACTOR WILL BE REQUIRED TO STORE ALL EQUIPMENT AND MATERIALS WITHIN THE AREA DESIGNATED BY THE ENGINEER AT THE PROJECT SITE.
- G5. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO ADJUSTIONS AS PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS, AND SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
- G6. CONSTRUCTION OF FACILITY SHALL CONFORM TO ALL APPLICABLE STATE AND LOCAL CODE REQUIREMENTS. THE CONTRACT AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

1. ACCESS ROAD SHALL BE INSTALLED AS REQUIRED BY UTILITY. PROVIDE AND INSTALL FIBRIC FABRIC FOR ENTIRETY OF ACCESS ROAD.
2. NEW ELECTRIC SERVICE RISER AS PER UTILITY REQUIREMENTS.
3. NEW PROPERTY LINE PULL BOX AS PER UTILITY REQUIREMENTS.
4. NEW TRANSFORMER PAD/PULL BOX AS PER UTILITY REQUIREMENTS.
5. NEW PULL BOX. SITE PLAN SHOWS MINIMUM REQUIRED PULL BOXES. PROVIDE ADDITIONAL PULL BOXES AS REQUIRED BY NEG AND UTILITY SERVICE.

CONTRACTOR SHALL STUB ALL CONDUITS INTO BUILDINGS BELOW GRADE VIA EXPOSED PIPE TRENCH. NO EXTERIOR CONDUITS PERMITTED TO RUN EXPOSED ON EXTERIOR WALLS. CORE DRILL FOUNDATION AS REQUIRED. SEAL ALL CONDUIT PENETRATIONS WITH DUCT SEAL ON THE INTERIOR AND LINK SEALS ON THE EXTERIOR.

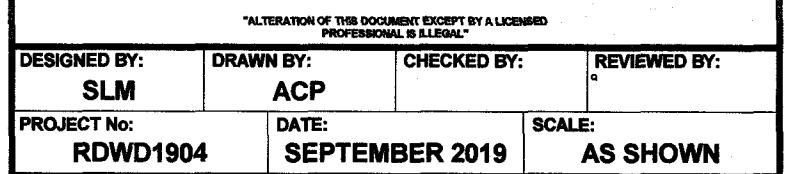
SITE PLAN LEGEND	
	CURB
	UTILITY POWER/TELEPHONE POLE
	EXISTING NATURAL GAS SERVICE
	EXISTING SEWER SERVICE
	EXISTING WATER SERVICE
	EXISTING TELEPHONE SERVICE
	NEW TELEPHONE SERVICE
	EXISTING ELECTRICAL LINES
	NEW ELECTRICAL LINES
	EXISTING PRIMARY ELECTRIC SERVICE
	NEW PRIMARY ELECTRIC SERVICE
	EXISTING OVERHEAD ELECTRIC LINES
	EXISTING FENCE
	ELECTRIC PULL BOX
	HANDHOLE
	TRANSFORMER

[illegible]

REPRODUCTION OF THIS DOCUMENT IS STRICTLY PROHIBITED			
DESIGNED BY: CJS	DRAWN BY: SLM	CHECKED BY:	REVIEWED BY:
PROJECT No.: RDWD1904	DATE: SEPTEMBER 2019	SCALE: AS SHOWN	

SP1.0

EET No.
02
OF **16**

[illegible]

Riverhead Water District

Rehabilitation of Plant No. 4



Dist:600 Sect:101 Block:03 Lot:001

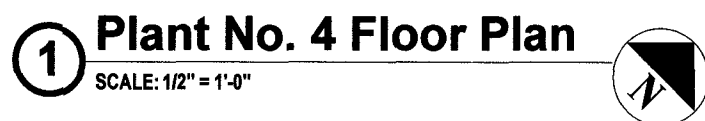
CONTRACT M LIME SYSTEM REPLACEMENT

FINAL BID DOCUMENT

**WELL HOUSE NO. 4
PROPOSED FLOOR PLAN**

M2.0

OF 16



1. THE CONTRACTOR SHALL SUPPORT AND ANCHOR ALL EXPOSED PIPING IN ACCORDANCE WITH THE SPECIFICATIONS. WHERE METHODS OF SUPPORT ARE SHOWN, SUCH METHODS SHALL BE CONSIDERED AS SUGGESTED. SUCH SUGGESTED METHODS SHALL NOT RELIEVE THE CONTRACTOR FROM INSTALLING ALL PIPING IN ACCORDANCE WITH SPECIFIED REQUIREMENTS.
2. MECHANICAL IDENTIFICATION SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS. VALVE DESIGNATIONS AND EQUIPMENT NAMES SHALL BE AS SHOWN ON MECHANICAL DRAWINGS.
3. CORE DRILL FLOORS AND WALLS TO INSTALL SMALL PIPING AND DUCT WORK FOR EXHAUST SYSTEM AS REQUIRED. UNLESS SPECIFICALLY DIMENSIONED ON THE DRAWINGS, VERIFY LOCATIONS OF CORE DRILLING WITH ENGINEER PRIOR TO DRILLING.
4. SINGLE LINE REPRESENTATIONS OF SMALL PIPING ARE DIAGRAMMATIC AND ARE NOT SHOWN TO SCALE.
5. ALL MECHANICAL EQUIPMENT, LARGE AND SMALL PIPING, VALVES AND APPURTENANCES CALLED OUT OR SHOWN ON MECHANICAL DRAWINGS ARE TO BE FURNISHED AND INSTALLED NEW BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL FURNISH AND INSTALL NEW SPOOL PIECES AND SPACERS, WITH LENGTHS AND DIMENSIONS AS REQUIRED, TO COMPLETE PIPING SYSTEMS SHOWN ON MECHANICAL DRAWINGS.
7. ALL NEW PIPING SHALL BE PREPARED, PRIMED AND PAINTED IN ACCORDANCE WITH THE SPECIFICATIONS. ALL COLORS SHALL BE AS APPROVED BY THE OWNER/ENGINEER.

RIVERHEAD WATER DISTRICT PLANT NO.4 - LIST OF EQUIPMENT, MANUFACTURER'S MAKE AND MODEL NUMBER		
#	ITEM OF EQUIPMENT	MANUFACTURER'S MAKE AND MODEL NUMBER
1	800-GALLON STEEL LIME STORAGE TANK	HIGHLAND TANK (CUSTOM TANK)
2	CHEMICAL METERING PUMPS (LIME SLURRY PUMP)	JESCO AMERICA CORPORATION, MODEL 1730
3	TANK MIXER	SPX CORPORATION, LIGHTWIN BRAND, MODEL EV6950M
4	DUST COLLECTION AND EXHAUST SYSTEM	NEDERMAN 10-FT ARM, FAN: N-SERIES MODEL N-16
5	BALL VALVES	CONBRACO INDUSTRIES, INC. APOLLO VALVE, MODEL 76F-100-A SERIES
6	PRESSURE RELIEF/BACKPRESSURE VALVES	PLAST-O-MATIC, MODEL TRVD100T-TF

MARK	DATE	DESCRIPTION

A circular professional engineer seal for the State of New York. The outer ring contains the text "STATE OF NEW YORK" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars. Inside the ring, the name "JOHN A. COLLINS" is written in an arc. In the center is a detailed illustration of a Native American figure holding a bow and arrow. Below the figure, the text "No. 10882" and "Expires 1985" are printed. The seal is stamped in black ink on a white background.

CLIENT _____

Rehabilitation of Plant No. 4



CONTRACT	

STATUS	FINAL BID DOCUMENT

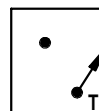
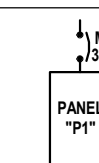
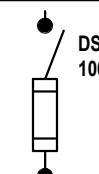
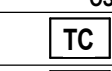
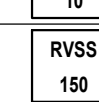
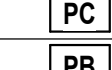
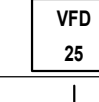
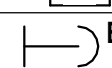
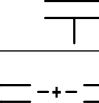
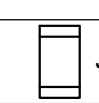
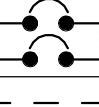
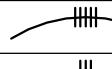
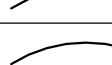
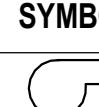
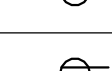
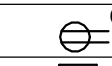
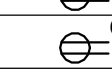
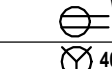
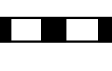
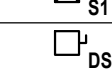
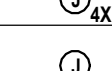
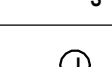
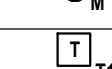
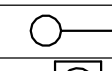
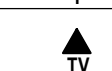
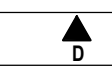
DRAWING No. SHEET No. 1

SHEET No. /

05



1. **INSTALL SIGNAGE AS DIRECTED BY THE ENGINEER AND IN ACCORDANCE WITH NYSDC AND SCDS REGULATIONS.**
2. **PROVIDE EIGHT RIGHT-TO-KNOW SIGNS AT ALL ENTRANCES TO THE BUILDING AND THE LIME ROOM, ON THE TANK, AT THE TREATMENT PUMP, AND AT THE INJECTION POINT.**
3. **PROVIDE TWO (2) HAZARDOUS MATERIAL SIGNS. INSTALL ON THE TANK AND AT THE TREATMENT PUMP.**

ELECTRICAL LEGEND					ELECTRICAL SHEET LIST		
SYMBOL	DESCRIPTION	COMMENTS	ABBREVIATION	DESCRIPTION	SYMBOL	DESCRIPTION	COMMENTS
S ₃	THREE - WAY SWITCH	46" AFF TO CL UON	AFF	ABOVE FINISH FLOOR		LINE VOLTAGE THERMOSTAT, 120V, 10A.	
S ₄	FOUR - WAY SWITCH	46" AFF TO CL UON	AFC	ABOVE FINISH CEILING		CIRCUIT BREAKER WITH TRIP AND POLES AS NOTED.	
S _i	ILLUMINATED SWITCH	46" AFF TO CL UON	AFG	ABOVE FINISH GRADE		TRANSFER SWITCH TS1; SEE TRANSFER SWITCH SCHEDULE.	
S ^A	SINGLE POLE SWITCH; "A" INDICATES SWITCH CONTROL	46" AFF TO CL UON	AMP, A	AMPERE		DISTRIBUTION PANEL P1 WITH 30A, 2 POLE M.C.B.; SEE DISTRIBUTION PANEL SCHEDULE.	
S ₀	SINGLE POLE DIMMER SWITCH	46" AFF TO CL UON	ATS	AUTOMATIC TRANSFER SWITCH; SEE TRANSFER SWITCH SCHEDULE		DISCONNECT SWITCH DS1, 100A, 3 POLES; SEE DISCONNECT SWITCH SCHEDULE.	
S _{3D}	THREE - WAY DIMMER SWITCH	46" AFF TO CL UON	AWG	AMERICAN WIRE GUAGE		FUSED DISCONNECT SWITCH DS2, FUSED AT 40A, 3 POLES; SEE DISCONNECT SWITCH SCHEDULE.	
S _k	SINGLE POLE KEYED SWITCH	46" AFF TO CL UON	BFC	BELOW FINISHED CEILING		GENERATOR SET G1	
S _{K3}	KEYED THREE - WAY SWITCH	46" AFF TO CL UON	CL	CENTERLINE		ELECTRIC METER AND METER PAN AS PER PSEG REQUIREMENTS.	
S _{K4}	KEYED FOUR - WAY SWITCH	46" AFF TO CL UON	CT	COUNTERTOP		MOTOR, NUMBER INDICATED HORSEPOWER.	
S _M	HORSEPOWER RATED SWITCH, WITH INDICATOR (CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE WITH EQUIPMENT)	46" AFF	EC	ELECTRICAL CONDUIT		CURRENT TRANSFORMER.	
S _p	SWITCH AND PILOT LIGHT		GFCI	GROUND FAULT CIRCUIT INTERRUPTER		VOLTAGE TRANSFORMER.	
S _t	SWITCH WITH THERMAL OVERLOAD PROTECTION (CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE WITH EQUIPMENT)		GFI	GROUND FAULT INDICATOR		TRANSFORMER WITH SIZE, PRIMARY AND SECONDARY VOLTAGES AS NOTED.	
S _{OS}	OCCUPANY SENSOR WITH MANUAL OVERRIDE, WALL MOUNT		PSEG	PUBLIC SERVICE ELECTRIC AND GAS COMPANY (LOCAL ELECTRIC UTILITY)		REDUCED VOLTAGE SOLID STATE RAMPING MODULE, SIZED FOR 10 H.P.	
	TIME CLOCK		MCB	MAIN CIRCUIT BREAKER		REDUCED VOLTAGE SOLID STATE STARTER, SIZED FOR 150 H.P.	
	PHOTOCELL		MLO	MAIN LUGS ONLY		VARIABLE FREQUENCY DRIVE, RATED FOR 25 H.P.	
	PUSH BUTTON		NTS	NOT TO SCALE		FULL VOLTAGE NON-REVERSING STARTER, NEMA SIZE 6	
	EMERGENCY SHUT OFF SWITCH; 'E' INDICATES ELECTRICAL; 'G' INDICATES GAS		UON	UNLESS OTHERWISE NOTED		FULL VOLTAGE REVERSING STARTER, NEMA SIZE 5	
	OCCUPANCY SENSOR, CEILING MOUNT		UC	UNDERCOUNTER		FAST ACTING SOLID STATE FUSES AS PER MANUFACTURER.	
	OCCUPANCY SENSOR POWER PACK, MOUNTED ABOVE CEILING		V	VOLTS		MULTIPLE BRANCH CIRCUITS AS REQUIRED.	
	2 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN WALL OR CEILING		VAC	VOLTS ALTERNATING CURRENT		CONTROL CIRCUIT; MIN 2 #12 AWG IN 3/4" E.C.	
	5 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN WALL OR CEILING		VDC	VOLT DIRECT CURRENT			
	3 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN OR BELOW SLAB		X-FMR	TRANSFORMER			
	DEDICATED HOME RUN TO PANEL LP1 FOR CIRCUIT No. 35 ONLY. 2 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN WALL OR CEILING		WP	WEATHERPROOF			
	SIMPLE RECEPTACLE: 120V, 20A. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR BASEBOARDS.	FLUSH					
	DUPLEX RECEPTACLE: 120V, 20A. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR BASEBOARDS.	FLUSH					
	QUAD RECEPTACLE, DOUBLE DUPLEX RECEPTACLE: 120V, 20A. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR BASEBOARDS.	FLUSH					
	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "C" INDICATES CEILING MOUNT.	FLUSH					
	DUPLEX RECEPTACLE: 120V, 20A; FLOOR MOUNTED.	FLUSH					
	ISOLATED GROUND DUPLEX RECEPTACLE. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR BASEBOARDS.	FLUSH					
	DUPLEX RECEPTACLE: 120V, 20A; WITH GROUND FAULT INDICATOR. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR BASEBOARDS.	FLUSH					
	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "UC" INDICATES UNDER COUNTER	AS PER ENGINEER					
	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "CT" INDICATES COUNTER TOP.	AS PER ENGINEER					
	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "WP" INDICATED WEATHER PROOF	AS PER ENGINEER					
	SPECIAL PURPOSE OUTLET: 240V, 40A. VERIFY NEMA CONFIGURATION WITH EQUIPMENT MANUFACTURER.	AS PER ENGINEER					
	TWISTED LOCK RECEPTACLE: 125V, 20A, 3 WIRE; UNLESS OTHERWISE NOTED.	AS PER ENGINEER					
	SURFACE RACEWAY WITH 2 GROUNDED AND ISOLATED TYPE DUPLEX RECEPTACLES AND 1 DATA OUTLET PER POSITION, 18" AFF UNLESS OTHERWISE NOTED.						
	TELEPHONE/POWER POLE						
	MAGNETIC STARTER "S1"; SEE STARTER SCHEDULE						
	DISCONNECTION SWITCH "DS1"; SEE DISCONNECT SWITCH SCHEDULE.						
	JUNCTION BOX						
	NEMA 4X STAINLESS STEEL JUNCTION BOX WITH GASKET COVER.						
	JUNCTION BOX RECESSED IN WALL WITH BLANK COVER, PROVIDE 3/4" E.C. AND DRAG LINE TO ABOVE FINISHED CEILING. MOUNT 18" AFF, UNLESS OTHERWISE NOTED.						
	FOR MONITOR, JUNCTION BOX RECESSED IN WALL WITH BLANK COVER. PROVIDE 3/4" E.C. AND DRAG LINE TO ABOVE FINISHED CEILING.						
	TRANSFORMER "T1"; SEE TRANSFORMER SCHEDULE.						
	ELECTRICAL PANEL "P1", RECESSED; SEE PANEL SCHEDULE.						
	ELECTRICAL PANEL "P1", SURFACE MOUNT; SEE PANEL SCHEDULE.						
	CONDUIT GOING UP.						
	CONDUIT GOING DOWN.						
	PULL BOX						
	TELEPHONE. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						
	CABLE TELEVISION. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						
	DATA. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						
	COMBINED DATA AND TV. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						
	SECURITY CAMERA. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						



architects
+
engineers

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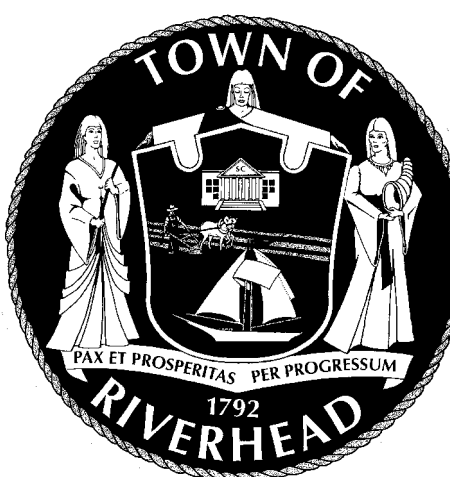


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PROJECT No: RDWD1904	DATE: SEPTEMBER 2019	SCALE:	AS SHOWN

Riverhead Water District

Rehabilitation of Plant No. 4



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Riverhead, NY 11901

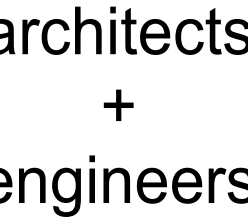
Dist:600 Sect:101 Block:03 Lot:001

CONTRACT

CONTRACT E
ELECTRICAL UPGRADES

STATUS	FINAL BID DOCUMENT
SHEET TITLE	ELECTRICAL LEGENDS

DRAWING No. E0.0	SHEET No. 06 OF 16



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Rehabilitation of Plant No. 4



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Riverhead, NY 11901**

Dist:600 Sect:101 Block:03 Lot:001

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SHEET TITLE

**WELL HOUSE NO. 4
ELECTRICAL REMOVALS
PLAN**

DRAWING No.

E1.0

SHEET No.

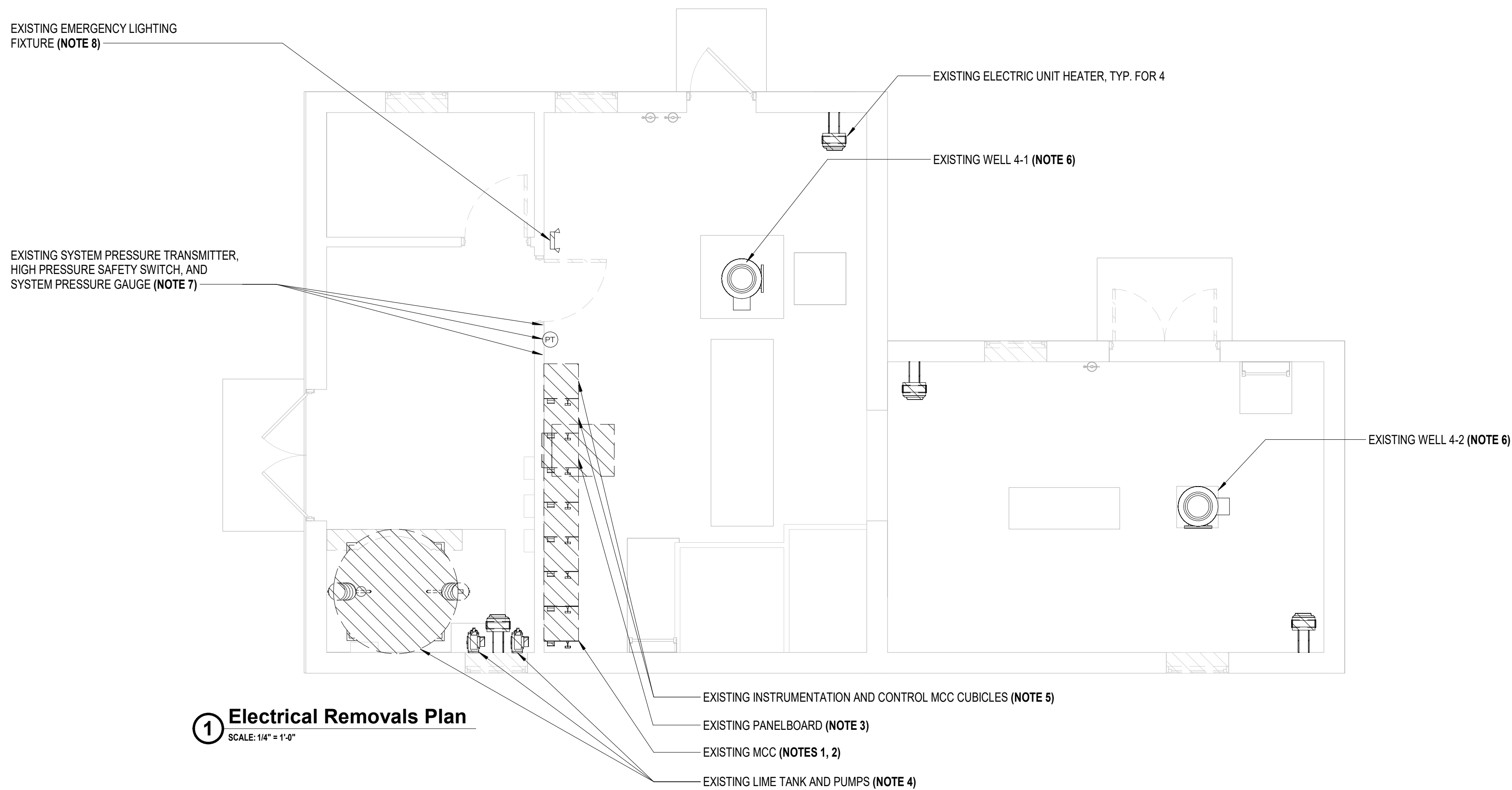
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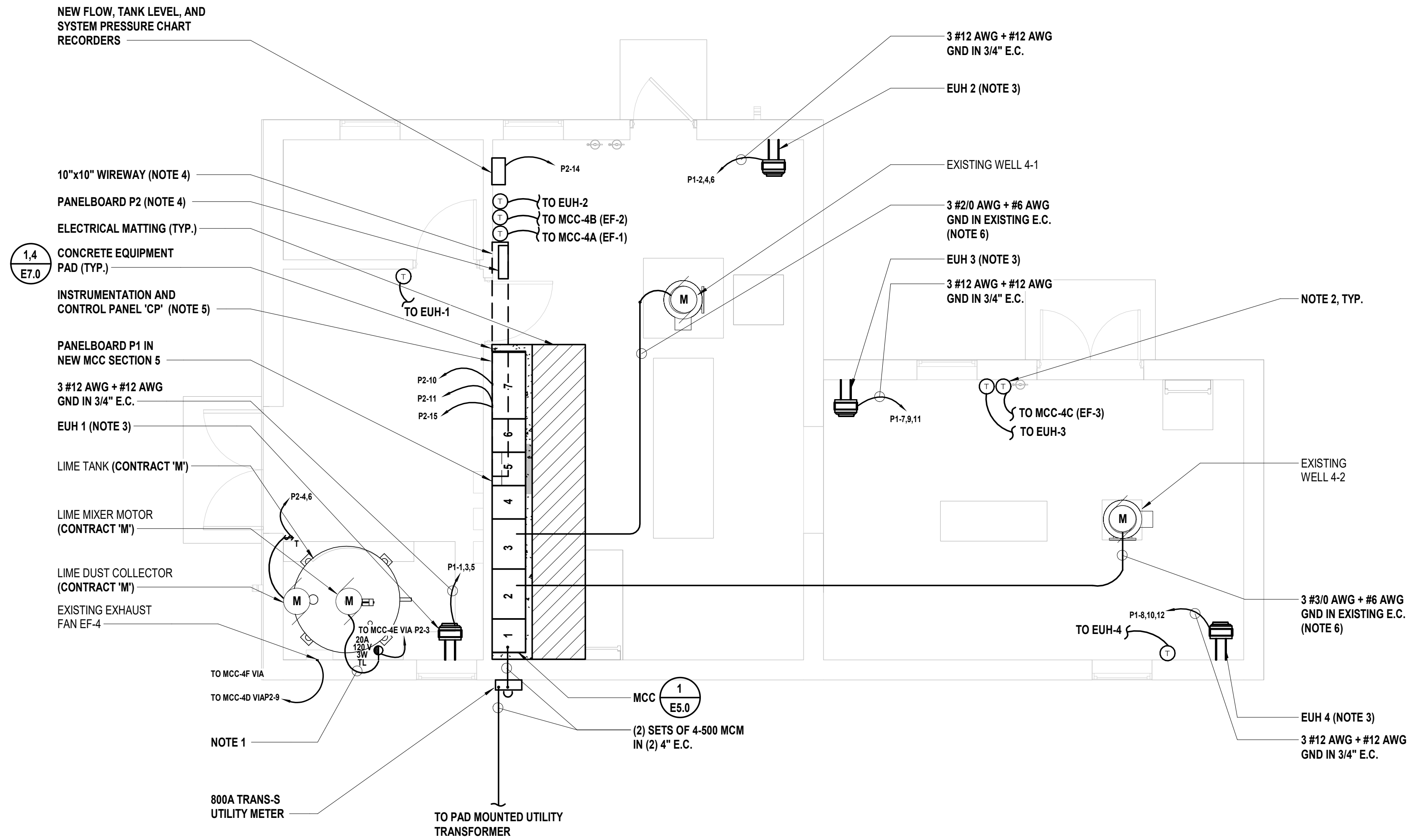
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9/11/2019 10:19:10 AM



1 Electrical Removals Plan

SCALE: 1/4" = 1'-0"



1 ELECTRICAL POWER PLAN

SCALE: 1/4" = 1'-0"

NOTES:

1. PROVIDE AND INSTALL S.O. CORD WITH MATCHING PLUG END. CORD AND PLUG END SHALL BE SIZED IN ACCORDANCE WITH NEC.
2. PROVIDE AND INSTALL INSULATED BACKPLATE FOR ALL THERMOSTATS MOUNTED ON AN EXTERIOR WALL.
3. CONTRACTOR SHALL FIELD INSTALL AND WIRE DISCONNECT SWITCH PROVIDED BY EQUIPMENT MANUFACTURER.
4. 10"x10" WIREWAY FOR ROUTING OF NEW AND EXISTING CIRCUITS FROM NEW MCC TO NEW PANELBOARD 'P2'. COORDINATE EXACT ROUTING IN FIELD TO ACCOMMODATE EXISTING AND NEW CONSTRUCTION. EXTEND ALL EXISTING CIRCUITS (CONDUIT AND WIRE) NOT IDENTIFIED AS BEING REMOVED TO NEW PANELBOARD 'P2' AND RETERMINATE TO NEW CIRCUIT BREAKER.
5. PROVIDE TWO (2) DEDICATED 120V CIRCUITS FROM PANELBOARD 'P2' TO NEW CP.
6. CONTRACTOR SHALL REPLACE EXISTING LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT FROM CONDUIT STUB UP LOCATION AT FLOOR TO TERMINATION BOX AT WELL PUMP MOTOR.

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SHEET TITLE WELL HOUSE NO. 4 POWER PLAN

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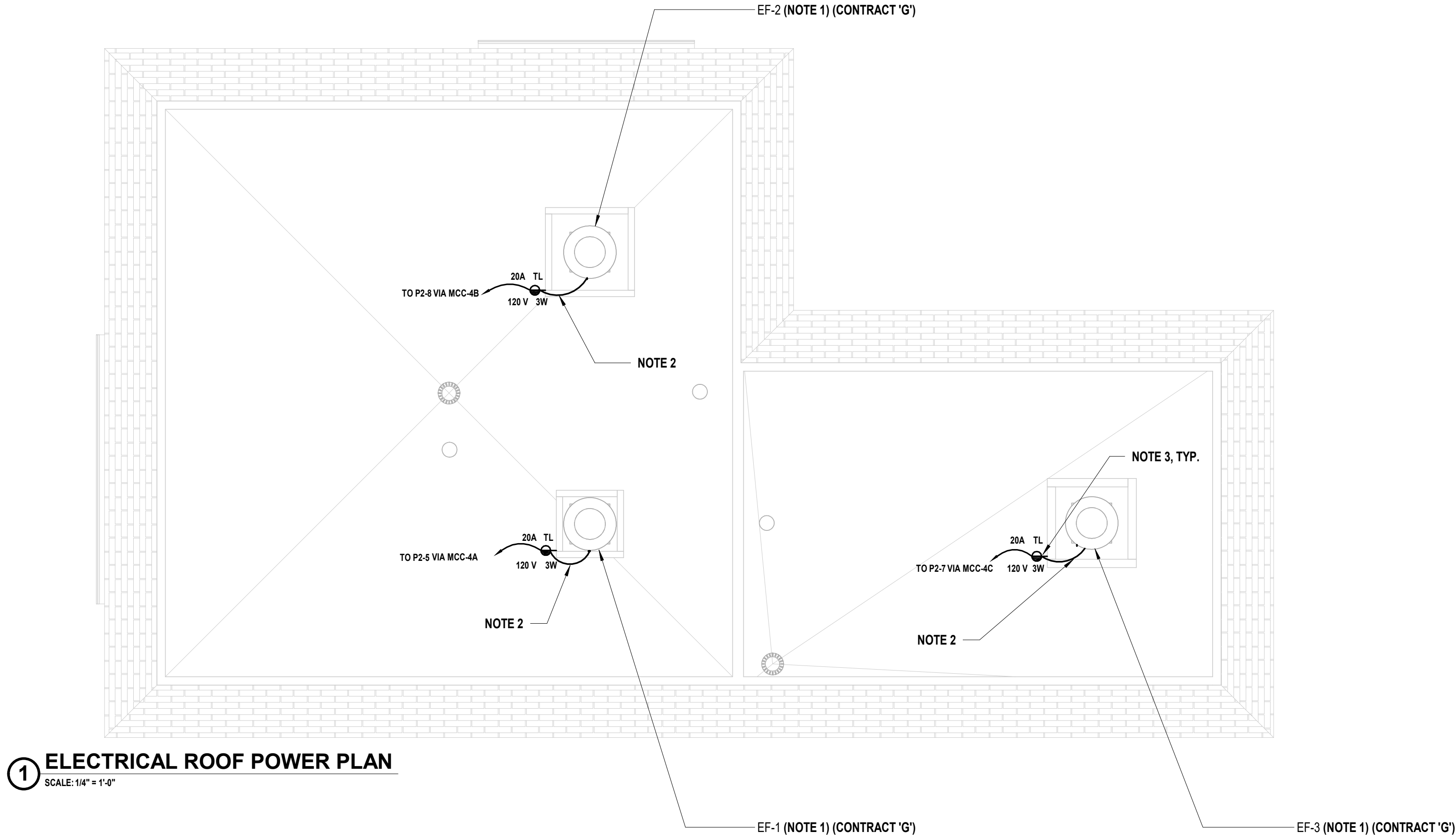
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STATUS

FINAL BID DOCUMENT

SHEET TITLE

WELL HOUSE NO. 4 ROOF
POWER PLAN



- NOTES:
- CONTRACTOR SHALL FIELD INSTALL AND WIRE DISCONNECT SWITCH PROVIDED BY EQUIPMENT MANUFACTURER.
 - PROVIDE AND INSTALL S.O. CORD WITH MATCHING PLUG END. CORD AND PLUG END SHALL BE SIZED IN ACCORDANCE WITH NEC.
 - ALL ROOF MOUNTED RECEPTACLES SHALL BE PROVIDED WITH WEATHERPROOF IN-USE COVER.

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PROJECT NO: RDWD 1904	DATE: SEPTEMBER 2019	SCALE: AS SHOWN	

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Rehabilitation of Plant No. 4

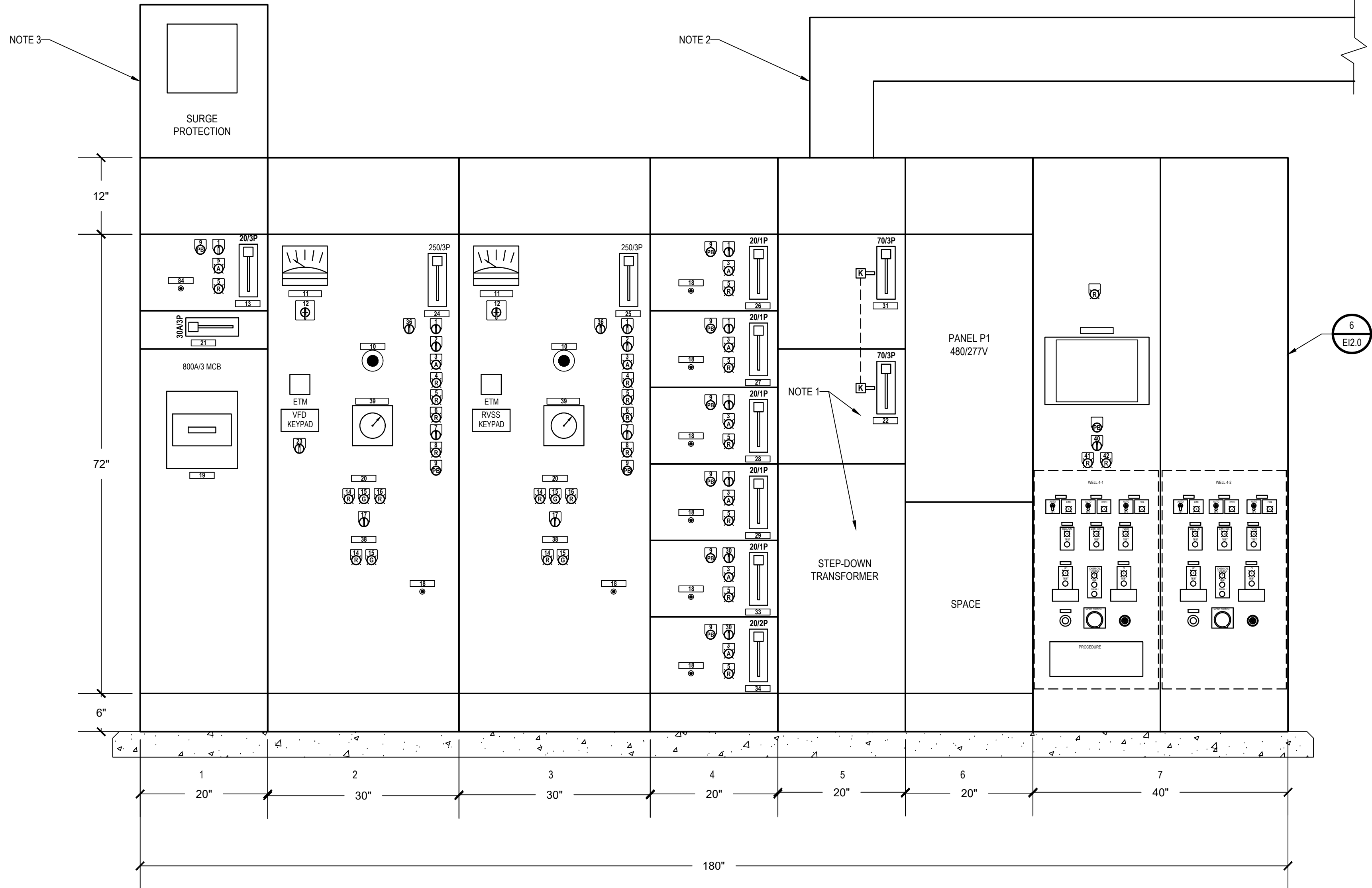
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SHEET TITLE
ELECTRICAL MCC ELEVATION PLAN

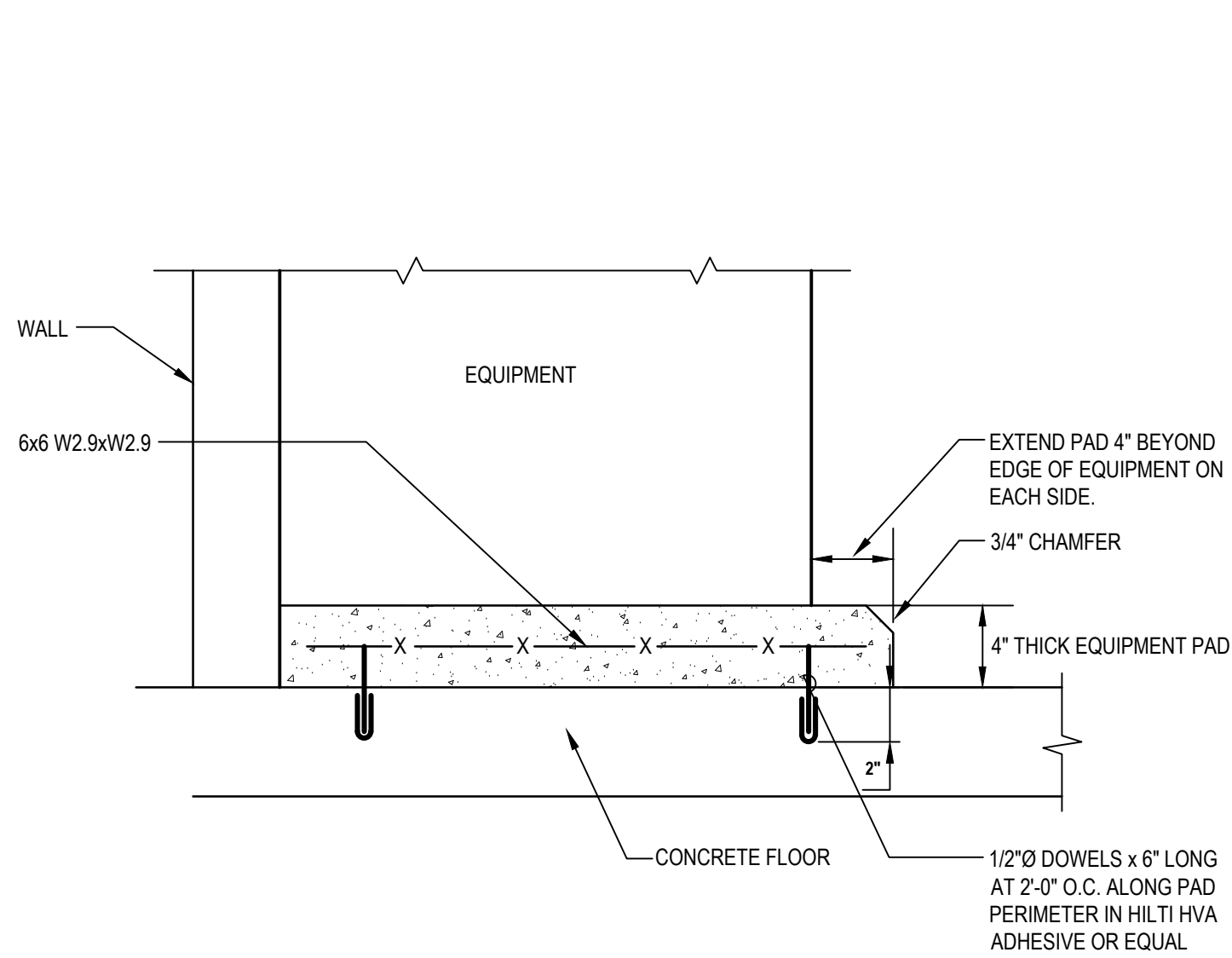


1 Electrical Equipment Elevation Plan
SCALE: 1" = 1'-0"

NOTES:

- KIRK KEYS KEYED ALIKE SO THAT ONLY ONE CIRCUIT BREAKER IS PERMITTED TO CLOSE AT ONE TIME.
- 10"X10" WIREWAY FOR ROUTING OF NEW AND EXISTING CIRCUITS FROM NEW MCC TO NEW PANELBOARD 'P2'. COORDINATE EXACT ROUTING IN FIELD TO ACCOMMODATE EXISTING AND NEW CONSTRUCTION.
- PROVIDE ALL MOUNTING HARDWARE AND ACCESSORIES REQUIRED TO SECURELY MOUNT EQUIPMENT INDICATED.

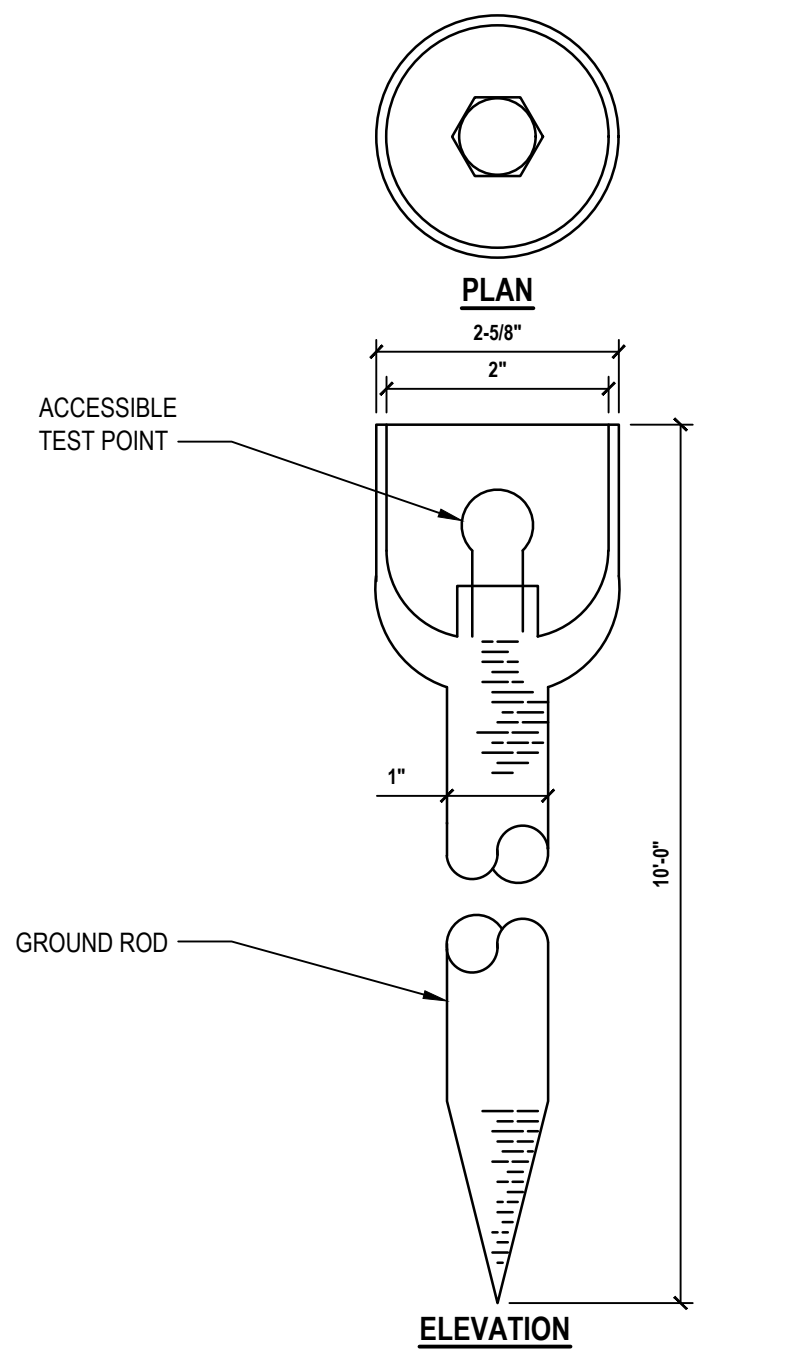
MCC ELEVATION SCHEDULE		
ITEM	DESCRIPTION	COLOR/TYPE
1	H-O-A SWITCH	SEL3
2	NORMAL-BY-PASS SELECTOR SWITCH	SEL2
3	RUN	AMBER
4	BYPASS	RED
5	OVERLOAD	RED
6	FAULT	RED
7	HIGH PRESSURE ENABLE / DISABLE	SEL2
8	HIGH PRESS FAILURE	RED
9	RESET	PB
10	EMERGENCY STOP	PB-M
11	AMMETER	-
12	A-B-C-OFF SELECTOR	SEL4
13	AIR COMPRESSOR	-
14	"OPEN"	RED
15	"CLOSED"	GREEN
16	INCOMPLETE VALVE CYCLE	RED
17	OPEN-CLOSE-STOP-AUTO SELECTOR SWITCH	SEL4
18	OVERLOAD RESET	PB
19	MAIN CIRCUIT BREAKER	-
20	BLOW-OFF VALVE	-
21	SURGE SUPPRESSION CIRCUIT BREAKER	-
22	PANEL P2 NORMAL FEED CIRCUIT BREAKER	-
23	SPEED POT	-
24	WELL 4-2	-
25	WELL 4-1	-
26	EXHAUST FAN EF-1	-
27	EXHAUST FAN EF-2	-
28	EXHAUST FAN EF-3	-
29	EXHAUST FAN EF-4	-
30	HAND-OFF	SEL2
31	PANEL P2 EMERGENCY FEED CIRCUIT BREAKER	-
32	MODE SELECTOR	SEL4
33	LIME MIXER	-
34	DUST COLLECTOR FAN	-
35	NORMAL-OFF-EMERGENCY	SEL3
36	DIESEL-ELECTRIC	SEL2
37	SPARE CIRCUIT BREAKER	-
38	DISCHARGE CONTROL VALVE	-
39	BACKSPIN TIMER	-
40	TANK LEVEL	SEL2
41	SYSTEM PRESSURE	RED
42	SYSTEM PRESSURE TRACKING	RED
MCC DEVICE LEGEND		
SEL2	SELECTOR SWITCH - TWO POSITION	
SEL3	SELECTOR SWITCH - THREE POSITION	
SEL4	SELECTOR SWITCH - FOUR POSITION	
PB	PUSH BUTTON SWITCH - MOMENTARY	
PB-M	PUSH BUTTON SWITCH - MAINTAINED	



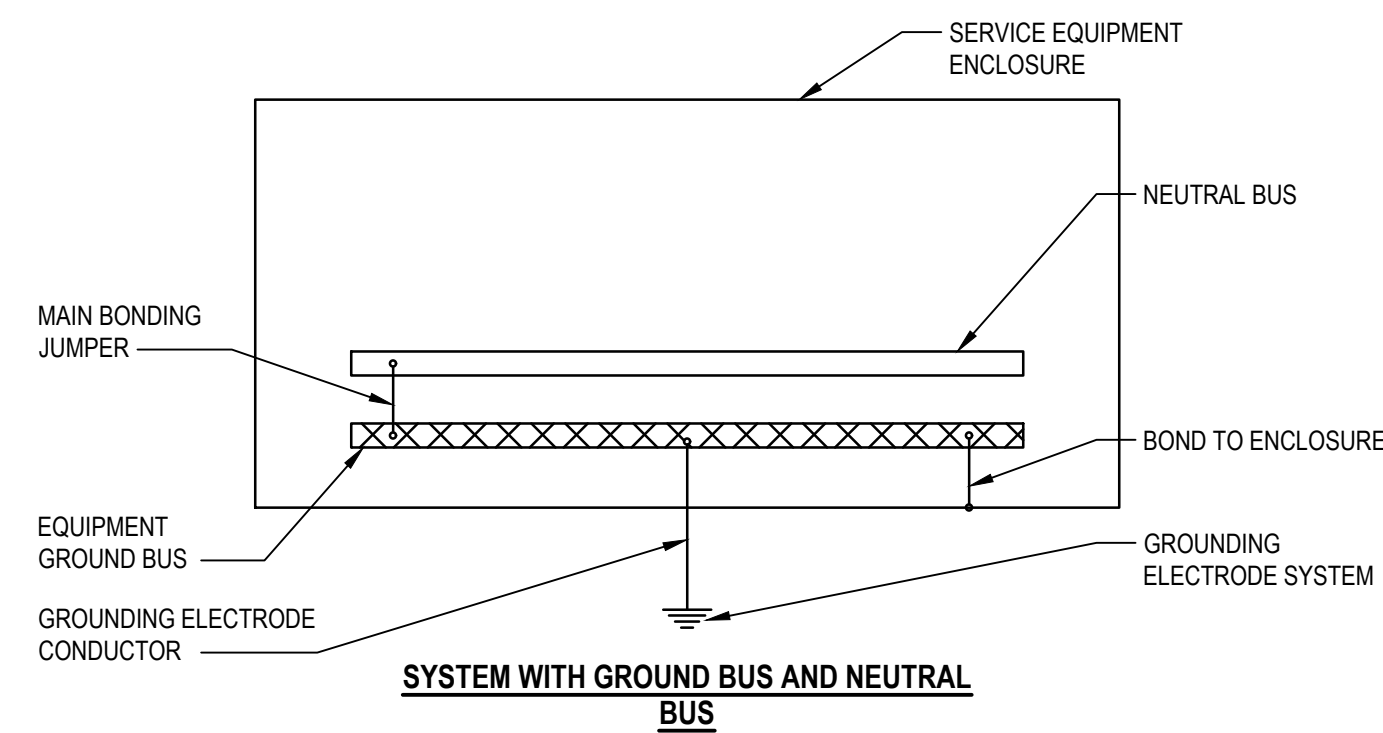
1 Concrete Equipment Pad Elevation View
SCALE: NTS

NOTE:

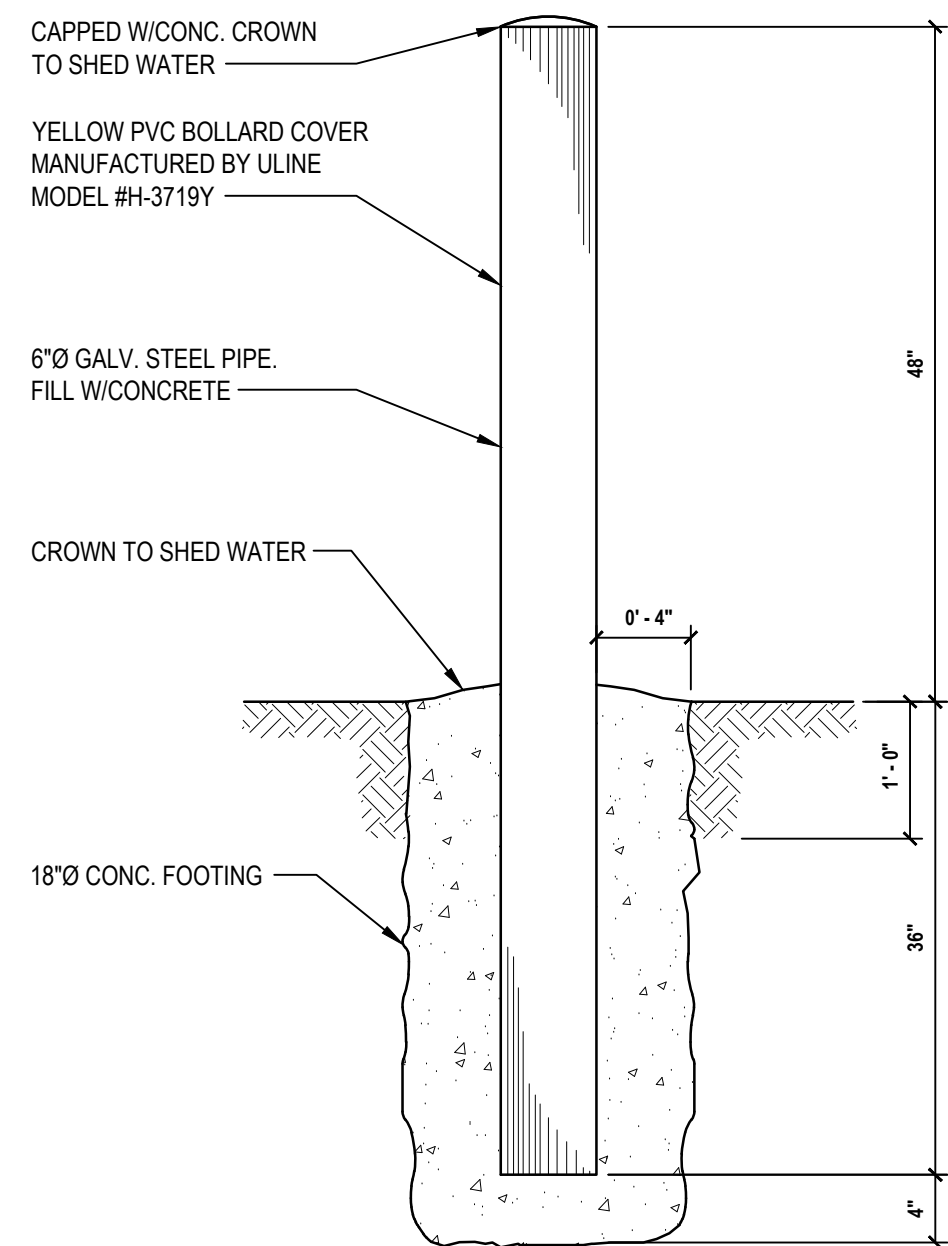
1. CONTRACTOR SHALL PRIME AND PAINT CONCRETE PAD BEFORE INSTALLING SWITCHBOARD.



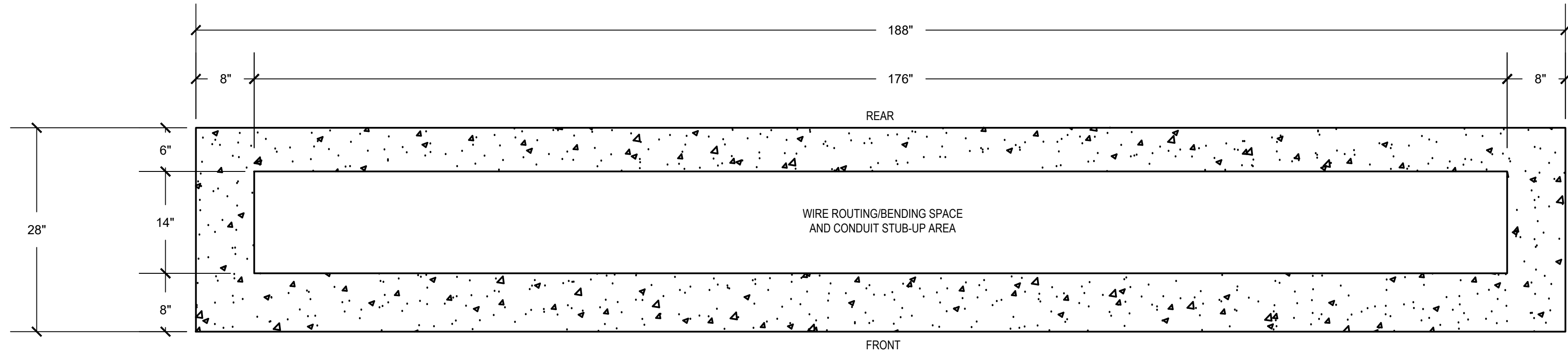
2 Accessible Ground Rod
SCALE: NTS



3 Basic System Grounding
SCALE: NTS



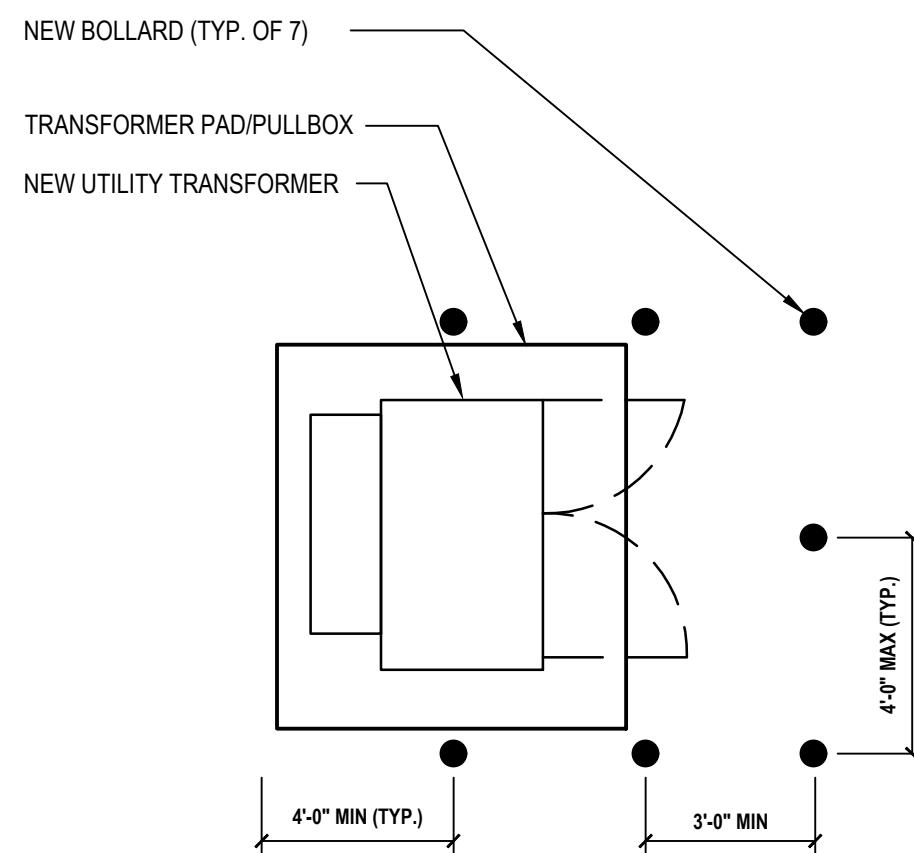
5 Bollard Detail
SCALE: 1/2"=1'-0"



4 Concrete Equipment Pad Plan View
SCALE: NTS

NOTE:

1. CONTRACTOR SHALL PRIME AND PAINT CONCRETE PAD BEFORE INSTALLING SWITCHBOARD.

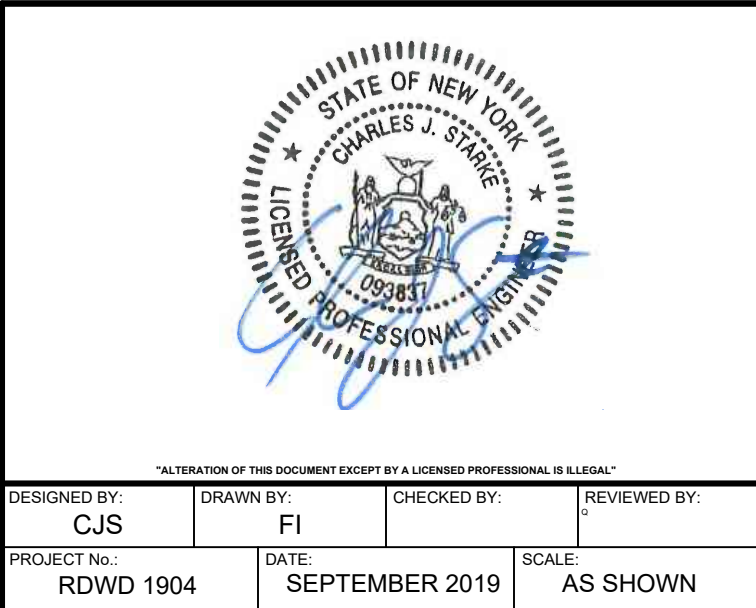


6 Typical Transformer Bollard Configuration Detail
SCALE: NTS

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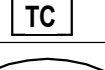
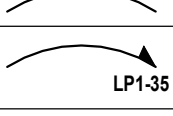
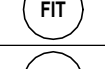
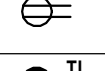
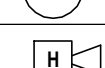
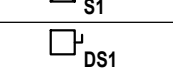
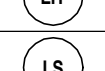
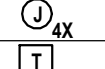
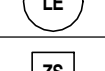
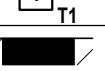
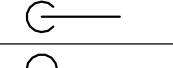
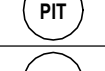
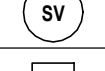
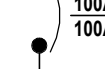
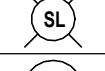
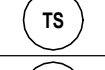
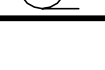
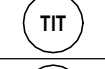
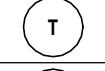
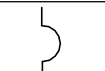
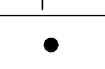
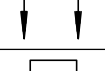
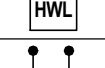
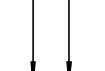
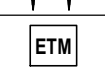
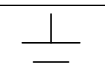
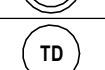
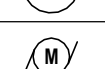
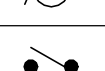
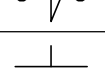
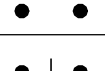
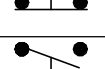
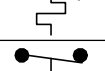
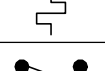
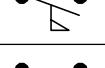
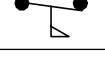
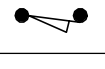
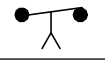
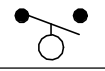
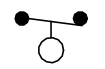
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SHEET No.

13

OF

16

INSTRUMENTATION AND CONTROL LEGEND					
SYMBOL	DESCRIPTION	COMMENTS	SYMBOL	DESCRIPTION	COMMENTS
	INDICATING LIGHT - LETTER DENOTES LENS COLOR: W-WHITE; G-GREEN; A-AMBER; R-RED; B-BLUE; C-CLEAR			TIME CLOCK	
	ANALYSIS INDICATING TRANSMITTER			2 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN WALL OR CEILING DEDICATED HOME RUN TO PANEL LP1 FOR CIRCUIT No. 35 ONLY. 2 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN WALL OR CEILING	
	FLOW INDICATING TRANSMITTER			DUPLEX RECEPTACLE: 120V, 20A. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR BASEBOARDS.	
	FLOW SWITCH			TWISTED LOCK RECEPTACLE: 125V, 20A, 3 WIRE; UNLESS OTHERWISE NOTED.	
	HORN			MAGNETIC STARTER "S1"; SEE STARTER SCHEDULE	
	LEVEL INDICATING TRANSMITTER			DISCONNECTION SWITCH "DS1"; SEE DISCONNECT SWITCH SCHEDULE.	
	LEVEL SWITCH			JUNCTION BOX	
	LEVEL ELECTRODES			NEMA 4X STAINLESS STEEL JUNCTION BOX WITH GASKET COVER.	
	LIMIT SWITCH			TRANSFORMER "T1"; SEE TRANSFORMER SCHEDULE.	
	PRESSURE SWITCH			ELECTRICAL PANEL "P1", SURFACE MOUNT; SEE PANEL SCHEDULE.	
	PRESSURE SWITCH INDICATOR			ELECTRICAL PANEL "P1", RECESSED; SEE PANEL SCHEDULE.	
	SOLENOID VALVE			CONDUIT GOING UP.	
	LINE REACTOR			CONDUIT GOING DOWN.	
	STROBE LIGHT			PULLBOX	
	TEMPERATURE SWITCH			CIRCUIT BREAKER WITH TRIP AND POLES AS NOTED; 100 AMP FRAME, 100 AMP TRIP.	
	TEMPERATURE INDICATING TRANSMITTER			MOTOR, NUMBER INDICATES HORSEPOWER	
	THERMOSTAT				
	DIFFERENTIAL PREASSURE SWITCH				
	CONTACT - NORMALLY OPEN				
	CONTACT - NORMALLY CLOSED				
	CONDUCTOR CROSSOVER				
	CONNECTION / TERMINATION				
	REMOTE CONTACT				
	HIGH WATER LEVEL SWITCH				
	REMOTE TERMINATION				
	ELAPSED TIME METER				
	GROUND				
	PUSH BUTTON				
	TIME DELAY				
	MOTOR				
	SWITCH - TOGGLE				
	SOLENOID VALVE COIL				
	MOMENTARY CONTACT PUSH BUTTON - NORMALLY OPEN				
	MOMENTARY CONTACT PUSH BUTTON - NORMALLY CLOSED				
	SWITCH - TEMPERATURE - NORMALLY OPEN				
	SWITCH - TEMPERATURE - NORMALLY CLOSED				
	SWITCH - FLOW - NORMALLY OPEN				
	SWITCH - FLOW - NORMALLY CLOSED				
	SWITCH - LIMIT - NORMALLY OPEN				
	SWITCH - LIMIT - NORMALLY CLOSED				
	CONTACT - "ON" TIME DELAY - NORMALLY OPEN				
	CONTACT - "ON" TIME DELAY - NORMALLY CLOSED				
	CONTACT - "OFF" TIME DELAY - NORMALLY OPEN				
	CONTACT - "OFF" TIME DELAY - NORMALLY CLOSED				
	SWITCH - LIQUID LEVEL - NORMALLY OPEN				
	SWITCH - LIQUID LEVEL - NORMALLY CLOSED				
	SWITCH - PRESSURE- NORMALLY OPEN				
	SWITCH - PRESSURE - NORMALLY CLOSED				

ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISH FLOOR
AFC	ABOVE FINISH CEILING
AFG	ABOVE FINISH GRADE
AMP, A	AMPERE
ATS	AUTOMATIC TRANSFER SWITCH; SEE TRANSFER SWITCH SCHEDULE
AWG	AMERICAN WIRE GUAGE
BFC	BELOW FINISHED CEILING
CL	CENTERLINE
CT	COUNTERTOP
EC	ELECTRICAL CONDUIT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INDICATOR
PSEG	PUBLIC SERVICE ELECTRIC AND GAS COMPANY (LOCAL ELECTRIC UTILITY)
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
NTS	NOT TO SCALE
UON	UNLESS OTHERWISE NOTED
UC	UNDERCOUNTER
V	VOLTS
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLT DIRECT CURRENT
X-FMR	TRANSFORMER
WP	WEATHERPROOF

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M

architects
+
engineers

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CONSULTANTS:		

MARK	DATE	DESCRIPTION



DESIGNED BY:
CJS

DRAWN BY:
FI

CHECKED BY:

REVIEWED BY:

PROJECT No:
RDWD1904

DATE:
SEPTEMBER 2019

SCALE:
AS SHOWN

CLIENT

Riverhead Water District

Rehabilitation of Plant No. 4



1124 Osborn Avenue
Riverhead, NY 11901

Dist:600 Sect:101 Block:03 Lot:001

CONTRACT

CONTRACT E
ELECTRICAL UPGRADES

STATUS

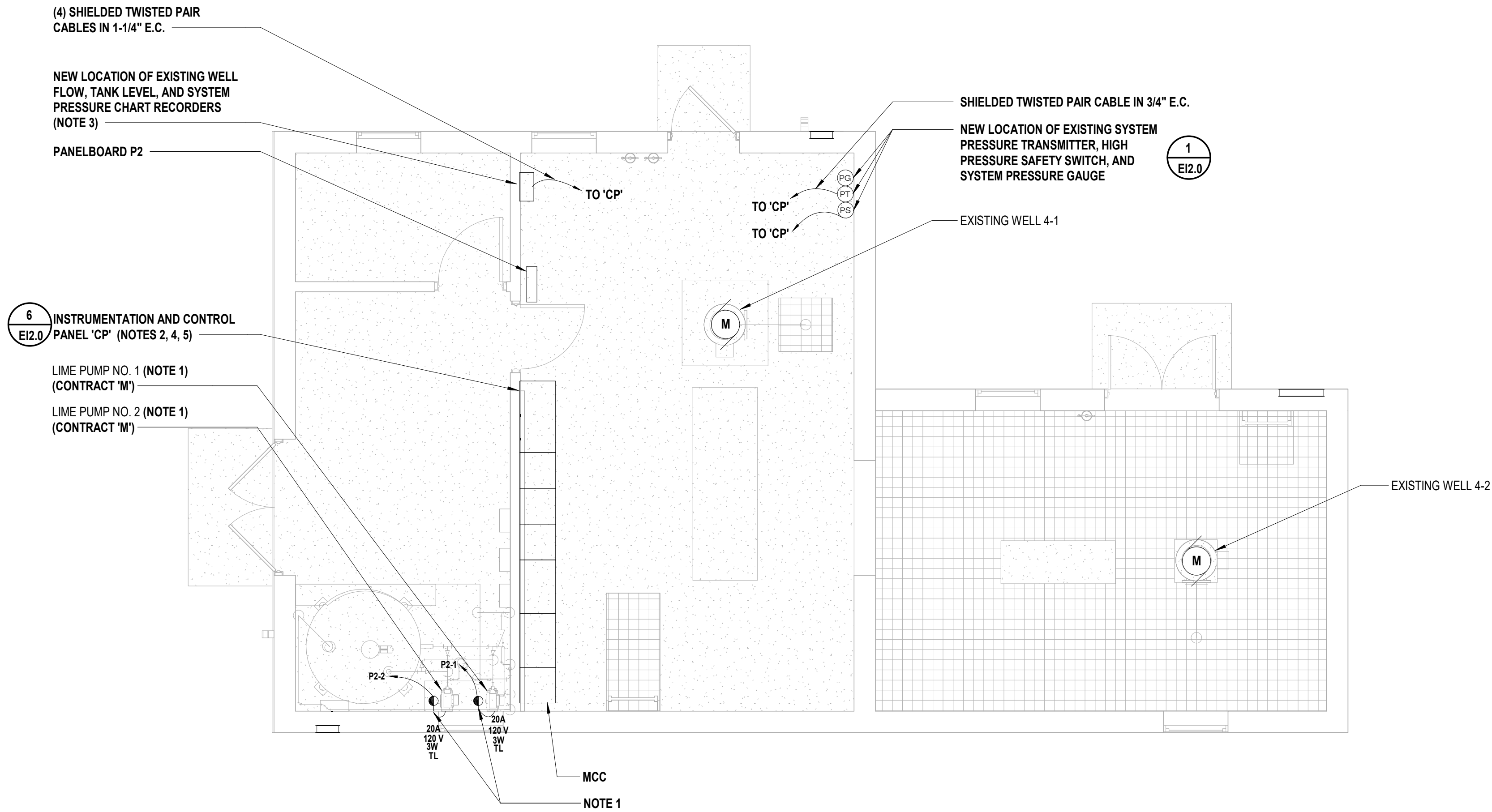
FINAL BID DOCUMENT

SHEET TITLE

INSTRUMENTATION AND
CONTROL LEGENDS

DRAWING No.
E10.0

SHEET No.
14
OF
16



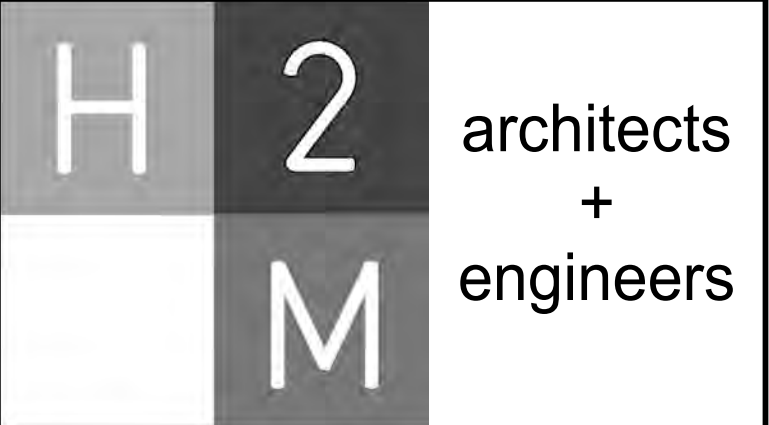
1 ELECTRICAL CONTROL PLAN
SCALE: 1/4" = 1'-0"

INSTRUMENTATION GENERAL NOTES:

- G1. ALL EXPOSED CONDUIT SHALL BE RUN PARALLEL TO BUILDING WALLS AND BEAMS EXCEPT WHERE OTHERWISE SHOWN ON PLANS.
- G2. EXPOSED CONDUIT SHALL BE SUPPORTED FROM WALLS AND, OR CEILING BY APPROVED HANGERS OF ANGLE OR CHANNEL CONSTRUCTION.
- G3. EXPANSION FITTINGS OF THE APPROVED TYPE SHALL BE FURNISHED AND INSTALLED WHERE CONDUITS EXPOSED OR CONCEALED PASS THROUGH STRUCTURAL JOINTS.
- G4. EXACT CONDUIT STUB-UP LOCATIONS ARE TO BE DETERMINED BY THE ELECTRICAL CONTRACTOR BASED ON THE CERTIFIED MANUFACTURER'S DRAWING OF THE RESPECTIVE EQUIPMENT. CONDUITS FOR THE EQUIPMENT SHALL BE INSTALLED BASED ON THE REQUIREMENTS OF THE ACTUAL EQUIPMENT FURNISHED.
- G5. ALL 3 PHASE MOTOR STARTERS SHALL BE NEMA SIZE 1 EXCEPT AS NOTED.
- G6. ALL PANELBOARD CIRCUIT BREAKERS SHALL BE RATED AT 20AMP UNLESS OTHERWISE NOTED. ALL UNUSED PANEL CIRCUITS SHALL BE PROVIDED WITH 20AMP- POLE SPARE.
- G7. ALL SINGLE PHASE POWER AND LIGHTING CONDUITS SHALL BE 3/4" WITH 3 #12 AWG (1 HOT, 1 NEUTRAL, 1 GROUND) UNLESS OTHERWISE NOTED.
- G8. FOR EXTERIOR WORK AND ENMA 4X RATED AREAS, ALL CONDUIT, SUPPORTS, FITTINGS, ETC. SHALL HAVE 40 MIL PVC COATED EXTERIOR, 2 MIL URETHANE COATED INTERIOR, AND ALL HARDWARE AND JUNCTION BOXES SHALL BE STAINLESS STEEL. NEMA 4x RATED AREAS SHALL INCLUDE BUT NOT BE LIMITED TO ALL EXTERIOR AREAS AND ALL CORROSIVE AREAS.
- G9. ALL ELECTRICAL WORK SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE, AS WELL AS THE OTHER APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES.
- G10. ALL EQUIPMENT IN ELECTRICAL ROOMS SHALL BE NEMA TYPE 12 UNLESS OTHERWISE NOTED.
- G11. ALL COMPONENTS OF THE ELECTRICAL SYSTEM SHALL BE PROPERLY GROUNDED IN ACCORDANCE WITH NEC AND MANUFACTURER'S RECOMMENDATION.
- G12. CONTRACTOR SHALL FURNISH AND INSTALL ALL ELECTRICAL EQUIPMENT REQUIRED TO PROVIDE A COMPLETED SYSTEM IN WORKING ORDER.
- G13. CONTRACTOR SHALL FURNISH AND INSTALL ALL ELECTRIC WIRE AND CABLE FOR ALL ELECTRICAL EQUIPMENT AND ALL INTERCONNECTING WIRES FOR COMPONENTS PROVIDED UNDER ALL SECTIONS OF THIS CONTRACT. ALL WIRING AND CABLING FOR THIS PROJECT SHALL BE COPPER UNLESS OTHERWISE NOTED.
- G14. ALL SWITCHES, CIRCUIT BREAKERS, MCC CUBICLES, AND CONTROL PANELS SHALL BE IDENTIFIED VIA NAMEPLATE.
- G15. REFER TO HVAC DRAWINGS FOR HVAC EQUIPMENT LOCATIONS.
- G16. CONTRACTOR SHALL EXERCISE AND TEST ALL CIRCUIT BREAKERS ASSOCIATED WITH EXISTING SWITCHGEAR AND MCC'S TO ENSURE PROPER OPERATION. ALL TESTS MUST BE PERFORMED PRIOR TO ANY CONSTRUCTION IN CONNECTION WITH THIS PROJECT IN THE PRESENCE OF AN ENGINEER.
- G17. THE SYMBOLS AND ABBREVIATIONS LISTED REPRESENT A COMPREHENSIVE STANDARD GUIDE INTENDED FOR GENERAL USE ON THIS PROJECT. THEREFORE NOT ALL OF THE SYMBOLS AND ABBREVIATIONS CONTAINED IN THIS LIST ARE NECESSARILY USED FOR THIS PARTICULAR PROJECT.
- G18. CROSS OFF LINE INDICATES DEMOLITION AND REMOVAL UNLESS OTHERWISE NOTED.
- G19. WHEREVER THE INSTALLATION OF ELECTRICAL EQUIPMENT AS SHOWN ON THE DRAWINGS IS IMPRACTICAL DUE TO LOCAL INTERFERENCE OR OTHER REASONS THE CONTRACTOR SHALL INSTALL THE EQUIPMENT AT NEW LOCATIONS AS DIRECTED BY THE ENGINEER, AT NO EXTRA COST.
- G20. ALL EQUIPMENT SCHEDULED TO BE REFERENCED TO AS A PART OF THIS PROJECT, CONTRACTOR SHALL TEST OPERATION PRIOR TO DE-ENERGIZATION/RE-ENERGIZATION IN PRESENCE OF ENGINEER.

NOTES:

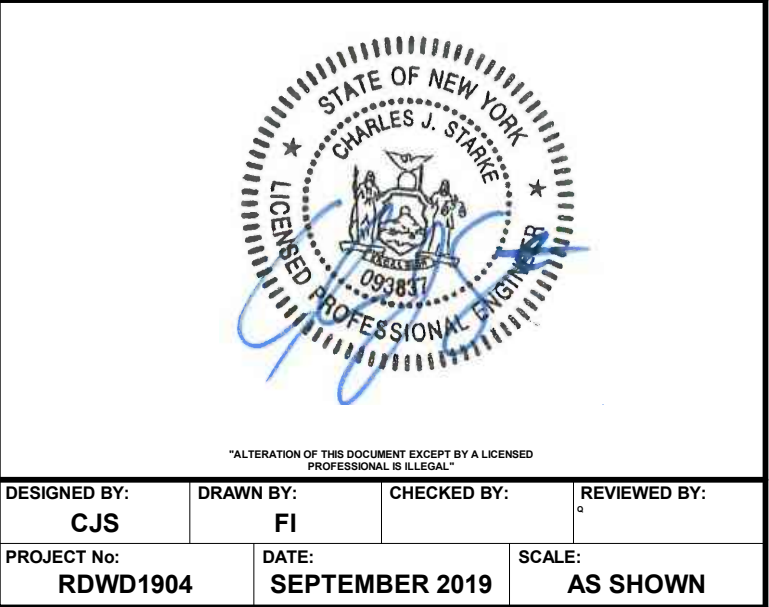
1. PROVIDE AND INSTALL S.O. CORD WITH MATCHING PLUG END. CORD AND PLUG END SHALL BE SIZED IN ACCORDANCE WITH NEC.
2. RETERMINATE ALL EXISTING PLC I/O WIRING TO NEW PLC IN NEW CP. REFER TO DRAWING E2.0 AND SPECIFICATION 265011 FOR ADDITIONAL DETAIL.
3. CONTRACTOR SHALL REROUTE EXISTING WELL 4-1 FLOW, WELL 4-2 FLOW, TANK LEVEL, AND SYSTEM PRESSURE CHART RECORDER INPUT SIGNALS FROM EXISTING TERMINATION LOCATION IN EXISTING MCC TO NEW LOCATION OF ASSOCIATED WALL MOUNTED CHART RECORDER.
4. REINSTALL EXISTING TELEMETRY EQUIPMENT (MODEM, VPN, ETC.) WITHIN NEW CONTROL PANEL TO ESTABLISH COMMUNICATION BETWEEN NEW CONTROL PANEL AND EXISTING ADMINISTRATION/SCADA SYSTEM.
5. ALL STATUS OF EXISTING ADMINISTRATION OFFICE PLANT NO. 4 PLC I/O POINTS LISTED IN SPECIFICATION SECTION 265010 SHALL BE MAINTAINED IN ORDER TO OPERATE AS CURRENTLY CONFIGURED. CONTRACTOR SHALL MODIFY EXISTING ADMINISTRATION OFFICE PLANT NO. 4 PLC PROGRAM AS REQUIRED TO COMMUNICATE APPROPRIATE INFORMATION FROM NEW PLC IN PLANT NO. 4 CP-1 TO EXISTING PLC IN ADMINISTRATION BUILDING, AND TO EXISTING SCADA PC IN ADMINISTRATION BUILDING. REFER TO SPECIFICATION 265011 - PROGRAMMABLE LOGIC CONTROLLER APPENDIX A - PLC INPUTS/OUTPUTS FOR ADDITIONAL DETAIL.



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CONTRACT

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ELECTRICAL UPGRADES**

STATUS

FINAL BID DOCUMENT

SHEET TITLE

**INSTRUMENTATION AND
CONTROL PLAN**

DRAWING No.

E11.0

SHEET No.

15
OF **16**

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