architects + engineers

CONTRACT AND SPECIFICATIONS

RIVERHEAD WATER DISTRICT
TOWN OF RIVERHEAD
SUFFOLK COUNTY, NEW YORK

CONSTRUCTION OF PRESTRESSED GROUND STORAGE TANK AT EAST WINDS DRIVE

CONTRACT T – TANK CONSTRUCTION

CAPITAL PROJECT NO. 19
H2M PROJECT NO: RDWD2201

TOWN SUPERVISOR
Tim Hubbard

TOWN BOARD
Robert Kern
Kenneth Rothwell
Denise Merrifield
Joann Waski

SUPERINTENDENT
Frank Mancini

ASSISTANT SUPERINTENDENT
John Flynn

TOWN CLERK
James M. Wooten

FEBRUARY 2024

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The Town Board of the Town of Riverhead on behalf of the Riverhead Water District will receive bids for:

Construction Of Prestressed Ground Storage Tank at East Winds Drive

Contract T - Tank Construction

PROJECT NO. RDWD2201

Bids will be received at the office of the Town Clerk, Riverhead Town Hall, 4 West Second Street, Riverhead, New York 11901, until **11:00 AM**, on **Thursday, March 7, 2024** at which time and place all bids will be publicly opened and read aloud.

Specifications may be examined on or after **Thursday, February 15, 2024** by visiting the Town of Riverhead website: http://townofriverheadny.gov and click on “Online Services -> Bids". Specifications are available in electronic format only and can only be downloaded from the aforementioned website. Specifications can only be obtained from this website and vendors submitting bids without registration on said site, shall be disqualified.

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 Owner reserves the right 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: FEBRUARY 15, 2024

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
Construction Of Prestressed Ground Storage Tank at East Winds Drive
CONTRACT T
CAPITAL PROJECT NO. 19
H2M PROJECT NO.: RDWD2201

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, 4 West Second Street, Riverhead, New York, not later than **11:00 A.M. prevailing time, on Thursday, March 7, 2024** at which time and place they will be publicly opened and read aloud. Use of the mails shall be at the Bidder's own risk. 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.: RDWD2201, Construction Of Prestressed Ground Storage Tank at East Winds Drive FOR THE RIVERHEAD WATER DISTRICT, TOWN OF RIVERHEAD, SUFFOLK COUNTY, NEW YORK", but otherwise unmarked.

Bid package shall include TWO (2) COPIES each of Spec Book Cover Page; Section 004105 - Bidders Declaration; Section 004116 - Proposal; Section 004313 - Bid Security; Section 004519 - Non-Collusive Bidding Certificate; Section 004546 - NYS Vendor Responsibility Questionnaire; Section 004547 - Iran Divestment Act Certification; Section 004548 - Statement on Sexual Harassment Prevention; and Section 004550 - Qualifications of Bidders.

CONTRACT AND SPECIFICATIONS

Specifications may be examined on or after **Thursday, February 15, 2024** by visiting the Town of Riverhead website: http://townofriverheadny.gov and click on “Online Services -> Bids”.

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.

Bid document inquiries may be submitted in writing by the Contractor to the Town until 12:00 P.M. on **Tuesday, March 4, 2024**, after which they will no longer be accepted.

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 the Proposal, dispute or complain of such estimate or assert 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.

Bidders may inspect the project site from 8:00 AM to 3:00 PM by appointment only. Appointments must be scheduled with the Riverhead Water District. Bidders may contact hcline@h2m.com, cc mames@h2m.com to schedule a site visit with the Riverhead Water District. The District shall reserve the right to reject request if not made 48 hours in advance.

PROPOSAL

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

As the estimates of quantities of items stated in the Proposal are approximate only, bidders are required to submit their proposal upon and in the following express conditions, which shall apply and become part of every proposal received.

Bids will be compared by total amounts, said total amount being the sum of the products of the quantities multiplied by the unit price bid for the various items, with due consideration being given to the lump sum prices bid for any contingent or optional 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 said Proposal for which it is submitting a bid. If there is any discrepancy between the prices in words and figures, the prices in words shall govern as unit and lump sum prices. If the Total Project Cost reported differs from the sum of all individual items, the sum of all individual items shall govern.

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 forty-five (45) 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 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 address, 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 one (1) year. 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, (weekends & holidays excepted), after date of notification of the acceptance of its proposal, and there sign the contract in quadripartite for the work and furnish insurances and 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 twelve (12) months after date of the Town'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. This project has been registered with the New York State Department of Labor. Bidders interested in this project are required to visit www.labor.ny.gov to access the prevailing wage schedule (See Section 007343 - Wage Rates for **PRC #2024001478**). Employees must be paid the minimum rate indicated on the schedule for the appropriate title or in accordance with current prevailing schedule at the time of construction.

APPRENTICESHIP PROGRAM

Pursuant to Section 816-(b) of the New York Labor Law, the Riverhead Water District has adopted a Resolution relating to approved apprenticeship programs. If the successful bidder's bid hereunder exceeds the sum of $750,000.00, 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 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 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 twelve (12) 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

This construction schedule must be followed and milestones completed within the specified time periods to avoid additional charges, including but not limited to liquidated damages (per calendar day of late work) as set forth below. Extra days used to achieve any particular milestone will be charged separately and at the expense of each Contractor required to meet that milestone. Assessment of liquidated damages will commence with the first calendar day following the milestone end date.

By 3:00 PM of each Friday during the construction period, each Contractor shall email a typed schedule to the Owner, Owner's inspector, and designated project manager. Schedule shall summarize the work for the following week, including material and equipment deliveries, special inspections, site use requirements, etc. per Spec Section 013100.

Milestone	Start Date	End Date	Contract(s)	Liquidated Damages (per day)
Submit list of shop drawings/ submittals per Spec Section 013100, and submit the Draft #1 Construction Schedule per Spec Section 013216.	NTP	15 Days	Contract T	$0.00
Submit all submittals to the Engineer for review per Spec Section 013300, and submit the Final Construction Schedule per Spec Section 013216.	NTP	45 Days	Contract T	$0.00
Substantial Completion of Work - including completion of all tank work, disinfection, water quality sampling, pressure and leak testing, field services, and all associated Health Department approvals and acceptance by the Suffolk County Department of Health Services where the District will have beneficial use of the tank.	NTP	180 Days	Contract T	$1,000.00
Contract Completion - Complete punchlist and provide final updated O&M Manual per Spec Section 017823.	Substantial Completion	60 Days from Substantial Completion	Contract T	$1,000.00

END OF SECTION 003113

BIDDER'S DECLARATION:

The undersigned, 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 or 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 and the Contract Documents; and fully understands all the same; and it proposes and agrees, if this proposal is accepted, it will contract with the Riverhead Water District in the Contract accompanying this bid to furnish all the material, implements, etc., and perform all the work required in accordance with the Contract Documents; and it will accept in full payment therefore the following sums to wit:

Acknowledgement that the foregoing Bidder's Declaration is true and factual.

SIGNATURE	PRINT NAME	TITLE	DATE

END OF SECTION 004105

Board:

The undersigned hereby offers to furnish all labor, equipment, materials and appurtenances for **Construction Of Prestressed Ground Storage Tank at East Winds Drive,** Contract T - Tank Construction all in accordance with the plans and specifications prepared by H2M architects + engineers for the following unit and lump sum prices:

ITEM 1 – MOBILIZATION, DEMOBILIZATION, AND GENERAL CONDITIONS
For mobilization, demobilization, bonds, insurances, and daily and final cleaning, etc. as specified. (Item not to exceed 5% of the total base bid)

LUMP SUM:_____ ($)
DOLLARS

ITEM 2A **– SITE CLEARING, REMOVALS, AND EROSION CONTROL**
For all work associated with the removal and legal disposal of all related on-site material, including but not limited to tree removal, grubbing, vegetation clearing, rock removal, removing asphalt paving, base, and sub base, and installation of erosion and sediment control measures, as required to allow for the installation of the ground storage tank, as shown and specified in the contract documents.

LUMP SUM:_____ ($)
DOLLARS

ITEM 2B **– EARTHWORK**
For the excavation of fill and furnishing and placing NYSDEC certified clean fill, soil preparation, bluestone, etc,. associated with the new tank construction, as shown and specified in the contract documents.

LUMP SUM:_____ ($)
DOLLARS

ITEM 2C – SITE CLEARING, REMOVALS, AND EARTHWORK (ALTERNATE)
Change in contract amount (positive or negative) for additional or reduced site clearing, removals, earthwork, fill, soil preparation, modifications, coordination, etc., associated with the construction of an alternate size tank in lieu of base bid tank.

LUMP SUM:_____ ($)
DOLLARS

ITEM 3A – NEW GROUND STORAGE TANK
For the design and construction of the new 2.5 MG concrete ground storage tank and all associated accessories, as shown and specified in the contract documents.

LUMP SUM:_____ ($)
DOLLARS

ITEM 3B – NEW GROUND STORAGE TANK (ALTERNATE)
For the design and construction of a new 2.5 MG concrete ground storage tank and all associated accessories. Contractor may modify the diameter, overflow elevation, and buried depth to optimize the construction costs. The dome height of the alternate tank shall not exceed a height of 35 feet above grade.

LUMP SUM:_____ ($)
DOLLARS

ITEM 4 - DISINFECTION AND WATER QUALITY SAMPLING
For disinfection and water quality testing as required and specified in Section 331160 and Section 331300.

LUMP SUM:_____ ($)
DOLLARS

ITEM 5 - QUALITY CONTROL TESTING CASH ALLOWANCE
Allowances as specified in Section 012100 - Allowances for independent testing laboratory services, as specified.

LUMP SUM:____Fourty Thousand_____ ($40,000.00)
DOLLARS

ITEM 6 **- CONTINGENCY CASH ALLOWANCE**
Allowances as specified in Section 012100 - Allowances for additional work not included in the original scope of this project due to unforeseeable conditions or as requested by the owner.

LUMP SUM:__Fifty Thousand ___ ($50,000.00)
DOLLARS

ITEM 7 **- PROJECT RECORD DOCUMENTS**
For furnishing all project record documents, as specified.
(Item not to be less than $5,000.00)

LUMP SUM:_____ ($)
DOLLARS

ITEM 8 **- EAST WINDS ROAD WATER MAIN (ALTERNATE)**
For all work associated with the installation of new water main on East Winds Road and accessories, as shown on the contract documents and using a Town approved water main contractor specified in Section 331411, including but not limited to traffic control, belgian block curb and asphalt restoration, in-kind replacement of the hedge row in mulch bed, and final restoration in accordance with the Town of Riverhead restoration requirements.

LUMP SUM:_____ ($)

DOLLARS

TOTAL BASE BID (Sum of Items 1-2B, 3A, 4-8**)**

_____

DOLLARS

($)

TOTAL ALTERNATE BID (Sum of Items 1-2B, 2C, 3B, 4-8**)**

_____

DOLLARS

($)

MOBILIZATION DATE BASED ON NOTICE OF AWARD

The Town of Riverhead has received federal funding to support a portion of the cost to construct this tank. As such, the District has time lines associated with expenditures for the tank. Failure to spend the monies within the established time frame may lead to forfeiture of the funds. The bidder shall provide a projected date to begin construction of the tank if awarded the work included within this contract within the stipulated award period. This date will be utilized by the Town / District to review their funding requirements and and may be used by the in evaluating bids to determine what is in best interest of Town / District.

(Provide written date of projected mobilization in month-day-year format)

_____

DATE

The Board of the Riverhead Water District reserves the right to award this contract based on either the total base 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 (weekends and holidays included), 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 in accordance with the specified time frames listed in Section 003113 Construction Schedule.

Failure of the contractor to complete work in the specified time frames will subject him to liquidated damages as set forth in Section 003113 Construction Schedule, for each day any phase of the project is incomplete past the contracted completion dates described in this construction schedule.

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.

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 Town of Riverhead, Town Clerk's office within ten (10) calendar days (weekends & legal holidays excepted) after due notice from the Town Board that the Contract has been awarded to it and is ready for signature; such notice to be given in writing within forty five (45) days of opening of the bids; and, on the signing of such Contract by the Bidder, to furnish the indemnifying bonds as provided in the Contract.

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) days (weekends & legal holidays excepted) after due notice from the 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 Board (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:

Construction Of Prestressed Ground Storage Tank at East Winds Drive
(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 owner's official representative authorized to legally bind the Reporting Entity, must certify the truth of the questionnaire answers.

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 must 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 fully. Each response must provide **all** relevant information to appropriately explain the answer. If you have concerns as to the legal requirements behind your answers, please seek clarification from your counsel. 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 to be identified. 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		
Legal Business Name	EIN ____	
Address of the Principal Place of Business (street, city, state, zip code) NO P.O. Boxes	New York State Vendor Identification Number	
	Telephone ext.	Fax
	Website (include all)	
Authorized Contact for this Questionnaire		
Name	Telephone ext.	Fax
Title	Email	

Additional Business Entity Identities: If applicable, list any other DBA, Trade Name, Former Name, Other Identity, or EIN 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 Business Entity Type – Check appropriate box and provide additional information:	
a) ☐ Corporation (including PC)	Date of Incorporation
b) ☐ Limited Liability Company (LLC or PLLC)	Date Organized
c) ☐ Limited Liability Partnership	Date of Registration
d) ☐ Limited Partnership	Date Established
e) ☐ General Partnership	Date Established County (if formed in NYS)
f) ☐ Sole Proprietor	How many years in business?
g) ☐ Other	Date Established
If Other, explain:	
1.0 Was the Business Entity formed in New York State?	☐ Yes ☐ No
If "No," indicate jurisdiction where the Business Entity was formed:	

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

I. BUSINESS CHARACTERISTICS

☐ United States	State	
☐ Other	Country	

1.2 Is the Legal Business Entity publicly traded?	☐ Yes ☐ No
If "Yes," provide the CIK code or Ticker Symbol:	
1.3 Is the Business Entity currently registered to do business in New York State? *Note: Select "Not Required" if the Business Entity is a Sole Proprietor or General Partnership*	☐ Yes ☐ No ☐ Not Required
If "No," explain why the Business Entity is not required to be registered to do business in New York State:	
1.4 Is the responding Business Entity a Joint Venture? Note: If the submitting Business Entity is a Joint Venture, also submit a separate questionnaire for each Business Entity comprising the Joint Venture.	☐ Yes ☐ No
1.5 If the Business Entity's Principal Place of Business is not in New York State, does the Business Entity maintain an office in New York State? *(Select "N/A" if Principal Place of Business is in New York State.)*	☐ Yes ☐ No ☐ 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 Minority-Owned Business Enterprise, Women-Owned Business Enterprise, Service-Disabled Veteran-Owned Business, New York State Small Business, or federally certified Disadvantaged Business Enterprise?	☐ Yes ☐ No

If "Yes," check all that apply:

☐ New York State certified Minority-Owned Business Enterprise (MBE)

☐ New York State certified Women-Owned Business Enterprise (WBE)

☐ New York State certified Service-Disabled Veteran-Owned Business (SDVOB)

☐ New York State Small Business

☐ Federally certified Disadvantaged Business Enterprise (DBE)

1.7 Identify **each person** or Business Entity that is or has been within the past five (5) years, a Business Entity Official, or a Principal Owner of 5.0% or more of the Reporting Entity's shares; or one of the five largest shareholders, if applicable. *(Attach additional pages if necessary.)*

Joint Ventures: Provide information for all firms involved.

Each Business Entity identified as a Principal Owner must also submit a Vendor Responsibility Questionnaire.

(Add additional sheets if necessary.) For each person, include name, title, date of birth, percentage of ownership, and employment status. For each Business Entity that is a Principal Owner, include name, address, EIN, and percentage of ownership.

If there is no person or Business Entity that owns 5% or more of the Reporting Entity, check here: ☐

Name *(For each person,* ***include a middle initial)***	Title	Date of Birth	Percentage of ownership (Enter 0%, if not applicable)	Employment status with the firm

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

I. BUSINESS CHARACTERISTICS				
				☐ Current ☐ Former ☐ N/A
				☐ Current ☐ Former ☐ N/A
				☐ Current ☐ Former ☐ N/A
				☐ Current ☐ Former ☐ N/A
Name of Each Business Entity owning 5% or more of Reporting Entity	Address	EIN	Percentage Ownership	

II. AFFILIATE and JOINT VENTURE RELATIONSHIPS		
2.0 Are there any other construction-related firms in which, now or in the past five years, the submitting Business Entity 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? If yes, identify below and if there is more than one, *attach additional pages with required information.*		☐ 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 Business Entity has in common with the disclosed firm(s)?		☐ Yes ☐ No
Individual's Name *(Include middle initial)*	Position/Title with Firm/Company	

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

II. AFFILIATE and JOINT VENTURE RELATIONSHIPS

2.1 Does the Business Entity have any construction-related affiliates not identified in the response to question 2.0 above? If yes, identify below and if there is more than one, *attach additional pages with the required information.*	☐ 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 the disclosed affiliate(s)?	☐ Yes ☐ No

Individual's Name *(Include middle initial)*	Position/Title with Firm/Company

2.2 Has the Business Entity participated in any construction-related Joint Ventures within the past three (3) years? If yes, identify below and if there is more than one, *attach additional pages with the required information.*	☐ Yes ☐ No

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

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 for government clients using Attachment A – Completed Construction Contracts, found at www.osc.state.ny.us/vendrep/documents/questionnaire/ac3294s.doc.

At the Business Entity's option, it may include construction contracts completed for private clients. 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 for government clients 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. At the Business Entity's option, it may include construction contracts uncompleted for private clients.

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

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

IV. INTEGRITY – CONTRACT BIDDING ***Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:***	
4.4 Had a bid rejected on a government contract for failure to make good faith efforts on any Minority-Owned Business Enterprise, Women-Owned Business Enterprise, Service-Disabled Veteran-Owned Business 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 Requested or been permitted 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, affiliate, predecessor company or 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 to explain each "YES" response.	

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, including arbitration, 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, integrity 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
For each "Yes," provide an explanation of the issue(s), the Business Entity, affiliate, predecessor company or 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 to explain each "YES" response.	

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 suspension 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 Minority-Owned Business Enterprise, Women-Owned Business Enterprise, Service-Disabled Veteran-Owned Business or a federal certification of Disadvantaged Business Enterprise status, for other than a change of ownership?	☐ Yes ☐ No
For each "Yes," provide an explanation of the issue(s), the Business Entity affiliate, predecessor company or 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 to explain each "YES" response.	

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:***	
7.0 Been the subject of a criminal investigation, whether open or closed, or an indictment for any business-related conduct constituting a crime under local, state or federal law?	☐ Yes ☐ No
7.1 Been the subject of: (i.) An indictment, grant of immunity, judgment or conviction (including entering into a plea bargain) for conduct constituting a crime; or (ii.) Any criminal investigation, felony indictment or conviction concerning the formation of, or any business association with, an allegedly false or fraudulent Minority-Owned Business Enterprise, Women-Owned Business Enterprise, Service-Disabled Veteran-Owned Business, or a Disadvantaged Business Enterprise?	☐ Yes ☐ No
7.2 Received any OSHA citation, which resulted in a final determination classified as serious or willful?	☐ Yes ☐ No
7.3 Had a government entity 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, monitoring agreement or other type of oversight with the New York State Department of Environmental Conservation, or a federal, state or local government enforcement entity involving a violation of federal, state or local environmental laws?	☐ Yes ☐ No
7.6 Other than previously disclosed, been the subject of any citations, notices or violation orders; a pending administrative hearing, proceeding or determination of a violation of: • Federal, state or local health laws, rules or regulations; • Federal, state or local environmental laws, rules or regulations; • Unemployment insurance or workers compensation coverage or claim requirements; • Any labor law or regulation, which was deemed willful; • Employee Retirement Income Security Act (ERISA); • Federal, state or local human rights laws; • Federal, state or local security laws; • Federal, state, or local tax laws?	☐ Yes ☐ No
For each "Yes," provide an explanation of the issue(s), the Business Entity, affiliate, predecessor company or 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 to explain each "YES" response. *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.*	

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

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 Sanctioned relative to any business or professional permit and/or license?	☐ Yes ☐ No ☐ N/A
8.1 Suspended, debarred or disqualified from any government contracting process?	☐ Yes ☐ No ☐ N/A
8.2 The subject of a criminal investigation, whether open or closed, or an indictment for any business-related conduct constituting a crime under local, state or federal 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 theft, 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 to explain each "YES" response.

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 or affiliate 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 to explain the "Yes" response.

9.1 Within the past five (5) years, has the Business Entity or any affiliate had any liquidated damages assessed over $25,000 for any reason, including failure to meet Minority-Owned Business Enterprise, Women-Owned Business Enterprise, Service-Disabled Veteran-Owned Business, or Disadvantaged Business Enterprise goals?	☐ Yes ☐ No

If "Yes," provide an explanation of the issue(s), the name of the Business Entity or affiliate 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), and the balance of the assessment not yet paid. 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

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

IX. FINANCIAL AND ORGANIZATIONAL CAPACITY

If "Yes," provide an explanation of the issue(s), the name of the Business Entity or affiliate involved, the relationship to the submitting Business Entity, relevant dates, the Lien holder or Claimants' name(s), the amount of the lien(s), the current status of the issue(s), and the balance of the lien, claim or judgment not yet paid. 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, or official 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 name of the Business Entity, affiliate or official 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 to explain the YES response.

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)	2nd Year (Indicate year)	3rd Year (Indicate year)
Gross Sales	Gross Sales	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)	2nd Year (Indicate year)	3rd Year (Indicate year)
Amount	Amount	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.)

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.

Authorizee

XI. AUTHORIZED CONTACT FOR THIS QUESTIONNAIRE

Name	Telephone ext.	Fax
Title	Email	

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.

It being acknowledged and agreed that all responses included in this questionnaire are to the knowledge, information and belief of the Business Entity, the undersigned certifies under penalties of perjury that they:

The undersigned certifies that he/she:

- are knowledgeable about the submitting Business Entity's business and operations;
- have legal authority to bind the Business Entity;
- have read and understand all of the questions contained in the questionnaire, including all definitions;
- have not altered the content of the questionnaire in any manner;
- have reviewed and/or supplied full and complete responses to each question;
- have provided true, accurate and complete responses, including all attachments, if applicable;
- understand 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
- are 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 _____

Date _____

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

I have been advised that the Board of the Riverhead Water District requires that vendors and contractors submitting a competitive bid on a purchase or public works contract or a proposal on a purchase or public works contract that does not require competitive bidding file with the Owner at the time of bid or proposal submission a statement in the form required for contractors by the State of New York under State Finance Law § 139-l relative to compliance with requirements for employer sexual harassment preventions programs.

On behalf of myself and my firm or corporation I make the following statement.

By submission of this bid or proposal, 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 the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

I recognize that my failure to submit this statement may result in the rejection of my bid.

If I need to qualify this statement under State Finance Law § 139-l, subparagraph (3) I hereby state the reasons why I must qualify this statement:

_____

_____

_____

I have been advised that pursuant to State Finance Law § 139-l this statement and my signature below shall be deemed to have been authorized by the board of directors of my firm or corporation, and such authorization shall be deemed to include the signing and submission of such bid or proposal and the inclusion of such statement as the act and deed of the corporation.

I, hereby affirm under the penalties of perjury that the foregoing statement is true.

_____
Signature

_____
Print Name

State of New York)
) ss.:
County of)

On the ____ day of _____ in the year 20__ before me personally came _____ to me known, who, being by me duly sworn, did depose and say that he/she/they reside(s) in _____(place of residence); that he/she/they is (are) the _____(office held) of the _____(name of corporation), the corporation described in and which executed the above instrument; that he/she/they know(s) the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by authority of the board of directors of said corporation, and that he/she/they signed his/her/their name(s) thereto by like authority.

_____
NOTARY PUBLIC

END OF SECTION 004548

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: _____

Owner	**Contact Name**	**Phone Number**	**Location**	**Contract Amount**

Subcontractor Name: _____

Type of Work: _____

Owner	**Contact Name**	**Phone Number**	**Location**	**Contract Amount**

Subcontractor Name: _____

Type of Work: _____

Owner	Contact Name	Phone Number	Location	Contract Amount

Subcontractor Name: _____

Type of Work: _____

Owner	Contact Name	Phone Number	Location	Contract Amount

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 _____

_____; FOR THE TOWN OF RIVERHEAD, SUFFOLK COUNTY, NEW YORK, dated _____, 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, as per Town Board Resolution No. _____dated _____, 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, 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.

TOWN DISTRICT: The term TOWN DISTRICT shall refer to the Town of Riverhead acting in its capacity as administrators of the Riverhead Water District. Where used independently, the terms shall refer to the Town of Riverhead (Town) and Riverhead Water District (District).

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% 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 ONE THOUSAND DOLLARS ($1,000.00) 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. 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. 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. The date of the Maintenance Bond shall be the date of final payment or other agreed upon date of acceptance by the Engineer and District. All extra work performed under the terms of this Contract shall be covered under the Maintenance Bond and as such the bond shall represent the value of these items.

10. CONTRACTOR'S INSURANCE:

The Contractor shall not commence work under this Contract until he has obtained and had approved by the TOWN DISTRICT the insurance required under this contract. Contractor shall maintain at a minimum the following insurance giving evidence of same, on the Acord form Certificates of Insurance, Acord Form 855 – New York Construction Certificate of Liability Insurance Addendum; copy of the Additional Insured Endorsements; provide 30 days' notice of cancellation, non-renewal or material change; C105.1 form or State Insurance Fund Certificate or Self-Insured SI-12 for Workers Compensation and DB120.1 Certificate for NYS Disability.

The insurance coverage limits set forth in Schedule below are minimum coverage requirements, not limitations of liability. New York State licensed admitted carrier is preferred; any non-licensed/non-admitted carriers will be accepted at TOWN DISTRICT's discretion. The insurance carrier must have an A.M. Best Rating of at least A- IX. All subcontractors must adhere to the same insurance and indemnification requirements.

The certificate holder for all policies shall be the Riverhead Water District. The Contractor shall not permit any subcontractor to commence any operation on the site until satisfactory proof of carriage of required insurance has been posted with and approved by the TOWN DISTRICT.

Certificate Holder for all policies: Riverhead Water District
1035 Pulaski Street
Riverhead, NY 11901

Additional Insured to read: Town of Riverhead, Riverhead Water District, all elected and appointed officials, employees and volunteers of the Town District, and H2M architects + engineers using ISO Form CG2026 or equivalent including products and completed operations coverage ISO Form CG2037 or equivalent. .

Additionally insured shall be listed and covered under the Commercial General Liability including Contractual Liability and Products and Completed Operations, Automobile Liability and Excess Liability. Insurance Coverage is to be primary and non-contributory to any insurance carried by any additional insured. Waiver of Subrogation is included on the Workers Compensation and General Liability in favor of the Additional Insureds.

A. Workers Compensation & Employers Liability - 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. Minimum limits for each accident, employee and disease of $1,000,000.

B. Commercial General Liability and Insurance - The Contractor shall take out and maintain during the life of this Contract such 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:

Occurrence – ISO Form CG2001 10-01 or equivalent

General Aggregate	$2,000,000
Products & Completed Operations	$2,000,000
Personal & Advertising Injury	$1,000,000

Per Occurrence Limit	$1,000,000
Damage to Rented Premises	$ 100,000
Medical Expense (any one person)	$ 10,000

The above policies for commercial general liability and umbrella liability insurance must be so written as to include Contractor's Protective Liability Insurance to protect the contractor against claims arising from the operations of any subcontractor.

Extensions - Mandatory:

- Aggregate Limits to apply per project.
- Full Contractual Liability extending to Hold Harmless Agreement.
- Contractual Liability Insurance is afforded per the definition of “insured contract” as defined in Form CG0001 with no endorsements that amend or restrict the definition of “insured contract”.
- The general liability is to be primary and non-contributory to any insurance carried by any additional insured.
- The general liability must not include any exclusion, limitation or restriction pertaining to interior or exterior work height; “action over” type claims; or “injury to employee or subcontractor” exclusions, nor any exclusions for Claims that fall within the Purview of New York Labor Law Sections 200, 240 &241.
- Waiver of Subrogation in favor of all additional insureds.

C. Umbrella Liability: The Contractor shall maintain for the life of the contract excess coverage for bodily injury and property damage in an amount not less than FIVE MILLION DOLLARS ($5,000,000.).

D. Commercial Automobile Liability - The Contractor shall take out and maintain during the life of the Contract such automobile public liability 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 in an amount not less than ONE MILLION DOLLARS ($1,000,000.) for bodily injuries, including wrongful death per occurrence.

D. Blanket Waiver of Subrogation – The above policies for workers’ compensation insurance as well as comprehensive general liability insurance, automobile insurance, and excess umbrella liability insurance shall include waiver of transfer of rights of recovery against the Town of Riverhead, The Riverhead Water District, and H2M architects + engineers. Such waiver of subrogation shall be evidenced by certificate of insurance or copy of endorsement to the appropriate policy.

E. Owner's Protective Liability Insurance – (TOWN DISTRICT, and/or TOWN BOARD, TOWN OF RIVERHEAD as OWNER and H2M architects + engineers as engineer) – If the Town of Riverhead, Riverhead Water District deem necessary, the Contractor shall furnish to the TOWN DISTRICT with respect to the operations he or any of his subcontractors perform, a regular Owner’s Protective Liability Insurance Policy for and in behalf of the TOWN DISTRICT and/or TOWN BOARD, TOWN OF RIVERHEAD as OWNER, providing for a limit of not less than ONE MILLION DOLLARS ($1,000,000.) each occurrence, a total limit of TWO MILLION DOLLARS ($2,000,000.) general aggregate 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. The insurance must fully cover the legal liability of the TOWN DISTRICT, TOWN BOARD, TOWN OF RIVERHEAD as OWNER and H2M architects + engineers as ENGINEER. 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.

F. Pollution Liability (where applicable) - If contract involves environmentally regulated substances or Hazardous material exposure(s) and/or the disposal of waste or other hazardous substance from the worksite, the contractor shall maintain Contractor's Pollution Liability including Pollution Legal Liability insurance in the amount of at least $5,000,000. per occurrence for 3rd party liability and clean-up. This coverage is to remain in effect for a minimum of (5) five years following the completion of work. If written on a claim made basis, the retroactive date must pre-date the inception of the contract or agreement.

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 con-tract 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 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 ($1,000.00) 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

Progress Payments: 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 suitable 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.

Final Payment: 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. Final Payment will not be issued without the required Maintenance Bond as described in Section 9C of this contract.

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.

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 a clean and neat 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 predetermining 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

The TOWN DISTRICT may terminate the 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 deter-mined 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)
TIM HUBBARD, SUPERVISOR

CONTRACTOR:

BY: _____

TITLE: _____ (SEAL)

STATE OF NEW YORK)
) ss:
COUNTY OF SUFFOLK)

On the _____ day of _____, 20___, before me personally came TIM HUBBARD, 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___, 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

1. GENERAL CONDITIONS

The "General Conditions" are hereby made a part of these specifications and are attached herein.

Where any article of the General Conditions is supplemented hereby, the provisions of such article shall remain in effect. All the supplemental provisions shall be considered as added thereto. Where any such article is amended, voided or superseded thereby, the provisions of such article not so specifically amended, voided or superseded shall remain in effect.

Work, materials, plant, labor and other requirements of the General Conditions shall be furnished by the contractor. No direct payment shall be made for these General Conditions, and payment shall be deemed to be included in the Contract price or various items of the entire Contract.

2. CONTRACT DOCUMENTS

The Contract Documents include, but are not limited to, the General Conditions, Detailed Specifications, Plans, Proposal Form, Contract and other sections as either cited on the Index page(s) or actually included in the bound documents.

Each section of the Contract Documents is intended to be complementary to the other sections. It is intended that they include all items of labor and materials and everything required and necessary to complete the work, even though some items of work or materials may not be particularly mentioned in every section or may have been inadvertently omitted from the Drawings or Specifications or both.

3. APPROVAL OF SUBCONTRACTORS AND MATERIALS

Prior to commencing any work under this Contract, the contractor shall submit to the Engineer for approval a list of all the subcontractors and material suppliers it proposes to use for this Contract. No subcontractor or material supplier will be permitted to deliver materials or perform any work on this Contract until it has been approved by the Engineer.

4. INTERPRETATION OF DRAWINGS, ETC.

In the event of discrepancies between the Drawings and the Specifications, the following order shall be given preference when making interpretations:

a. Addenda (later dates to take precedence over earlier dates).

b. Drawings (schedules or notes to take precedence over other data shown on Drawings).

c. Technical Specifications

d. General Conditions

On all Plans, Drawings, etc., the figure dimensions shall govern in the case of discrepancy between the scales and figures.

The contractor shall take no advantage of any error or omission in the Plans, or of any discrepancy between the Plans and Specifications, and the Engineer shall make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the Specifications and of the Plans as construed by him, and his decision shall be final.

All work that may be called for in the Specifications and not shown on the Plans, or shown on the Plans and not called for in the Specifications, shall be furnished and executed by the contractor as if designated in both. Should any work or material be required which is not denoted in the Plans and Specifications, either directly or indirectly, but which is, nevertheless, necessary for the proper carrying out of the intent

thereof, it is understood and agreed that the same is implied and required, and that the contractor shall perform such work and furnish such materials as if they were completely delineated and described.

5. ADDITIONAL WORK

Additional work, if required to be performed under this Contract, will be in accordance with the applicable paragraphs of the Contract. The Engineer shall be the sole judge as to whether such work was intended as part of the Contract or is in addition thereto.

6. SAFETY PROVISIONS

The contractor shall take every precaution and shall provide such equipment and facilities as are necessary or required for the safety of its employees. In case of an accident, first aid shall be administered to any who may be injured in the progress of the work. In addition, the contractor shall also be prepared for the removal to the hospital for treatment of any employee either seriously injured or ill.

7. SANITARY REGULATIONS

In addition to compliance with the Occupational Safety and Health Act, the contractor shall erect and maintain necessary sanitary conveniences for the use of employees on the work. Such conveniences shall be properly secluded from observation, and their use shall be strictly enforced. Such sanitary conveniences shall be constructed in compliance with all laws, ordinances or regulations governing these facilities. The contents of same shall be removed with sufficient frequency to prevent nuisance, and disposed of to the satisfaction of the Engineer.

The contractor shall obey and enforce such other sanitary regulations and orders and shall take such precautions against infectious diseases as may be deemed necessary. In case any infectious diseases occur among its employees, it shall arrange for the immediate removal of the patient from the work and his isolation from all persons connected with the work.

8. RESPONSIBILITY OF ENGINEER AND CONTRACTOR DURING CONSTRUCTION

By means of the on-site observations of the work in progress, the Engineer will endeavor to provide protection for the Owner against defects and deficiencies in the contractor's work, but the furnishing of such services shall not include construction review of the contractor's construction means, methods, techniques, sequences or procedures, or of any safety precautions and programs in connection with the work.

The contractor is responsible for complete conformance to the Plans and Specifications, proper construction procedures, coordination with subcontractors, other contractors and utilities, and safe working conditions for its employees.

9. LABOR

All contractors and subcontractors employed upon the work shall and will be required to conform to the Labor Laws of the State of New York and the various acts amendatory and supplementary thereto; and to all other laws, ordinances and legal requirements applicable thereto. All contractors and subcontractors shall submit original copies of certified payroll records for each period worked at the site. In addition all contractors and subcontractors shall provide a completed Affidavit of Labor Form 220 and Riverhead Town Wage Disclaimer Form for each payroll week prior to issuance of any partial or final payment.

All labor shall be performed in the best and most workmanlike manner by mechanics skilled in their respective trades. The standards of the work required throughout shall be of such grade as will bring results of the first class only.

Pursuant to Section 816-(b) of the New York Labor Law, the Riverhead Water District has adopted a Resolution relating 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 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.

10. CLAIMS OR PROTESTS

If the contractor considers any work required of him to be outside the requirements of the Contract, or considers any record or ruling of the Engineers or Inspectors as unfair, he shall ask for written instructions or decisions immediately, and then file a written protest with the Owner against the same within five days thereafter, or be considered as having accepted the record or ruling.

11. NOTIFICATION, INTERFERENCE AND INJURY TO UTILITIES

The contractor shall cooperate in every way with the utility companies. All excavation shall be done in compliance with Article 36 of the General Business Law and notices given as provided by GBL, Section 761.

All conduits, water mains and gas mains encountered in the construction shall be properly and safely taken care of by the contractor, who shall, upon encountering same, notify the public corporation to whom they belong, in order that they may be changed in such a manner as not to interfere with the final construction.

In case any damage shall result to any service pipe for water or gas, or any private or public sewer or conduit by reason of negligence on the part of the contractor, he shall, without delay and at his own expense, repair same to the satisfaction of the Engineer, and in case such repairs are not made promptly or satisfactorily, the Owner may have the repairs made by another contractor or otherwise, and deduct the cost of same from any monies due or to become due the contractor.

12. INFRINGEMENT OF PATENTS

The contractor further agrees to hold himself responsible for any claims made against the Owner for any infringement of patents by the use of patented articles in any one phase of construction of the work and the completion of same, or any process connected with the work agreed to be performed under this Contract, or of any materials used upon said work and to save harmless and indemnify the Owner from all costs, expenses and damages which the Owner shall be obliged to pay by reason of any infringement or patents used in the construction and completion of the work.

13. DAMAGES

All damage, direct or indirect, of whatever nature resulting from either the performance of, or resulting to the work under, this Contract during its progress from whatever cause, shall be borne and sustained by the contractor, and all work shall be solely at his risk until the date of the final payment request.

14. GUARANTEE/WARRANTY

This contractor shall guarantee and warrant his work and that of his subcontractors against defects in workmanship and/or materials for a period of one (1) year from the date of final payment request by the Engineer, except as otherwise specified. Upon written notification from the Engineer, the contractor shall repair, replace or reconstruct such defects to the satisfaction of the Engineer at no cost to the Owner.

15. STANDARDIZATION

The general items specified with the Technical Specifications indicate specific manufacturers and/or catalog numbers etc., for the purpose of standardization within the District in order to minimize the stockpiling of replacement parts.

END OF SECTION

The **Wage Rates** schedule can be accessed and downloaded through the NYSDOL website: **https://dol.ny.gov/public-work-and-prevailing-wage** using the job-specific PRC# 2024001478.

END OF SECTION 007343

PART 1 - GENERAL

1.01 BRIEF PURPOSE OF PROJECT / GENERAL

A. The purpose of the project is to construct a new 2.5 million gallon pre-stressed concrete ground storage tank at the Town of Riverhead's site on East Winds Drive in Wading River.

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 tank construction project. A separate project for the construction of a booster building and site improvements will be awarded and occuring simultaneously.

C. This Section provides an abbreviated summary of the work for the Construction Contract associated with the Owner's program to construct the project.

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 Tank Construction Contractor may be referred to as the "Tank Contractor", "Prime Contractor", "Contract T Contractor" or similar wording. The lack of word capitalization shall be incidental. This Construction Contract shall be known as Contract T.

1.03 ABBREVIATED SUMMARY OF CONTRACT T 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. Site supervision, management, and coordination of special inspections.
   2. Furnish and maintain temporary dumpsters, waste containers and sanitary facilities.
   3. Tree removal, site clearing, grubbing, sheeting, bracing, excavation, slope protection, earth movement, subgrade preparation, removal of excess and/or unsuitable excavated material, dewatering, and import of suitable material, as necessary to install and construct all the work defined within the Contract Documents.
   4. Preliminary site work including: utility mark-out, erection of safety fencing, erosion control facilities, rock removal, and asphalt and base removal.
   5. Protection of existing utilities.
   6. New site piping, valving, and fire hydrant.
   7. Design and construction of the 2.5 MG tank, foundation, walls, domed roof, accessories, and coatings.
   8. Exfiltration leak testing of tank and piping.
   9. Disinfection and testing of of new tank and all associated potable water piping.
   10. Project closeout submittals.

11. 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.
12. Site restoration including final grading and placement of topsoil, seeding, bluestone, and curb.
13. Furnishing of the Engineer's Field Office (Trailer)
14. Project closeout submittals.

D. All other work shown and specified within the Contract Documents for Contract T.

1.04 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 Occupational Safety and Health Administration.
2. Guidelines and requirements of the New York State Department of Environmental Conservation (NYSDEC).
3. Guidelines and requirements of the Suffolk County Department of Health Services (SCDHS)
4. Guidelines and requirements of the New York State Department of Health (NYSDOH)
5. Guidelines and requirements of the Town of Riverhead.
6. Local laws and ordinances of the Riverhead Water District.

1.05 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. Site utilization and management so as not to disrupt the Owner’s ability to operate the existing facilities in a safe and efficient manner.
3. 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.
4. Product and equipment storage and handling requirements.
5. Starting and adjusting of the equipment and systems required under the project.
6. Site safety in accordance with all applicable federal, state, and local regulations.
7. Project submittals, meetings, professional photographs, testing services, work plans, 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.
8. 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 other contracts will coincide with work of this Contract.

1.06 OWNER SUPPLIED PRODUCTS AND UTILITIES

A. The Owner will not be supplying equipment, labor, or tools for the project.

B. 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 help cure concrete or painting systems will not be permitted.

5. Power to the Contractor's trailer will be permitted.

C. 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.

1.07 EXISTING CONDITIONS

A. The Drawings show certain information that has been obtained by the Owner regarding various pipelines, utilities and structures 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.

F. Suggested construction sequence.

1.02 SITE ACCESS AND CONTROL

A. The Contractor shall use the designated entrance to the site as shown on the drawings. If no site entrance is designated, the Contractor 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. The Contractor is 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. The Contractor shall not close any road for any period in time. The Contractor shall take whatever measures are necessary to not cause any inconvenience to the area's residents.

D. The Contractor is responsible to employ methods to prevent construction materials and/or debris from leaving the site. The Contractor is 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 Contractor shall employ methods to prevent the transmission of dirt from vehicles driving on exposed areas of the site from reaching the surrounding roadways. The Contractor will be responsible to immediately clean the roadway, should the measures being taken by the Contractor 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 Contractor 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 Contractor for all costs associated with maintaining the grounds as well as maintaining areas outside the site, which may be disturbed by the Contractor should the Contractor fail to maintain or repair the aforementioned in a condition acceptable to the Owner.

I. The Contractor 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 responsibly of the Contractor.

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 Contractor 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 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. Contractor 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 Contractor.

D. The Contractor 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. The Contractor 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. The Contractor 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. Due to the limited site area available for construction, staging areas shall be relocated several times during the various stages of construction. Additional compensation for relocating staging areas, equipment and material storage, and trailers are not to be considered an extra cost to the Contractor as this is an anticipated expense that shall be considered at the time of the bid.

H. The Contractor is 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 The Contractor being back charged for the cleaning cost plus construction administration fees.

I. Refer to Section 015000 - Temporary Facilities and Controls for minimum rubbish removal requirements.

J. Do not discard or dispose of any waste on-site.

K. Open fires will not be permitted on the site.

L. 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. Contractor 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 materials storage will be permitted within the buildings at any time during construction.

E. Storage of chemicals and paint materials shall be outside the existing or new structures and shall follow manufacturer's storage/handling 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. Contractor 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. Contractor 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 Contractor 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 - Saturday 7:00 am - 5:00 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 Contractor shall schedule working days and hours as specified. The Contractor 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.

1.07 SUGGESTED CONSTRUCTION SEQUENCE

A. The following is one suggested general, not all-inclusive, sequence of construction that may be used to complete all the work under the Contract within the time specified.

B. Work restrictions may be noted throughout the suggested sequence provided below. The Contractor shall comply with all noted work restrictions that appear.

C. The following suggested sequence is provided for information only:
1. Submit shop drawings, construction schedule, schedule of values, etc.
2. Establish storage areas as required.
3. Perform site clearing and removals, excavate unsuitable material, and perform soil
4. Install yard piping and fittings.
5. Construct tank foundation.
6. Construct tank floor.
7. Construct tank walls.
8. Construct tank dome.
9. Install tank accessories.
10. Leak test tank and piping.
11. Disinfect and test samples
12. Rough grade, final grade, seeding, and clean up.

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. Quality Control Testing Allowance.
   2. Contingency Account.

B. This Section covers the requirements for use of the cash allowances listed above contained in the proposal (Bid Forms, Price Schedule) and included in the Contract Price bid by the Contractor and defines and stipulates the charges that will be paid for out of the stipulated allowances.

C. The Contractor shall include the cash allowances stipulated in this Section in the amount bid.

D. Eligible costs described in this Section, and Sections referenced herein, will be the only costs paid for out of the stipulated allowances.

E. 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 QUALITY CONTROL TESTING ALLOWANCE

A. Include the cash allowance amount indicated in the proposal for independent testing laboratory services specified in Section 014500.

B. The actual invoiced charges of the testing laboratory, including toning companies where called for, incurred for field and laboratory tests, as specified only in Section 014500 - Quality Control, shall be paid for out of the cash allowance.
   1. Any other requirement specified herein throughout these specifications for providing the services of an independent testing laboratory, underground utility location company, or similar outside independent service are to be borne by the Contractor.
   2. All costs for quality control services are to be included as part of the Contract Price (as-bid).

C. One (1) week prior to each partial payment, submit a certified invoice from each company listing and detailing the total costs incurred since the last invoice.

1. The invoice shall be on company letterhead signed by an authorized representative of the company and shall include man-hours, tests conducted, date of tests and associated costs and fees.
2. Payment for costs will not be made unless the information is provided and certified. Payment for costs will not be made unless the typed test data reports have been received by the Engineer.
3. In the case of pipe toning, flags must be set to delineate the route of underground pipes and utilities prior to submission of partial payment request.

D. If in the event test results (provided by the independent testing laboratory) show non-compliance with these specifications, then at the option of the Contractor and only with the approval of the Owner, he may re-test samples to verify the original test results at his/her own expense.

E. Costs for re-testing failed components of the work, when ordered by the Engineer, will not be paid for out of the cash allowance and will be directly borne by the Contractor.

F. Show as separate line in the Schedule of Values.

G. Funds remaining at project closeout shall be credited to the Owner.

1.05 PAYMENTS TO BE MADE OUT OF CONTINGENCY ACCOUNT

A. 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.

B. The Owner will draw funds from the contingency account only upon prior written approval by the Owner's Construction Field Representative and Engineer.

C. One (1) week prior to each partial payment, submit a certified invoice from each company listing and detailing the total costs incurred since the last invoice.

D. Show as separate line in the Schedule of Values.

E. 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. Submission procedures.

B. Documentation of changes to Contract Sum/Price and Contract Time.

1.02 RELATED SECTIONS

A. Proposal Form.

B. Other sections referencing this section.

C. All contractual requirements outlined in the documents.

1.03 SUBMISSION REQUIREMENTS

A. Submit Alternates on Proposal Forms identifying the effect on adjacent or related components.

B. Alternates will be reviewed and accepted or rejected at the Owner's option.

C. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.04 SELECTION AND AWARD OF ALTERNATES

A. Indicate variation of Bid Price for Alternates listed on the PROPOSAL FORM. This form requests a "difference" in Bid Price by adding to or deducting from the base Bid Price.

B. Alternates quoted on PROPOSAL FORM will be reviewed and accepted or rejected at Owner’s option.

C. Accepted alternates will be identified in Owner-Contractor Agreement.

D. Bids will be evaluated on the base bid price, plus any combination of alternate items.

1.05 WORK FOR ALTERNATES

A. Work for alternate items selected shall include all related materials, labor, equipment and operations necessary to conduct and complete the alternate work and all other affected work or adjacent areas.

B. There shall be no change in time or completion date for the selected alternates, unless specified herein or approved in writing by the Engineer and Owner.

C. Alternates and associated work shall meet all standards and specifications delineated in the Contract Documents.

D. Contractor shall coordinate pertinent related Work and modify surrounding Work as required to complete the project under each alternate selected by the Owner.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PROCEDURES

A. Work for each alternate, related items and collateral work shall be completed in their entirety.

B. If alternate items are not selected, work for the base bid and collateral work shall be completed in their entirety.

END OF SECTION 012300

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.*

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. The Contractor shall submit three (3) copies of the REQUEST FOR SUBSTITUTION FORM for consideration including all required information.
   2. The Contractor 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 Contractor 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.

PART 3 - EXECUTION

NOT USED

This space left intentionally blank.

REQUEST FOR SUBSTITUTION FORM

Project: Construction Of Prestressed Ground Storage Tank at East Winds Drive Substitution Request Number:_____

Contractor:_____

Address:_____

To:_____ Date:_____

H2M Project Number: RDWD2201 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. Contractor shall provide a copy of the final Certificate of Occupancy from the AHJ prior to issuance of the final payment. 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 as provided by the Owner.

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. OSHA cards for all employees of contractor and subcontractors are required to be submitted with the payment application.

I. 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.

J. Contractor shall pay all workers and have all subcontractors pay all workers the prevailing New York State Wage Rates.

K. Owner may conduct on-site interviews with all workers to verify payments of prevailing wage rates are enforced.

L. The Engineer shall submit the documentation along with an Engineer’s Payment Report to the Owner for payment.

M. 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 their copy of the Final Payment Request to them, the Contractor shall return such copy to the Owner together with a statement of their 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 their 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 01-48 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. In addition to the above, provide a separate line item cost for each of the following items which shall be supported by proof where requested by Engineer:
   1. Performance and payment bonds.
   2. Insurance (submit proof of this amount)
   3. Mobilization and Demobilization (Amounts shall be equal in value).
   4. Temporary facilities and measures as specified in Section 015000.
   5. Project Coordination Meetings as specified in Section 013100.
   6. Preparation of the Project Construction Schedule, and updates, as specified in Section 013216.
   7. Temporary facilities and measures as specified in Section 015000.

8. Rubbish removal and daily cleaning up. (Provide a total dollar amount and a daily rate for each calendar day during the contract period.)
9. All Cash Allowance items as contained in Section 012100.
10. Surveyor used for layout.
11. A total dollar amount for furnishing all the Operations and Maintenance Manuals specified throughout the specifications.
12. Record Drawing retainage amount specified in Section 017839.
13. 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. Coordination between contractors, if applicable
   3. Administration of subcontracts
   4. Coordination of work with utility companies and the Owner/Engineer
   5. Communication and coordination requirements
   6. 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 will respond to requests utilizing the form provided herein.

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 of the form will be accepted. The original of the form must be signed and provided to the project manager.

E. The Engineer will respond in writing to the request as soon as possible.

1.03 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. The 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.

1.04 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.

1.05 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.

1.06 SPECIFIC COORDINATION REQUIREMENTS

A. 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/her 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.

B. 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.

C. The Contractor shall also coordinate the work by complying with the following:
   1. Construction Schedule: The 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, the 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 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: The 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: The 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.

D. Project Coordination Meetings: All Contractors shall participate in and attend the Project Coordination Meetings as specified below:
   1. Up to three (3) project coordination meetings will be held at the Engineer's or Owner's office as specified herein and in Section 013216.
   2. The meetings will be held when so called for by the Engineer.
   3. Each meeting may last up to eight (8) hours with one hour for lunch.
   4. The Engineer will prepare the final agreed version of the schedule and distribute it to all Contractors.
   5. The Engineer reserves the right not to hold these meetings if in his/her opinion they are not needed.

1.07 CONTRACTOR'S JOB SITE SUPERINTENDENT

A. The Contractor shall employ an on-site superintendent as specified herein below. He/She shall be a full-time employee of the Contractor.

B. The 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. The Superintendent shall have a minimum of five (5) years of experience as a job site superintendent for projects of equal size and complexity.

E. Contract T superintendent shall not be a foreman or crew supervisor and shall be qualified and experienced person who shall act to schedule and sequence the work on a daily basis.

F. The superintendent shall be qualified to perform the duties so required to successfully complete the work in accordance with the Contract Documents.

G. The superintendent for Contract T shall be on the site for each work day, full time, starting within twenty one (21) calendar days from the date of the Notice To Proceed through the date of Final Completion, including all punch list items.

H. Each superintendent shall also visit the site daily when work is not being performed under their Contract for coordination purposes, through the Owner/Engineer. He/She shall remain on the site for a minimum of one (1) hour, if work is being performed by others. He/She shall telephone the Engineer/Architect's designated field representative to advise him/her that they are on the site to discuss matters related to coordination.

I. The 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/she 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: Construction Of Prestressed Ground Storage Tank at East Winds Drive

CONSTRUCTION CONTRACT NO.: RDWD2201

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	*Response Accepted By Contractor* *Contractor's Signature & Date*
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. The 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/her 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. Chair - When Engineer/Owner attend meetings, Engineer, or his/her duly authorized representative, will act as chair. 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/she so orders.

F. Minutes - Minutes of meetings will be kept, written and distributed by the Chair or his/her duly authorized representative. Minutes of all meetings will be available upon request to the Chair.

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 Chair will allow each party to speak, however, he/she 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. Prepare a Gantt Chart type schedule and keep it up to date as specified hereinafter.

C. All schedules shall be submitted in accordance with the requirements contained herein in Section 013300.

D. Refer to Section 013100 regarding the requirements for attendance at Project Coordination Meetings and additional requirements concerning the submission of other project coordination and sequencing information.

1.02 PRIME CONTRACTORS SCHEDULE TYPES

A. Gantt Chart Type: The Contractor shall prepare a Gantt Chart type schedule as specified hereinafter.
   1. Contractor T 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.

G. The schedule shall show the critical sequence items where new units must come online before existing facilities go offline, if applicable to the project. The schedule shall also 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.

H. 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.

I. Prepare the schedule in a manner so that the actual progress of the work can be recorded and compared with the expected progress.

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 11-inch by 17-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. Provide editable schedule to Engineer for inclusion of other trades.

D. The Engineer will provide an electronic version of the Final Combined Construction Schedule for use in keeping the schedule up to date.

E. From time to time, and at stages deemed appropriate by the Engineer, the Engineer may request an updated schedule from the Contractor to reflect the project's status. The percent complete for each task may be shown, as determined by the Contractor and Engineer.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 013216

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project record documents shall be prepared as specified herein.

B. Tank foundation locations shall be staked by the Tank Contractor's surveyor in accordance with the requirements contained in this section.

1.02 QUALITY ASSURANCE

A. The Contractor shall employ a land surveyor licensed in the State where the project is located. The surveyor shall be acceptable to the Engineer in terms of experience and qualifications.
   1. Submit evidence of the surveyor's errors and omissions (professional liability) insurance coverage in the form of an insurance certificate.
   2. The surveyor shall maintain a minimum coverage of $1,000,000 for professional liability.
   3. The Owner, Engineer, and Contractor shall be named as insurance certificate holders.
   4. A thirty-day cancellation notice shall be provided.
   5. Physical work shall not be performed until the certificate is provided and approved by the Owner.

B. All instruments used on the project shall be of professional quality and in first class condition.
   1. All instruments shall have been calibrated by a manufacturer's service station within the last twelve (12) months.
   2. Submit certificate of calibration or paid invoice showing that the unit has been calibrated, if so required by the Engineer.

1.03 SUBMITTALS FOR REVIEW

A. Submit name, address, and telephone number of Surveyor before starting survey work.

B. Surveyor's professional liability insurance certificate.

C. On request, submit documentation verifying accuracy of survey work.

D. Submit a copy of the site drawing signed by the land surveyor showing locations of other benchmarks set by the surveyor, baseline location and offset hubs. If requested, the Engineer will provide a reproducible drawing or a drawing in digital format for use by the surveyor.

1.04 EXAMINATION

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Engineer of any discrepancies discovered.

1.05 SURVEY REFERENCE POINTS

A. The Contractor's surveyor shall locate and protect survey control and reference points located throughout the project site.

B. Control datum for survey is that indicated on the Drawings or will be provided by the Engineer.

C. The Contractor shall protect survey control points prior to starting any site work. Preserve permanent reference points during construction.

D. Promptly report to the Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
   1. The surveyor shall replace dislocated survey control points based on original survey control when directed by the Engineer.
   2. Make no changes without prior written notice to Engineer.

E. The surveyor shall set control lath for rough and final grading purposes. Lath shall be placed at sufficient intervals to control grade or as directed by the Engineer.

F. All new structures, pits, chambers, drainage pools, curbs, roads, swales, and other physical elements shall be located by survey control.

G. Underground pipelines need not be located using survey control but shall be located using standard survey equipment operated by persons experienced in their operation.

1.06 SURVEY REQUIREMENTS

A. The Engineer will provide one (1) benchmark.

B. The Contractor shall, with his/her own forces, obtain working or construction lines or grades as needed subject to the check of the surveyor. The surveyor shall set offsets.

C. Establish elevations, lines, offsets and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements, stakes for grading, curbs, fill and topsoil placement, utility locations, slopes and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations, and equipment foundations.

D. Provide tie distances on record drawings to all underground structures, valves, pipes, and utilities installed as work of this Contract.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 013223

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 competed in its entirety. Identify each submittal and resubmittal using the form.

B. Each individual submittal shall be identified with a 'submittal number' based on the items six or, in some cases, (eight) digit specification Section number listed in the Project Manual Table of Contents. For example: 033000 or (033000.00)
   1. This Section number shall be followed by a dash. The dash will be followed by the Part 2 Article and paragraph location applicable to the item being submitted. For example: 033000-2.01.A.2
   2. This number will be followed by a second dash and a number in parentheses which will indicate the number of times the submission was made. Use the number "(1)" for the first time the item is being submitted. Using our example: 033000-2.01.A.2-(1)
   3. Subsequent submissions of the item 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/she 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 review by the Engineer.

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 or blueprinting machines.

B. All electronic submittals shall be produced with a minimum resolution of 300 dpi and with character recognition.

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/she 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/she 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 - 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- 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 - 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 - SEE REMARKS - 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 - 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 - 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 SAFETY DATA SHEETS (SDS)

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 Safety Data Sheet (SDS) in accordance with "Right To Know" requirements.

C. Products will not be permitted to be kept on site without a SDS.

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 (.pdf) 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 electronically . 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/her 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/her 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/her 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/her 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: Construction Of Prestressed Ground Storage Tank at East Winds Drive

Submittal Name:			
Submission Date:		Submission Log No.:	
Specification Section:		Paragraph Reference:	
Contract Drawing Reference(s):			
Manufacturer's Name:			
Manufacturer's Mailing Address:			
Manufacturer's Contact Information:	*Name*	( ) *Tel. no.*	*Email*
Supplier's Name:			
Supplier's Mailing Address:			
Supplier's Contact Information:	*Name*	( ) *Tel. no.*	*Email*
This item is a substitution for the specified item:		____ No	____ Yes
Contractor's Approval Stamp with Signature & Date		Contractor's Brief Comments or Remarks (attach separate letter as needed): By this submittal, We hereby represent that we have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and that we have reviewed and approved this submittal and checked and coordinated each item with other applicable Shop Drawings and all Contract requirements.	

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.

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 Conservation Construction 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
   15. New York State Department of Health
   16. American Water Works Association (AWWA)
   17. NSF

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. Clearing and tree removal
   2. Transportation and disposal of construction debris
   3. Road opening permit

D. A New York Board of Fire Underwriters inspection or certificate is not required.

E. The following permits and/or certifications will be obtained by the Owner from the appropriate permitting agencies:
   1. Suffolk County Department of Health 348 – Public Water Supply Improvement.

1.05 NOISE CONTROL

A. Control noise in accordance with Town and OSHA requirements.

B. Operations which may generate objectionable noise shall be limited to between the hours of 7:00 a.m. to 5:00 p.m. on weekdays.

1.06 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.

1.07 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.

1.08 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.
   1. Make necessary connections to existing public water mains under supervision of the water utility representative.

B. Pay the water utility's charges for the connections.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 014100

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. Compaction Testing - Soil:

1. Perform compaction testing in accordance with ASTM D2922, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth) or ASTM D1556 Density and Unit Weight of Soil In Place by the Sand Cone Method.
2. Perform tests and analysis of fill material in accordance with ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb. Rammer and 12-inch Drop.

B. Concrete Testing:
1. Collect samples in accordance with ASTM C172, Practice for Sampling Freshly Mixed Concrete.
2. Make test cylinders in accordance with ASTM C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.
3. Test concrete cylinders in accordance with ASTM C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
4. Test slump and air entrainment.

1.09 TESTING SCHEDULE

A. Compaction Testing of Soil:
1. Pipe Installation: One test per 100 linear feet per two feet of fill.
2. Concrete flatwork: One test per 2,000 square feet.
3. Pavement subgrade: One per 500 square feet.

B. Concrete Testing: See specification 331613 Prestressed Concrete Aboveground Water Utility Storage Tanks

C. PVC Water Stop: Test each weld seam by spark test or alternate method approved 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 Contractor 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 Tank Contractor and 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. The Contractor shall comply with all requirements of the Act.

B. The 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. The 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.

B. The Contractor shall provide a sketch showing routing of temporary water service for construction purposes and for exfiltration tank testing. Provide cuts and plumber's certification for backflow device(s).

1.05 CONTRACTOR'S RESPONSIBILITY

A. The 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 the 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. The 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. The 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.

D. The Contractor shall exercise measures to conserve water.

E. Provide insulation and heat tracing to prevent freezing of temporary piping. Drain hoses at the end of each use.

F. 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. The 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 the contractor.

G. The temporary toilet facilities and enclosures shall be maintained on the premises until final payment is issued.

2.04 HEAT

A. The 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. 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. The 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. The Contractor shall ventilate buildings to safely apply paint in accordance with Section 099100 requirements.

2.06 BARRIERS AND PROTECTION

A. The 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. The 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. The 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. The Contractor shall provide measures to keep the ground surface well drained, but avoid erosion of embankments, excavations, the project site, and adjacent areas.

B. The 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. The Contractor shall install erosion control measures as shown on the Drawings.

2.10 DUST CONTROL

A. The 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. The Contractor shall provide all roadways with dust control.

2.11 RUBBISH REMOVAL

A. The 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. The 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. The Contractor shall be responsible for maintaining the site free of trash.

2.12 SNOW REMOVAL

A. The 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. The 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. The 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. The Contractor has full responsibility for the working area until final acceptance and payment.

D. The 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 the 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. The 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.

E. Where trades work from their trucks, then coordinate the parking of trucks with other prime contractors.

2.16 DAMAGES

A. The 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. The Contractor shall provide and maintain adequately equipped first aid facilities in a location or at locations that are readily accessible to workers, 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 TEMPORARY SECONDARY CONTAINMENT

A. Provide secondary containment for all fuel operated equipment. Capacity shall be 110% of the fuel capacity of the equipment being serviced.

B. Containment shall be cleaned on a weekly basis.

C. Containment shall be drained of water and/or snow after a corresponding weather event.

2.20 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. The Work of this Section includes the furnishing of the Engineer's Field Office (Trailer).
   1. The Engineer's Field Office shall be furnished by the Contractor.
   2. It shall be provided within the time period specified hereinafter.

B. The Contractor shall also furnish the following to the Owner/Engineer all in accordance with the specifications contained herein as follows:
   1. Miscellaneous equipment and supplies
   2. Services as may be specified herein.

1.02 CARE AND PLACEMENT

A. Field offices shall be placed where directed by the Engineer in accordance with site utilization requirements.

B. All field offices shall be installed to meet all standards of the Occupational Safety and Health Act of 1970 and subsequent revisions.

C. In the event of damage to existing facilities, including but not limited to: tanks, driveways, walks, pavement, buildings, pipes, conduits, valves, and electrical 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.

1.04 SUBMITTALS

A. The Contractor shall submit the following:
   1. Floor plan of the proposed Field Office of the Engineer.
   2. Catalog cuts of miscellaneous equipment and supplies if they are different from that specified.

B. The Contractor shall also provide a listing of the companies providing specified services with telephone number and contact name. Provide references for each company when requested.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT AND SERVICES FURNISHED TO THE OWNER BY THE CONTRACTOR

A. The Contractor shall also furnish the following equipment and services that shall not be eligible under any cash allowance. All items specified herein shall be new and remain the property of the Owner unless otherwise stated. The following shall be furnished:
   1. Two (2) 5-gallon plastic wastepaper basket.
   2. New 50-person industrial first aid station, OSHA approved, by Acme United or equal, order no. ACM-1403 (Huntington Business Products) or equal.
   3. Thermometer, with indoor and outdoor sensing bulbs, and high, low instantaneous reading, with magnetic reset function by Radio Shack or equal.
   4. Two U.L. and F.M. approved fire extinguishers with a minimum rating of 4A-60B:C.
   5. Standard manufacturer operating manuals for all equipment supplied.
   6. One (1) 30" x 60" desk with 4 side drawers and a locking center drawer.

7. Three (3) new swivel task chairs for use with desk equal to order no. SUP-12223643 by Superior Chair (Huntington Business Products).
8. One (1) new rolling stand with top, Model No. 76MR/76TP from Plan Hold, catalog #27, or equal.
9. Two (2) 48" x 60" reference tables.
10. Six (6) folding chairs.
11. One (1) 8' folding table.

B. Janitorial Services - Provide janitorial services two (2) times each week. Thoroughly clean and dust entire office and leave in a condition satisfactory to Engineer. Provide this service through final completion.

C. Ownership of Furnishings - All items to be provided by Contractor under this paragraph shall remain the property of the Owner unless otherwise stated.

D. Internet Access Service - The Contractor shall also pay for monthly Internet access fees at a cost not to exceed $45.00 per month for the length of the contract up to the date of final completion.
1. This cost shall be included in the price as bid and shall be billed directly to the Contractor.
2. The service provider shall be selected by the Engineer. The Contractor shall arrange for the service.
3. Internet access will be used by the Engineer and the Owner to send email to manufacturers, vendors, Engineer's home office, the Contractor's home office, other prime Contractors, regulatory agencies and the like.
4. The Contractor may use this service at the discretion of the Engineer. Only project related transmissions will be allowed.

E. All items specified herein are subject to the approval of the Engineer.

F. Equipment shall be delivered to the site and turned over to the Engineer via a type written transmittal form.

G. All equipment that is to remain the property of the Contractor shall be new.
1. Equipment that is to remain the property of the Owner shall also be new and be provided in it's factory packaging, unopened until delivered to the Owner/Engineer.
2. Maintenance of all supplied equipment shall be the Contractor's responsibility up to substantial completion.

H. All items shall be delivered prior to the first application for payment, but no later than the day the Engineer's Trailer is delivered.

I. Engineer's Field Trailer:
1. Office - The Contractor shall furnish, equip, and maintain a field office at the site for the exclusive use of Owner/Engineer.
   a. The field office shall be of substantial weatherproof construction, with a usable floor space of not less than 8' x 25' overall.
   b. Office may be in an approved, near new condition, independent trailer, completely skirted with insulation and with sufficient landings and stairs at each door.
   c. Submit a scaled floor plan of the trailer.
2. Duration - Provide office by no later than 30 calendar days from the date of the Notice To Proceed and maintained during the life of the Contract, up to the date of the Final Certificate.
3. Location - As directed by Owner/Engineer. Relocate during the progress of the work, without additional cost to Owner, as may be required by the Owner/Engineer.
4. Utilities - Provide the following in sufficient size, quantity, and capacity, as approved by the Owner/Engineer.

a. Windows for natural light and ventilation, with locks, screens, and shades or curtains.
b. Lighting acceptable to the Owner/Engineer.
c. Door with screen, with hasp and padlock and five keys for Owner/Engineer's use. Two (2) doors minimum. Provide two (2) commercial grade foot mats at each door.
d. Air conditioning unit and heater in each room, sized to maintain an indoor temperature of 60 deg. F with an outdoor temperature range of 10 deg. F to 90 deg. F.
e. 110 volts, 100-amp electric service with sufficient receptacles spaced around the room.

2.02 REMOVALS

A. Remove all items provided under this Section except as otherwise specified.

PART 3 - EXECUTION

3.01 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

A. Remove temporary above grade or buried utilities, equipment, facilities and materials.

B. Remove underground installations to a minimum depth of 2 feet or as specified elsewhere.

C. Regrade area to existing slope and elevation and restore the surface to its existing condition or to the condition shown on the Contract Drawings.

D. The Contractor shall inventory all equipment that has been turned back to the Contractor prior to agreeing to final payment.

END OF SECTION 015213

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 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 existing work and verify that it 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, disfigurations 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 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 and ground storage tank 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 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.

3.04 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.

3.05 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. Refer to Section 331613 - Prestressed Concrete Aboveground Water Utility Storage Tanks for concrete ground storage tank leak testing requirements.

C. Perform all tank testing in accordance with AWWA D-110.

3.06 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.

3.07 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 150 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. 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.

J. All electronic Operations and Maintenance Manuals shall be as specified hereinafter.
   1. All files shall be in Adobe PDF format and submitted on USB drives.
   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.

K. 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.

L. Two (2) weeks after the date the unit was placed into service and the Owner has gained beneficial use, submit two (2) 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).

M. 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 Tank 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 T.

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. 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.

B. 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".

C. 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).

D. 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.

E. 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.

F. 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.

G. 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.

1.08 UNDERGROUND PIPELINE DOCUMENTATION

A. The installing Contractor shall document the location of all underground pipelines by taking digital photographs of the installed pipelines prior to backfilling. At least 3 digital photographs shall be taken of each pipe section before it has been backfilled.

B. The Contractor shall provide each pipe installation crew with a digital camera capable of a 3 mega-pixel quality picture using Smart Media, Compact Flash Media, or Memory Stick cards as the media within the camera.

C. At the end of each day that pipe has been installed, the crew foreman shall hand deliver to the Engineer the removable media.
   1. The Engineer will then download the photographs and delete the photographs from the media.
   2. The media will be returned to the crew foreman within two working days from the date it was delivered.
   3. The Contractor shall have at least three (3) 256 MB media cards available for this purpose to be used on a rotating basis.

D. Installed work will not be eligible for payment until documentation is provided.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 017839

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Site preparation for pressure washing of water storage tanks.

B. Pressure washing requirements.

1.02 RELATED SECTIONS

A. Section 011400 - Work Restrictions

B. Section 017423 - Cleaning

C. Section 099885 - Concrete Tank Coating System

1.03 REFERENCES

A. NACE No. 5/SSPC-SP-12 - Surface Preparation and Cleaning of Metals by Waterjetting prior to Recoating

B. NACE No. 5 SSPC-SP-12 - Visual Standard WJ.1

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify site conditions and tank details.

3.02 PREPARATION

A. Provide rigging/access to allow working of all areas of the tank.

B. All tank openings (vents) shall be adequately protected during power washing to prevent any spray, dirt, or debris from entering tank openings or piping.

C. All debris generated during pressure washing activities shall be collected and retained on site. All debris shall be disposed of in accordance with all state, federal, and local laws.

3.03 APPLICATION

A. All exterior and interior surfaces of the tank are to be pressure washed as per the requirements of specification Section 099885 - Concrete Tank Coating System.

B. Water pressure shall be 4,000 - 5,000 psi. Contractor shall use the means necessary to accomplish the level of cleanliness less than 70µS/cm /WJ-4 or as directed by Engineer. HoldTight 102 shall be utilized in all wash water at a ratio of 100:1.

C. Water shall be of a minimum temperature of 120-150°F and shall be capable of removing accumulated dirt, mildew, and algae. Water temperature shall be maintained with hot water or steam generator.

D. Stubborn staining shall be removed by soft bristle scrub brush. Stain scrubbing may be facilitated with a mild chlorine solution if approved by engineer.

E. Work shall progress such that completed sections are not soiled by subsequent activities.

F. Any damage to the site due to cleaning activities shall be restored by the contractor at his own expense.

3.04 TOLERANCES

A. Minimum water temperature: 120°F.

3.05 FIELD QUALITY CONTROL

A. Perform cleaning under provisions of Section 017423.

B. Do not perform pressure washing when temperatures may create ice formation or when wind conditions will create a nuisance to adjacent properties and buildings.

END OF SECTION 025129.13

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Shop and field fabricated ferrous metal items.

B. Structural steel members.

1.02 RELATED SECTIONS

A. Section 055133.19 - Aluminum Ladders

B. Section 055213 - Aluminum Pipe And Tube Railings

C. Section 108900 - Tank Roof Vent

1.03 REFERENCES

A. AISC - Code of Standard Practice - Manual of Steel Construction - Allowable Stress Design (ASD).

B. ASTM A36/A36M - Structural Steel.

C. ASTM A53 - Hot-Dipped, Zinc-coated Welded, and Seamless Steel Pipe.

D. ASTM A108 - Steel Bars, Carbon, Cold-Finished, Standard Quality.

E. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.

F. ASTM A153 - Zinc Coating (Hot Dip) on Iron and Steel Hardware.

G. ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.

H. ASTM A325 - High Strength Bolts for Structural Steel Joints.

I. ASTM A563 - Carbon and Alloy Steel Nuts.

J. ASTM A568/A568M - General Requirements for Steel, Carbon and High-Strength Low-Alloy Hot-Rolled Sheet and Cold-Rolled Sheet.

K. AWS A2.4 - Symbols for Welding, Brazing, and Nondestructive Examination.

L. ASTM B308 - Aluminum-Alloy 6061-T6 Standard Structural Profiles

M. AWS D1.1 - Structural Welding Code.

N. SSPC (Steel Structures Painting Council) - Painting Manual.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Shop Drawings:
   1. Indicate profiles, sizes, connections, reinforcing, anchorage, size and type of fasteners, and accessories.
   2. Include erection drawings, elevations, and details where applicable.

C. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.

D. Welders' Certificates: Certify welders employed on the Work have met AWS qualification within the previous twelve (12) months.

E. Manufacturer's Mill Certificate: Certify that Products meet or exceed specified requirements.

1.05 QUALIFICATIONS

A. Prepare Shop Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the project is located. Shop drawings must be signed and sealed by a Professional Structural Engineer.

B. Fabricate structural steel members in accordance with AISC Code of Standard Practice.

1.06 FIELD MEASUREMENTS

A. Verify field measurements.

B. Replacement fabrications shall be of same dimensions, strength, and gage as original members, unless noted differently on drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Sections: ASTM A36; sizes to match existing where not indicated on drawings.

B. Plates: ASTM A283; gage to match existing where not indicated on drawings.

C. Pipe: ASTM A53, Grade B; schedule to match existing where not indicated on drawing.

D. Steel Tubing: ASTM A501, hot-formed, welded or seamless structural tubing.

E. Stainless Steel: Type 316, ASTM A666 for plate; sheet and strip ; ASTM A 276 for bars and shapes; ASTM A269 for tubing

F. Aluminum and aluminum alloy; ASTM B-308; Aluminum-Alloy 6061-T6

G. Stainless steel fasteners: ASTM A666, Type 316

H. Bolts, Nuts, and Washers ASTM A325 and Teflon coated: ASTM A325

I. Welding Materials: AWS D1.1; type required for materials being welded.

2.02 FABRICATION

A. Fit and shop assemble in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise. Components shall be comparable in size and capacity to existing components in similar anchorage situations.

F. Fabricate support framing for openings and edges where existing supports are inadequate.

2.03 FINISHES

A. Provide proper isolation between metal surfaces in direct contact with concrete and dis-similar metals.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Shop prime structural steel members.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work, including the removal of existing metal fabrications that require replacement.

B. Beginning of installation means erector accepts existing conditions.

C. Verify that opening sizes and dimensional tolerances are acceptable.

D. Verify that supports are correctly positioned.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components indicated on shop drawings.

D. Connections shall be capable of transferring loads identical to capacity of existing connections.

E. Perform field welding in accordance with AWS D1.1. Provide a fire watch during all hot work operations.

F. Repair weld seams as directed by the Engineer after initial surface preparation has been performed. Arc-gouge defective areas, perform welding, grind weld smooth, and abrade the surface to the same degree as steel around repair.

G. Install dielectric insulation kits when affixing dissimilar metals.

H. Secure to prevent movement and anchor by welding.

I. Obtain Engineer approval prior to site cutting or making adjustments not scheduled.

END OF SECTION 055000

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Aluminum ladders.

1.02 RELATED SECTIONS

A. Section 055000 – Metal Fabrications.

B. Section 055213 – Aluminum Pipe and Tube Railings.

C. Section 108905 – Climbing Safety Device.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM).

B. Building Code of New York State – Latest Edition.

C. ANSI/ASCE 7 – Minimum Design Loads for Buildings and Other Structures – Latest Edition.

D. American Welding Society (AWS) D1.2/D1.2M – Structural Welding Code – Aluminum.

E. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

F. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

G. ANSI A14.3 – Ladders-Fixed Safety Requirements.

H. OSHA 1910.27 – Fixed Ladders.

1.04 DESIGN REQUIREMENTS

A. Fabricate ladder assembly to support concentrated live load of 250 lb (1100 N) acting anywhere on the ladder with a maximum deflection of 1/240 of span and without damage of permanent set.

B. Fabricate ladder assembly to support concentrated live load of 80 lb (350 N) acting on each rung simultaneously with a maximum deflection of 1/240 of span and without damage of permanent set.

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.05 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Shop Drawings
   1. Include plans, elevations, sections, details, and attachments to other work.
   2. Indicate profiles, sizes, connections attachments, reinforcing, anchorage, fastener size and type and accessories.
   3. Provide reaction loads for each hanger and bracket.

C. Product Information: Provide manufacturer's product brochure and specifications.

1.06 QUALITY ASSURANCE

A. Obtain all ladder materials from a single manufacturer.

B. Prepare shop drawings under the direct supervision of a licensed Professional Engineer experienced in design of this work and licensed in the State of New York. The submitted shop drawings shall bear this seal and signature.

C. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum".

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500.

B. Fabricate and deliver products to the site in largest sections as practical.

C. Do not handle products in a manner that will damage or distort materials.

D. Do not store materials directly on the ground.

1.08 FIELD MEASUREMENTS

A. Field verify all required measurements and actual locations of structural anchorage members before fabrication.

1.09 COORDINATION

A. Coordinate work under provisions of Section 013100.

B. Coordinate installation of ladder with the installation of other accessories that are to be attached to the ladder.

C. Schedule installation so substrate attachments are made only to completed substrates.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:
   1. O'Keeffe's, Inc., Brisbane CA.
   2. Precision Ladders, LLC, Morristown TN.
   3. Or approved equal.

2.02 LADDER TYPE

A. Exterior tank ladder: Tubular rail access ladder with walk through rail extension.

B. Interior tank ladder: FRP fixed ladder.

2.03 MATERIALS

A. Aluminum Sheet: Alloy 5005-H34 to comply with ASTM B 209.

B. Aluminum Extrusions: Alloy 6063-T6 to comply with ASTM B 221.

2.04 FABRICATION

A. Rungs:
   1. Fabricate ladder with rungs spaced 12-inches on center. Minimum rung length to be 18-inches (clearance between side rails).
   2. Section of rungs shall be less than 1-inch, formed from tubular aluminum extrusions. Rung shall be slip resistant.
   3. Rungs shall withstand a 1,500-pound load without deformation or failure.

B. Install attachment hardware such that the centerline of the ladder rungs is a minimum of 7-inches from any structure, measured perpendicular to the ladder.

C. Side Rails:
   1. Assembled from two interlocking aluminum extrusions no less than 1/8-inch wall thickness by 3-inches wide.
   2. Construction shall be self-locking stainless-steel fasteners, full penetration welds, and clean, smooth, and burr-free surfaces.
   3. Extend siderails a minimum of 42-inches above any platforms, landings, or as otherwise indicated on the drawings. Walkthrough rail and roof rail extensions shall be fitted with tubular grabrails.

2.05 ALUMINUM FINISHES

A. Clear Anodic Finish: AA-M10C22A41 (architectural class, 0.018 mm or thicker).

2.06 ACCESSORIES

A. Ladder Vandal Guard:
   1. Vandal guard shall be aluminum, minimum thickness of 1/8 inch.
   2. Attachment hardware shall be stainless steel or hot dipped galvanized.
   3. Provide and install a new 8' high aluminum vandal guard.
   4. Manufacturer: RB Industries, Greensboro, N.C.

B. Ladder Safety Gate:
   1. Stainless-steel self-closing safety gate with stainless-steel hardware.
   2. Material shall be stainless steel, including attachment hardware.
   3. Manufacturer: Cotterman, Model No. AG2440S.

C. Ladder Safety Climb:
   1. See Section 108905 – Climbing Safety Device.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

B. Install items plumb and level, accurately fitted, free from distortion or defects.

C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with wood, or dissimilar metals, with a heavy coat of bituminous paint.

D. Provide anchors, plates, angles, hangers, and struts required for connecting ladder to structure.

E. Obtain Engineer's approval prior to field cutting or making adjustments not scheduled.

3.03 ADJUSTING AND CLEANING

A. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.

3.04 TOLERANCES

A. Maximum variation from plumb: ¼-inch in 10-feet, non-cumulative.

B. Maximum offset from true alignment: ¼-inch.

3.05 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 055133.19

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Aluminum pipe and tube railings.

1.02 RELATED SECTIONS

A. Section 055000 – Metal Fabrications.

B. Section 055133.19 – Aluminum Ladders

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM).

B. Building Code of New York State – Latest Edition.

C. ANSI/ASCE 7 – Minimum Design Loads for Buildings and Other Structures – Latest Edition.

D. American Welding Society (AWS) D1.2/D1.2M – Structural Welding Code – Aluminum.

E. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

F. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

1.04 DESIGN REQUIREMENTS

A. Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials in accordance with ANSI/NAAMM AMP 521 - latest edition and based on the following:
   1. Aluminum: The lesser of minimum yield strength divided by 1.65 or minimum ultimate tensile strength divided by 1.95.

C. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Handrails and Top Rails of Guards:
      a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
      b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   2. Infill of Guards:
      a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
      b. Infill load and other loads need not be assumed to act concurrently.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
   1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.05 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Shop Drawings
   1. Include plans, elevations, sections, details, and attachments to other work.
   2. Indicate profiles, sizes, connections attachments, reinforcing, anchorage, fastener size and type and accessories.
   3. Provide reaction loads for each hanger and bracket.

C. Product Information: Provide manufacturer's product brochure and specifications.

1.06 QUALITY ASSURANCE

A. Obtain all pipe, tube, connectors, etc. from a single manufacturer.

B. Prepare shop drawings under the direct supervision of a licensed Professional Engineer experienced in design of this work and licensed in the State of New York. The submitted shop drawings shall bear this seal and signature.

C. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum".

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500.

B. Fabricate and deliver products to the site in largest sections as practical.

C. Do not handle products in a manner that will damage or distort materials.

D. Do not store materials directly on the ground.

1.08 FIELD MEASUREMENTS

A. Field verify all required measurements and actual locations of structural anchorage members before fabrication.

1.09 COORDINATION

A. Coordinate work under provisions of Section 013100.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including anchor bolts, and items with integral anchors.

C. Schedule installation so substrate attachments are made only to completed substrates. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:
   1. Holleander Speed-Rail System
   2. Or approved equal.

2.02 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.03 ALUMINUM

A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

B. Extruded Bars and Tubing: ASTM B 221, Alloy 6063-T5.

C. Pipe and Round Tubing: ASTM B 429, Alloy 6061-T6, ASTM B 221, Alloy 6005-T5.

D. Drawn Seamless Tubing: ASTM B 210, Alloy 6063-T832.

E. Plate and Sheet: ASTM B 209, Alloy 6061-T6.

F. Die and Hand Forgings: ASTM B 247, Alloy 6061-T6.

G. Castings: ASTM B 26/B 26M, Alloy 535.

H. Panel Clips: Alloy 6063-T6.

2.04 FASTENERS

A. Type 316 stainless-steel fasteners.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads. ASTM E 894.

C. Fasteners for Interconnecting Railing Components:
   1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
   2. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
   3. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.

D. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 2 (A4) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

2.05 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
   1. For aluminum railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

C. Non-shrink, Non-metallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

D. Anchoring Cement: Factory-packaged, non-shrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
   1. Water-Resistant Product: At exterior locations and where indicated, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.06 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded connections unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove flux immediately.
   4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.

J. Form changes in direction as follows:
   1. As detailed.

K. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

L. Close exposed ends of railing members with prefabricated end fittings.

M. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
   1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

P. Woven-Wire Mesh Infill Panels: Fabricate infill panels from woven-wire mesh crimped into 1 inch by 1/2 inch by 1/8-inch metal channel frames. Make wire mesh and frames from same metal as railings in which they are installed.

2.07 FINISHES - GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.08 ALUMINUM FINISHES

A. Clear Anodized Finish: AA-M10C22A41 (architectural class, 0.7 mil or thicker).

B. Fittings shall be an architectural tumbled mill finish.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine construction to ensure that aluminum support angles are in place to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.02 INSTALLATION

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
   1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
   2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).

C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with wood, or dissimilar metals, with a heavy coat of bituminous paint.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fastening: Use anchorage devices and fasteners for securing railings and for properly transferring loads to adjoining support structure.

3.03 RAILING CONNECTIONS

A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

B. Expansion / Slip Movement Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches (50 mm) beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches (150 mm) of post.

3.04 ANCHORING POSTS

A. Form or core-drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, non-metallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Leave anchorage joint exposed with 1/8-inch (3-mm) buildup, sloped away from post.

C. Anchor posts to metal surfaces with circular flanges floor type as required by conditions, connected to posts and to metal supporting members as follows:
   1. For aluminum pipe railings, attach posts using fittings designed and engineered for this purpose.

3.05 ADJUSTING AND CLEANING

A. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.

3.06 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 055213

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass fiber reinforced, resin fabrications.

B. FRP ladders.

1.02 RELATED SECTIONS

A. SECTION 108905 - CLIMBING SAFETY DEVICE.

1.03 REFERENCE STANDARDS

A. FM (AG) - FM Approval Guide; current edition.

B. ITS (DIR) - Directory of Listed Products; Current Edition.

C. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 DESIGN REQUIREMENTS

A. Design items with sufficient strength for handling stresses.

B. The completed ladder installation shall meet the following load requirements set forth in OSHA 1910.27. The ladder shall also be capable of supporting a concentrated vertical load of 1,200 pounds applied at the mid-span of the rung. Manufacturer shall be required to provide supporting test data for rung capacity.

C. All ladders shall be designed and laid out in strict accordance with OSHA 1910.27.

D. Temperature exposure is limited to 100°F (38°C) unless specifically stated otherwise in drawings and/or supplementary conditions.

1.05 SUBMITTALS

A. See Section - 013300 - SUBMITTALS for submittal procedures.

B. Product Data: Provide data on specified component products.

C. Shop Drawings: Indicate design load parameters, dimensions, adjacent construction, materials, thicknesses, fabrication details, required clearances, field jointing, tolerances, connections, colors, finishes, methods of support, integration of tank components, and anchorages.

D. Maintenance Data: Include instructions for stain removal, surface and gloss restoration, and general cleaning recommendations.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in New York.

B. The material covered by these specifications shall be furnished by an ISO-9001:2008 certified manufacturer of proven ability who is regularly engaged in the manufacture, fabrication and installation of FRP systems.

C. Manufacturer Qualifications: Company specializing in architectural glass fiber and resin components with five years documented experience with sufficient production capacity to produce required units without causing delay in the work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. All systems, sub-systems and structures shall be shop fabricated and assembled into the largest practical size suitable for transporting.

B. Protect components from damage by retaining shipping protection in place until installation.

C. Identify and match-mark all materials, items and fabrications for installation and field assembly.

D. All materials and equipment necessary for the fabrication and installation of guardrail/handrail and appurtenances shall be stored before, during, and after shipment in a manner to prevent cracking, twisting, bending, breaking, chipping or damage of any kind to the materials or equipment, including damage due to over exposure to the sun. Any material which, in the opinion of the Architect, has become damaged as to be unfit for use, shall be promptly removed from the site of work, and the Contractor shall receive no compensation for the damaged material or its removal.

1.08 FIELD CONDITIONS

A. Do not install site fabricated components when site conditions may be detrimental to successful installation.

B. Maintain temperature and humidity conditions favorable to proper curing of resin during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glass Fiber and Resin Fabrications:
   1. Fibergrate Composite Structures, Inc.; Vi-Corr® molded grating, Fibertred® stair treads and Dynaform SAFRAIL railing systems
   2. Strongwell; DURAGRATE Molded grating and Strongwell Railing system.
   3. Substitutions: See Section 016100 - Product Requirements.

B. Climbing Safety Device
   1. See specification Section 108905.

2.02 REGULATORY REQUIREMENTS

A. Conform to FM Assembly Design No. UL 94 V-0..

B. Conform to applicable code for a flame/smoke index rating of 25/0 in accordance with ASTM E84 listed product requirements.

2.03 MATERIALS

A. Pultruded FRP Materials:
   1. Materials used in the manufacture of the FRP products shall be raw materials in conformance with the specification and certified as meeting the manufacturer’s approved list of raw materials.

2. All structural shapes are to be manufactured by the pultrusion process with a glass content minimum of 45%, maximum of 55% by weight. The structural shapes shall be composed of fiberglass reinforcement and resin in qualities, quantities, properties, arrangements and dimensions as necessary to meet the design requirements and dimensions as specified in the Contract Documents.
3. Fiberglass reinforcement shall be a combination of continuous roving, continuous strand mat, and surfacing veil in sufficient quantities as needed by the application and/or physical properties required.
4. The visual quality of the pultruded shapes shall conform to ASTM D4385.
5. FRP products exposed to weather shall contain an ultraviolet inhibitor. Should additional ultraviolet protection be required, a one mil minimum UV coating may be applied. Products manufactured with a phenolic resin system shall be coated with a one mil minimum UV coating.
6. All exposed surfaces shall be smooth and true to form, consistent with ASTM D4385.

Fibergalss Pultruded Material Properties				
Properties	**Test**	**Units**	**Value**	
Tensile Strength	ASTM D790	psi	30,000	
Tensile Modulus	ASTM D638	psi	2.5 x 10^6	
Flexural Strength	ASTM D790	psi	30,000	
Flexural Modulus	ASTM D790	psi	1.8 x 10^6	
Flexural Modulus (Full Section)		psi	2.8 x 10^6	
Short Beam Shear (Transverse)	ASTM D2344	psi	4,500	
Shear Modulus (Transverse)	N/A	psi	4.5 x 10^5	
Coefficient of Thermal Expansion	ASTM D696	in/in/deg F	8.0 x 10^-6	
Flame Spread	ASTM E84	N/A	25 or less	

Resin Systems	
Description	**Resin Base**
Chemical Resistant - Fire Retardant	Vinyl Ester
Industrial Grade - Fire Retardant	Isophthalic
Architectural Grade - Fire Retardant	Orthophthalic
High Temperature – Low Smoke/Low Flame	Phenolic
Low Flame/Class 1 Smoke	Custom Blend

2.04 FRP LADDERS

A. All ladder side rails, rungs, ladder mounting brackets and cage straps are to be FRP structural shapes manufactured by the pultrusion process.

B. All structural shapes shall be composed of fiberglass reinforcement and resin in qualities, quantities, properties, arrangements and dimensions as necessary to meet the design requirements and dimensions as specified in the Contract Documents.

C. The ladder side rail shall be 1-3/4 inches square tube with a wall thickness of 1/4 inch or greater. The rungs shall be 1-1/4 inch diameter pultruded structural shapes, continuously fluted

to provide a non-slip surface. Rungs that are gritted as a secondary operation shall not be permitted. Ladder wall and floor mount shall be fabricated from pultruded angles, 3/8 inch minimum thickness.

D. All fasteners used in the ladder system are to be Type 316 stainless steel. Rivets will be 18-8 stainless steel.

E. Type 316 stainless steel bolts shall be provided for attaching wall brackets to the ladder.

F. All rungs shall be both mechanically attached to the ladder with stainless steel rivets and chemically bonded with epoxy.

G. All ladder components are to be integrally pigmented yellow. All wall and floor mount brackets shall be Dynaform® ISOFR light gray.

2.05 FABRICATION

A. Mold Material: Metal type.

B. Finish other surfaces not in contact with the mold to match the molded surfaces in appearance.

C. Finish trim corners and edges.

D. Cure components prior to shipment and remove material that may be toxic to plant or animal life.

E. The fabricated railing sections shall be supplied complete with fittings by the FRP manufacturer. The components used to join fabricated sections together may be shipped loose, to be epoxied and riveted together in the field by the contractor.

F. All ladder rungs shall penetrate the wall of the tube side rails and shall be connected to the rails with both epoxy and rivets to provide both a chemical and mechanical lock, respectively.

G. Ladders shall be fully shop assembled.

2.06 FINISH

A. Color: as selected by the Engineer.

B. Exposed to view Surface Texture: Railing surfaces shall be smooth. grating surfaces shall be non-slip.

2.07 ACCESSORIES

A. Ladder Safety Climb:
   1. See Section 108905 – Climbing Safety Device.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work and dimensions are as indicated on shop drawings.

3.02 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.03 INSTALLATION

A. Install fabrications in accordance with shop drawings and fabricator's instructions.

B. Fasten grating panels securely in place with hold down fasteners as specified herein.

C. Fastening to in-place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous FRP fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts and other connectors as determined by the Design Engineer.

D. Follow manufacturer's instructions when cutting or drilling fiberglass products or using resin products; provide adequate ventilation. Field cut and drill fiberglass reinforced plastic products with carbide or diamond tipped bits and blades for drilling and fitting required for installation of miscellaneous FRP fabrications. Set FRP fabrication accurately in location, alignment and elevation; with edges and surfaces level, plumb, true and free of rack; measured from established lines and levels.
   1. All field cut and drilled edges, holes and abrasions shall be sealed with a catalyzed resin compatible with the original resin as recommended by the manufacturer.

E. The fabricated handrail sections shall be installed as shown on the approved shop drawings. The handrail sections shall be accurately located, erected plumb and level. The sections shall be fastened to the structure as shown on the approved shop drawings.

3.04 TOLERANCES

A. Maximum variation from true position: 1/4 inch (6 mm).

B. Maximum offset from true alignment: 1/8 inch (3 mm).

3.05 CLEANING

A. Clean components of foreign material without damaging finished surface.

B. Hand rub smooth surfaces with polishing cream.

C. Clean fabrications in accordance with fabricator's instructions.

3.06 PROTECTION

A. Place protective structural covering over installed units.

END OF SECTION 068200

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Roof Access Hatch and related items.

1.02 RELATED SECTIONS

A. Section 331613 - Prestressed Concrete Aboveground Water Utility Storage Tank

1.03 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Indicate on shop drawings plan layout, construction details and required clearances.

C. Shop Drawing of unit and all accessory installations.

1.04 WARRANTY

A. Manufacturer's warranty: Materials shall be free of defects in material and workmanship for a period of ten (10) five (5) years from the date of installation. Should a part fail to function in normal use within this period, the manufacturer shall furnish a new part at no charge.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. U.S.F. Fabrication, Inc.

B. Approved equal.

2.02 TANK ACCESS HATCH

A. Access Hatch shall be prefabricated ready for installation and use.

B. Door construction:
   1. Doors to open 90 degrees and lock automatically in that position. Provide vinyl grip handle for closing.
   2. Cover: Shall be ¼" aluminum diamond pattern plate, reinforced for a minimum of 150 psf (live load), and capable of holding up to 10 ft. head of water.
   3. Frame: Shall be 3/8" thick aluminum angle. Angle shall include a horizontal leg and 9/16" diameter mounting holes for bolting to concrete top slab. Frame to include a U-shaped neoprene gasket riveted to the frame to eliminate water intrusion.
   4. Locks: Shall be 316 stainless steel nut and bolt pressure locks, with exterior staple for padlock. Locks shall be spaced so as to provide an adequate seal to prevent the intrusion of water up to the rated depth.
   5. Hinges: Shall be heavy duty aluminum bolted to underside of door with 316 stainless steel pins.

C. Accessories & Options:
   1. Hatch shall be provided with an anodized finish.
   2. Provide standard open vertical compression spring operators for ease of operation.
   3. Provide bituminous coating system, applied to frame surface in contact with concrete, as per manufacturer's instructions.

4. Provide anodized aluminum Hatch Safety Grate as a fall-through prevention system, designed for live loads up to 300 psf. Grating shall not be colored (USF standard is OSHA safety orange). Hardware components of the safety grating shall be stainless steel. Submit grate opening size options to Engineer for review.
5. Latch: Stainless steel slam lock with fixed interior handle and removable exterior lift handle.
6. Ladder Safety Post
    a. Post shall be high strength, type 304 stainless steel tubing, and mill finish, with a pull-up loop at its upper end.
    b. All hardware, including mounting brackets, hinges, torsion rod, padlock loop, and fasteners, shall be type 316 stainless steel.
    c. Up and down movement shall be controlled by a stainless steel balancing spring mechanism.
    d. Post shall lock automatically when extended, and a release lever must be activated to disengage the post to permit the return to the lowered position.

D. Door Operation:
1. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
2. Operation of the cover shall not be affected by temperature.
3. Cover and grating shall be operated separately and shall automatically lock in the full open position.
4. The access door may not be closed without first closing the safety grate.
5. The safety grating shall be operated and reinforced independently of the access hatch. If the grating is damaged or removed, the access door shall continue to operate at the specified load and deflection requirements.

2.03 FABRICATION

A. Fabricate components free of visual distortions and defects. Weld corners and joints.

B. Provide for removal of condensation occurring within components or assembly.

C. Fit components for weather-tight assembly.

D. Apply bituminous paint on surfaces of units to be in contact with cementitious materials or dissimilar metals.

2.04 QUALITY ASSURANCE

A. Guarantee access doors against defects in material and workmanship for a period of five (5) years.

PART 3 - EXECUTION

3.01 DELIVERY AND STORAGE

A. Delivery of materials to the site shall be made in unopened cartons with the name of the manufacturer clearly visible on the carton.

B. Materials shall be stored in a safe, dry place.

3.02 INSTALLATION

A. Install access doors in accordance at location indicated on the drawings and according to manufacturer's instructions. Set flush in top slab and square and parallel to foundation/vault walls. Set plumb to top slab/floor.

B. Install hatch in accordance with OSHA regulations.

C. Installer shall supply and install mechanical fasteners compatible with the roof deck and the hatch.

D. Manufacturer shall furnish fasteners necessary for ladder safety post installation.

E. Install ladder safety post in accordance with the manufacturer's installation instructions.

END OF SECTION 083100

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Exterior concrete tank coatings.

1.02 RELATED SECTIONS

A. Section 013300 - Submittals

B. Section 025129.13 - High Pressure Water Cleaning Decontamination

1.03 REFERENCES

A. ANSI/NSF 61 - Drinking Water System Components - Health Effects

B. SSPC VOL 1 - Good Painting Practices - 2002 4th Edition

C. SSPC VOL 2 - Systems and Specifications - 2005 Edition

D. ASTM E1216-99(2005) - Standard Practice for Sampling for Particulate Contamination by Tape Lift

E. NACE No. 5/SSPC-SP12, WJ-3 (LP-WC) - Surface Preparation and Cleaning by Waterjetting Prior to Recoating

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 material 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 structures and property including, but not limited to, the following:
   1. Method of paint application.
   2. Method of surface preparation.

F. Submit detailed daily reports upon engineer’s request at any time during the project, to include the following:
   1. The start date and time, and the completion date and time, of surface preparation to any item or zone. The item or zone, (location) must be clearly defined in the report.
   2. The start date and time, and the completion date and time, of each coat applied to any item or zone. The item or zone, (location) must be clearly defined in the report.
   3. The ambient conditions recorded daily on site, for everyday of surface preparation, coating application, and curing of applied coatings. Ambient conditions records shall include wet bulb temperature, dry bulb temperature, surface temperature, relative humidity, dew point, the time conditions were recorded, and the location where the conditions were taken. Also include the weather reported for the previous day and the weather forecasted for the following day of the dated report.
   4. The name, type, batch numbers, 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. Contractor shall be aware of the New York State Requirements for Volatile Organic Compounds in drinking water.

B. All coatings shall comply with VOC regulations as promulgated by the Ozone Transport Commission, effective January 2005.

C. Industrial and Architectural coatings are subject to Article 19 of the New York State Environmental Conservation Laws (ECL) and the provisions of the regulation promulgated thereunder, 6NYCRR Part 205, Industrial and Architectural Coatings.

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 Section 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.

E. The Contractor shall furnish and install a high/low thermometer where coatings are stored on-site to confirm storage conditions.

1.08 ENVIRONMENTAL REQUIREMENTS

A. No coatings or seam sealer shall be applied to any surfaces when moisture (rain, sleet, snow, condensation or equal) is occurring or expected during the period defined by the manufacturers printed literature as cured. Do not apply coating when the temperature and/or relative humidity are below manufacturers printed literature. Deviations from these requirements will cause all coatings applied to be removed at the direction of the engineer and the surfaces shall be re-prepared in accordance with this section.

B. A 24 hour Ambient Monitor shall be required for all coating phases from surface preparation through complete cure of final coat for the exterior of the tank. The cost of the ambient monitor shall be borne by the Contractor. The ambient monitor or approved equal must be capable of recording dry bulb, relative humidity, dew point, surface temperature, and wind speeds periodically for the duration stipulated. The ambient monitor shall be a HOBO RX3000 Remote

Monitoring Station with all necessary accessories and programming to provide continuous logging of the parameters noted. The HOBO shall also be provided with cellular communication where the data logging can be monitored by the Engineer remotely.

1.09 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. If the paint manufacturer does not provide this warranty, the contractor will.

D. 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.

E. 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.

F. 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. The entire area shall achieve an aesthetically pleasing finish product.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. SHERWIN WILLIAMS

B. Coating substitutions shall be permitted only after receiving written approval from the Engineer prior to bid.

2.02 MATERIALS - EXTERIOR TANK SIDEWALL

A. Exterior Paint System - Five (5) coat system.
   1. First Coat: Macropoxy 5,000 Penetrating Epoxy Primer, 1.0 - 1.5 mils DFT.
   2. Second Coat: Macropoxy 5,000 Penetrating Epoxy Primer, 1.0 - 1.5 mils DFT.
   3. Third Coat: Pro Industrial DTM Acrylic Gloss, 2.0 - 3.0 mils DFT. Contrasting color to next coat.
   4. Fourth Coat: Pro Industrial DTM Acrylic Gloss, 2.0 - 3.0 mils DFT. Contrasting color to next coat.
   5. Fifth Coat: Pro Industrial DTM Acrylic Gloss, 2.0 - 3.0 mils DFT. Finish color selected by the owner.

2.03 TESTING

A. The Engineer shall have the right to take random samples of media from the contractor's equipment at any time. These samples may be sent to a certified lab to be analyzed for non-specified contamination or analyzed by engineer's representative.

B. The Engineer shall have the right to take random samples of paint from the painter's bucket as it is being applied to the tank. These samples will be sent to the paint manufacturer for analysis to determine constituents and type of coating.

C. Cost of testing paint products shall be borne by Contractor and under no circumstances will additional compensation be allowed to the Contractor to pay for this testing. Results shall be provided directly to Engineer within two (2) weeks of sample collection.

D. 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.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall verify and record existing ambient condition and substrate conditions prior to proceeding with any work and submit to Engineer's/representative's 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's/representative's 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. All surfaces to be painted shall be prepared and cleaned as per specification 025129.13 - High Pressure Water Cleaning.

B. Cleaned surface, when viewed without magnification, shall be free of all oil, grease, dirt, mildew, algae, biological growth, calcium deposits, and other foreign matter.

C. All areas shall be cleaned prior to any coating application. All surfaces to be painted shall be dry.

D. Any exposed steel reinforcement encountered after high pressure water cleaning shall be power tool cleaned prior to any coating applications.

3.03 APPLICATION

A. No coatings shall be applied until the concrete has cured for a minimum of 28 days.

B. All exterior coatings shall be applied by the use of roller (½" nap, or greater) or by brush in order to work the irregular surfaces of the substrate.

C. 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.

D. No coatings shall be applied when the surface temperature is less than 5 degrees Fahrenheit (3 degrees Celsius) above the dew point.

E. No coatings shall be applied when the relative humidity is above 80% or as recommended by manufacturer. If the specifications differ from the manufacture's recommendations, the more stringent will apply.

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 specified thickness. Improper film thickness shall be corrected at the discretion of the engineer, with proper surface preparation and application of additional coating.

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 coating shall be applied as a continuous film of uniform thickness, free of pores, to the maximum extent practicable. 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.

J. All coatings that are specified shall only be acceptable in the number of coats specified in the contract documents.

K. All coatings applied shall be free of any runs, drips, sags, roller nap, brush hairs, or any other foreign matter.

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 and other tools and equipment shall be held in 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, 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 and upon mobilization by the Contractor.
   2. Prior to the delivery and upon receiving of any materials, equipment, supplies, or personnel.
   3. Prior to and upon completion of any installation of permanent or nonpermanent items on to the tank.
   4. Prior to the start of hot work (of any item).
   5. Upon completion of hot work (of any item).
   6. Prior to the start of surface preparation (of any section, zone, or area).
   7. Upon completion of surface preparation (of any section, zone, or area).
   8. Prior to the application of any coating or lining (on any section, zone, or area).

9. Upon completion of application of any coating or lining (on any section, zone, or area).
10. Following the curing of any coating or lining (of any section, zone, or area).
11. Prior to and upon completion of disinfection.
12. Prior to and upon completion of any sampling or testing.

C. The Engineer reserves the right to conduct any testing, both destructive and nondestructive, at any time for inspection or evaluation purposes. The contractor shall repair any areas damaged by testing at no additional cost. For purposes of bidding the contractor shall expect to repair six tested areas.

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 tank is to be properly rigged with safety lines to provide access for inspection of entire tank at all times. The contractor shall provide access to all equipment, containers and office space as deemed necessary by the engineer or his representative.

3.06 DISPOSAL OF MATERIALS

A. All waste materials shall be disposed of in accordance with the requirements of the USEPA and NYSDEC.

B. Unless otherwise specified, all waste materials shall become the property of the Contractor. The Contractor shall be responsible for the safe and proper removal of all waste materials and the disposal of such waste materials at a licensed waste disposal facility.

C. All fees, transportation costs, etc. are the responsibility of the Contractor. The Contractor shall bear full responsibility for any and all fines or assessments levied against the project due to improper handling and disposal of the waste material.

END OF SECTION 099885

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Tank vent.

1.02 RELATED SECTIONS

A. Section 005500 - Metal Fabrications

1.03 REFERENCES

A. AWS A2.0 - Standard Welding Symbols

B. AWS D1.0 - Code for Welding in Building Construction

C. AWS D1.1 - Structural Welding Code

1.04 DESIGN REQUIREMENTS

A. Minimum capacity: 1,000 CFM

1.05 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Shop drawings: Indicate profiles, sizes, connection attachments, reinforcing, size and type of fasteners, and accessories. Indicate welded connections using AWS A2.0 welding symbols.

1.06 QUALITY ASSURANCE

A. Fabricate vent in accordance with AWS D1.0 and AWS D1.1.

B. Maintain one (1) copy of each document on site.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect, and handle products to the site under provisions of Sections 016500.

B. Fabricate and deliver products to the site in largest sections practical.

C. Do not handle vent in a manner which will damage or distort vent.

D. Do not store vent directly on the ground.

1.08 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on approved shop drawings.

1.09 COORDINATION

A. Coordinate work under provisions of Section 013100.

B. Coordinate installation of vent with fabrication of substrate and all other adjacent work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Vent: Fully weatherproof and freezeproof; aluminum construction; designed to prevent the ingress of birds, animals, insects, dust, and water.

2.02 FABRICATION

A. Fabricate vent to be freeze proof and to provide sufficient air capacity during maximum rate of inflow or outflow of water to the tank so that dangerous pressures do not develop.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install roof vent in accordance with approved shop drawings.

B. Install roof vent vertical and plumb.

END OF SECTION 108900

PART 1 - GENERAL

1.01 SCOPE

A. Climbing safety device.

1.02 RELATED SECTIONS

A. Section 055133.19 – Aluminum Ladders.

B. Section 068200 - Glass Fiber Reinforced Plastic Fabrications

1.03 REFERENCES

A. OSHA 1910.27.

B. ANSI A14.3-2008 or latest revision.

1.04 SYSTEM DESCRIPTION

A. Fall protection for climbing elevated tank ladders which allows the climber hands-free operation whether ascending or descending.

1.05 SUBMITTALS

A. Product data.

B. Manufacturer's installation instructions.

C. Maintenance schedule.

1.06 FIELD MEASUREMENTS

A. Verify length of each ladder to receive new safety system.

PART 2 - PRODUCTS

2.01 CLIMBING SAFETY SYSTEM

A. Manufacturer: LAD-SAF Vertical Climbing Safety System, 3M DBI/SALA, or approved equal.

B. Standard Rung Mount Vertical Climbing Safety System:
   1. Lad-Saf top mounting bracket, type 304 stainless steel with single point anchor, type 316 stainless steel. Model 616613.
   2. Lad-Saf bottom mounting bracket, type 304 stainless steel with integrated tension indicator.

C. Cable:
   1. Lad-Saf 3/8” 7 x 19, type 304 stainless steel safety cable with pre-swaged cable termination. Model 6107.

D. Cable Guide:
   1. Lad-Saf ladder rung mounted cable guide, type 304 stainless steel, installed a maximum of every 25-feet. Provide a minimum of one cable guide for each system regardless of total length.

E. Cable Sleeve:
   1. Two (2) Lad-Saf flexible sleeves, stainless steel, type X3 cable sleeves for 3/8" (9.5mm) climbing cable. Model 6160054.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's installation instructions.

B. Install dielectric insulation kits when affixing dissimilar metals.

C. Install ¼-inch thick red rubber isolators where safety climb components are affixed to any painted surface.

END OF SECTION 108905

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clearing and protection of vegetation.

B. Removal and dispose of existing debris.

C. Clear designated areas of the site of plant life and grass as required

D. Remove and dispose of trees and shrubs as required.

E. Remove and dispose of stumps and root system of trees and shrubs as required.

F. Removal and storage of topsoil.

1.02 RELATED REQUIREMENTS

A. Section 011000 - Summary of Work: Limitations on Contractor's use of site and premises.

B. Section 015000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

C. Section 312213 - Rough Grading: Topsoil removal.

D. Section 312323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

1.03 REGULATORY REQUIREMENTS

A. Conform to applicable local code(s) for disposal of debris.

B. Burning of materials on site is prohibited.

C. Coordinate clearing work with utility companies.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SITE CLEARING

A. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

B. Verify existing conditions.

C. Verify limits of clearing. Identify existing plant life designated to be removed and verify with Owner and Engineer prior to removal.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Protect existing structures and other elements that are not to be removed.

3.03 VEGETATION

A. Identify existing plant life designated to be removed. Verify with Owner and Engineer prior to removal.

B. Scope: Remove trees, shrubs, brush, root ball, and stumps, rocks, in areas to be covered by structures and paving.

C. Do not remove or damage vegetation beyond the limits indicated on drawings.

D. Install substantial, highly visible fences at least 3 feet (1 m) high to prevent inadvertent damage to vegetation to remain:
   1. At vegetation removal limits.

E. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum disturbance of the subsoil.

F. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
   1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
   2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches (450 mm).
   3. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.

G. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.04 DEBRIS

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 311000

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 RELATED SECTIONS

A. Section 311000 - Site Clearing

B. Section 312316 - Excavation

C. Section 312323 - Fill

1.03 REFERENCES

A. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 kg) Rammer and 18 inch (457 mm) Drop.

1.04 SUBMITTALS

A. Submit under provisions of 013300.

B. Sieve Analysis: Submit a sieve analysis of all types of fill material to be used.

1.05 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of utilities remaining, by horizontal dimensions, elevations or inverts, and slope gradients.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not place wet or frozen material.

B. Do not place material in wet or frozen ground or when precipitation is occurring.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Subsoil: Reused, excavated material, graded, free of lumps, rocks and gravel larger than 3 inches (75 mm) 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 which are to remain.

E. Protect plant life, lawns, rock outcroppings 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, landscaped 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 (2.4 m). 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 continuous layers not exceeding 6 inches (150 mm) compacted depth, compacted to 95 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 (25 mm).

3.05 FIELD QUALITY CONTROL

A. Perform field testing under provisions of Section 014500.

B. Perform tests and analysis of fill material in accordance with ANSI/ASTM D1557.

C. Compaction tests are to be performed at a rate of one for every 10 cubic yards (7.6 cu m) of material placed.

END OF SECTION 312213

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for site structure volume below grade, footings and site structures.

B. Trenching for utilities outside the site structure to utility main connections.

C. Temporary excavation support and protection systems.

1.02 RELATED REQUIREMENTS

A. Section 311000 - Site Clearing: Vegetation and existing debris removal.

B. Section 312213 - Rough Grading

C. Section 312323 - Fill

D. Section 312316.13 - Trenching

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the work are as indicated.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 311000 for clearing, grubbing, and removal of existing debris.

C. Locate, identify, and protect utilities that remain and protect from damage.

3.03 EXCAVATING

A. Excavate to accommodate new structures and construction operations.

B. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Slope banks of excavations deeper than 4 feet (1.2 meters) to angle of repose or less until shored.

D. Do not interfere with 45 degree bearing splay of foundations.

E. Cut utility trenches wide enough to allow inspection of installed utilities.

F. Hand trim excavations. Remove loose matter.

G. Grade top perimeter of excavation to prevent surface water from draining into excavation.

H. Remove excavated material that is unsuitable for re-use from site.

I. Remove excess excavated material from site.

3.04 FIELD QUALITY CONTROL

A. The Engineer shall inspect load-bearing excavated surfaces prior to placement of foundation.

3.05 PROTECTION

A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

B. 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. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

A. Section 312213 - Rough Grading

B. Section 312316 - Excavation

1.03 REFERENCE STANDARDS

A. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017, with Editorial Revision (2020).

1.04 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Subsoil excavated on-site.
   1. Graded.
   2. Free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50 mm), and debris.
   3. Conforming to ASTM D2487 Group Symbol CL.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

3.03 TRENCHING

A. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

B. Slope banks of excavations deeper than 4 feet (1.2 meters) to angle of repose or less until shored.

C. Do not interfere with 45 degree bearing splay of foundations.

D. Cut trenches wide enough to allow inspection of installed utilities.

E. Hand trim excavations. Remove loose matter.

F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.

G. Remove excavated material that is unsuitable for re-use from site.

H. Remove excess excavated material from site.

3.04 PREPARATION FOR UTILITY PLACEMENT

A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.05 BACKFILLING

A. Backfill to contours and elevations indicated using unfrozen materials.

B. Fill up to subgrade elevations unless otherwise indicated.

C. Employ a placement method that does not disturb or damage other work.

D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches (200 mm) compacted depth.

G. Slope grade away from building minimum 2 inches in 10 ft (50 mm in 3 m), unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

H. Correct areas that are over-excavated.
   1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.

I. Compaction Density Unless Otherwise Specified or Indicated:
   1. Under paving, slabs-on-grade, and similar construction: 92 percent of maximum dry density.

J. Reshape and re-compact fills subjected to vehicular traffic.

3.06 BEDDING AND FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

3.07 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 1 inch (25 mm) from required elevations.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch (25 mm) from required elevations.

3.08 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for general requirements for field inspection and testing.

B. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.09 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION 312316.13

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Filling, backfilling, and compacting for building volume below grade, footings, paving, and site structures.

B. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

C. Environmental testing.

1.02 RELATED REQUIREMENTS

A. Section 312213 - Rough Grading: Site grading.

B. Section 312316 - Excavation: Removal and handling of soil to be re-used.

C. Section 312316.13 - Trenching: Excavating for site piping.

1.03 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

B. Subgrade Elevations: Indicated on drawings.

1.04 REFERENCE STANDARDS

A. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.

B. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017, with Editorial Revision (2020).

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Materials Sources: Submit name of imported materials source.

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. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.

E. Testing Agency Qualification Statement.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where designated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

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:

<table>
<tr><td colspan="4">Recommended Number of Soil Samples for Imported Soil</td></tr>
<tr><td>Contaminant</td><td>VOC's</td><td colspan="2">SVOC's, Inorganics & PCB's/Pesticides</td></tr>
<tr><td>Soil Quantity (cubic yards)</td><td>Discrete Samples</td><td>Composite</td><td>Discreet Samples/Composite</td></tr>
<tr><td>0-50</td><td>1</td><td>1</td><td rowspan="8">3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis</td></tr>
<tr><td>50-100</td><td>2</td><td>1</td></tr>
<tr><td>100-200</td><td>3</td><td>1</td></tr>
<tr><td>200-300</td><td>4</td><td>1</td></tr>
<tr><td>300-400</td><td>4</td><td>2</td></tr>
<tr><td>400-500</td><td>5</td><td>2</td></tr>
<tr><td>500-800</td><td>6</td><td>2</td></tr>
<tr><td>800-1000</td><td>7</td><td>2</td></tr>
<tr><td>>1000</td><td colspan="3">Add an additional 2 VOC and 1 composite for each additional 1000 cubic yards or consult with DER</td></tr>
</table>

C. Provide materials from the same source throughout the work. Change of source requires approval from the Engineer

2.02 FILL MATERIALS

A. General Fill: Subsoil excavated on-site.
   1. Graded.
   2. Free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50 mm), and debris.

B. Granular Fill - Gravel : Pit run washed stone; free of shale, clay, friable material and debris.
   1. Graded in accordance with ASTM D2487 Group Symbol GW.

C. Sand: Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter.
   1. Graded in accordance with ASTM C136/C136M; within the following limits:
      a. No. 4 (4.75 mm) sieve: 100 percent passing.
      b. No. 14 (1.40 mm) sieve: 10 to 100 percent passing.
      c. No. 50 (300 micro m) sieve: 5 to 90 percent passing.
      d. No. 100 (150 micro m) sieve: 4 to 30 percent passing.
      e. No. 200 (75 micro m) sieve: 0 percent passing.

D. Topsoil: See Sections 311000 and 312213.

2.03 SOURCE QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the Work are as indicated.

B. Identify required lines, levels, contours, and datum locations.

C. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

A. Scarify and proof roll subgrade surface to a depth of 6 inches (150 mm) to identify soft spots.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Fill up to subgrade elevations unless otherwise indicated.

C. Employ a placement method that does not disturb or damage other work.

D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches (150 mm) compacted depth.

G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches (200 mm) compacted depth.

H. Slope grade away from building minimum 2 inches in 10 feet (50 mm in 3 m), unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

I. Correct areas that are over-excavated.
   1. Load-bearing foundation surfaces: Fill with concrete.
   2. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.

J. Compaction Density Unless Otherwise Specified or Indicated:
   1. Under slabs-on-grade, foundations, and similar construction: 95 percent of maximum dry density.

K. Reshape and re-compact fills subjected to vehicular traffic.

L. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Engineer. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

3.05 TOLERANCES

A. Top Surface of General Filling: Plus or minus 1 inch (25 mm) from required elevations.

B. Top Surface of Filling Under Paved Areas: Plus or minus 1/2 inch (13 mm) from required elevations.

3.06 CLEANING

A. See Division 1 for additional requirements.

B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION 312323

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Wood and steel sheeting.

B. Sheeting box.

1.02 RELATED SECTIONS

A. Section 312323 - Fill

B. Section 312316.13 - Trenching.

1.03 REFERENCES

A. Occupational Safety and Health Standards - Excavations; Final Rule (29 CFR Part 1926) - OSHA Standards.

1.04 QUALITY ASSURANCE

A. Perform all work of this section in accordance with OSHA Standards and approved shop drawings.

1.05 COORDINATION

A. Coordinate work under provisions of Section 013100.

B. Coordinate work with all other sections requiring temporary sheeting and bracing.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Wood Sheeting: Hardwood species of size and dimensions capable of being driven to the required depths and capable of supporting excavation sides and soil pressures when braced; free from wormholes, wind shakes, loose knots, decayed or unsound portions or defects which would impair its strength or tightness; 2 inches (50 mm) thick minimum.

B. Steel Sheeting: Corrugated "Z" shape cross-section; of size and dimensions capable of being driven to the required depths and capable of supporting excavation sides and soil pressures when braced; structurally sound; special shapes for corner construction and transition points.

C. Sheeting Boxes: Steel, of size and dimensions capable of supporting excavation sides and soil pressures; structurally sound.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing substrate and site conditions.

B. Verify elevations and grades are as indicated on the plans.

C. Verify proposed locations of excavations are as indicated on the plans.

3.02 PREPARATION

A. Excavate to a depth no greater than 4 feet (1.2 m) from existing grade.

B. Assemble and drive the sheeting in accordance with approved shop drawings.

3.03 INSTALLATION - SHEETING

A. Drive sheeting in place to thoroughly support both sides of the excavation using a sheeting hammer. Use a steam or pneumatic hammer for steel sheeting.

B. Water jetting of sheeting will not be permitted. Do not loosen adjacent ground which might result in collapse.

C. Install walls and braces or shores tight and in accordance with approved shop drawings.

3.04 INSTALLATION - SHEETING BOX

A. Place box in trench utilizing a means which will not damage structural integrity of the box.

B. Excavate ahead of the sheeting box only enough to advance the sheeting box and only immediately prior to moving the sheeting box.

C. Backfill on both sides of the sheeting box as it is moved.

3.05 REMOVAL OF SHEETING

A. Remove sheeting only as backfilling progresses.

B. Carefully remove sheeting such that compacted backfill is not displaced. Add additional backfill to the areas vacated by the sheeting.

C. All sheeting is to be removed from the site once its use is no longer required.

3.06 CLEANING

A. Clean site of any debris from work of this section

END OF SECTION 315000

PART 1 - GENERAL

1.01 SUMMARY

A. Replace or restore disturbed or damaged surfaces including, but not limited to, roadways, driveways, walks, curbs, drains, fences, walls, lawns, trees, shrubs, and plantings.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to starting construction, the Contractor, Owner, and Engineer shall inspect construction areas. The condition of the site, limits of construction, and existence of improvements shall be mutually agreed upon at this time. The Contractor is advised to take photographs as he may deem necessary to depict existing conditions. The intent of these specifications is to restore disturbed areas to a condition equal to or better than their original condition.

3.02 INSTALLATION

A. The general characteristics of each construction area are shown on the contract drawings. Restoration of disturbed areas shall be as specified herein and within the following sections:
   1. Paved Roads, Driveways, and Walks - Where trenches have been excavated in and across paved areas, the Contractor shall furnish, place, and maintain temporary pavement over the trenches until approval is given by the Engineer for placement of permanent pavements. Bituminous surface pavements shall be equal to the thickness of the existing pavements, and the top course shall match the existing top course. Concrete pavements and walkways shall be at least equal to that existing prior to construction.
   2. Curbs, Drains, Fences, and Walls - Where feasible to do so without causing permanent damage and where approved by the Engineer, the Contractor may remove, store and reconstruct in their original location and condition curbs, drains, fences, walls and similar improvements which interfere with construction. Such reconstruction shall not be made in trench areas until the backfill has been given time to settle. Where reconstruction is not feasible or where the Contractor has caused irreparable damage to the improvement, damaged improvements shall be removed from the site and replaced, as approved. Where required or where originally provided, the Contractor shall construct or restore foundations, footings, or other approved supports for the kinds of improvements specified herein whether reconstructed or replaced new.
   3. Lawns - Lawns and grassed areas which have been excavated, damaged by movement of construction equipment, damaged by the storage of materials, or damaged in any other way as a result of the Contractor's operations shall be restored by approved hydroseeding operations.
   4. Trees, Shrubs, and Landscaping - Trees, shrubs, and landscaped areas that have been excavated, damaged by movement of construction equipment, damaged by the storage of materials, or damaged in any other way as a result of the Contractor's operations shall be restored or replaced with plants of equal value, subject to prior approval of the Engineer.

END OF SECTION 320140

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Recycled concrete aggregate base course.

1.02 REFERENCES

A. ANSI/ASTM C88 - Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.

B. ANSI/ASTM C136 - Sieve Analysis of Fine and Coarse Aggregates.

C. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 kg) Rammer and 18-inch (457mm) Drop.

D. ASTM D4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.03 DELIVERY, STORAGE AND HANDLING

A. Do not handle aggregate in any manner which will cause segregation of large or fine particles.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aggregate Base Course: Angular, crushed, recycled concrete; free of shale, clay, friable materials and debris; graded in accordance with ANSI/ASTM C136 within the following limits:

Sieve Size		Percent Passing
1½ inches	(38 mm)	100
1 inch	(25 mm)	90-100
½ inch	(13 mm)	65-85
3/8 inch	(9 mm)	55-75
No. 4	(4.75 mm)	40-55
No. 8	(2.36 mm)	30-45
No. 16	(1.18 mm)	22-36
No. 30	(0.60 mm)	16-27
No. 40	(0.30 mm)	12-19
No. 100	(0.15 mm)	7-13
No. 200	(75 micro m)	3-7

B. Material retained on the 1/2 inch (13 mm) sieve is coarse aggregate.

C. Coarse aggregate shall not have more than 10 percent by weight of flat or elongated pieces. A flat or elongated piece is defined as being three times greater in the largest dimension as compared to its least dimension.

D. The portion of the aggregate base course which passes the No. 40 (0.30 mm) screen shall have a plasticity index of one as tested in accordance with ASTM D4318.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify elevations of subgrade are as indicated on the plans.

B. Verify that subgrade is properly compacted and ready to receive work of this section.

3.02 PREPARATION

A. Fine grade and compact subgrade to 95 percent maximum dry density in accordance with ANSI/ASTM D1557.

3.03 AGGREGATE PLACEMENT

A. Spread course aggregate over prepared subgrade to a total compacted thickness as indicated on the plans.

B. Place aggregate in 3 inch (75 mm) layers and compact by roller.

C. Level and contour surfaces to elevations and gradients indicated.

D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

E. Compact placed aggregate materials to achieve 95% maximum dry density in accordance with ANSI/ASTM D1557. Maintain optimum moisture content to attain required density.

F. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

G. Use mechanical vibrating tamping in areas inaccessible to compaction equipment.

H. New pavement must be placed on the properly compacted aggregate base course within 24 hours of final compaction. If aggregate base course is left open for more than 24 hours, recompact and retest in accordance with ANSI/ASTM D1557.

3.04 TOLERANCES

A. Maximum Variation from Flatness: 1/4 inch measured with 10 foot straight edge.

B. Maximum Variation from Scheduled Compacted Thickness: 1/4 inch

C. Maximum Variation from True Elevation: 1/4 inch

3.05 FIELD QUALITY CONTROL

A. Perform compaction testing in accordance with ANSI/ASTM D1557.

B. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

END OF SECTION 321123

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Asphalt paving; wearing, binder, or base course within the Town of Riverhead roadways.

1.02 RELATED SECTIONS

A. Section 321123 - Aggregate Base Course.

1.03 REFERENCES

A. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

B. AI MS-8 - Asphalt Paving Manual.

C. ASTM D242 - Mineral Filler for Bituminous Paving Mixtures.

D. ASTM D546 - Test Method for Sieve Analysis of Mineral Filler for Road and Paving Materials.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Supplier: Submit name of asphalt supplier to be used on the project prior to placement of any asphalt on the project.

C. Design Data: Submit asphalt mix design for each asphalt type to be used.

D. Testing Firm: Submit name of testing firm.

1.05 QUALITY ASSURANCE

A. Obtain materials from the same supplier throughout the duration of the project.

B. Do not alter from mix design requirements.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500.

B. Deliver asphalt in sealed, tight, metal containers covered with suitable material to protect the asphalt from the elements

C. Lightly lubricate the inside surface of the container with a thin oil or soap solution before loading asphalt.

D. All containers must be cleaned of all foreign materials prior to loading.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when base surface temperature is less than 40 degrees F (4 degrees C), or if surface is wet or frozen.

B. Do not place asphalt when precipitation is occurring.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asphalt Cement: AC-20; homogeneous, and shall not foam when heated to 347 degrees F (175 degrees C).

B. Fine Aggregate: Material passing the 1/8 inch sieve; natural sand of hard, strong, durable particles which are free from coatings or injurious amounts of clay, loam or other deleterious substances.

C. Coarse Aggregate: Material retained on the 1/8 inch sieve; crushed stone or gravel; clean, durable, sharp angled fragments of rock of uniform quality.

D. Mineral Filler: ASTM D242, finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter; 100 percent shall pass the No. 30 (0.60 mm) sieve; a minimum of 85 percent shall pass the No. 80 (0.18 mm) sieve; and a minimum of 65 percent shall pass the No. 200 (0.075 mm) sieve as measured in accordance with ASTM D546.

2.02 EQUIPMENT

A. Rollers: Minimum weight of 10 tons (89kN) equipped with lubricating devices for the roller wheels.

B. Pavers: Equipped with a vibratory device.

2.03 ACCESSORIES

A. Tack Coat: Homogeneous, medium curing, liquid asphalt.

B. Wheel Lubricant: Oil-water mixture containing maximum 10 percent lubricating oil.

2.04 MIXES

A. Use dry material to avoid foaming. Mix uniformly.

B. Binder Course: NYSDOT Type 3; 4.5 to 6.5 percent of asphalt cement by weight in mixture in accordance with the following gradation:

SIEVE SIZE	**PERCENT PASSING**
1-1/2 INCHES	100
1 INCH	95-100
1/2 INCH	70-90
1/4 INCH	48-74
1/8 INCH	32-62
NO. 20	15-39
NO. 40	8-27
NO. 80	4-16
NO. 200	2-8

C. Wearing Course: NYSDOT Type 6; 5.8 to 7.0 percent of asphalt cement by weight in mixture in accordance with the following gradation:

SIEVE SIZE	PERCENT PASSING
1 INCH	100
1/2 INCH	95-100
1/4 INCH	65-85
1/8 INCH	36-65
NO. 20	15-39
NO. 40	8-17
NO. 80	4-16
NO. 200	2-6

2.05 SOURCE QUALITY CONTROL

A. Obtain asphalt materials from same source throughout the project.

B. Provide asphalt in accordance with the approved mix design for each type of asphalt.

C. Test samples in accordance with AI MS-2.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate.

B. Verify that compacted subbase is dry and ready to receive work of this section.

C. Verify gradients and elevations of base are correct.

D. Verify that all castings are properly installed and are at the correct elevations.

E. Beginning of installation means installer accepts existing conditions.

3.02 PREPARATION

A. Pavement removal shall be kept to a minimum and not to exceed the authorized trench width plus the minimum required cut-backs as outlined in this section. Saw cutting shall be performed to ensure the breakage of pavement along straight lines.

B. Apply tack coat at uniform rate of 0.03 to 0.07 gal/sq yd (0.14 to 0.32 L/sq m) to contact vertical surfaces of curbs, gutters and any asphalt or concrete material

C. Do not apply tack coat to wet or frozen surfaces.

D. Coat surfaces of manhole and catch basin frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.03 INSTALLATION

A. Install work in accordance with AI MS-8.

B. Maintain asphalt temperature between 250 and 325 degrees F (121 and 163 degrees C) during placement.

C. Place asphalt within 24 hours of applying tack coat.

D. Place asphalt to compacted thicknesses as identified on plans. If a multiple course pavement is to be used, place top course within 24 hours of placing bottom course. If more than 24 hours elapse, a tack coat will be required to be placed over the entire surface of the bottom course prior to any additional paving.

E. Utilize the vibratory device on the paver at all times.

F. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

G. Compact pavement to a minimum of 94% maximum density.

H. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

I. A minimum cut back of 12-inches is required on all water main trenches. All pavement restoration areas shall be rectangular or square in shape with the edges perpendicular to the centerline of the roadway.

J. All trenches made in asphalt road areas shall receive temporary asphalt paving at the end of each work day. Temporary asphalt must be maintained in good condition throughout the contract work. No additional payment will be made for multiple (repeat) placements of temporary asphalt on deteriorated and spalling areas of asphalt.

3.04 TOLERANCES

A. Maximum Variation from Flatness: 1/8 inch measured with 10 foot straight edge.

B. Maximum Variation from Scheduled Compacted Thickness: 1/8 inch

C. Maximum Variation from True Elevation: 1/4 inch

3.05 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014500.

B. Take samples and perform tests in accordance with AI MS-2.

C. Testing to include percent compaction, gradation and asphalt content.

D. Cost of testing are to be borne by the contractor.

E. Provide an asphalt thermometer for determining the asphalt temperature during paving operations.

3.06 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury until project is accepted by the Owner.

END OF SECTION 321216

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Finish grade subsoil.

B. Place, level and compact topsoil.

1.02 RELATED SECTIONS

A. Section 329219 - Seeding.

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver topsoil to the site in uncontaminated containers.

B. Do not stockpile topsoil over a height of 8 feet.

C. Cover stockpiled topsoil to protect from precipitation, erosion and contamination.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Do not place wet or frozen topsoil.

B. Do not place topsoil on wet or frozen ground or when precipitation is occurring.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; friable loam; free of subsoil, clay or impurities, plants, weeds, roots, grass, stone and foreign matter; acidity range (pH) of 5.8 to 6.5; containing a minimum of 2.75 percent and a maximum of 25 percent organic matter. Topsoil may be reused from on-site if it meets these requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing substrate and conditions.

B. Verify site conditions and note irregularities affecting work of this section.

C. Beginning work of this section means acceptance of existing conditions.

3.02 PREPARATION

A. Eliminate uneven areas and low spots. Remove and dispose of debris, roots, branches and stones in excess of 1/2 inch in size. Remove and dispose of subsoil contaminated with petroleum products.

B. Scarify subsoil to depth of 3 inches where topsoil is scheduled to be placed. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.03 INSTALLATION

A. Place topsoil in areas where seeding, sodding or planting is scheduled or where shown on the plans.

B. Place topsoil to the depths indicated.

C. Use topsoil in relatively dry state. Place during dry weather.

D. Fine grade topsoil eliminating rough or low areas. Maintain levels, profiles and contours of subgrade.

E. Remove and dispose stone, roots, grass, weeds, debris and foreign material while spreading.

F. Manually spread topsoil around trees, plants and building to prevent damage.

G. Lightly roll placed topsoil.

H. Remove surplus subsoil and topsoil from site. Do not remove surplus topsoil from the site prior to obtaining approval of the Engineer.

I. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.04 PROTECTION

A. Protect landscaping and other features remaining as final work.

B. Protect existing structures, fences, roads, sidewalks, paving and curbs. Any damage caused by the Contractor to any of these items shall be repaired promptly by the Contractor at no additional cost to the Owner.

END OF SECTION 329119

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Seeding.

B. Mulch, fertilizer and other accessories.

C. Maintenance.

1.02 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.03 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel and Brome Grass.

1.04 SUBMITTALS

A. Product Data: Provide data on seed mixtures, fertilizer and lime.

B. Certificates: Provide certificates indicating that all fertilizer, pesticides and herbicides comply with all applicable regulatory agency requirements.

1.05 OPERATION AND MAINTENANCE DATA

A. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.06 QUALITY ASSURANCE

A. Seed: Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.07 REGULATORY REQUIREMENTS

A. Comply with applicable regulatory agencies for fertilizer, pesticide and herbicide composition.

B. All fertilizer, pesticides and herbicides to be used shall comply with all applicable regulatory agency requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 016500.

B. Deliver grass seed mixture in original sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis and name of manufacturer.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Do not sow immediately following rain, during windy periods or if ground is frozen.

B. Do not sow when the ambient temperature is expected to drop below 40 degrees F or rise above 90 degrees F during the time in which the seed will establish itself.

C. Planting Season: April 1st through May 15th or September 1st through October 15th.

1.10 COORDINATION

A. Coordinate with grading and placement of topsoil.

B. Coordinate with installation of underground sprinkler system piping and watering heads.

1.11 WARRANTY

A. Include coverage for one continuous growing season; reseed areas of dead or unhealthy grass at no additional cost to the Owner.

1.12 MAINTENANCE SERVICE

A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition, as determined by at least two cuttings, or until the job is accepted by the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Seed: Dry, fresh, re-cleaned seed of the latest crops and of the mixtures as specified and shown on the drawings.

B. No-Mow Fescue Mixture #12 by the Long Island Cauliflower Association (LICA).

2.02 ACCESSORIES

A. Mulching Material: Hemlock species wood cellulose fiber, dust form, free of growth or germination inhibiting ingredients.

B. Fertilizer: FS O-F-241, Type I, Grade A; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, to the following proportions: Nitrogen 10 percent, phosphoric acid 6 percent, soluble potash 4 percent.

C. Limestone: Ground dolomitic limestone containing a minimum of 90 percent calcium and magnesium carbonates. One hundred percent (100%) shall pass a No. 10 mesh screen and a minimum of 50 percent shall pass a No. 100 mesh screen.

D. Peat Moss: Shredded, loose, sphagnum moss; free of lumps, roots, inorganic material or acidic materials; minimum of 90 percent organic material measured by oven dry weight; pH range of 4 to 5 percent; moisture content of 30 percent; with moisture absorptive capacity of 450 to 500 percent.

E. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

F. Stakes: Softwood lumber, chisel pointed.

G. String: Inorganic fiber.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing substrate and site conditions.

B. Verify that prepared soil base is ready to receive the work of this section.

C. Beginning of installation means installer accepts existing conditions.

3.02 PREPARATION

A. Rake topsoil smooth.

3.03 APPLICATION

A. Apply fertilizer at a rate of 21 lbs per 1,000 square feet.

B. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

C. Mix thoroughly into upper 2 inches of topsoil and water lightly to aid the dissipation of fertilizer.

D. Apply seed at a rate of 4 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.

E. Do not seed areas in excess of that which can be mulched on same day.

F. Roll seeded area with roller not exceeding 100 lbs per foot of width.

G. Immediately following seeding and compacting, apply mulch at a rate of 92 lbs per 1,000 square feet. Maintain clear of shrubs and trees.

H. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil. Discontinue watering if washing begins to occur.

I. Identify seeded areas with stakes and string around area periphery. Set string height to 24 inches. Space stakes at 8 feet on center.

J. Cover seeded slopes where grade is 30 percent or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.

K. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.

L. Secure outside edges and overlaps at 36 inch intervals with stakes.

M. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

N. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 12 inches.

3.04 MAINTENANCE

A. Maintain grass until the grass exhibits a vigorous growing condition, as determined by at least 2 cuttings.

B. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.

C. Neatly trim edges and hand clip where necessary.

D. Immediately remove clippings after mowing and trimming.

E. Water to prevent grass and soil from drying out.

F. Immediately reseed areas which show bare spots.

3.05 FINAL ACCEPTANCE

A. Final acceptance of grass area will be granted when a uniform stand of acceptable grass is obtained, with a minimum of 95 percent coverage. Portions of the grass areas may be accepted at various times at the discretion of the Owner's representative.

B. Unacceptable grass area: reseed as specified and fertilize at one-half the specified rate.

C. At the physical completion of the Work, the Owner will assume maintenance responsibilities of the grass areas.

3.06 PROTECTION

A. Protect seeded areas with warning signs during maintenance period.

END OF SECTION 329219

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Disinfection of potable water storage facility.

1.02 REFERENCES

A. ANSI/AWWA B300 - Standard for Hypochlorites.

B. ANSI/AWWA B301 - Standard for Liquid Chlorine.

C. ANSI/AWWA C652 - Standard for Disinfection of Water Storage Facilities.

1.03 SUBMITTALS

A. Test Reports: Indicate results comparative to specified requirements.

B. Certificate: Certify that cleanliness of water storage facilities system meets or exceeds specified requirements.

1.04 PROJECT RECORD DOCUMENTS

A. Disinfection Report Record:
   1. Type and form of disinfectant used.
   2. Date and time of disinfectant injection start and time of completion.
   3. Test locations.
   4. Initial and 24-hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
   5. Date and time of flushing start and completion.
   6. Disinfectant residual after flushing in ppm for each outlet tested.

B. Bacteriological, Chemical and Organic Chemical Report Record:
   1. Date issued, project name and testing laboratory name, address and telephone number.
   2. Time and date of water sample collection.
   3. Name of person collecting samples.
   4. Test locations.
   5. Initial and 24-hour disinfectant residuals in ppm.
   6. Coliform bacteria and chemical test results.
   7. Certification that water conforms or fails to conform to New York State drinking water standards.
   8. Laboratory Director's signature and authority.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with ANSI/AWWA C652.

1.06 QUALIFICATIONS

A. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this Section with minimum three (3) years experience.

B. Testing Firm: Company specializing in testing potable water systems, approved by the New York State Department of Health.

1.07 REGULATORY REQUIREMENTS

A. Conform to Recommended Standards for Water Works and applicable codes or regulations for performing the work of this Section.

B. Water quality to conform to New York State drinking water standards after completion of disinfection.

C. The Health Department will be notified of the date of water quality testing to allow sampling by the Health Department. Provide Engineer three (3) days advanced notification of proposed sampling date.

PART 2 - PRODUCTS

2.01 DISINFECTION CHEMICALS

A. ANSI/AWWA B300, Hypochlorite.

B. ANSI/AWWA B301, Liquid Chlorine.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that tank has been cleaned and inspected.

3.02 EXECUTION

A. Provide required equipment to perform the work of this Section. The Owner will provide the water required for the initial disinfection and filling of the tank. The Contractor shall pay for the water required for any subsequent filling of the tank based on the retail water rate.

B. Disinfect water storage facility in accordance with Method 1 or Method 2 of AWWA C652.

C. Collect samples after retention period and refilling with potable water. Samples shall not be collected if chlorine residual is greater than 0.1 mg/L.

D. Collect sample from tank sampling point at 2, 30 and 60 for bacteriological analysis, as listed in table 6 of Part 5, Subpart 5-1 Public Water Systems of the New York State Department of Health Water Quality Monitoring. Repeat bacteriological analysis 24 hours after initial collection.

E. Collect sample from tank sampling point at 30 minutes and have analyzed for Inorganic Chemicals (IOCs), physical characteristics, and Principal Organic Contaminants (POCs) as listed in Tables 9A and 9D of Part 5, Subpart 5-1 Public Water Systems of the New York State Department of Health Water Quality Monitoring

F. If water quality in tank does not meet the requirements of the Health Department for potable water, the Contractor shall re-chlorinate tank or take other steps necessary to provide acceptable water quality. Samples shall be collected and analyzed after each attempt at the contractors cost.

G. Neutralize residual chlorine to less than 1 mg/l with a suitable quantity of sodium bisulfite, sodium sulfide or sodium thiosulfate prior to disposal to drainage system.

3.03 QUALITY CONTROL

A. Provide analysis and testing of treated water in storage facility.

B. Test samples in accordance with ANSI/AWWA C652 and Health Department requirements.

END OF SECTION 331160

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Disinfection of water piping

1.02 REFERENCES

A. ANSI/AWWA B300 - Standard for Hypochlorites.

B. ANSI/AWWA B301 - Standard for Liquid Chlorine.

C. ANSI/AWWA C651 - Disinfecting Water Mains.

1.03 SUBMITTALS

A. Submit proposed method for introducing disinfectant into water piping.

B. Test Reports: Indicate results comparative to specified requirements.

1.04 PROJECT RECORD DOCUMENTS

A. Disinfection Report: Record:
   1. Type and form of disinfectant used.
   2. Date and time of disinfectant injection start and time of completion.
   3. Test and injection locations.
   4. Initial and 24-hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
   5. Date and time of flushing start and completion.
   6. Disinfectant residual after flushing in ppm for each outlet tested.

B. Bacteriological, Chemical and Organic Chemical Report: Record:
   1. Date issued, project name and testing laboratory name, address and telephone number.
   2. Time and date of water sample collection.
   3. Name of person collecting samples.
   4. Test locations.
   5. 24-hour and 48-hour disinfectant residuals in ppm.
   6. Coliform bacteria and chemical test results.
   7. Certification that water conforms or fails to conform to New York State drinking water standards.
   8. Laboratory Director's signature and authority.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with ANSI/AWWA C651.

1.06 QUALIFICATIONS

A. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this Section with minimum three (3) years experience.

B. Testing Firm: Laboratory specializing in testing potable water systems, approved by the New York State Department of Health.

1.07 REGULATORY REQUIREMENTS

A. Conform to Recommended Standards for Water Works and applicable codes or regulations for performing the work of this Section.

B. Water quality to conform to New York State drinking water standards after completion of disinfection.

PART 2 - MATERIALS

2.01 DISINFECTION CHEMICALS

A. ANSI/AWWA B300, Hypochlorite.

B. ANSI/AWWA B301, Liquid Chlorine.

PART 3 - DISINFECTION & TESTING

3.01 EXAMINATION

A. Verify that all piping systems have been cleaned, inspected and pressure tested.

3.02 EXECUTION

A. Provide required equipment to perform the work of this Section. The Owner will provide the water required for the initial disinfection and filling of the piping, and valves, etc.

B. The preferred method of chlorinating is the continuous feed method using calcium hypochlorite granules in accordance with Section 4.4.3 of AWWA C651-05. Granules shall be placed at a minimum in accordance with Table 1 of the applicable Section. The slug method of chlorination is also acceptable and shall be performed in accordance with Section 4.4.4 of AWWA C651-05. The use of tablets for disinfection is prohibited.

C. The use of calcium hypochlorite granules specifically intended for swimming pool use is prohibited. The contractor shall utilize only those chemicals which are NSF 60/AWWA approved for disinfection.

D. The newly installed pipe shall be properly chlorinated to at least 200 ppm (mg/l) for a minimum of 24 hours, to ensure the chlorine residual at the pipe extremities and at other representative points after the retention period, is at least 200 ppm (mg/l). Treated water shall be retained in the pipe long enough to destroy all non-spore-forming bacteria.

E. After completion of retention period, new mains shall be flushed in order to eliminate residual chlorine with a suitable quantity of sodium bisulfite, sodium sulfide or sodium thiosulfate prior to disposal. Bacteria samples may not be collected until a chlorine residual representative of the existing distribution system is achieved. New mains shall be flushed at a velocity of no less than 2.5 ft/sec.

F. Collect samples 24 & 48-hours after flushing disinfectant and refilling with potable water. Samples shall not be collected if a chlorine residual inconsistent with that of the existing distribution system is present. Any portion of the sample set which tests positive for total coliform and/or e-coli bacteria constitutes failure of the entire set with no exceptions.

G. Field chlorine residual checks shall be performed for each sample and shall be recorded on the laboratory sampling form for inclusion in the sampling results report.

H. Two (2) consecutive sets of bacteriological samples, taken 24 hours apart, must be collected from every 1,000 ft of new main, the end of the line and from each branch. Samples should be collected after final flushing and when the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the distribution system (ANSI/AWWA C651 Standard).

I. Sample tap locations shall be as directed by the Engineer. Taps shall be installed to sample at a frequency as described above.

J. If water quality in system does not meet the requirements of the Department of Health for potable water, the Contractor shall re-chlorinate or take other steps necessary to provide acceptable water quality. Samples shall be collected and analyzed after each attempt.

3.03 QUALITY CONTROL

A. Test samples in accordance with ANSI/AWWA C651 and Department of Health requirements.

END OF SECTION 331300

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Water Utility Pipe

B. Special Castings; Mechanical Joint Fittings

C. Buried Valves & Valve Boxes

1.02 RELATED SECTIONS

A. Section 312316.13 - Trenching

B. Section 312323 - Fill

C. Section 331300 - Disinfection of Water Utility Distribution

1.03 REFERENCES

A. ANSI/AWWA C104 - Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.

B. ANSI/AWWA C110 - Ductile Iron and Grey Iron Fittings.

C. ANSI/AWWA C111- Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings.

D. ANSI/AWWA C150 - Thickness Design of Ductile Iron Pipes

E. ANSI/AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast for Water Service.

F. ANSI/AWWA C153 - Ductile-Iron Compact Fittings for Water Service.

G. ANSI/AWWA C504 - Rubber Seated Butterfly Valves.

H. ANSI/AWWA C509 - Resilient Seated Gate Valves for Water Supply Service.

I. ANSI/AWWA C515 - Reduced-Wall Resilient-Seated Gate Valves for Water Supply Service.

J. ANSI/AWWA C600 - Installation of Ductile Iron Water Mains and Their Appurtenances.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of water mains, valves, fittings, connections, and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with the local water utility company requirements.

B. The tone-out, mark-out, locating and verification of existing utilities on private property and within public Right-of-Ways are the responsibility of the contractor. All known utilities and facilities shall be verified by test holes or other means prior to commencing water main installation. No compensation will be paid to the contractor for lost time due to improper or inadequate utility investigation.

C. The contractor shall conform to the standard traffic requirements of the New York State Manual of Uniform Traffic Control Devices for work in Public Roadways.

D. Valves: Manufacturer's name and pressure rating marked on valve body.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to ensure they are kept free from damage.

B. Store piping and valves to ensure that their interiors are kept free of debris, organics or animals.

PART 2 - PRODUCTS

2.01 APPROVED INSTALLERS

A. Excav Services, Inc.

B. Bancker Construction Corp.

C. Merrick Construction Co.

D. Alessio Pipe & Construction Co. Inc.

E. Roadwork Construction Corp.

2.02 WATER UTILITY PIPING

A. Cement-Lined Ductile Iron Pipe
   1. Approved Manufacturers:
      a. US PIPE
      b. McWANE DUCTILE
      c. AMERICAN PIPE
   2. Cement-Lined Ductile Iron Pipe meeting AWWA C150/C151 :
      a. Special Class 52 for all pipe 14 inches and smaller.
      b. Special Class 51 for all pipe 16 inches and larger.
   3. Interior lining shall be double-thick cement with a minimum thickness of 1/8" (125 mils) in accordance with AWWA C104.
   4. Exterior of pipe shall have an exterior bituminous coating measuring 1 mil in thickness and be marked with the manufacturer name, date of casting and pressure class.

B. Pipe Accessories:
   1. Joints: ANSI/AWWA C111, vulcanized rubber gaskets for push-on pipe; mechanical joint with rods and wedge-type restraining glands for fittings.

2. Field lock gaskets by US Pipe Model 350 or approved equal shall be utilized on the last push-on joint of all dead-end mains, where a bell falls within 10 feet of a mechanical joint connection or as indicated on the plans or as directed by the Engineer.
3. Gaskets shall be free from porous areas, foreign materials and visible defects. No reclaimed rubber shall be used
4. Lubricant for Joints: Nontoxic, NSF-61 certified, shall not support the growth of bacteria, and shall have no deteriorating effects on the gasket or pipe material.
5. Wedges: Bronze, installed at each push-on joint. (CLDIP only)

2.03 SPECIAL CASTINGS

A. Manufacturers:
1. US PIPE
2. SIGMA CORP.
3. TYLER UNION
4. APPROVED EQUAL

B. Material:
1. Fittings shall be in accordance with ANSI/AWWA C153 (compact).
2. Fittings shall be ductile iron.
3. Ductile iron fittings shall have a pressure rating of 350 psi.
4. Fittings shall be cement lined.

C. Mechanical Joint fittings shall be used with "push-on" joint pipe with the joint conforming to AWWA Specifications.

D. Rubber gaskets shall be used at each pipe connection. Rubber gaskets shall be vulcanized rubber that is free of porous areas, foreign materials and visible defects. No reclaimed rubber shall be used. The size, mold number, gasket manufacturer's mark, the letters "MJ" and the year of manufacture shall be molded in the rubber.

E. Wedge type restraining glands shall be required at all mechanical joints.
1. Manufacturer:
a. EBAA IRON WORKS
b. FORD METER BOX CO.
c. SIGMA CORPORATION
d. TYLER UNION
e. US PIPE
f. Approved equal
2. Wedge type restraining glands shall be secured to fittings using alloy steel T-head bolts and hex-head nuts.

2.04 BURIED VALVES

A. Resilient Wedge Gate Valves (up to 12”)
1. Acceptable Manufacturers:
a. MUELLER COMPANY; A-2361/2362 (M.J. x M.J. Connections)
b. CLOW VALVE COMPANY; Model 2639
c. KENNEDY VALVE CO.; Model KS-FW(8571)/KS-RW(7571)
2. All vertical gate valves up to and including 12-inch diameter shall conform to latest revision of AWWA Specification C509 or C515, and shall be specified as follows:
a. Material: Ductile Iron body, bronze mounted.
b. Pressure: 250 psi minimum working pressure.
c. Wedge: Cast iron wedge with urethane rubber coating (encapsulated). The rubber/metal bond shall be tested to meet ASTM D429.

d. Stem: Forged bronze, non-rising stem with two "O" ring seals.
e. Wrench Nut: Two-inch square (at base) wrench nut opening to the left or counterclockwise.
f. Mechanical Joint Ends: Mechanical joint ends complete with all joint accessories including rubber gaskets.
g. Painting: The body and bonnet shall be coated with a fusion coating both interior and exterior to meet AWWA Standard C550.
h. Markings: Markings shall be cast on the bonnet or body of each valve, and shall show the manufacturer's name or mark, the year the valve casting was made, the size of the valve, and the designation of working water pressure for 4 to 12-inch valves.
i. Affidavit of Compliance: The Contractor shall have the manufacturer provide an affidavit directly to the Engineer that all valves supplied on this project comply with all applicable provisions of AWWA Specification C509, and that each valve was subjected to and passed the 500 psi hydrostatic test without leakage. No final payment for valves will be made until this Affidavit of Compliance is received by the Engineer.

B. Butterfly Valves (14” and larger):
1. Acceptable Manufacturers:
a. CLOW VALVE COMPANY; Model 4500
b. MUELLER COMPANY Lineseal XP II
c. Approved equal
2. All butterfly valves shall conform to AWWA Specification C504-06 or latest revision, and shall be specified as follows:
a. Select from below as required:
b. Material: Ductile Iron body, bronze mounted.
c. Pressure: 200 psi minimum working pressure.
d. Shaft: The valve shaft shall be a one-piece unit extending through the valve bearings into the valve disc. The shaft shall be 18-8 stainless steel, Type 302, 303, 304, 316, or if carbon steel, with 18-8 stainless steel journals.
e. The disc movement shall be 90 degrees open to shut. Discs shall be of cast iron conforming to ASTM A48, Class 40, or if alloy cast iron, conforming to ASTM A436, Type 1 or 2. Disc edge shall have Type 316 stainless steel seating surface.
f. Valve seats shall provide tight shutoff 200 psi upstream, zero psi downstream pressure differential. Rubber seats mounted on the disc and shall be retained without metal hardware. Rubber seats mounted on valve bodies shall be cemented and clamped, bonded or vulcanized into the valve body. Rubber seats shall be of new natural or synthetic rubber.
g. Valves shall be fitted with sleeve type bearings contained in the hubs of the valve body. A bearing shall be provided on the shaft outboard of the shaft seal or in the operator housing to protect the shaft seal from thrust forces developed in the operating mechanisms. Each valve shall be equipped with either one or two thrust bearings set to hold the valve disc securely in the center of the valve seat. Sleeve and other bearings fitted into the valve body proper shall be of self-lubricating materials and shall have a coefficient of friction not higher than 0.25.
h. Where shafts project through the valve body for operator connection, a shaft seal shall be provided. Seals shall be split "V" type or "O" ring type. "O" ring type shall be contained in a removable, corrosion-resistant recess. Seals shall be of a design allowing replacement without removing the valve shaft.
i. Manual operation shall be provided with totally enclosed gearing, with stop-limiting devices for the open and closed positions. Actuators shall be totally enclosed and shall produce full output torque requirements throughout the entire travel with an input torque no greater than 150 foot pounds.

C. Valve Boxes

1. Manufacturer:
   a. BINGHAM & TAYLOR
   b. SIGMA CORPORATION
   c. TYLER UNION
2. Valve boxes shall be two piece, sliding type with 8" x 5-1/4" cast iron flanged bottom section, 9" x 6-1/8" ductile iron top section and 7" ductile iron drop lid with "WATER" cast on cover.

PART 3 - EXECUTION

3.01 INSTALLATION - PIPE

A. Remove scale and dirt, on inside and outside, before assembly.

B. Bevel plain ends of cut pipe at push-on joints.

C. Excavate pipe trench in accordance with Section 312333 for work of this section. Hand trim excavation for accurate placement of pipe to elevations indicated.

D. Place bedding material at trench bottom; level fill materials in one continuous layer not less than 6 inches compacted depth; compact to 95 percent maximum dry density.

E. Maintain optimum moisture content of bedding material to attain required compaction density.

F. The Contractor shall be responsible for verifying the location of the existing water mains and other utilities along the entire route of the project.

G. The Contractor must have experienced personnel in his employ to perform the cut-ins and connections to the existing water mains and have available equipment necessary for cutting ductile iron, cast iron, asbestos cement and miscellaneous piping in the existing distribution system.

H. Suitable facilities shall be available for proper dewatering, drainage and disposal of water removed from dewatered lines and excavations, without damage to adjacent properties. Exposed ends of the water main shall never be submerged either partially or fully.

I. Maintain a 10 foot horizontal and 18 inch vertical separation of water main from all storm and sanitary sewer facilities. The Contractor shall install the water main with the minimum cover indicated in the Contract Documents. The Contractor shall verify the depth of any existing service laterals to the structures prior to crossing of same.

J. Pipe trenches shall be of minimum width and allow six (6) inches on each side of the bell with sufficient width to allow straight alignment of pipe and provide sufficient room for jointing as required and to allow the backfill to be placed as specified.

K. Only new full-lengths of pipe shall be delivered to and utilized on this project. Field cut pieces with bell ends shall be a minimum of 5 feet in length. Smaller pieces shall not be permitted for use and shall be removed from site.

L. Pipe shall be laid with the bell end facing in the direction of laying. Where pipe is laid on a grade of 10% or greater, the laying shall start at the bottom and shall proceed upward with the bell ends of the pipe up gradient.

M. Install pipe to indicated elevation to within tolerance of 1/2 inch.

N. Clean bell end of pipe prior to placing gasket. Apply lubricant to both gasket and plain end of pipe.

O. Do not field cut pipe within 24 inches of bell or 8 inches of spigot end. Verify the pipe diameter of cut end.

P. Route pipe in straight line where possible. Joint deflections are permitted as outlined in ANSI/AWWA C600.

Q. Install and test ductile iron piping and fittings to ANSI/AWWA C600.

R. For installation of CLDIP, at each joint, two serrated silicon bronze wedges shall be driven into the rubber gasket after the pipe is pushed into place. The wedges shall be installed on opposite sides of the joint on a horizontal plane. Both wedges shall be started in together and driven with a hammer with blows on alternate sides so as not to displace the spigot end to one side of the pipe.

S. For installation of PVC main, install markings facing up. Install magnetic marking tape 12-18" above top of pipe.

T. Establish elevations of buried piping to ensure not less than 4 feet of cover unless otherwise indicated on plans or specifically approved by Engineer or Owner in field.

U. Trench widths shall not exceed the following authorized widths prior to cut-back:
   1. Less than 12-inches diameter mains: 30 inches
   2. 12-inch & 16-inch diameter mains: 36 inches

V. Pavement removal shall be kept to a minimum and not exceed the preceding authorized widths. Sawing, drilling or chipping shall be used to ensure the breakage of pavement along straight lines. Final restoration limits shall include a 12-inch cut-back on all sides of the trench.

W. Backfill trench in accordance with Section 312323. Backfill around sides and to top of pipe with fill, tamped in place and compacted to 95 percent maximum dry density.

X. The contractor shall restore, replace and/or reposition all decorative lawn ornaments, and miscellaneous items disturbed during water main installation including but not limited to the following: stones, brick driveway pavers, fences, signs, sprinklers, shrubs and trees.

3.02 DISINFECTION AND BACTERIA SAMPLING OF WATER UTILITIES

A. Flush and disinfect system in accordance with Section 331300.

B. Where cut-in connections or valve installations are being installed on existing main, all pipe, valves and fittings shall be disinfected via 200 ppm chlorine solution. The contractor shall apply the solution via spraying or swabbing the appurtenances to allow for a minimum contact time of 2 hours prior to activation.

3.03 PRESSURE TESTING

A. Perform hydrostatic pressure testing after disinfection, but prior to bacteria sampling.

B. Expel all air from piping system, including pipe, valves and appurtenances. All new water mains shall be pressure tested to a minimum of 150 psi or 1.5 times line pressure, whichever is greater. The pressure test shall be held for a minimum of two hours with no leakage.

C. Remove and replace any defective pipe, fittings, valves, and appurtenances. Repeat pressure test until satisfactory to Engineer.

D. Where cut-in connections or valve installations are being installed on existing main and hydrostatic pressure testing is not feasible, the joints shall be visually inspected for leaks following repressurization of the main and prior to backfilling.

3.04 INSTALLATION - SPECIAL CASTINGS

A. Tighten glands in accordance with manufacturers direction.

B. Ensure that fittings are free of dirt and debris prior to installation.

C. Support fitting with solid blocking in areas of over excavation. Wood wedges, blocking and supports are prohibited.

D. The contractor shall install a minimum of two ¾-inch steel tie rods on mechanical joint fittings. Additional tie-rods may be requested on vertical pipe or by Engineer in areas of high pressure.

E. Steel tie rods shall be secured to fittings using 3/4" steel eye-bolts, washers and nuts. The use of ductile iron "Duc-Lugs" is prohibited. Steel tie rods shall be secured to pipe using half-moon pipe clamps, restraints, washers and nuts.

F. Bell ends of pipe shall not be installed within 5 feet of a mechanical joint assembly without being further restrained by locking gaskets or tie rods.

G. Concrete blocking shall be applied on all pipe lines 4-inch in diameter and larger at all hydrants, tees, plugs, caps, and at bends deflecting 22-1/2 degrees or more. Blocking shall be placed between solid ground and the fitting to be anchored. The blocking shall be so placed that the pipe and fitting joints will be accessible for repair. Size of blocking and minimum bearing area shall be in accordance with the Bearing Area Table within this specification section.

H. Form and place concrete for thrust blocks at each elbow or change of direction of pipe.

I. Concrete for Thrust Blocks: Portland Cement Concrete; 2,000 psi minimum strength at 28 days. Solid precast concrete blocking meeting the compressive strength requirement shall also be acceptable for use. When solid blocking is utilized, the contractor shall fill all annular spaces with cement or mortar. The use of wood wedges or blocking is not permitted.

3.05 INSTALLATION - VALVES

A. Set valves on solid bearing.

B. Contractor is responsible for ensuring that all valve boxes are plumb and centered over the operating nut until after final asphalt restoration is complete.

C. Contractor shall adjust boxes prior to final restoration. The use of "Rite-Hite" type adapters is not permitted on new construction.

3.06 NOTIFICATIONS

A. The Engineer and local water utility shall be notified at least 24 hours in advance and immediately prior to any of the following:
   1. Commencing work or starting again after more than a 72-hour shutdown.
   2. Admitting water to a new section.

3. Flushing or blowing off water mains.
4. Chlorination of water mains.
5. Shutting down water mains or service to consumers. Consumers should also be informed at least 24 hours in advance and immediately prior to shutting down service.
6. Disinfection and reconnection of house services.
7. The permanent shutting down of existing water mains or house services.

3.07 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed in accordance with Owner requirements.

B. Leakage testing shall be in accordance with ANSI/AWWA C600.

C. Compaction testing shall be in accordance with ANSI/ASTM D1557.

D. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

END OF SECTION 331411

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. Section 312316.13 - Trenching.

B. Section 331411 - Water Utility Distribution Piping.

C. Section 331300 - Disinfection of Water Utility Distribution.

1.02 REFERENCES

A. ASTM B88 - Seamless Copper Tube.

B. AWWA C800 - Underground Service Line Valves and Fittings.

1.03 SUBMITTALS

A. Submit under provisions of Section 013300

B. Product Data: Provide data on pipe materials, pipe fitting and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.04 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of piping mains, valves, connections, and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with the local water utility company requirements.

PART 2 - PRODUCTS

2.01 COPPER PIPING AND ACCESSORIES

A. All underground copper piping, for potable water shall be soft annealed Type "K" with fittings per ANSI/AWWA C800.

B. Copper Tubing: ASTM B88, Type "K" annealed and AWWA C800, with the following accessories:
   1. Fittings: ANSI/ASME B62, cast bronze
   2. Joints: AWWA, Compression Gasket

C. Couplings for 1" shall be copper to copper (compression-type) by MUELLER COMPANY, No. H-15403, Flare fittings shall not be utilized.

2.02 CORPORATION STOP

A. Corporation stops to be FORD METER BOX COMPANY, Model No. F1000-4-G QNL, or MUELLER COMPANY, Model No. P-15008N for 1-inch, or specifically approved equal.

B. Water service bronze body with AWWA standard thread inlet and copper AWWA outlet, complete with straight coupling nuts. Ball valve type corporation stops may also be utilized.

C. A service saddle shall be utilized on all taps greater than 1-inch. Service saddles shall be by MUELLER COMPANY, Model DR2A or specifically approved equal.

2.03 CURB STOPS

A. All curb stops shall be by FORD METER BOX COMPANY, Model No. B44-444 QNL, or MUELLER COMPANY, Model No. P-25209N, or specifically approved.

B. All metal parts shall be constructed of water service bronze. The curb stop shall have a combined tee and cap and an inverted tapered key with 1/4-inch hole drilled in cap for attaching a stationary rod. The valve shall open to the left (counterclockwise).

2.04 EXTENSION SERVICE BOXES

A. Extension service boxes shall be constructed of extra grade gray iron cover and base, steel ex-tension pipe; with a small arch pattern base for 1/2-inch through 1-1/2-inch curb stops; adjustment between 4 and 5 feet; complete with stationary inside stop rod; one-piece lid with two holes for removal with spanner wrench.

B. Curb valve shall be located within a No. 6 round, three-piece cast iron, 5-1/4 inch shaft, sliding type valve box with "WATER" cast on the cover.

2.05 METER PITS & COVERS

A. The meter pit shall be 24 inch diameter by 48 inches long for 1 inch water service. All pits shall be constructed of Thermoplastic, notched (3 x 4 inch) 180 degrees with anti setting flanges. Pit wall thickness shall be no greater than 0.7 inches and no less than 0.3 inches.

B. Reinforced concrete meter pits are also acceptable.

C. The pit cover shall be constructed of ductile iron and sized to match the meter pit. An extension ring will be necessary. The lid shall have a recess with a properly sized, drilled hole capable of accepting an Itron Pit ERT module.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Before tapping, the pipe to be tapped shall be thoroughly cleaned by removing all dirt and scale. The main shall be tapped on the side facing the house. All copper service pipes shall be installed at 4'-6" minimum cover with slack left at the corporation stop.

B. The Contractor shall furnish and install all materials and incidentals as outlined herein including the copper tubing, complete from the new corporation stop to within 5 feet of the existing building face and as indicated on the plans. The new installation shall include all costs to furnish and install the corporation stop, saddle, 'K'-copper, and union.

C. The curb box shall be centered over the curb stop and shall be plumb with the cover slightly above grade.

D. In making cuts in copper service pipe, the most modern equip-ment shall be used to produce a square cut. The tubing, after cutting, shall be cut square, burrs removed and reamed. Fittings, sockets and tube ends shall be thoroughly cleaned to a bright finish. All solder joints shall be

fluxed using either 95/5 tin/antimony or silver solder. NO LEAD SOLDER WILL BE PERMITTED.

E. On completion of the service connection, the corporation stop shall be left on.

F. All new copper service piping crossing existing drainage piping, etc. shall be installed at a 4'-6" minimum cover wherever possible. In areas where 4'-6" cover cannot be maintained, the Contractor will be allowed to cross the drainage piping with an absolute minimum cover of 3'-6", otherwise the new service shall be installed under the drainage piping, etc. All new services installed with cover between 3'-6" and 4'-6" due to drain interference, etc., shall be wrapped with felt wrapping and tar paper or other approved frost wrap protection. A minimum of ten-foot horizontal separation shall be maintained between the new water service and any sanitary sewer facilities including; pipes, tanks and pools.

G. The Contractor shall take all necessary precautions to minimize damage to any underground utility. Damage to any utility shall be immediately repaired and the cost of such repair shall be the responsibility of the Contractor. No water service shall be accepted which has been installed through any storm drain, etc.

3.02 FIELD QUALITY CONTROL

A. Flush new service line prior to installing meter, backflow device and connecting to existing service.

B. Before piping is concealed, recheck it for leaks.

END OF SECTION 331417

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fire Hydrant Assemblies

1.02 RELATED SECTIONS

A. Section 312316.13 - Trenching

B. Section 312323 - Fill

C. Section 331300 - Disinfection of Water Utility Distribution

D. Section 331411 - Water Utility Distribution Piping

1.03 REFERENCES

A. ANSI/AWWA C502 - Dry Barrel Fire Hydrants.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: Provide data on hydrant assemblies.

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.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to ensure they are kept free from damage.

PART 2 - PRODUCTS

2.01 FIRE HYDRANT ASSEMBLIES

A. Acceptable Manufacturers:
   1. CLOW VALVE COMPANY, Medallion
   2. MUELLER, Supercenturion 250 No. A-421

B. Hydrant: ANSI/AWWA C502, dry barrel type, inside dimension of 6 inches minimum, with minimum 4.50 inch diameter valve seat opening; minimum net water area of barrel not less than 190 percent of valve opening; 6 inches mechanical joint inlet connection with accessories, gland bolts and rubber gaskets.

C. Hose Connection: Two 2-1/2 inch (64 mm) diameter hose nozzles conforming to NATIONAL STANDARD dimensions (7-1/2 threads per inch).

D. Hydrants shall be equipped with non-kinking chains.

E. Steamer Connection: One 4-1/2 inch (114 mm) pumper nozzle conforming to NATIONAL STANDARD dimensions (4 threads per inch)

F. Hydrant Extensions: Fabricate in multiples of 6 inches (150 mm) with rod and coupling to increase barrel length. Extensions shall be of the same manufacturer as the hydrant.

G. Operating nut and outlet nozzle caps shall be square (4 sided) in shape, 1-1/2 inches point to flat at the base and open to the left or counterclockwise. A clearly visible arrow and the word "OPEN" shall be cast in relief on the top of the hydrant.

H. A poured concrete hydrant bracing pad shall be installed around the base of each hydrant from 3" to 6" below finished grade. Pad shall be a minimum of 4" thick.

I. Each hydrant shall be equipped with a reflective orange mini flag measuring 4 inches by 5 inches. Flag shall be mounted on a 64-inch x 3/8 inch diameter reflective fiberglass shaft. Shaft shall be mounted to the back of the hydrant bonnet with a spring loaded L-bracket and plate.

J. Finish: Primer and two coats of enamel to barrel and top section.
   1. Color:
      a. Barrel color shall be orange.
      b. Bonnet color shall be aluminum.
      c. Cap color shall be aluminum.

PART 3 - EXECUTION

3.01 INSTALLATION - HYDRANTS

A. Set hydrants plumb and locate steamer connection perpendicular to roadway.

B. Set hydrants to grade, with center of steamer connection at least 18 inches aboveground.

C. Attach hydrant control valve to anchoring tee unless otherwise directed by Owner or Engineer. Attach hydrant to valve with a minimum of two 3/4" steel tie rods in all cases.

D. Provide a drainage pit surrounding the hydrant 36 inches square by 24 inches deep filled with 1 inch diameter washed gravel. The stone shall be placed to a point 1 foot above the bottom flange.

E. Brace behind elbow of hydrant with 4,000 psi minimum concrete having a minimum bearing area of 3 sq ft against unexcavated earth. A precast concrete block shall be installed beneath the elbow.

3.02 FIELD QUALITY CONTROL

A. After activation of water main and hydrant, each hydrant shall be operated with the main valve fully opened and closed to ensure proper drainage and operation.

B. Field inspection and testing will be performed in accordance with District requirements.

END OF SECTION 331419

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. 2.5 million gallon precast, wire-wound, prestressed concrete tank, including design, fabrication, delivery, erection, and testing.

1.02 RELATED SECTIONS

A. Section 013300 - Submittals

B. Section 014500 - Quality Control

C. Section 025129.13 - High Pressure Water Cleaning Decontamination

D. Section 099885 - Concrete Tank Coating System

E. Section 311100 - Site Clearing

F. Section 315000 - Excavation Support and Protection

G. Section 312316 - Excavation

H. Section 312316.13 - Trenching

I. Section 312323- Fill

J. Section 331160 - Disinfection of Water Storage Facilities

K. Section 331300 - Water Utility Distribution Piping

1.03 REFERENCES

A. ACI 301 Specifications for Structural Concrete

B. ACI 305 Hot Weather Concreting

C. ACI 306 Cold Weather Concreting

D. ACI 309R Guide for Consolidation of Concrete

E. ACI 318 Building Code Requirements for Reinforced Concrete and Commentary

F. ACI 350 Code Requirements for Environmental Engineering Concrete Structures and Commentary

G. ACI 350.3 Seismic Design of Liquid Containing Concrete Structures and Commentary

H. ACI 372R Design and Construction of Circular Wire- and Strand Wrapped Prestressed Concrete Structures

I. ACI 506R Guide to Shotcrete

J. ASTM A185 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

K. ASTM A416 Standard Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete

L. ASTM A475 Standard Specification for Zinc-Coated Steel Wire Strand

M. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

N. ASTM A821 Standard Specification for Steel Wire, Hard Drawn for Prestressing Concrete Tanks

O. ASTM A1008/A1008M Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

P. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field

Q. ASTM C33 Standard Specification for Concrete Aggregates

R. ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

S. ASTM C618, Type F Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

T. ASTM C920 Specification for Elastomeric Joint Sealants

U. ASTM D1056 Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber

V. ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

W. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 Ft. - lbf/ft3) 2700 KN-M/M3)

X. ASTM D2000 Classification System for Rubber Products in Automotive Applications

Y. ASCE Standard 7-05 Minimum Design Loads for Buildings and Other Structures

Z. AWWA C652 Standard for Disinfection of Water-Storage Facilities

AA. AWWA D110-04 Wire and Strand Wound, Circular, Prestressed Concrete Water Tanks, Type III

AB. US Army Corps of Engineers Specification CRD-C-572, Specification for PVC Waterstop

1.04 SYSTEM DESCRIPTION

A. The tank shall consist of a cast-in-place reinforced concrete floor, a precast wire-wound prestressed concrete wall with a continuous mechanically bonded steel diaphragm, and a precast or cast-in-place prestressed clear span concrete dome with no interior columns.

B. Tank accessories include but are not limited to an internal ladder, roof hatch, roof handrailing, safety guide cable, roof pipe penetration, exterior ladder, ladder vandal guard, ladder safety

climbing devices, overflow piping, inlet piping, outlet piping, conduit mounting brackets and roof vent as specified and shown on the plans.

1.05 QUALITY ASSURANCE

A. Qualifications and Experience
   1. All tank work shall be performed by a company that specializes in the design and construction of precast, wire-wound prestressed concrete tanks using the method of circumferential prestress wire reinforcing and with proven capability of meeting all the requirements of these specifications. No company is considered qualified unless it has designed and built in its own name at least twenty precast, wire-wound prestressed concrete tanks conforming to AWWA D110, Type III in the last ten years. At least ten of the above tanks shall have been in successful service for a minimum of five years.
   2. The tank contractor shall have in its employ a design engineer with a minimum of ten years experience in the design of AWWA D110 Type III tanks. The design engineer shall have been the engineer of record for a minimum of ten AWWA D110 Type III tanks.
   3. The tank contractor shall have in its employ for this project a team consisting of a tank superintendent, project manager, shotcrete foreman, wire-winding foreman, and precast erection foreman, each of whom shall have constructed a minimum of five (5) AWWA D110 Type III tanks having a capacity of 1.0 MG or greater.
   4. Experience in the design and construction of AWWA D110 Type I, Type II, or Type IV tanks is not acceptable.
   5. The plans and specifications included in the contract documents are typical of an AWWA D110, Type III wire wound, prestressed concrete tank
   6. Prequalification
      a. All tank contractors are required to be prequalified. The bidder is required to state on the face of his sealed proposal the name of the prequalified tank contractor. Sealed proposals which do not state the name of the prequalified tank contractor will be returned to the bidder unopened.
      b. DN Tanks, Inc. of Wakefield, Massachusetts, and, Preload LLC of Louisville, KY are prequalified for precast, wire-wound prestressed, concrete tank construction. Additional tank contractors seeking prequalification shall make a complete submittal to the Engineer for review and approval no later than ten (10) days prior to the date set for receipt of bid, in accordance with Section 013300. The submittal shall include detailed design drawings and calculations meeting the requirements of these specifications, the company's record of previous experience in the design and construction of circular precast, wire-wound prestressed concrete tanks constructed in their own name, conforming to AWWA D110 Type III, including the experience of the design engineer and a project team meeting the requirements of Article 1.5(A) above. Within five (5) days prior to the date of receiving bids, the engineer will publish a list of additional prequalified tank contractors.
      c. Experience in the design and construction of AWWA D110 Type I, Type II, or Type IV tanks is not acceptable.
      d. All tank contractors not prequalified in accordance with this specification will be rejected.

1.06 QUALITY ASSURANCE

A. Perform testing under provisions of Section 014500.

B. Perform work in accordance with applicable standards.

1.07 SUBMITTALS

A. All submittals shall be made in accordance with Section 013300.

B. Prequalification Submittals Ten Days Prior to Bid Date
   1. Tank contractors not previously prequalified shall submit preliminary design drawings and calculations showing the dimensions of the tank, details of the type of construction, wire-wound prestressing methods, and sizes of principal members. The drawings and calculations shall be of sufficient detail to show compliance with the specification and all required standards and shall be signed and sealed by an Engineer registered in the state the tank is to be constructed. The registered Engineer shall certify the design is in conformance with AWWA D110, Type III.
   2. Tank contractors not previously prequalified shall submit a complete experience record for the tanks they have designed and built in their own name. The record shall include the contractor's experience in the design and construction of precast, wire-wound, prestressed concrete tanks conforming to AWWA D110, Type III. The record shall also indicate the size of the tank, the name and address of the Owner, the year of construction, and the name of the Engineer for each project.
   3. Tank contractors not previously prequalified shall submit the resume of the tank designer, currently in its employ, and his/her experience as the designer of record for AWWA D110 Type III tanks, meeting the requirements of Article 1.5(A) above.
   4. Tank contractors not previously prequalified shall submit the resumes for each member of the project team including the tank superintendent, project manager, shotcrete foreman, wire-winding foreman, and precast erection foreman that will be used for this project, meeting the requirements of Article 1.5(A) above.
   5. Experience in the design and construction of AWWA D110 Type I, Type II, or Type IV tanks is not acceptable.
   6. Design Submittal after Execution of Contract
      a. Design calculations and shop drawings in quadruplicate, showing details and procedures of construction, shall be submitted to the Engineer for approval after execution of the Contract. After approval by the Engineer, one set of the drawings and calculations will be returned to the Contractor, and any changes found necessary by the Engineer shall be made by the Contractor.
      b. Approval by the Engineer of the drawings and calculations submitted by the Contractor will not in any way relieve the Contractor of full responsibility for the accuracy and completeness of the drawings and calculations.
      c. Design calculations and shop drawings shall be stamped by a Professional Engineer experienced in the design of AWWA D110, Type III wire-wound, prestressed concrete tanks and registered in the state of New York.
      d. Design calculations and shop drawings shall be submitted within 30 days after execution of the contract.
   7. Pre-Bid Submissions
      a. Each bidder shall submit an alternate tank sketch, to be included with the proposal, showing all major dimensions, including, but not limited to, the tank height, diameter, overflow height and buried depth for the alternate 2.5 MG concrete ground storage tank and foundation. Include any drawings that will be required to evaluate the alternate tank dimension proposal and impacts to the project.
   8. Submittals
      a. Design proportions for all concrete and shotcrete. Concrete strengths of trial mixes.
      b. Admixtures to be used in the concrete or shotcrete and their purpose.
      c. Reinforcing steel shop drawings showing fabrication and placement.
      d. Catalog cuts or shop drawings of all appurtenances, i.e. hatch, vent, ladders, waterstops.
      e. Exterior tank coating.

1.08 WARRANTY

A. The Contractor shall provide a Warranty Certificate typed on company letterhead and signed by an authorized officer of the Contractor. The certificate shall be witnessed by a notary public in the state in which the company headquarters is located. The Warranty Certificate shall be submitted, verbatim and without exception, as follows:

Assuming the ground storage tank is being operated in accordance with the written operating instructions provided by (*Name of Contractor*), the Contractor shall guarantee the structure against defective materials or workmanship for a period of 10 years from the date of completion. If any materials or workmanship prove to be defective within 10 years, they shall be replaced or repaired by the Contractor.

Defective material or workmanship includes but is not limited to:
Concrete spalling, excessive efflorescence as determined by the owner, cracking, other than due to normal shrinkage, wall and foundation penetration leakage and excessive waterstop leakage as determined by the owner.

Agreed upon this_____
(Date)
by_____ of
(Name of Authorized Agent)
_____, who,
(Name of Supplier)
by signing this document, affirms that he/she is legally authorized to submit this warranty on behalf of the Supplier.

_____ _____
AUTHORIZED SIGNATURE DATE

_____ _____
TYPEWRITTEN NAME DATE

This certificate shall be notarized and contain the corporate embossed seal of the corporation. An acknowledgment shall also be provided by the corporation that the person signing this certificate is authorized to do so

PART 2 - PRODUCTS

2.01 DESIGN

A. Design Requirements:
   1. The prestressed concrete tank shall be designed and constructed in accordance with the provisions of AWWA D110 Standard for Wire Wound Circular Prestressed-Concrete Water Tanks, Type III: Precast Concrete with a Steel Diaphragm.
   2. Horizontal prestressing shall be continuous. Discontinuous prestressing tendons or strands will not be allowed.
   3. Design Criteria:
      a. Storage Capacity: 2.5 million gallons
      b. Inside Diameter: 119 feet
      c. Liquid Depth: 30 feet
      d. Liquid Unit Weight: 62.5 pounds per cubic foot
      e. Roof Live Load: 30 pounds per square foot
      f. Maximum Overflow Rate: 2,000 gallons per minute
      g. Maximum Withdrawal Rate: 3,000 gallons per minute

B. Wall:

1. The precast, wire-wound prestressed tank wall shall be designed as a composite concrete wall with an embedded mechanically bonded steel diaphragm in combination with vertical mild steel reinforcement.
2. The prestressed tank wall shall be considered as a cylindrical shell with partial edge restraint.
3. The prestressed tank wall shall be reinforced vertically by deformed steel reinforcing rods. The continuous mechanically bonded steel diaphragm can be taken as effective vertical reinforcing.
4. The prestressed tank wall shall be of precast construction. Shotcrete or cast-in-place concrete core walls are not permitted.
5. A stress plate shall be required at all above grade locations where prestress wires are displaced 24 inches or greater. The stress plate shall be designed to transfer stress across the opening.
6. Minimum precast wall thickness shall be four (4) inches.
7. No reduction in ring compression or tension in the wall will be taken due to restraint at the bottom.

C. Floor Slab:
1. The floor slab shall be designed as a membrane floor not less than four (4) inches thick and shall be placed monolithically. No construction joints will be allowed unless otherwise approved by the engineer.
2. Minimum ratio of floor reinforcement area to concrete area shall be 0.6 percent.
3. Wall footings may be above or below floor grade, but shall be placed monolithically with the floor.

D. Dome Roof:
1. The dome roof shall have a rise to span ratio within the range of 1:8 to 1:14.
2. The minimum concrete thickness shall be as per AWWA D110.
3. The dome shall be fixed to the tank wall. Columns or interior supports will not be allowed. Dome design shall be based on elastic spherical shell analysis.

2.02 MATERIALS

A. CONCRETE
1. Concrete shall conform to ACI 301.
2. Cement shall be Portland cement Type I or Type II.
3. Admixtures, other than air-entraining and water reducing admixtures, will not be permitted unless approved by the Engineer.
4. Concrete for tank wall and dome construction shall have a minimum compressive strength of 4,000 psi at 28 days. All precast wall and dome concrete shall be air-entrained.
5. Concrete for the tank floor, footings, pipe encasement, and all other work shall have a minimum compressive strength of 4,000 psi at 28 days and shall not be air-entrained. The course and fine aggregate shall meet the requirements of ASTM C33. Course aggregate shall be No. 467 with 100 percent passing the 1½ inch sieve. Superplasticizer and water-reducing admixtures shall be incorporated into the floor concrete. Fibers shall be Microfiber by Grace, Fibermesh 150 by Propex, or equal. Fiber lengths shall be a maximum of ¾ inches. The amount of polypropylene fibers added to the concrete mix shall conform to the manufacturer's recommendations.
6. Proportioning for concrete shall be in accordance with ACI 301.
7. Concrete in contact with prestressing steel shall have a maximum water soluble chloride ion concentration of 0.06 percent by weight of cement.

B. SHOTCRETE
1. Shotcrete shall conform to ACI Standard 506, except as modified herein.
2. The wet mix process shall be employed for shotcreting.

3. Shotcrete used for covering prestressed wire shall consist of not more than three parts sand to one part Portland cement by weight. Additional coats of shotcrete shall consist of not more than four parts sand to one part Portland cement by weight. Polypropylene fibers shall be included in the shotcrete used for the finish covercoat. Fibers shall be Fibercast 500 by Propex, or equal. Fiber length shall be ¼". The amount of the fibers added to the shotcrete used for the finish covercoat shall conform to the manufacturer's recommendations. Fly ash may be incorporated into the finish covercoat. Fly ash shall conform to ASTM C618, Type F. Shotcrete shall have a minimum strength of 4,500 psi at 28 days.
4. Shotcrete in contact with prestressing steel shall have a maximum water soluble chloride ion concentration of 0.06 percent by weight of cement.

C. MORTAR FILL AND NON-SHRINK GROUT
1. Mortar fill and non-shrink grout shall have a minimum compressive strength of 4,000 psi at 28 days.

D. REINFORCING STEEL
1. Reinforcing steel shall be new billet steel Grade 60, as shown on the shop drawings, meeting the requirements of ASTM A615. Welded wire fabric shall conform to ASTM A185.
2. Reinforcing steel shall be accurately fabricated and shall be free from loose rust, scale, and contaminants, which reduce bond.
3. Reinforcing steel shall be accurately positioned on supports, spacers, hangers, or other reinforcements and shall be secured in place with wire ties or suitable clips. Rebar chair supports may be either steel or plastic.
4. When required by design, the tank designer shall use base restraint cables to resist earthquake loads. Seismic base restraint cables shall be hot-dipped galvanized seven-wire strand and shall be manufactured in accordance with ASTM A416 prior to galvanizing, and ASTM A475 after galvanizing.

E. STEEL DIAPHRAGM
1. The steel diaphragm shall conform to ASTM A1008 and shall be a minimum thickness of 0.017 inches. It shall be vertically ribbed with reentrant angles. The back of the channels shall be wider than the front, providing a mechanical keyway anchorage with the concrete and shotcrete encasement.
2. The steel diaphragm shall extend to within one inch of the full height of the wall panel with no horizontal joints. Vertical joints within a wall panel shall be roll seamed or otherwise fastened in a fashion that results in a firm mechanical lock. Joints between wall panels that are not roll seamed shall be edge sealed with polysulfide or polyurethane sealant.
3. No punctures will be permitted in the diaphragm except those required for pipe sleeves, temporary construction openings, or special appurtenances. The Engineer shall approve details of the openings. All openings shall be completely edge sealed with polysulfide or polyurethane sealant.
4. Diaphragm steel may be considered as contributing to the vertical reinforcement of the wall.

F. PRESTRESSING STEEL
1. Steel for prestressing shall be cold drawn, high carbon wire meeting the requirements of ASTM A821, having a minimum ultimate tensile strength of 210,000 psi.
2. Splices for horizontal prestressed reinforcement shall be ferrous material compatible with the reinforcement and shall develop the full strength of the wire. Wire splice and anchorage accessories shall not nick or otherwise damage the prestressing.

G. ELASTOMERIC MATERIALS
1. Twelve inch minimum waterstop with centerbulb shall be polyvinyl chloride meeting the requirements of the Corps of Engineers Specification CRD-C 572. Splices shall be made

in accordance with the manufacturer's recommendations subject to the approval of the Engineer. Waterstop shall be manufactured by Greenstreak Plastic Products Company, Inc., or equal.

2. Bearing pads shall be natural rubber or neoprene.
3. Natural rubber bearing pads shall contain only virgin natural polyisoprene as the raw polymer and the physical properties shall comply with ASTM D2000 Line Call-Out M 4 AA 414 A1 3.
4. Neoprene bearing pads shall have a hardness of 40 to 50 durometer, a minimum tensile strength of 1,500 psi, a minimum elongation of 500 percent, and a maximum compressive set of 50 percent. Pads shall meet the requirements of ASTM D2000 Line Call-Out M 2 BC 410 A1 4 B14 for 40 durometer material.
5. Sponge filler shall be closed-cell neoprene or rubber conforming to ASTM D1056, Type 2, Class A, and Grade 1. Compression deflection limited to 25 percent at two to five psi.
6. Polysulfide or polyurethane sealant will be a two or three component elastomeric compound meeting the requirements of ASTM C920. Sealants must have permanent characteristics of bond to metal surfaces, flexibility, and resistance to extrusion due to hydrostatic pressure. Air cured sealants shall not be used.
7. COATING
    a. See specification Section 099885 - Concrete Tank Coating System.

2.03 ACCESSORIES

A. The Contractor shall furnish and install all accessories as detailed in the plans and specifications, including:
    1. Inlet piping
    2. Outlet piping
    3. Overflow piping
    4. Drain piping
    5. Roof vent
    6. Roof hatch(s)
    7. Roof handrail with swing gate(s)
    8. Interior ladder(s) with safety climb device
    9. Exterior ladder(s) with safety climb device and vandal guard
    10. Conduit mounting bracket(s)
    11. Dome safety line(s)
    12. Provisions for mounting future panel(s)
    13. Small piping

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing site conditions.

3.02 EXCAVATION AND BACKFILL

A. After excavation is complete, the bottom of the excavation shall be proof rolled and leveled as directed by the Engineer before the compacted select fill is placed. The Engineer shall inspect the subgrade for conformance with the original geotechnical report and its suitability for the tank foundation.

B. A leveling base material consisting of a minimum six inch thick layer of compacted select fill shall be placed beneath the entire tank foundation. A non-woven geotextile fabric such as Mirafi 1100N, Propex 4545, or equal, shall be placed between the subgrade and leveling base material as shown on the drawings or directed by the tank builder. Select fill shall consist of a

clean, well graded angular or subangular material having not more than 8 percent by weight passing the No. 200 sieve. The maximum size stone shall be 1½ inch. Select fill shall be placed in layers not exceeding twelve inches and compacted to a minimum density equal to 95 percent of the maximum laboratory density in accordance with ASTM D1557. Field testing for density achieved shall be in accordance with ASTM D1556 or D2922.

C. A uniformly graded ¾ inch minus crushed stone shall be used as the leveling base material. The crushed stone shall be ¾ inch sieve size with 100 percent passing the one inch. If uniformly graded crushed stone is used for the leveling base material, compaction performance criteria shall be used to gauge the degree of compaction. Crushed stone shall be placed in layers not exceeding 9 inches and compacted with at least two passes in each direction with vibratory roller compaction equipment. Compaction shall be inspected and verification of compaction effort shall be documented by an approved testing laboratory.

D. The surface elevation of the leveling base shall be fine graded to a tolerance of plus zero inches to minus ½ inch over the entire foundation areas. Fine grading tolerances for floor pipe encasements shall be plus zero inches to minus six inches.

E. Crushed stone material shall consist of clean, hard, durable, crushed particles or fragments of stone or ledge rock of uniform quality reasonably free of thin or elongated pieces. The materials shall be free from ice, snow, rubbish, sods, roots, and other deleterious or organic materials and shall conform to the following gradation requirements meeting ASTM C 33 stone size No. 67.

SIEVE SIZE	PERCENT PASSING BY WEIGHT
1 INCH	100%
3/4 INCH	90% - 100%
3/8 INCH	20% - 55%
NO. 4	0% - 10%
NO. 8	0% - 5%

A. Compacted select fill should consist of sandy gravel or gravelly sand free of ice, snow, rubbish, sods, roots and other deleterious or organic materials and should be well graded within the following limits.

SIEVE SIZE	PERCENT FINER BY WEIGHT
1.5 INCH	100%
NO. 4	30% - 90%
NO. 40	10% - 50%
NO. 200	0% - 8%

3.03 FLOOR

A. The floor and wall footings shall be constructed to the dimensions shown on the Approved Shop Drawings.

B. Prior to placement of the floor reinforcing, a six mil polyethylene moisture barrier shall be placed over the leveling base material. Joints in the polyethylene shall be overlapped a minimum of six inches.

C. Prior to placement of the floor concrete, all piping that penetrates the floor shall be set and encased in concrete.

D. The vertical waterstop shall be placed and supported so that the bottom of the center bulb is at the elevation of the top of the footing. The waterstop shall be supported without puncturing any portion of the waterstop unless it is manufactured with holes for tying. The waterstop shall be spliced using a thermostatically controlled sealing iron and each splice shall be successfully spark tested prior to encasement in concrete.

E. The floor shall have a minimum thickness of four inches and be poured monolithically. There shall be no construction joints in the floor or between the floor and footing.

F. The floor shall be cured by applying one coat of curing compound and/or flooding with water, and shall remain saturated for a minimum of seven days.

3.04 PRECAST PANEL CONSTRUCTION AND ERECTION

A. The precast wall shall be constructed with a continuous waterproof steel diaphragm embedded in the exterior of the precast panel. Horizontal joints in the diaphragm will not be allowed.

B. No holes for form ties, nails, or other punctures will be permitted in the wall.

C. Temporary wall openings may be provided for access and removal of construction materials from the tank interior subject to the approval of the Engineer.

D. Wall and dome panel beds shall be located around the periphery of the tank as required. The beds shall be constructed to provide finished panels with the proper curvature of the tank.

E. Polyethylene sheeting shall be placed between successive pours to provide a high moisture environment and a long slow cure for the concrete.

F. The erecting crane and lifting equipment shall be capable of lifting and placing the precast panels to their proper location without causing damage to the panel.

G. The precast panels shall be erected to the correct vertical and circumferential alignment. The edges of adjoining panels shall not vary inwardly or outwardly by more than 3/8 inch and shall be placed to the tank radius within + 3/8 inch.

H. Joints between precast wall panels shall be bridged with a 10 gauge steel plate edge sealed with polysulfide or polyurethane and filled with mortar as shown on the drawings. No through-wall ties will be permitted.

I. Minimum dome and wall panel thickness shall be four inches.

3.05 CONCRETE

A. All concrete shall be conveyed, placed, finished, and cured as required by pertinent ACI standards.

B. Weather Limitations
   1. Unless specifically authorized in writing by the Engineer, concrete shall not be placed without special protection during cold weather when the ambient temperature is below 35 degrees Fahrenheit and when the concrete is likely to be subjected to freezing temperatures before initial set has occurred and the concrete strength has reached 500 psi. Concrete shall be protected in accordance with ACI 306. The temperature of the concrete shall be maintained in accordance with the requirements of ACI 301 and ACI 306. All methods and equipment for heating and for protecting concrete in place shall be subject to the approval of the Engineer.

2. During hot weather, concreting shall be in accordance with the requirements of ACI 305.
3. Placement of concrete during periods of low humidity (below 50 percent) shall be avoided when feasible and economically possible, particularly when large surface areas are to be finished. In any event, surfaces exposed to drying wind shall be covered with polyethylene sheets immediately after finishing, or flooded with water, or shall be water cured continuously from the time the concrete has taken initial set. Curing compounds may be used in conjunction with water curing, provided they are compatible with coatings that may later be applied, or they are degradable.

C. Finishes
1. The tank shall be given the following finishes:
   a. The floor slab shall receive a bull float finish or Fresno finish.
   b. The interior of precast wall panels shall receive a light broom finish.
   c. The exterior of precast dome panels, dome slots, and cast-in-place domes shall receive a light broom finish, and acrylic coating.
   d. Exterior shotcrete shall receive a nozzle finish.

D. Curing
1. Concrete shall be cured using water methods, sealing materials, or curing compounds. Curing compounds shall not be used on surfaces to which decorative coatings, mortar, or shotcrete is to be applied. Curing compounds used within the tank shall be suitable for use with potable water.

E. Testing
1. For concrete placed in precast panels or wall slots, a set of four (4) cylinders shall be made for each truck load of concrete placed. For concrete placed in the floor, dome ring, or dome slots, two sets of four (4) cylinders for the first 50 cubic yards, and one set of three cylinders for every 100 cubic yards thereafter placed in the same day. One cylinder shall be tested at seven days, two (2) at 28 days, and one held as a spare.
2. Slump, air content and temperature testing shall be performed on each truck where cylinders are taken or where directed by engineer.
3. All concrete testing shall be in accordance with ASTM C31 and C39, at the expense of the Contractor, and shall be conducted by an independent testing agency approved by the Engineer.
4. All concrete testing shall be in accordance with Section 014500.

3.06 SHOTCRETING

A. Weather Limitations
1. Shotcrete shall not be placed in freezing weather without provisions for protection against freezing. Shotcrete placement can start without special protection when the temperature is 35 degrees Fahrenheit and rising, and must be suspended when the temperature is 40 degrees Fahrenheit and falling. The surface to which the shotcrete is applied must be free from frost. Cold weather shotcreting shall be in accordance with ACI 301 and ACI 306.
2. Hot weather shotcreting shall be in accordance with the requirements of ACI 301 and ACI 305.

B. Coating of Steel Diaphragm
1. The steel diaphragm shall be covered with a layer of shotcrete at least ½ inch thick prior to prestressing.
2. Total minimum coating over the steel diaphragm shall be 1½ inches including diaphragm cover, wire cover, and finish covercoat.

C. Coating Over Prestressing Wire

1. Each prestress wire shall be individually encased in shotcrete. Wire coat thickness shall be sufficient to provide a clear cover over the wire of at least ¼ inch.
2. Finish covercoat shotcrete shall be applied as soon as practical after the last application of wire coat. The total thickness of shotcrete shall not be less than one inch over the wire.

D. Placement of Shotcrete
1. Shotcrete shall be applied with the nozzle held at a small upward angle not exceeding five degrees and constantly moving during application in a smooth motion with the nozzle pointing in a radial direction toward the center of the tank. The nozzle distance from the prestressing shall be such that shotcrete does not build up or cover the front face of the wire until the spaces behind and between the prestressing elements are filled.
2. Total covercoat thickness shall be controlled by shooting guide wires. Vertical wires shall be installed under tension and spaced no more than two feet apart to establish uniform and correct coating thickness. Monofilament line (100 lb. test) or 18 or 20 gauge high tensile strength steel wire shall be used. Guide wires shall be removed after placement of the covercoat.

E. Curing
1. Shotcrete shall be cured using water curing methods or sealing materials at the option of the Contractor.

F. Testing
1. Testing of shotcrete shall be in accordance with ACI 506, except as specified herein. One test panel shall be made for each of the following operations: corewall, cove, wire cover, and covercoat. Test panels shall be made from the shotcrete as it is being placed, and shall, as nearly as possible, represent the material being applied. The method of making a test sample shall be as follows: A frame of wire fabric (one foot square, three inches in depth) shall be secured to a plywood panel and hung or placed in the location where shotcrete is being placed. This form shall be filled in layers simultaneously with the nearby application. After 24 hours, the fabric and plywood backup shall be removed and the sample slab placed in a safe location at the site.
2. The sample slab shall be moist cured in a manner identical with the regular surface application. The sample slab shall be sent to the testing laboratory. Nine three inch cubes shall be cut from the sample slab and subjected to compression tests in accordance with current ASTM Standards. Three cubes shall be tested at the age of 7 days, three shall be tested at the age of 28 days, and three shall be retained as spares. Testing shall be by an independent testing laboratory, approved by the Engineer and at the Contractor’s expense.
3. All shotcrete testing shall be in accordance with Section 014500.

3.07 PRESTRESSING

A. Prestressing wire will be placed on the wall with a wire winding machine capable of consistently producing a stress in the wire within a range of minus seven percent to plus seven percent of the stress required by the design. No circumferential movement of the wire along the tank wall will be permitted during or after stressing the wire. Stressing may be accomplished by drawing the wire through a die or by another process that results in uninterrupted elongation, thus assuring uniform stress throughout its length and over the periphery of the tank.

B. Each coil of prestressing wire shall be temporarily anchored at sufficient intervals to minimize the loss of prestress in case a wire breaks during wrapping.

C. Minimum clear space between prestressing wires is 5/16 inch or 1.5 wire diameters, whichever is greater. Any wires not meeting the spacing requirements shall be respaced. Prestressing shall be placed no closer than two inches from the top of the wall, edges of openings, or inserts, nor closer than three inches from the base of walls or floors where radial movement may occur.

D. The band of prestressing normally required over the height of an opening shall be displaced into circumferential bands immediately above and below the opening to maintain the required prestressing force. Bundling of wires shall be prohibited.

E. A stress plate shall be used at all permanent wall penetrations above grade that results in displacement of wire equal to or greater than 24 inches in height. The stress plate shall accommodate a portion of the prestressing wires normally required for the height of the opening. The remaining prestress wires normally required shall be displaced into circumferential bands immediately above and below the penetration. The effect of banded prestressing shall be taken into account in the design.

F. Ends of individual coils shall be joined by suitable steel splicing devices capable of developing the full strength of the wire.

G. The Contractor shall furnish a calibrated stress recording device, which can be recalibrated, to be used in determining wire stress levels on the wall during and after the prestressing process. At least one stress reading per vertical foot or one stress reading for every roll of wire, whichever is greater, shall be taken immediately after the wire has been applied on the wall. Readings shall be recorded and shall refer to the applicable height and layer of wire for which the stress is being taken. The Contractor shall keep a written record of stress readings. All stress readings shall be made on straight lengths of wire. If applied stresses fall below the design stress in the steel, additional wire will be provided to bring the force on the corewall up to the required design force. If the stress in the steel is more than seven percent over the required design stress, the wrapping operation should be discontinued, and satisfactory adjustment made to the stressing equipment before proceeding.

3.08 EXTERIOR COATINGS

A. All exposed exterior dome surfaces, exterior exposed wall surfaces and down to 18" below finished grade shall be coated as per the system specified in Part 2.02,G, above. Work shall be performed by workmen skilled in the application of these types of products. The manufacturer’s application instructions shall be submitted to the Engineer for approval. The Contractor shall confer with the manufacturer’s representatives regarding application techniques and shall follow the manufacturer’s instructions implicitly.

B. The concrete surface to be coated must be clean, free of all laitance, dirt, grease, or other foreign materials. All defective surfaces shall be filled and/or repaired. Application shall be in full accordance with the manufacturer’s instructions or as amended by the Engineer.

C. The Owner shall select the color.

D. See Specification Section 099885 for additional requirments.

3.09 DISINFECTION

A. The Contractor shall, at the completion of tank construction, thoroughly clean the interior of the tank.

B. The Contractor shall notify the Engineer prior to disinfecting the tank. Disinfection shall meet with the approval of the Engineer, AWWA C652, and the health department.

C. The tank shall be disinfected in accordance with Section 331160.

D. Prior to placing the tank in service, successful sample results shall be achieved in accordance with Section 331160. Testing shall be by an independent testing laboratory, approved by the

Engineer. Should initial sample tests fail, the contractor shall at his own expense dispose of water, clean, re-disinfect, re-fill and re-test until successful sample results are achieved.

3.10 WATERTIGHTNESS TEST

A. Upon completion, the tank shall be tested to determine watertightness. The tank shall be filled with potable water to the maximum level. Water for an initial test will be furnished to the tank by the new booster station. If the tank construction is complete prior to the completion of the booster station the tank shall be filled via a fire hydrant. Contractor must install an approved backflow prevention device and meter. The test shall consist of measuring the liquid level over the next 24 hours to determine if any change has occurred. If a change is observed and exceeds the maximum allowance, the test shall be extended to a total of five days. If at the end of five days the average daily change has not exceeded the maximum allowance, the test shall be considered satisfactory.

B. The liquid volume loss for a period of 24 hours shall not exceed one-twentieth of one percent of the tank capacity, 0.0005 x tank volume. If the liquid volume loss exceeds this amount, it shall be considered excessive, and the tank shall be repaired and re-tested. Any water needed for re-testing shall be at the expense of the contractor.

C. During the test, no water shall be added to or taken from the tank.

D. Damp spots will not be permitted at any location on the tank wall. Damp spots are defined as spots where moisture can be picked up on a dry hand. All such areas shall be repaired as necessary.

E. Damp spots or standing water on the footing may occur upon tank filling and are permissible within the allowable volume loss. Measurable flow in this area is not permissible and must be corrected.

3.11 TANK BACKFILL

A. Backfill material around the tank shall be placed in uniform layers and compacted as specified for the material and site conditions. Asymmetrical backfill placement, except as may be required by the design and site conditions, shall be avoided.

3.12 CLEAN-UP

A. The premises shall be kept clean and orderly at all times during the work. Upon completion of construction, the Contractor shall remove or otherwise dispose of all rubbish and other materials caused by the construction operation. The Contractor shall leave the premises in as good a condition as it was found.

END OF SECTION 331613

APPENDIX A
SOIL BORING REPORT

CARLIN • SIMPSON & ASSOCIATES, LLC

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28 June 2022

H2M Architects + Engineers
538 Broad Hollow Rd, 4th Floor East
Melville, NY 11747

Attn: Mr. John Collins, P.E.
Vice President – Dep. Manager – Water Resources

Re: Report on Subsurface Soil and Foundation Investigation
Proposed New Ground Storage Tank
64 East Winds Drive
Wading River, NY (CSA Job #22-82)

Dear Mr. Collins:

In accordance with our revised proposal dated 10 January 2023 and your subsequent authorization, we have completed a Subsurface Soil and Foundation Investigation for the referenced site. The purpose of this study was to determine the nature and engineering properties of the subsurface soil and groundwater conditions for the new construction, to recommend a practical foundation scheme, and to determine the allowable bearing capacity of the site soils.

We understand the planned construction will consist of a new ground storage tank. Site improvements will also consist of a new booster building, generator pad, and small storage building. To guide us in our study, you have provided us with plans that indicate the location of the planned construction.

Our scope of work for this project included the following:

1. Reviewed the proposed layout, the existing site conditions, the expected soil conditions, and planned this study.

2. Retained Environmental Technical Drilling Inc. to advance six (6) soil borings at the subject site.

3. Laid out the boring locations in the field, provided full time inspection of the explorations, obtained soil samples, and prepared detailed logs and a Boring Location Plan.

4. Performed soil identification tests on selected soil samples in our laboratory.

5. Analyzed the field and laboratory test data and prepared this report containing the results of this study.

1.0 SITE DESCRIPTION

The project site is located at 64 East Winds Drive in Wading River, New York. The site is currently an active construction yard for the Town of Riverhead. A small maintenance building and a salt storage building is located in the center of the site. The remainder of the site to the north consists of gravel driveways and to the south consists of a wooded area. Site grades are relatively flat.

2.0 PROPOSED CONSTRUCTION

We understand the planned construction will consist of a new 2.5-million-gallon ground storage tank. The proposed storage tank is planned in the southeast corner of the site. The proposed site grades were unknown at the time of writing this report.

Site improvements will also consist of a new booster building located to the west of the proposed ground storage tank, a new generator pad located to the north of the planned booster building, and a storage garage located in the north end of the site (near boring location B-6). The finished floor elevations of the proposed buildings and generator pad were unknown as of the date of this report. However, we anticipate that minor cuts and fills will be required to achieve the planned finished floor elevations. We anticipate that site improvements will also include new underground utilities.

The following evaluation is based on the information that has been provided to our office as of the date of this report. Once the construction plans have been further developed, a copy of the plans should be forwarded to our office so that we can review them along with the recommendations in this report. At that time, any changes or additional recommendations can be provided, if required.

3.0 SUBSURFACE CONDITIONS

To determine the subsurface soil and groundwater conditions at the site, six (6) borings were performed by Environmental Technical Drilling, Inc. at the locations shown on the enclosed Boring Location Plan. The borings were performed using hollow stem augers and split spoon sampling. Detailed boring logs have been prepared and are included in this report. The borings were completed in April 2023 under the full-time inspection of Carlin-Simpson & Associates. Our field engineer visually identified all of the soil samples obtained during the boring operations and selected samples were tested in our laboratory.

3.1 Soils

The soil descriptions shown on the boring logs are based on the Burmister Classification System. In this system, the soil is divided into three components: Sand (S), Silt ($), and Gravel (G). The major component is indicated in all capital letters, the lesser in lower case letters. The following modifiers indicate the quantity of each lesser component:

Modifier	Quantity
trace (t)	0 -10%
little (l)	10% - 20%
some (s)	20% - 35%
and (a)	35% - 50%

In addition, the Unified Soil Classification System (USCS) has been provided for each major soil stratum. The subsurface soil conditions encountered in the borings can be summarized as follows:

Stratum 1 Topsoil — At the surface in 5 of the 6 borings is topsoil that ranges from approximately 2 to 5 inches in thickness.

Stratum 2 Existing Fill — At the surface in boring B-6 and below the surface layer in the remaining borings is existing fill that generally consists of loose to medium dense brown coarse to fine SAND, little (to and) Silt, trace (to little) coarse to fine Gravel. Debris was encountered within this stratum in borings B-1, B-5, and B-6 consisting of organics, asphalt, and ash. This stratum extends to depths ranging from 2’0” to 5’0” below the existing ground surface at the boring locations.

Stratum 3 Sand [USCS: SP] — Beneath the existing fill is loose to dense brown coarse to fine SAND, trace Silt, trace (to little) coarse to fine Gravel. Each boring was terminated in this stratum at depths ranging from 25’0” to 70’0” below the existing ground surface.

3.2 Groundwater

During this investigation groundwater was not encountered in any of the borings to a depth of 70’0” below the existing ground surface. Based on the boring observations and anticipated construction, we do not expect that groundwater will be encountered during construction. However, perched or trapped water may be encountered within the existing fill, especially during wet periods. Proper groundwater control measures will be required in the event that water is encountered in site excavations.

Variations in the location of the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, and other factors not immediately apparent at the time of this exploration.

3.3 Summary of Subsurface Observations

A summary of the boring observations is provided in Table 1 below.

Table 1 – Boring Observation Summary

Boring No.	Depth to Groundwater	Depth to Bottom of Existing Fill
B-1	NE to 50’0”	2’6”
B-2	NE to 50’0”	2’6”
B-3	NE to 50’0”	2’0”
B-4	NE to 50’0”	2’0”
B-5	NE to 70’0”	2’0”
B-6	NE to 25’0”	5’0”

NE – Not Encountered

4.0 SUMMARY OF DESIGN RECOMMENDATIONS

Below is a summary of the major design and construction considerations for this project. Additional recommendations are provided in the following sections of this report.

- *Subsurface Conditions (Section 3.0)*
  - Existing fill was encountered throughout the site to depths ranging from 2’0” to 5’0” below the existing ground surface.
  - Groundwater was not encountered in any of the borings to a depth of 70’0” below the existing ground surface.
  - A summary of the subsurface observations is provided in Table 1 above.

- *Subgrade Preparation (Section 5.1)*
  - Surface materials (i.e., topsoil) must be stripped from the proposed construction areas.
  - Existing fill is not suitable for support of the proposed ground storage tank or garage storage building foundations and floor slabs.
  - Where existing fill is encountered in the proposed ground storage tank area or garage storage building area it shall be completely removed down to the virgin sand and replaced to the subgrade elevation with engineer-approved compacted fill.
  - All subgrades shall be densified with several passes of a vibrator roller prior to the placement of new structure fill or prior to the excavation of foundations.
  - New backfill shall be compacted to at least 95% of its Maximum Modified Dry Density (ASTM D1557).

- *Foundation Design Recommendations (Section 5.2)*
  - Existing fill is not suitable for support of the proposed booster building or generator pad foundations. The footings for the referenced structures must be lowered to bear directly on virgin soil below the existing fill.

- All new foundations may be designed as shallow spread footing bearing on virgin soil, or engineer-approved compacted fill.
- Net design bearing pressure is 4,000 psf.
- Minimum depth for frost protection is 36 inches.
- Seismic Site Class D or Stiff Soil Profile.

- *Floor Slab Recommendations (Section 5.4)*
  - The existing fill can be densified in-place for support of the proposed floor slab for the booster building and generator pad.
  - The existing fill cannot be densified in-place for support of the proposed floor slab for the ground storage tank or garage storage building.
  - The floor slab may be designed as slab on grade.
  - Modulus of subgrade reaction is 200 pci.

5.0 EVALUATION

We understand the planned construction will consist of a new 2.5-million-gallon ground storage tank. The proposed storage tank is planned in the southeast corner of the site. The proposed site grades were unknown at the time of writing this report.

Site improvements will also consist of a new booster building located to the west of the proposed ground storage tank, a new generator pad located to the north of the planned booster building, and a storage garage located in the north end of the site (near boring location B-6). The finished floor elevations of the proposed buildings and generator pad were unknown as of the date of this report. However, we anticipate that minor cuts and fills will be required to achieve the planned finished floor elevations. A summary of the boring observations performed for the planned construction is provided in Table 1 above.

Existing fill (Stratum 2) is present throughout the site extending to depths ranging from 2’0” to 5’0” below the existing ground surface. The depth and extent of the existing fill is expected to be variable and may be deeper or shallower in unexplored areas of the site. The consistency and density of the soil fill are not predictable. Certain areas may contain clean dense soils while other areas may contain loose material, void spaces, and/or debris. The existing soil fill creates the possibility of intolerable differential settlements under loading.

Ground Storage Tank and Garage Storage Building

The existing fill present in the ground storage tank and garage storage building areas is not an acceptable bearing material for the new tank or garage storage building foundations or floor slab. We expect that a majority of the existing fill will be removed during the excavation to the ground storage tank subgrade elevation. However, existing fill in the area of the proposed garage storage building extends to a depth of 5’0” below the existing ground surface. Where existing fill is present below these structures subgrade it shall be completely removed and replaced with new compacted fill.

Provided that the ground storage tank and garage storage building areas are prepared as outlined in this report, it is our opinion that the new engineer-approved compacted fill and/or virgin soil can adequately support the planned foundations and floor slab. Recommendations for preparation of the tank and garage storage building subgrades are provided in Section 5.1. Foundations and floor slab recommendations are provided in Section 5.2 and 5.3 below, respectively.

Booster Building and Generator Pad

The existing fill is not an acceptable bearing material for the booster building or generator pad foundations. We recommend that a series of test pits be performed prior to construction to confirm the depth and extent of existing fill in the referenced areas.

The booster building and generator pad foundations shall be lowered to bear directly on the virgin sand (Stratum 3, USCS: SP) below the existing fill layer. Where loose existing fill extends beyond a depth where lowering the proposed footings is practical, it should be removed to virgin soil and replaced with new compacted fill to the planned subgrade elevation. Provided that the booster building and generator pad foundations are prepared as outlined in this report, it is our opinion that the new engineer-approved compacted fill and/or virgin soil can adequately support the planned foundations. Recommendations for preparation of the booster building and generator pad subgrades are provided in Section 5.1. Foundation recommendations can be found in Section 5.2 of this report.

In our opinion the existing fill located in the booster building and generator pad areas can be densified in place for support of the respective slabs. Floor slab recommendations are provided in Section 5.3 below.

5.1 Subgrade Preparation

All vegetation and surface materials such as asphalt and topsoil shall be removed from the planned construction areas, extending at least ten (10) feet beyond the new construction limits, where practical.

In the event that existing utilities are encountered within the planned construction areas, they should be either abandoned or rerouted around the new structures. Once the utility has been rerouted or abandoned, the section of pipe and any associated structure within the construction areas should be completely removed. The removal of the pipe and structure must also include any loose fill around the pipe or structure. After the pipe, associated structure, and associated loose backfill have been removed, the resulting excavation shall be backfilled with new controlled fill as described below in “Installation of New Structural Fill”.

Removal of Existing Fill – Ground Storage Tank and Garage Storage Building Only

As discussed above, the existing fill is not suitable for support of the ground storage tank or the garage storage building foundations or floor slab. Existing fill was encountered within the storage tank area to depths ranging from 2’0” to 2’6” below the existing ground surface. We

expect that a majority of the existing fill will be removed during the excavation to the storage tank subgrade elevation.

Existing fill was encountered in boring B-6 performed for the proposed storage garage building to a depth of 5’0” below the existing ground surface. Where existing fill is present below the planned subgrade elevation of both the ground storage tank or garage storage building, it must be completely removed and replaced as described below.

The excavation shall extend through the existing fill, down to the virgin sand. At the bottom of the excavation, the removal of the unsuitable material shall extend horizontally beyond the structure limits a minimum distance of 1’0” plus a distance equal to the depth of the excavation below the planned foundation bearing elevation. For example, if the removal of the existing fill extends vertically 2’0” below the planned structure area, the excavation must extend horizontally a minimum of 3’0” (1’0” plus 2’0”) beyond the new structure limits at that location.

The removal of the existing fill from the ground storage tank area and garage storage building shall be performed under the full time inspection of Carlin-Simpson & Associates or a qualified geotechnical engineering firm. The on-site representative from Carlin-Simpson & Associates or a qualified geotechnical engineering firm shall direct the contractor during this operation to ensure that all of the unsuitable material has been removed from the proposed structure areas.

During the removal of the unsuitable material, the contractor should segregate the potentially re-usable existing soil/fill material from the non-reusable fill (i.e. debris and topsoil). The on-site representative from Carlin-Simpson & Associates or a qualified geotechnical engineering firm shall evaluate the suitability of the excavated materials for use as compacted fill during the excavation and prior to its re-use. Potentially usable fill should be stockpiled and covered with tarps or plastic sheeting for protection from excess moisture. Any fill material that is or becomes wet must be dried prior to its re-use.

Densification of Subgrade Soils (Proofrolling) – All Structures

After the surface materials and existing fill (where required) are removed as outlined above and prior to the placement of new structural fill, the exposed subgrade soil must be graded level shall be proofrolled with at least five (5) passes of a large vibratory drum roller (i.e. Dynapac CA 250 or equivalent). The proofrolling is necessary to densify the underlying soils. Proofrolling must be performed prior to the excavation for new foundations and/or the installation of new compacted fill in the structure areas.

A representative from Carlin-Simpson & Associates or a qualified geotechnical engineering firm shall observe the proofrolling operation. If any excessive movement is noted during the proofrolling, the soft soil shall be removed and replaced with new compacted fill. The Carlin-Simpson & Associates or a qualified geotechnical engineering firm representative shall be responsible for determining what material, if any, is to be removed and will direct the contractor during this operation. The subgrade proofrolling may be eliminated, if in the opinion of the

geotechnical engineer, the proofrolling will cause pumping or otherwise disturb the stability of the subgrade.

Installation of New Structural Fill – All Structures

Where new fill is required to achieve final grades, it shall consist of either suitable on-site soil or imported sand and gravel. The new fill shall be placed in layers not exceeding one (1) foot in thickness and each layer shall be compacted to at least 95% of its Maximum Modified Dry Density (ASTM D1557). Each layer must be compacted, tested, and approved by the Carlin-Simpson & Associates or a qualified geotechnical engineering firm field representative prior to placing subsequent layers. The suitability of the excavated soil for reuse as compacted structural fill is discussed in Section 6.3 below.

If imported structural fill is required during construction, the imported structural fill shall meet the following specified gradation:

US Standard Sieve Size	Percent Finer by Weight
3 inch	100
No. 4	30-80
No. 40	10-50
No. 200	0-20

5.2 New Foundations

Once the planned structure areas have been prepared as described in Section 5.1 above, the new foundations may be constructed on the virgin site soils and/or new compacted fill. Foundation design parameters for all structures can be found below in Table 2.

Booster Building and Generator Pad

The booster building and generator pad foundations may be designed as shallow foundations lowered to bear on virgin soils. Borings were not performed for the booster building or generator pad. However, existing fill in the vicinity of the planned building and pad areas extend to depths ranging from 2’0” to 2’6” below the existing ground surface. We recommend that a series of test pits be performed prior to construction to confirm the depth of existing fill.

Alternatively, where lowering the footings to bear on virgin soil is not practical, the existing fill can be completely removed from beneath the “zone of influence” of the new building and pad foundations and replaced with new engineer-approved compacted fill to the planned subgrade elevation. At the bottom of the excavation, the removal of the existing fill shall extend horizontally beyond the foundation footprint a minimum distance equal to the depth of the excavation below the planned foundation bearing elevation on each side of the foundation. For example, if the removal of the existing fill extends vertically two (2) feet below the planned footing bearing elevation, the excavation must extend horizontally a minimum of three (3) feet (1 foot plus 2 feet) beyond the new footing limits at that location. Once the existing fill is completely removed, as described, it can then be backfilled to the planned subgrade elevation as

described in Section 5.1 “Installation of New Structural Fill”. The foundation design parameters in Table 3 below shall be used for design.

Ring Wall Foundation – Ground Storage Tank

We understand that the ground storage tank foundation will likely be designed utilizing a ring-wall foundation. The new tank foundations may be designed as a shallow spread foundation bearing on virgin soil or engineer-approved compacted fill using the net design bearing pressures in Table 3 below.

The ringwall foundation design must also consider the potential overturning of the tank caused by wind loads. The movement of the tank under wind loading must be computed and the foundation must be designed to withstand that load. For a ringwall foundation, the resistance to overturning is provided by the weight of the footing and the soil above the footing. The backfill placed above the new footings must consist of a dense graded aggregate (DGA). This backfill shall be installed in loose layers not exceeding one (1) foot in thickness and each layer shall be compacted to at least 95% of its Maximum Modified Dry Density (ASTM D-1557). The DGA shall meet the following gradation:

US Standard Sieve Size	Percent Finer By Weight
1 ½ inch	100
¾ inch	55-90
No. 40	25-50
No. 50	5-20
No. 200	3-10

The proper placement of new fill within the tank area and adjacent to the ringwall foundation is critical to the performance of the tank and for minimizing settlement. Carlin-Simpson & Associates or qualified geotechnical engineering firm must be retained to monitor and test the placement of fill within the tank area and adjacent to the ringwall foundations.

The soil within the tank area, adjacent to the ringwall, will exert a horizontal pressure against the ringwall. This pressure is based on the soil density and coefficient of earth pressure at rest (k_o), which is applicable to non-yielding walls. Values for these parameters can be found in Table 2 below.

Table 2 – Ringwall Foundation Earth Pressures Design Parameters

Soil Type	**On-Site Soils**
Moist Unit Weight (γ)	130 pcf
Friction Angle (ϕ, deg)	30
Cohesion (c, psf)	0
Coefficient of Earth Pressure at Rest (k_o)	0.5
Coefficient of Passive Earth Pressure (k_p)	3.0
Equivalent Fluid Pressure*	162.5 psf/ft
Foundation Sliding Coefficient	0.45

(*) – A factor of safety of 2.5 is applied.

Foundation Design Parameters – All Structures

All new structure foundations may be designed as shallow spread footings using net design bearing pressures as listed in Table 3 below. All of the exterior footings shall bear at the minimum depth listed below for protection from frost. Interior column footings may bear on the virgin soil or new structural fill just below the floor slab provided the structure is heated during winter. The footings shall have minimum dimensions as listed below.

Table 3 – Foundation Design Parameters

Description	Value
Foundation Bearing Material	Virgin Soil/ New Compacted Fill
Net Design Bearing Pressure	4,000 psf
Minimum Frost Depth	36 inches
Minimum Column Dimension	30 inches
Minimum Wall Dimension	18 inches

The excavations for the new foundations shall be performed under the full-time inspection of Carlin-Simpson & Associates or a qualified geotechnical engineering firm. The on-site representative shall confirm that the foundation bearing material is capable of supporting the design bearing pressure.

Prior to the placement of formwork, reinforcement steel, and concrete, the bearing subgrade soil shall be cleaned of all loose soil and where soil is encountered at the subgrade elevation, it shall be compacted with several passes of a small vibratory drum trench compactor (i.e. Wacker Model RT560), a heavy vibratory plate tamper (i.e. Wacker BPU 3545A or equivalent), or "jumping jack" style tamper (i.e. Wacker Model BS 600). This must be performed under the observation of Carlin-Simpson & Associates or a qualified geotechnical engineering firm. If instability is observed during the compaction of the bearing subgrade, the soft soil shall be removed and replaced with new compacted fill.

5.3 Floor Slab on Grade

New fill for the floor slab shall consist of either suitable on-site soil or imported sand and gravel. In the event that imported sand and gravel is required it should meet the gradation provided in "Installation of New Structural Fill" in Section 5.1. The new fill shall be placed in layers not exceeding one (1) foot in loose thickness and each layer shall be compacted to at least 92% of its Maximum Modified Dry Density (ASTM D1557). Fill layers shall be compacted, tested, and approved before placing subsequent layers.

Slab Subgrade Preparation – Booster Building and Generator Pad Only

In our opinion, the existing fill can be adequately compacted in place to support the new floor slab for the booster building and generator pad. During the preparation of subgrade for the structure area, if instability is noted by Carlin-Simpson & Associates or qualified geotechnical

engineer, the existing fill may be partially removed and replaced with new compacted fill for support of the new floor slab.

Slab on Grade Design Recommendations – All Structures

The structure floor slab may be designed as a slab on grade bearing on densified virgin soil, new engineer-approved structural fill or engineered approved densified existing fill. Floor slab design parameters are provided in Table 4 below. A layer of 3/4-inch crushed stone is recommended beneath the concrete slab for additional support and drainage.

Table 4 – Floor Slab Design Parameters

Description	Value
Slab Subgrade Material	Virgin Soil/ New Structural Fill/ **Densified Existing Fill
Modulus of Subgrade Reaction (k)	200 pci
Crushed Stone Cushion Thickness	6 inches

(**) – Booster Building and Generator Pad Only

5.4 Settlement

Settlement of individual footings, designed in accordance with recommendations presented in this report, is expected to be within tolerable limits for the proposed structures. For footings placed on natural soils or new compacted fill approved by Carlin-Simpson & Associates or a qualified geotechnical engineering firm and constructed in accordance with the requirements outlined in this report, maximum total settlement is expected to be on the order of 1-inch or less. Maximum differential settlement between adjacent columns or load bearing walls is expected to be ½-inch or less.

The above settlement values are based on our engineering experience with similar soil conditions and the anticipated structural loading. These estimated settlements are intended to guide the structural engineer with their design. It is critical that Carlin-Simpson & Associates or a qualified geotechnical engineer be retained to observe the foundation bearing surfaces and to confirm the recommended bearing pressures during construction.

5.5 Site Seismic Design Considerations

From site-specific test boring data, the Site Class was determined from Building Code of New York State Section 1613.2.2. The site-specific data used to determine the Site Class typically includes soil test borings to determine Standard Penetration resistances (N-values). Based on estimated average N-values in the upper 100 feet of soil profile, the site can be classified as Site Class D – Stiff Soil Profile.

New structures should be designed to resist stress produced by lateral forces computed in accordance with Section 1613 of the Building Code of New York State. The values in Table 5 shall be used for this project.

Table 5 – Seismic Design Values

Description	Value
Mapped Spectral Response Acceleration for Short Periods, [Fig 1613.2.1 (1)]	S_S=0.179g
Mapped Spectral Response Acceleration at 1-Second Period, [Fig 1613.2.1 (2)]	S_1=0.050g
Site Coefficient [Table 1613.2.3 (1)]	F_a= 1.60
Site Coefficient [Table 1613.2.3 (2)]	F_v= 2.40
Max Considered Earthquake Spectral Response for Short Periods [Eq 16-36]	S_{MS}=0.286g
Max Considered Earthquake Spectral Response at 1-Second Period [Eq 16-37]	S_{M1}=0.119g
Design Spectral Response Acceleration for Short Periods [Eq 16-38]	S_{DS}=0.190g
Design Spectral Response Acceleration for 1-Second Period [Eq 16-39]	S_{D1}=0.080g

We expect that the proposed buildings and ground storage tank will be an essential facility with a Risk Category of IV. Based on this assumption, the Seismic Design Category (SDC) is C. The Risk Category and SDC should be verified by the project structural engineer. In the event that the structure has a different Risk Category, the SDC should be updated in accordance with Section 1613 of the New York State Building Code.

6.0 SITE EVALUATION

Our recommendations for the proposed site development including new utilities, temporary excavation and bracing, and suitability of the existing site soils for reuse are provided below. A summary of the boring observations is provided in Table 1 above.

6.1 Utilities

New utilities may bear in the densified existing fill, virgin site soils, and new compacted fill. The bottom of all trenches should be excavated clean and shaped so a hard bottom is provided for the pipe support. If any soft or unsuitable soil conditions are encountered during construction, the unsuitable materials must be removed and replaced with new compacted fill.

For areas where existing fill is encountered within the utility excavations, the subgrade at bottom of the utility excavation shall be compacted in place with a vibratory drum trench compactor or "jumping jack" style tamper. Carlin-Simpson & Associates or a qualified geotechnical engineering firm must evaluate these areas for the presence of soft or unsuitable material within the existing fill matrix. If instability is observed, portions of this fill may have to be removed and replaced with new compacted fill. Carlin-Simpson & Associates or a qualified geotechnical engineering firm will determine this during construction.

In the event that the trench bottom becomes soft due to the inflow of surface or trapped water, the soft soil shall be removed and the excavation filled with a minimum of six (6) inches of 3/4-inch clean crushed stone to provide a firm base for support of the pipe. Sump pits and pumps should be adequate to keep the excavations dry.

After the utility is installed, the trench must be backfilled with compacted fill. The fill shall consist of suitable on-site soil or imported sand and gravel. In the event that imported fill in

required, it shall meet the gradation provide in Section 5.3 “Installation of New Structural Fill” above. Controlled compacted fill shall be placed in one (1) foot loose layers and each layer shall be compacted to at least 92% of its Maximum Modified Dry Density (ASTM D-1557). The backfill must be free of topsoil and debris.

6.2 Temporary Construction Excavations and Excavation Protection

Temporary construction excavations shall be conducted in accordance with the most recent OSHA guidelines or applicable federal, state or local codes. A qualified person should evaluate the excavations at the time of construction to determine the appropriate soil type and the allowable slope configuration. Based on the boring data, we believe the site soil would have the following classifications as defined by the OSHA guidelines.

Soil Type	Possible Classification	Maximum Slope or Bench
Existing Fill	“C”	1½H:1V
Virgin Soil	“B” or “C”	1H:1V or 1½H:1V

Temporary support (i.e., trench boxes, sheeting and shoring, etc.) should be used for any excavation that cannot be sloped or benched in accordance with the applicable regulations, where necessary to protect adjacent utilities and structures, or where saturated soils or water seepage is encountered within the excavation.

A New York State licensed professional engineer must design all temporary and permanent support systems. The contractor will select the shoring type and submit design calculations for the proposed shoring method to Carlin-Simpson & Associates for review. The soil adjacent to the temporary support system will exert a horizontal pressure against the system. This pressure is based on the soil unit weight, coefficient of active earth pressure, and depth of the excavation. Support of Excavation design parameters are listed in Table 6 below.

Table 6 – Temporary Sheeting and Shoring Design Parameters

Description	Value
Moist Unit Weight (pcf)	130
Friction Angle (ϕ, deg)	30
Cohesion (c, psf)	0
Active Earth Pressure Coefficient (k_a)	0.33
Equivalent Fluid Pressure (pcf)	42.9
Passive Earth Pressure Coefficient (k_p)	3.0

6.3 Suitability of the In-Situ Soils for Use as Compacted Fill

The suitability of each soil stratum for use as compacted fill is discussed below.

Stratum 1 Topsoil

Topsoil is not suitable for use as compacted fill. During the stripping operation, it may be stockpiled on site for later use in the landscaped areas or removed from the site.

Stratum 2 Existing Fill

The existing fill generally consists of loose to medium dense brown coarse to fine SAND, little (to and) Silt, trace (to little) coarse to fine Gravel.

Debris was encountered in borings B-1, B-5, and B-6 within this stratum consisting of organics, asphalt, and ash. In order for the existing fill to be used as compacted fill, the debris within the existing fill stratum must be removed prior to reuse. A screener may be required to remove the debris. In some cases, a screener may not be able to remove all debris. If all debris cannot be removed from the existing fill, the material will not be suitable for reuse as compacted fill.

The existing fill contains a moderate to high percentage of silt and will be moisture sensitive. When this material becomes wet, it will be difficult to reuse.

The existing fill is generally suitable for reuse as compacted fill provided that it remains relatively dry for optimum compaction and that any debris, or organic material has been removed prior to its reuse.

Stratum 3 Sand [USCS: SP]

The virgin site soils consist of brown coarse to fine SAND, trace Silt, trace (to little) coarse to fine Gravel. The virgin site soils are suitable for reuse as compacted fill.

The boring data indicates that the on-site soils contain a varying of silt (3% to 45%). The moderate to high silt content soils may be moisture sensitive, particularly some of the existing fill. If the soil becomes too wet, it will be difficult to achieve adequate compaction.

Proper moisture conditioning of the soil will be required. New compacted fill should be within 2% (+/-) of its optimum moisture content at the time of placement. In the event that the on-site material is too wet at the time of placement and cannot be adequately compacted, the soil should be aerated and allowed to dry or the material removed and a drier cleaner fill material used. In the event that the on-site material is too dry at the time of placement and cannot be adequately compacted, water may be needed to increase the soil moisture content for proper compaction.

The in-situ soils which exist throughout the site may become soft and weave if exposed to excessive moisture and construction traffic. The instability will occur quickly when exposed to these elements and it will be difficult to stabilize the subgrade. We recommend that adequate site

drainage be implemented early in the construction schedule and if the subgrade becomes wet, the contractor should limit construction activity until the soil has dried.

The minimum compaction requirements for the various areas of the site are summarized in Table 7 below.

Table 7 – Minimum Compaction Requirements

Area	Maximum Modified Dry Density (ASTM D-1557)
Below Foundations	95%
Above Ring Wall Foundations	95%
Below Floor Slab	92%
Pavement Areas	92%
Exterior Slabs and Sidewalks	92%
Utility Trenches	92%
Landscape Areas (non-sloped)	90%

Debris Fill and Potential Environmental Concerns

Debris was encountered within the existing fill stratum during this subsurface investigation. Debris must be removed from the existing fill in order to be reused as structural fill onsite. In some cases, a screener cannot remove all debris from the existing fill sufficiently enough to be reused. In that case, the material would need to be reused in non-structural areas onsite or be hauled off site. The possibility of not being able to reuse all of the existing fill material should be taken into consideration by the project team. This should also be included in the project specifications.

In the event that the debris material needs to be hauled off site, environmental testing will likely be required to export the debris fill material. An environmental evaluation of the site was beyond the scope of this study. Proper disposal of all soil and water must be performed in accordance with applicable federal and state regulations. An environmental engineering firm should be retained by the owner to address these potential issues. The possibility of having to haul off possible contaminated materials should be taken into consideration by the project team.

7.0 GENERAL

The findings, conclusions and recommendations presented in this report represent our professional opinions concerning subsurface conditions at the site. The opinions presented are relative to the dates of our sitework and should not be relied on to represent conditions at later dates or at locations not explored. The opinions included herein are based on information provided to us, the data obtained at specific locations during the study and our past experience. If additional information becomes available that might impact our geotechnical opinions, it will be necessary for Carlin-Simpson & Associates to review the information, reassess the potential concerns, and re-evaluate our conclusions and recommendations.

Regardless of the thoroughness of a geotechnical exploration, there is the possibility that conditions between borings and test pits will differ from those encountered at specific boring or test pit locations, that conditions are not as anticipated by the designers and/or the contractors, or that either natural events or the construction process have altered the subsurface conditions. These variations are an inherent risk associated with subsurface conditions in this region and the approximate methods used to obtain the data. These variations may not be apparent until construction.

The professional opinions presented in this geotechnical report are not final. Field observations and foundation installation monitoring by the geotechnical engineer, as well as soil density testing and other quality assurance functions associated with site earthwork and foundation construction, are an extension of this report. Therefore, Carlin-Simpson & Associates should be retained by the Owner to observe all earthwork and foundation construction, to document that the conditions anticipated in this study actually exist, and to finalize or amend our conclusions and recommendations Carlin-Simpson & Associates is not responsible or liable for the conclusions and recommendations presented in this report if Carlin-Simpson & Associates does not perform the observation and testing services.

Therefore, in order to preserve continuity in this project, the Owner shall retain the services of Carlin-Simpson & Associates to provide full time geotechnical related monitoring and testing during construction. At a minimum, this shall include the observation and testing of the following: 1) the removal of existing fill and unsuitable soil, where required; 2) the proofrolling of the subgrade soil prior to the placement of new compacted fill; 3) the placement and compaction of controlled fill; 4) the excavations for the new foundations; and 5) the preparation of the subgrade for the floor slab and pavement areas.

This report has been prepared in accordance with generally accepted geotechnical engineering practice. No other warranty is expressed or implied. The evaluations and recommendations presented in this report are based on the available project information, as well as on the results of the exploration. Carlin-Simpson & Associates should be given the opportunity to review the final drawings and site plans for this project to determine if changes to the recommendations outlined in this report are needed. Should the nature of the project change, these recommendations should be re-evaluated.

This report is provided for the exclusive use of H2M Architects + Engineers and the project specific design team and may not be used or relied upon in connection with other projects or by other third parties. Carlin-Simpson & Associates disclaims liability for any such third-party use or reliance without express written permission. Use of this report or the findings, conclusions or recommendations by others will be at the sole risk of the user. Carlin-Simpson & Associates is not responsible or liable for the interpretation by others of the data in this report, nor their conclusions, recommendations or opinions.

If the conditions encountered during construction vary significantly from those stated in this report, this office should be notified immediately so that additional recommendations can be made.

Thank you for allowing us to assist you with this project. Should you have any questions or comments, please contact this office.

Very truly yours,

CARLIN-SIMPSON & ASSOCIATES, LLC

CATHERINE K. ANDERSEN, P.E.
Project Engineer

ROBERT B. SIMPSON, P.E.
Principal

File No. 22-82

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-1
Project: Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY		**SHEET NO.:** 1 of 3
Client: H2M Architects + Engineers		**JOB NUMBER:** 22-82
Drilling Contractor: Environmental Technical Drilling, Inc.		**ELEVATION:** -

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	**DATUM:** -
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			**START DATE:** 3/Apr/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			**FINISH DATE:** 3/Apr/23
				WGHT		140#			**DRILLER:** SP
				FALL		30"			**INSPECTOR:** JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			5		**Topsoil** 0'2"	
1		**S-1**	5		**FILL (Dark gray, brown coarse to fine**	Rec = 13"
			5		**SAND, little (+) Silt, little coarse to fine**	moist
2			5		**Gravel, with asphalt)**	
			3		2'6"	
3		**S-2**	4			Rec = 22"
			4		Lt br cf S, t $, t cf G	moist
4			5			
			4			
5		**S-3**	5		same, l cf G	Rec = 9"
			9			moist
6			8			
			6			
7		**S-4**	8		same, t (-) $, t (+) mf G	Rec = 15"
			6			moist
8			8			
			6			
9		**S-5**	8		same, t cf G	Rec = 16"
			7			moist
10			8		**Light brown coarse to fine SAND,**	
					trace Silt, trace coarse to fine Gravel	
11					**[USCS: SP]**	
12						
13						
			4			
14		**S-6**	3		same	Rec = 19"
			4			moist
15			5			
16						
17						
18						
			6			
19		**S-7**	7		same	Rec = 16"
			10			moist
20			10			
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-1
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 2 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23						
			5			
24		**S-8**	7		Lt br cf S, t $, l (-) cf G	Rec = 20"
			7			moist
25			9			
26						
27						
28						
			6			
29		**S-9**	8		same	Rec = 17"
			11			moist
30			12			
31						
32						
33					**Light brown coarse to fine SAND, trace Silt, little (-) coarse to fine Gravel [USCS: SP]**	
			6			
34		**S-10**	8		same	Rec = 20"
			13			moist
35			13			
36						
37						
38						
			7			
39		**S-11**	12		same	Rec = 14"
			14			moist
40			14			
41						
42						
43						
			9			
44		**S-12**	12		same	Rec = 24"
			13			moist
45			16			
46						
47						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-1
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 3 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
48					**Light brown coarse to fine SAND,**	
			13		**trace Silt**	
49		**S-13**	13		**[USCS: SP]**	Rec = 16"
			13		Lt br cf S, t $	moist
50			19		50'0"	
					End of Boring @ 50'0"	
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-2
Project: Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY		**SHEET NO.:** 1 of 3
Client: H2M Architects + Engineers		**JOB NUMBER:** 22-82
Drilling Contractor: Environmental Technical Drilling, Inc.		**ELEVATION:** -

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: -
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE: 3/Apr/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE: 3/Apr/23
				WGHT		140#			DRILLER: SP
				FALL		30"			INSPECTOR: JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			2		**Topsoil** 0'5"	
1		**S-1**	2		FILL (Gr, br cf S, a $, l cf G)	Rec = 10"
			3		**FILL (Gray, brown coarse to fine SAND,**	moist
2			5		**and Silt, little coarse to fine Gravel)**	
			3		2'6"	
3		**S-2**	5		Lt br cf S, t $	Rec = 10"
			6			moist
4			6			
			6			
5		**S-3**	12		same	Rec = 14"
			12			moist
6			12			
			8			
7		**S-4**	9		same, l (-) cf G	Rec = 17"
			9			moist
8			10			
			7			
9		**S-5**	8		same	Rec = 14"
			6			moist
10			8		**Light brown coarse to fine SAND,**	
					trace Silt	
11					**[USCS: SP]**	
12						
13						
			4			
14		**S-6**	5		same	Rec = 20"
			5			moist
15			5			
16						
17						
18						
			3			
19		**S-7**	5		same	Rec = 16"
			4			moist
20			6			
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-2
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 2 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23						
			7			
24		**S-8**	10		Lt br cf S, t $, t cf G	Rec = 15"
			9			moist
25			13			
26						
27						
28						
			6			
29		**S-9**	9		same	Rec = 19"
			10			moist
30			13			
31						
32						
33					**Light brown coarse to fine SAND, trace Silt, trace coarse to fine Gravel [USCS: SP]**	
			6			
34		**S-10**	10		same, l cf G	Rec = 20"
			10			moist
35			14			
36						
37						
38						
			6			
39		**S-11**	11		same	Rec = 17"
			13			moist
40			16			
41						
42						
43						
			8			
44		**S-12**	8		same	Rec = 21"
			10			moist
45			12			
46						
47						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-2
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 3 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
48					**Light brown coarse to fine SAND,**	
			11		**trace Silt, trace coarse to fine Gravel**	
49		**S-13**	13		**[USCS: SP]**	Rec = 20"
			14		Lt br cf S, t $, t cf G	moist
50			18		50'0"	
					End of Boring @ 50'0"	
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-3
Project: Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY		**SHEET NO.:** 1 of 3
Client: H2M Architects + Engineers		**JOB NUMBER:** 22-82
Drilling Contractor: Environmental Technical Drilling, Inc.		**ELEVATION:** -

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: -
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE: 4/Apr/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE: 4/Apr/23
				WGHT		140#			DRILLER: SP
				FALL		30"			INSPECTOR: JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			3		**Topsoil** 0'2"	
1		**S-1**	4		**FILL (Brown coarse to fine SAND,**	Rec = 12"
			4		**some Silt, little coarse to fine Gravel)**	moist
2			5		FILL (Br cf S, s $, l cf G) 2'0"	
			5			
3		**S-2**	5		Lt br cf S, t $, s (-) cf G	Rec = 13"
			8			moist
4			7			
			11			
5		**S-3**	9		same, l (-) cf G	Rec = 18"
			10			moist
6			9			
			9			
7		**S-4**	8		same	Rec = 20"
			7			moist
8			7			
			5			
9		**S-5**	5		same, t (+) cf G	Rec = 15"
			4			moist
10			7		**Light brown coarse to fine SAND,**	
					trace Silt, some (-) coarse to fine Gravel	
11					**[USCS: SP]**	
12						
13						
			3			
14		**S-6**	4		same	Rec = 20"
			5			moist
15			6			
16						
17						
18						
			3			
19		**S-7**	6		same	Rec = 20"
			9			moist
20			9			
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-3
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 2 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23						
			5			
24		S-8	6		Lt br cf S, t $, t (+) cf G	Rec = 20"
			6			moist
25			7			
26						
27						
28						
			4			
29		S-9	5		same	Rec = 19"
			8			moist
30			10			
31						
32					**Light brown coarse to fine SAND,**	
33					**trace Silt, trace (+) coarse to fine Gravel**	
			6		**[USCS: SP]**	
34		S-10	9		same	Rec = 20"
			10			moist
35			12			
36						
37						
38						
			8			
39		S-11	8		same	Rec = 19"
			15			moist
40			17			
41						
42						
43						
			6			
44		S-12	9		same	Rec = 17"
			10			moist
45			12			
46						
47						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-3
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 3 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
48					**Light brown coarse to fine SAND,**	
			8		**trace Silt, trace (+) coarse to fine Gravel**	
49		**S-13**	10		**[USCS: SP]**	Rec = 15"
			11		Lt br cf S, t $, t (+) cf G	moist
50			14		50'0"	
					End of Boring @ 50'0"	
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-4
Project: Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY		**SHEET NO.:** 1 of 3
Client: H2M Architects + Engineers		**JOB NUMBER:** 22-82
Drilling Contractor: Environmental Technical Drilling, Inc.		**ELEVATION:** -

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	**DATUM:** -
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			**START DATE:** 5/Apr/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			**FINISH DATE:** 5/Apr/23
				WGHT		140#			**DRILLER:** SP
				FALL		30"			**INSPECTOR:** JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			3		**Topsoil** 0'2"	
1		**S-1**	2		**FILL (Brown coarse to fine SAND,**	Rec = 15"
			3		**some Silt, little (-) coarse to fine Gravel)**	moist
2			4		FILL (Br cf S, s $, l (-) cf G) 2'0"	
			4			
3		**S-2**	3		Lt br cf S, t $, t (+) mf G	Rec = 12"
			3			moist
4			4			
			4			
5		**S-3**	6		same	Rec = 15"
			7			moist
6			6			
			9			
7		**S-4**	7		same	Rec = 17"
			6			moist
8			8			
			4			
9		**S-5**	5		same	Rec = 16"
			5			moist
10			4			
					Light brown coarse to fine SAND,	
11					**trace Silt, little (-) coarse to fine Gravel**	
					[USCS: SP]	
12						
13						
			3			
14		**S-6**	3		same	Rec = 15"
			5			moist
15			5			
16						
17						
18						
			4			
19		**S-7**	5		same	Rec = 14"
			7			moist
20			8			
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-4
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 2 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23		**S-8**	5 6 7	■	Lt br cf S, t $, t (+) cf G	Rec = 21" moist
24			7	■		
25						
26						
27						
28						
29		**S-9**	4 6 7	■	same	Rec = 22" moist
30			9	■		
31						
32						
33					**Light brown coarse to fine SAND, trace Silt, trace (+) coarse to fine Gravel [USCS: SP]**	
34		**S-10**	4 8 9	■	same	Rec = 18" moist
35			10	■		
36						
37						
38						
39		**S-11**	5 9 10	■	same	Rec = 15" moist
40			12	■		
41						
42						
43						
44		**S-12**	6 10 15	■	same	Rec = 24" moist
45			14	■		
46						
47						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-4
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 3 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
48					**Light brown coarse to fine SAND,**	
			14		**trace Silt, trace coarse to fine Gravel**	
49		**S-13**	14		**[USCS: SP]**	Rec = 20"
			15		Lt br cf S, t $, t cf G	moist
50			16		50'0"	
					End of Boring @ 50'0"	
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-5
Project: Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY		**SHEET NO.:** 1 of 3
Client: H2M Architects + Engineers		**JOB NUMBER:** 22-82
Drilling Contractor: Environmental Technical Drilling, Inc.		**ELEVATION:** -

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: -
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE: 4/Apr/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE: 4/Apr/23
				WGHT		140#			DRILLER: SP
				FALL		30"			INSPECTOR: JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Topsoil** 0'4"	
1		**S-1**	2		**FILL (Brown coarse to fine SAND,**	Rec = 20"
			1		**some Silt, trace coarse to fine Gravel,**	moist
2			2		**with organics** 2'0"	
			4			
3		**S-2**	5		Lt br cf S, t $, t cf G	Rec = 14"
			7			moist
4			8			
			7			
5		**S-3**	10		same, l cf G	Rec = 12"
			9			moist
6			12			
			11			
7		**S-4**	10		same	Rec = 14"
			9			moist
8			9			
			7			
9		**S-5**	4		same	Rec = 10"
			8			moist
10			8			
11					**Light brown coarse to fine SAND,**	
					trace Silt, trace coarse to fine Gravel	
12					**[USCS: SP]**	
13						
			2			
14		**S-6**	3		same	Rec = 22"
			4			moist
15			4			
16						
17						
18						
			4			
19		**S-7**	6		same	Rec = 12"
			6			moist
20			7			
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-5
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 2 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23						
			5			
24		S-8	7		Lt br cf S, t $, l (-) cf G	Rec = 23"
			8			moist
25			8			
26						
27						
28						
			5			
29		S-9	8		same	Rec = 18"
			10			moist
30			9			
31						
32						
33					**Light brown coarse to fine SAND, trace Silt, little (-) coarse to fine Gravel [USCS: SP]**	
			6			
34		S-10	9		same	Rec = 24"
			9			moist
35			10			
36						
37						
38						
			7			
39		S-11	9		same	Rec = 20"
			10			moist
40			12			
41						
42						
43						
			9			
44		S-12	11		same	Rec = 24"
			11			moist
45			15			
46						
47						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-5
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 3 of 3
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
48						
			10			
49		S-13	12		Lt br cf S, t $, t cf G	Rec = 20"
			10			moist
50			15			
51						
52						
53						
54						
55						
56						
57					**Light brown coarse to fine SAND, trace Silt, trace coarse to fine Gravel [USCS: SP]**	
58						
			9			
59		S-14	12		same	Rec = 20"
			15			moist
60			15			
61						
62						
63						
			8			
64		S-15	12		same	Rec = 18"
			15			moist
65			20			
66						
67						
68						
			12			
69		S-16	16		same	Rec = 20"
			15			moist
70			20		70'0"	
					End of Boring @ 70'0"	
71						
72						

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.				TEST BORING LOG					BORING NUMBER B-6	
Project:	Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY								**SHEET NO.:**	1 of 2
Client:	H2M Architects + Engineers								**JOB NUMBER:**	22-82
Drilling Contractor:	Environmental Technical Drilling, Inc.								**ELEVATION:**	-
GROUNDWATER						CASING	SAMPLE	CORE	TUBE	**DATUM:** -
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**		HSA	SS			**START DATE:** 5/Apr/23
No Groundwater Encountered				**DIA.**		3 1/4"	1 3/8"			**FINISH DATE:** 5/Apr/23
				WGHT			140#			**DRILLER:** SP
				FALL			30"			**INSPECTOR:** JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			8			
1		S-1	13		FILL (Dk gr cf S, l (+) $, l (+) cf G, w/ash, asphalt)	Rec = 12"
			12			moist
2			11			
			9			
3		S-2	5		FILL (same, gr, br s (+) $, w/organics, ash)	Rec = 16"
			5		**FILL (Dark gray coarse to fine SAND, little (+) Silt, little (+) coarse to fine Gravel, with organics, ash, asphalt)**	moist
4			4			
			4			
5		S-3	5		5'0"	Rec = 10"
			4		Lt br cf S, t $, t cf G	moist
6			5			
			5			
7		S-4	5		same	Rec = 12"
			7			moist
8			6			
			8			
9		S-5	6		same	Rec = 13"
			8			moist
10			8			
11						
					Light brown coarse to fine SAND, trace Silt, trace coarse to fine Gravel [USCS: SP]	
12						
13						
			4			
14		S-6	6		same	Rec = 10"
			4			moist
15			7			
16						
17						
18						
			4			
19		S-7	5		same	Rec = 24"
			6			moist
20			8			
21						
22						

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-6
Project:	**Proposed Ground Storage Tank, 64 East Winds Dr, Wading River, NY**	**SHEET NO.:** 2 of 2
Client:	**H2M Architects + Engineers**	**JOB NUMBER:** 22-82

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23					**Light brown coarse to fine SAND,**	
			7		**trace Silt, little (-) coarse to fine Gravel**	
24		**S-8**	9		**[USCS: SP]**	Rec = 15"
			9		Lt br cf S, t $, l (-) cf G	moist
25			11		25'0"	
					End of Boring @ 25'0"	
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
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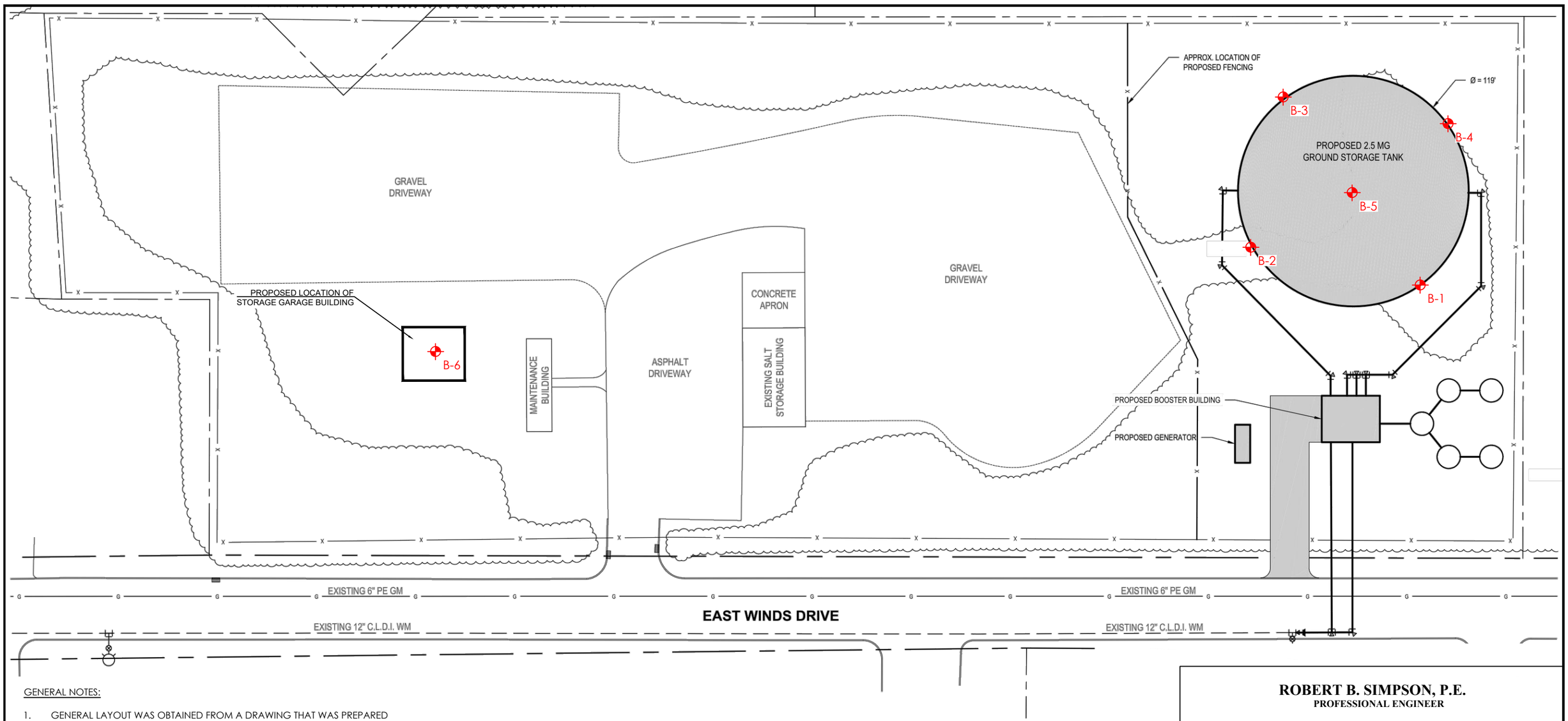
42						
43						
44						
45						
46						
47						



GENERAL NOTES:

1. GENERAL LAYOUT WAS OBTAINED FROM A DRAWING THAT WAS PREPARED BY H2M ARCHITECTS + ENGINEERS, ENTITLED "PRELIMINARY SITE PLAN", DATED FEBRUARY 2022.
2. BORING LOCATIONS WERE LAID OUT IN THE FIELD BY CARLIN-SIMPSON & ASSOCIATES (CSA).
3. THE BORINGS WERE PERFORMED BY ENVIRONMENTAL TECHNICAL DRILLING, INC. ON 3 & 5 APRIL 2023, UNDER THE FULL TIME INSPECTION OF CSA.
4. LOCATIONS ARE APPROXIMATE.

LEGEND:

- BORING LOCATION

ROBERT B. SIMPSON, P.E.
PROFESSIONAL ENGINEER

BORING LOCATION PLAN

PROPOSED GROUND STORAGE TANK
64 EAST WINDS DRIVE
WADING RIVER, NEW YORK

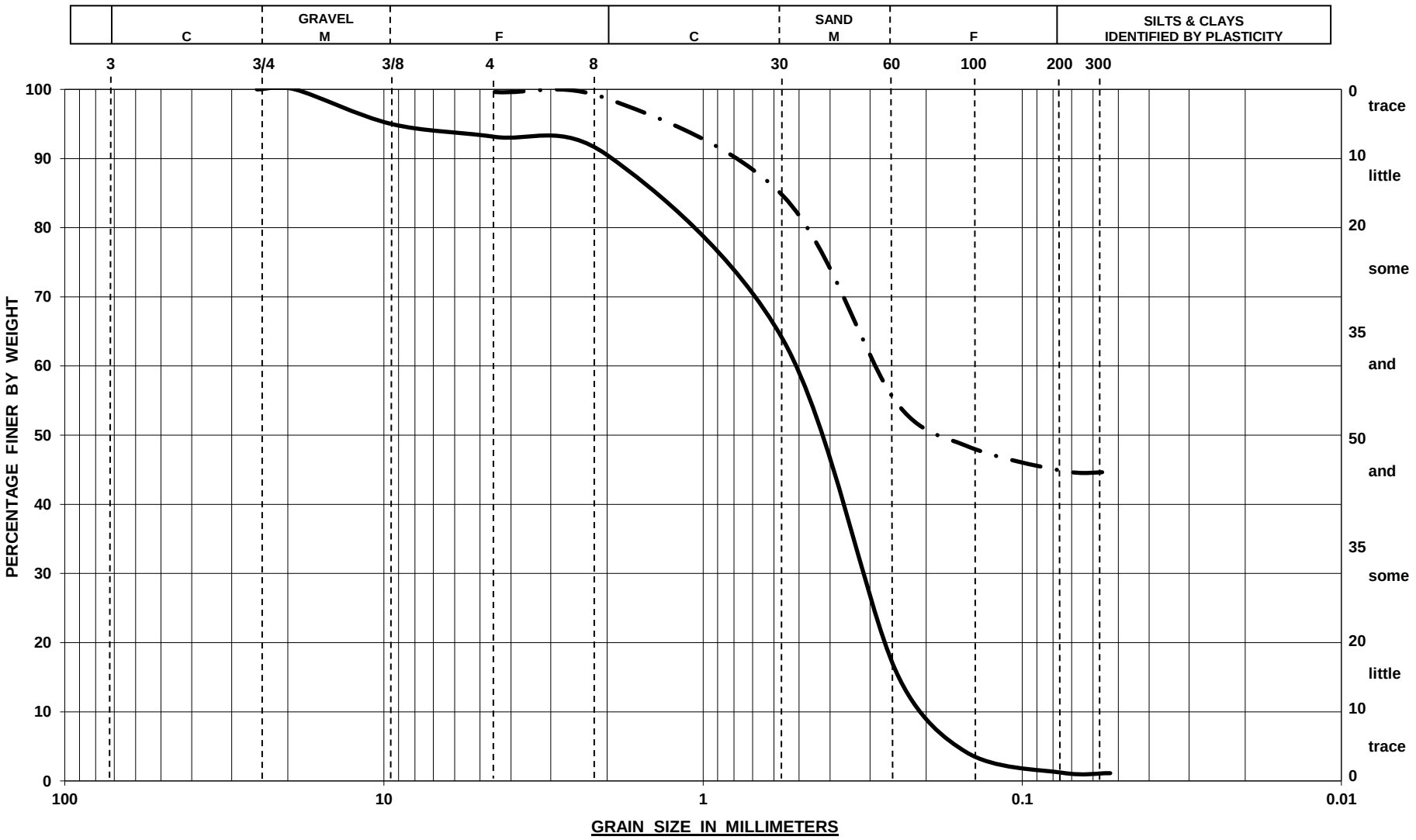
DRAWN: CKA	SCALE: 1" = 50'
CHECKED: RBS	DATE: 06.19.20203
PROJECT NO.: 22-82	DWG NO.: FIG -1
APPROVED:	

CARLIN-SIMPSON AND ASSOCIATES, LLC
61 Main Street
Sayreville, NJ 08872

Consulting Geotechnical and Environmental Engineers

CARLIN-SIMPSON & ASSOCIATES, LLC
SAYREVILLE, NJ 08872

SIEVE ANALYSIS

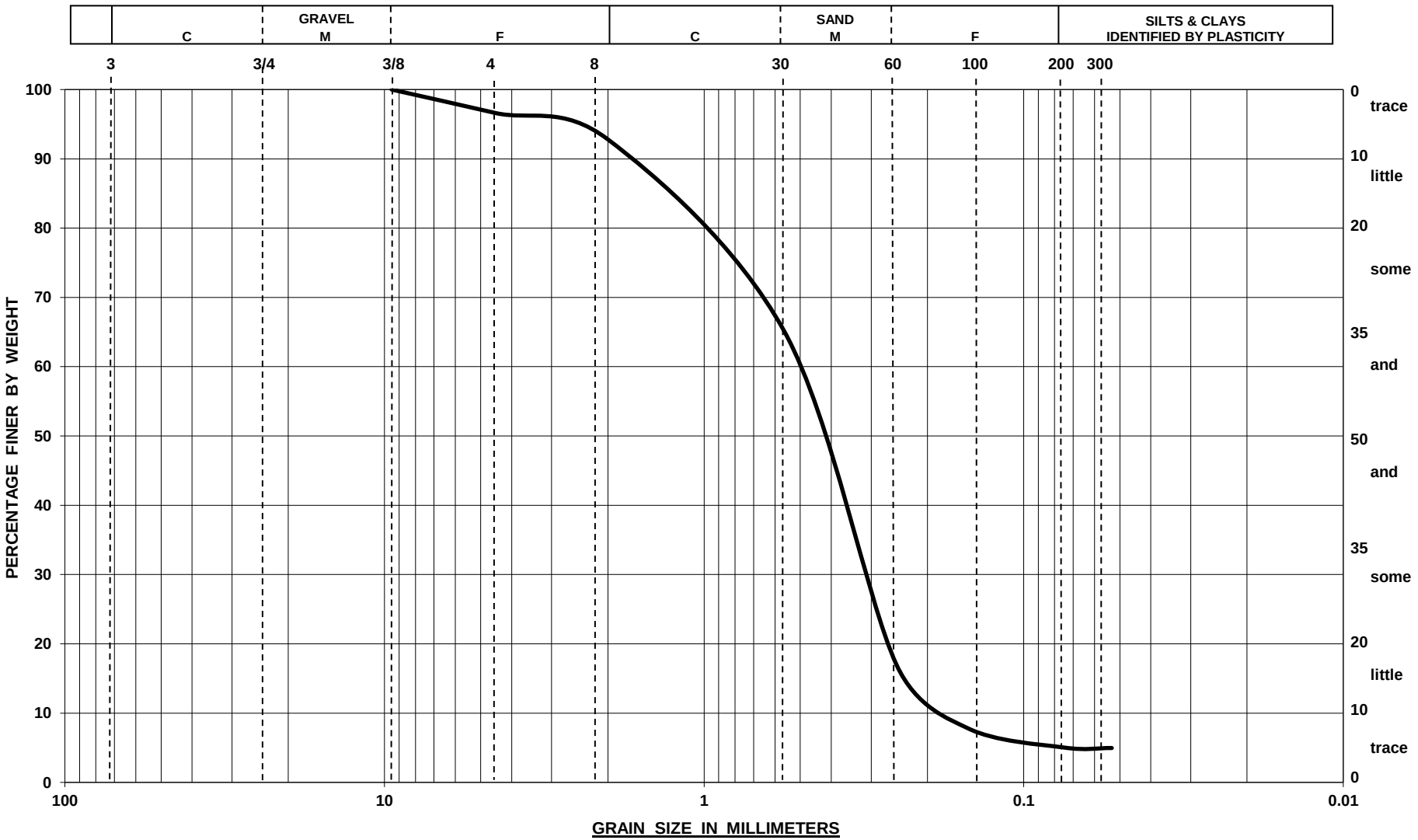


SYMBOL	BORING	SAMPLE	DEPTH	DESCRIPTION	NAT MC
———	B-1	S-4	6'-8'	Light Brown coarse to fine SAND, trace (-) Silt, trace (+) medium to fine Gravel [SP]	3.4%
— · —	B-2	S-1	0'-2'	FILL (Gray brown coarse to fine Sand, and Silt, trace (-) fine Gravel)	25.6%

PROJECT Proposed Ground Storage Tank, 64 Winds Drive, Wading River, NY **BY** BGH **DATE** 17-Apr-23 **JOB NO** 22-82

CARLIN-SIMPSON & ASSOCIATES, LLC
SAYREVILLE, NJ 08872

SIEVE ANALYSIS



SYMBOL	BORING	SAMPLE	DEPTH	DESCRIPTION	NAT MC
———	B-4	S-2	2'-4'	Light brown coarse to fine SAND, trace Silt, trace (+) medium to fine Gravel [SP]	4.7%

PROJECT Proposed Ground Storage Tank, 64 Winds Drive, Wading River, NY **BY** BGH **DATE** 17-Apr-23 **JOB NO** 22-82