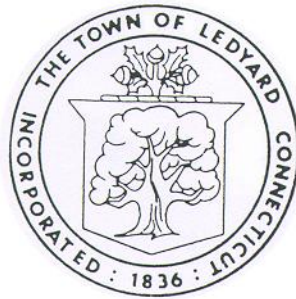


PROJECT MANUAL & SPECIFICATIONS

Public Works Fuel Station Improvements



Town of Ledyard, Connecticut

February 2014

Bid # 2014-07

Prepared By:

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INVITATION TO BID

**LEGAL NOTICE
TOWN OF LEDYARD, CONNECTICUT
INVITATION TO BID – BID # 2014-07**

PUBLIC WORKS FUEL STATION IMPROVEMENTS

March 5, 2014

The Town of Ledyard seeks bids for PUBLIC WORKS FUEL STATION IMPROVEMENTS. Project Plans, Technical Specifications, Bid Proposal Forms, and addenda may be obtained on-line at www.ledyardct.org or in person at the Ledyard Town Hall, 741 Colonel Ledyard Highway, Ledyard, CT 06339.

Sealed proposals will be received by the Director of Finance, Ledyard Town Hall, 741 Colonel Ledyard Highway, Ledyard, CT. 06339, until **2:00 p.m., Thursday, March 27, 2014**, at which time they will be opened and read aloud. Proposals received after that time will not be accepted and will be returned to the bidder unopened. Proposals should be clearly marked **“SEALED BID #2014-07: PUBLIC WORKS FUEL STATION IMPROVEMENTS.”**

Prospective Bidders may contact Public Works Director Steve Masalin at (860) 464-1100 for additional information or clarification of the bidding process. The Town of Ledyard reserves the right to waive any technical defects in the bids; to reject any bids which do not conform to terms and conditions described in the specifications; to reject any or all bids and to again invite bids; and waive informalities or irregularities in the bidding process.

The contract will be awarded to the lowest responsible and qualified bidder whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary to perform the work in good faith.



Marcia Hancock
Director of Finance

AFFIRMATIVE ACTION/EQUAL OPPORTUNITY EMPLOYER

INFORMATION TO BIDDERS

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ARTICLE 1 RECEIPT AND OPENING OF BIDS

Sealed bids for the PUBLIC WORKS FUEL STATION IMPROVEMENTS project will be received at the time specified in the advertisement for bids, then opened and read aloud. The envelopes containing the bids must be sealed and designated as PUBLIC WORKS FUEL STATION IMPROVEMENTS.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities in or reject any and all bids. Conditional or qualified bids will not be accepted. Any bid received after the time and date specified shall not be considered. Should there be reasons why the contract cannot be awarded within the specified period the time may be extended by mutual agreement between the Owner and the bidder.

ARTICLE 2 PREPARATION OF BID

Each Bid must be submitted on the prescribed form. All blank spaces for bid prices must be filled in, in ink or typewritten, both in words and figures. All bids must be prepared in conformity with and shall be based on and submitted subject to all requirements of the Specifications and Drawings together with all Addenda thereto.

ARTICLE 3 TELEGRAPHIC MODIFICATION

Any bidder may modify his bid by telegraphic communication at any time prior to the scheduled closing time for receipt of bids, provided such telegraphic communication is received by the Owner prior to the closing time, and provided further, the Owner is satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed and postmarked prior to the closing time. The telegraphic communication should not reveal the bid price but should provide the addition or subtraction or other modifications so that the final prices or items will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the telegraphic modifications.

ARTICLE 4 CORRECTIONS

Erasures or other changes in the bid must be explained or noted over the signature of the bidder.

ARTICLE 5 WITHDRAWAL OF BIDS

Bids may be withdrawn personally or on written or telegraphic request dispatched by the bidder in time for delivery in the normal course of business prior to the time fixed for the opening, provided that written confirmation of any telegraphic withdrawal over the signature of the bidder is placed in the mail and postmarked prior to the time set for the opening of the bids. Negligence on the part of the bidder in preparing his bid confers no right of withdrawal or modification of his bid after such bid has been opened.

ARTICLE 6 QUALIFICATIONS OF THE BIDDER

The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional bids will not be accepted.

ARTICLE 7 OBLIGATIONS OF THE BIDDER

Bidders must satisfy themselves by personal examination at the site of the proposed work, by review of the Drawings and Specifications including Addenda, and by additional means as they may prefer, as to the actual conditions, requirements, and limits of the proposed work, and as to the accuracy of the information and statements herein contained, and the submission of any bid will be accepted by the Owner as satisfactory proof that the bidder has satisfied himself in these respects. The bidder shall not at any time after the submission of a bid dispute or complain of such statements or information, nor, assert that there was any misunderstanding in regard to the nature, or amount of work to be done. The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve the bidder of his obligation to furnish all materials except those materials furnished by the Owner and labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated work for the considerations set forth in his bid, if his bid is accepted.

ARTICLE 8 CONDITIONS OF WORK

Insofar as possible, the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with traffic, with the use of existing facilities and utilities, with the use of municipally or State or privately owned lands, or with the work being performed by others. The Contractor must satisfy himself by his own investigation and research as to the nature and location of the work, the general and local conditions, including but not restricted to those bearing upon the transportation, disposal, handling and storage of materials, water, electric power, roads, means of access, the construction and making of connections of the work to existing facilities and utilities, or other similar conditions at the site, the character of equipment and facilities needed preliminary to and during the prosecution of the work, requirements of owners and controlling authorities having jurisdiction over the various lands, existing structures, facilities and utilities, and all other conditions affecting the work to be done and labor and materials needed.

ARTICLE 9 INFORMATION SUPPLIED TO BIDDERS

The Owner shall provide to bidders prior to bidding, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The Contract Documents contain the provisions required for the construction of the project. Information obtained from any officer, agent, or employee of the Owner or any other person shall not affect the risks or obligations assumed by the Contractor or relieve him from fulfilling any of the conditions of the Contract.

ARTICLE 10 BID SECURITY

Each bid must be accompanied by a certified check of the bidder, or a bid bond prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of 5 percent of the bid. Such checks or bid bonds will be returned to all but the three lowest bidders within five days after the opening of bids, and the remaining checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract; or if no award has been made within 60 days after the date of the opening of the bids, upon demand of the bidder at any time thereafter, so long as he has not been notified of the acceptance of his bid. The bid bond of the successful bidder will be retained until the payment bond and performance bond have been executed and approved, after which it will be returned.

ARTICLE 11 METHOD OF AWARD-LOWEST QUALIFIED BIDDER

If, at the time this Contract is to be awarded, the lowest base bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the Owner as available to finance the Contract, the Contract will be awarded on the lowest base bid by a responsible bidder, availability of bidder and bidder considered best suited to the Owner's needs in the Owner's opinion. If such bid exceeds such amount, the Owner expressly reserves the right to increase or decrease any class, item, or part of the work, and this reservation includes the omission of any such item, items, class, or part of the work as may be decided by the Owner at unit prices submitted by the bidder to bring the Contract within available funds; or the Owner may reject all bids. In determining the lowest qualified bidder the total price bid for the Basic Contract will be used.

The term "lowest responsible bidder" shall mean the bidder whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work.

The low bidder shall supply the names and addresses of major material suppliers and subcontractors when requested to do so by the Owner.

ARTICLE 12 EXECUTION OF THE AGREEMENT

A Contract in the form set forth hereinafter will be required to be executed by the successful bidder and the Owner. The attention of all bidders, therefore, is called to the form of the Agreement and the provisions thereof. The party to whom the Contract is awarded will be

required to obtain the performance bond and payment bond and insurance certificates within five (5) calendar days from the date when the Notice of Award is delivered to the bidder. The Notice of Award shall be accompanied by the necessary Agreement and bond forms. The Contractor shall furnish a performance bond and a payment bond, each in the amount of 100 percent of the Contract Price, with a corporate surety approved by the Owner, as security for faithful performance of the Contract.

The Bidder, five (5) days after notification of award shall have three (3) copies of the Performance Bond, Payment bond, Insurance Certificates, Save harmless endorsement and Agreement ready for a contract signing with the Owner at the Owner's place of business, at which time a pre-construction conference shall be held.

ARTICLE 13 LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within 5 days after he has received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal the surety deposited with his bid.

ARTICLE 14 NOTICE TO PROCEED

The Notice to Proceed shall be issued within five (5) days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued within such period; the time may be extended by mutual agreement between the Owner and Contractor.

ARTICLE 15 TIME OF COMPLETION AND LIQUIDATED DAMAGES

Time Completion

The bidder must agree to commence work on or before the date specified in the written Notice to Proceed of the Owner and to fully complete the total project within 120 consecutive calendar days thereafter.

Liquidated Damages

In addition to the above liquidated damages, the bidder must agree also to pay as liquidated damages, the sum of \$250.00 for each consecutive calendar day thereafter, as hereinafter provided in the Contract and General Conditions.

ARTICLE 16 POWER OF ATTORNEY

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

ARTICLE 17 ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Drawings, Specifications, or other prebid documents will be made to any bidder orally. Every request for such interpretation should be in writing, addressed to: CLA Engineers, Inc., 317 Main Street, Norwich, CT 06360. In order to be given consideration, such request must be made at least 5 days prior to the date fixed for the opening of bids. Any and all interpretations and any supplemental instructions will be in the form of written Addenda to the Specifications, which, if issued, will be **posted on the Town Website**, not later than three (3) days prior to the date fixed for the opening of bids. **Potential Bidders are responsible for checking the Town for any addendums and updates regarding this Bid.** All Addenda so issued shall become a part of the Contract Documents

ARTICLE 18 UNCERTAINTY OF QUANTITIES

The quantities listed in the bid (proposal) are approximate and are given only for use in comparing bids and to indicate approximately the total amount of the Contract; and the Owner does not expressly or by implication represent that the actual amounts of work will even approximately correspond therewith, but does call particular attention to the uncertainty of the quantities of the work involved which cannot be predicted in advance. The work under certain items may be materially greater or less than that given in the bid, as may be necessary in the judgment of the Owner to complete the work contemplated in the Contract.

Under the Contract, the Owner reserves the right to increase or decrease the approximate quantities for, or to omit entirely, any of the items as listed in the bid.

Only such quantities of the respective items of work actually performed and accepted will be paid for. An increase or decrease in the quantity for any item shall not be regarded as grounds for an increase or decrease in the bid prices.

ARTICLE 19 ITEMS NOT LISTED IN THE BID

Appurtenant items of work shown on the Drawings or specified or required to complete the work but not listed separately under the list of items in the bid shall be included in the cost of payment under the various applicable bid items of work and no separate payment will be made for such items. It shall be the responsibility of the Contractor to verify any missing or incomplete items.

ARTICLE 20 BALANCED BIDDING

Minus bidding on any item or items of the Specifications is prohibited. Bids should be made on each separate item of work shown in the bid (Proposal) with reasonable relation to the probable cost of doing the work included in such item and the right is reserved to reject wholly any bid in case any item or items thereof are obviously unbalanced or appear to the Owner to be so unbalanced as to affect or to be liable to affect adversely any interests of the Owner. The attention of the bidder is called to the fact that unbalancing of bids may adversely affect the

Contractor if certain portions of the work are increased or decreased as provided in the Contract Documents.

ARTICLE 21 PRICES

Bidders shall state the proposed price for the work by which the bids will be compared. This price is to cover all the expenses incidental to the completion of the work in full conformity with the Contract, the Specifications, and the Drawings. The price or prices proposed shall be stated both in words and in figures, and any bid not so stated shall be rejected.

In the event there is a discrepancy between the unit prices and the extended totals, the unit prices shall govern. In the event that there is a discrepancy between the unit prices written in words and the unit prices written in figures, the unit prices written in words shall govern. No bid will be accepted which does not contain a unit or lump sum price for every item contained in the bid form.

ARTICLE 22 NONDISCRIMINATION

The Contractor agrees and warrants that in the performance of this contract he will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, sex, mental retardation or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved in any manner prohibited by the laws of the United States or of the State of Connecticut, and further agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission concerning the employment practices and procedures of the Contractor as relate to the provisions of this section.

ARTICLE 23 EMPLOYMENT OF LABOR

The wages paid to mechanics, laborers or workmen employed upon the work herein contracted to be done shall be at a rate equal to the rate of wages prevailing for the same work in the same trade or occupation in the Ledyard area as determined by the labor Commissioner of the State of Connecticut. See Section 31.53 of the General Statutes of the State of Connecticut, Revision of 195S, as amended.

Public Act 79-325 passed by the 1979 Legislature covers exemptions from Section 31.53 of the General Statutes. Under the new exemptions, effective October 1985, the regulations that the prevailing wage must be paid for work performed by contractors and subcontractors in connection with work on public facilities will not apply:

To public work alterations, repair, refinishing projects with total cost of less than \$100,000.

To public works new construction with a total cost of less than \$400,000.

All Bidders are informed that the project is considered as REPAIR work.

All Bidders are advised to inform themselves and to comply with the requirements of Federal, State and local laws governing the employment of labor.

The Contractor shall provide certified payroll sheets to the Owner which includes all employees involved with the project for each payroll period during the course of the project.

ARTICLE 24 LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable federal and state laws and municipal ordinances for the construction, reconstruction, alteration, remodeling, repair or demolition of public works and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

ARTICLE 25 PAYMENT FOR DRAWINGS AND SPECIFICATIONS

See Advertisement for Bids

ARTICLE 26 CONSTRUCTION SCHEDULE

Prior to start of work the Contractor will be required to submit a construction schedule showing the order in which he proposes to carry on the work, including dates at which he will start and finish various parts of the work conforming to major divisions of the specifications.

ARTICLE 27 TAXES

The Town of Ledyard is considered exempt from the payment of Federal excise taxes, Connecticut Sales Taxes, etc. and such taxes shall be identified separately or excluded from the bid prices.

ARTICLE 28 NON-RESIDENT CONTRACTORS

Connecticut General Statute §12-430(7) requires that:

When a non-resident contractor enters into a contract they must post a 5% cash or guarantee bond for the total amount with the Commissioner of Revenue Services;

or

Any person dealing with a non-resident contractor without first obtaining a certificate of compliance must deduct 5% from the amount payable to the non-resident contractor and submit it to the state.

If the requirements are not met, the general contractor will be liable for all Connecticut taxes imposed.

All questions shall be directed to the State of Connecticut Department of Revenue Services Discovery Unit at 860-541-3280.

ARTICLE 29 OCCUPATIONAL SAFETY & HEALTH REGULATORY COMPLIANCE

Successful bidders must demonstrate compliance with the applicable safety and health acts including without limitation, 29CFR 1910.146 "Permit Required Confined Spaces". "Sub-part P - Excavations" Part 1926 [Amended], Sections 1926.650, 651 and 652.

The contractor is responsible for ensuring OSHA compliance, and his responsibility includes supervising and monitoring work site conditions for OSHA compliance. If the contractor uses subcontractors the contractor is responsible for ensuring that the subcontractors fulfill their obligations with respect to employee safety, particularly including those which affect the entire site.

The Owner shall consider OSHA violations(s) over the past five years in determining the ability of the Contractor to comply with OSHA requirements and in determining whether contractor is a responsible bidder.

If there has been an OSHA violation within the past five (5) years (measured from the date of the bid), the contractor shall provide copies of the citation(s), all documents regarding final determination of such citations including settlement any explanation(s) of such violation(s).

ARTICLE 30 PROVISIONAL ITEMS

Provisional items are delineated in the bid form. Quantities for provisional items may or may not be used in whole or in part at the discretion of the Owner. This shall in no way affect the established contract unit prices. All bid unit prices for provisional items shall be added to establish the total bid amount.

ARTICLE 31 ALTERNATES

An alternate is an amount proposed by Bidders and stated on the Bid Form that will be Added to or Deducted from Base Bid amount if the Owner decides to accept a corresponding change in either scope of work or in products, materials, equipment, systems or installation methods described in Contract Documents.

The Contractor shall be responsible for coordinating related work and modifying or adjusting adjacent work as required to ensure that work affected by each accepted alternate is complete and fully integrated into the project.

Following the award of the Contract, the Owner will indicate the status of acceptance of each alternate.

A schedule of alternates is included at the end of this section. Specifications referenced in the Schedule contain requirements for materials and methods necessary to achieve the work described under each alternate.

The Contractor shall include as part of each alternate, miscellaneous devices, appurtenances and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.

SCHEDULE OF ALTERNATES:

Add-Alternate #1 –Provide and maintain temporary 2000 gallon diesel fuel tank & dispenser for the duration of the project.

Includes all work associated with the set-up of a temporary fuel station (Owner to provide fuel and power source, Contractor to make electrical connection) and its subsequent removal once the new station is complete.

Add-Alternate #2 –Provide and maintain temporary 2000 gallon diesel fuel tank & dispenser and 2000 gallon gasoline tank and dispenser for the duration of the project.

Includes all work associated with the set-up of a temporary fuel station (Owner to provide fuel and power source, Contractor to make electrical connection) and its subsequent removal once the new station is complete.

Add-Alternate #3 –Provide lightning protection system for canopy.

Includes all work associated providing a lightning protection system for the canopy in accordance with the specification.

BID PROPOSAL FORMS

BID FORM
PUBLIC WORKS FUEL STATION IMPROVEMENTS
LEDYARD, CONNECTICUT

TO: Director Of Finance
Ledyard Town Hall
741 Colonel Ledyard Highway
Ledyard, CT 06339

FROM: _____

The undersigned, having familiarized (himself, itself, themselves) with the existing conditions on the Project Site affecting the cost of the work, and with the Contract Documents for the PUBLIC WORKS FUEL STATION IMPROVEMENTS hereby proposes to furnish all supervision, technical personnel, labor, materials, equipment, tools, appurtenances, services, materials not supplied by the Owner, and anything else necessary, including utility and transportation services required to perform and complete this Contract, all in accordance with the Contract Documents, at and for the unit prices for work in place for the following work items. Unit prices are to be written in both words and figures. In case of discrepancy, the unit price shown in words will govern.

The quantity of the units shown below is given for the purpose of determining the Award. The Owner reserves the right to increase or decrease these quantities. Payment to the Contractor will be based on completed measured quantities of these work items.

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
-------------	--------------------	-----------------	-------------	-------------------	---------------

BASE BID

1.	Complete Installation of Fuel station and all associated site work in accordance with Contract Documents: Includes all work shown on drawings and Specified with the exception of add-Alternate options.		L.S.	_____	_____
----	--	--	------	-------	-------

UNIT PRICE IN WORDS: _____

2.	<u>Provisional Item:</u> Rock Excavation and Disposal and Subsequent Gravel Refill. (Minimum 1 C.Y.)	5	C.Y.	_____	_____
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UNIT PRICE IN WORDS: _____

3. Provisional Item:
Furnish and install additional
Gravel Fill to replace unsuitable
material 20 C.Y. _____

UNIT PRICE IN WORDS: _____

4. Provisional Item:
Removal and Disposal of
Contaminated soil off site. 5 C.Y. _____

UNIT PRICE IN WORDS: _____

BASE BID AMOUNT: _____

BASE BID AMOUNT IN WORDS: _____

ADD –ALTERNATE No. 1

Provide and maintain 2000 gallon
diesel fuel tank and dispenser for
duration of project. L.S. _____

UNIT PRICE IN WORDS: _____

ADD –ALTERNATE No. 2

Provide and maintain 2000 gallon
diesel fuel tank & dispenser and 2000 gallon
gasoline tank & dispenser for duration
of project. L.S. _____

UNIT PRICE IN WORDS: _____

ADD –ALTERNATE No. 3

Provide lightning protection system
for canopy.

L.S. _____

UNIT PRICE IN WORDS: _____

The low bid will be determined by either of the following:

1. If the Owner elects perform only the work outlined in the BASE BID and NOT to perform any of the Add Alternates, and then the low bidder will be established by the BASE BID amount only.
2. If the Owner elects to perform the work outlined in the BASE BID and any of the Add Alternate items, then the low bidder will be established by adding the BASE BID amount to one or any combination of the Add Alternate amounts or substituting Alternate items as appropriate.

This contract is to be awarded to that responsible Bidder whose total bid is the lowest number of dollars for the above items.

This contract is to be awarded to that responsible Bidder whose total bid is the lowest number of dollars for the above items.

The undersigned agrees, if awarded the Contract, to execute and fully complete all work within 120 days in accordance with the Information To Bidders. The undersigned has checked carefully all the above figures and understands that the OWNER will not be responsible for any errors or omissions on the part of the undersigned in making up this bid.

The Contractor acknowledges the receipt of the following Addenda;

Addendum No. _____, dated _____

Addendum No. _____, dated _____

Addendum No. _____, dated _____

Enclosed is the Bidder's Bond, Certified Check or Cashier's Check No. _____ in the amount of five (5%) of the Bid.

Town of Ledyard

Public Works Fuel Station
Improvements

Contractor understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding. The Contractor agrees that this bid shall be good and may not be withdrawn for a period of 60 calendar days after the scheduled closing time for receiving bids.

Respectfully submitted:

By _____
(Title)

(Business Address)

(Telephone Number)

(SEAL - if bid is by a corporation)

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned, _____

_____, as PRINCIPAL, and _____
as SURETY are held and firmly bound unto the Town of Ledyard hereinafter called the
"OWNER", in the penal sum of Five Percent of Total Bid Dollars, (\$5% of Total Bid) lawful
money of the United States, for the payment of which sum well and truly to be made, we bind
ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally,
firmly by these Presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted
the Accompanying Bid, dated _____, 20__, for

PUBLIC WORKS FUEL STATION IMPROVEMENTS

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the period specified
therein after the opening of the same, or, if no period be specified, within ninety (90) days after
the said opening, and shall within the period specified therefor, or if no period be specified,
within ten (10) days after the prescribed forms are presented to him for signature, enter into a
written Contract with the Owner in accordance with the Bid, as accepted, and give bond with
good and sufficient surety or sureties, as may be required, for the faithful performance and
proper fulfillment of such Contract; or in the event of the withdrawal of said Bid within the
period specified, or the failure to enter into such Contract and give such bond within the time
specified, the Principal shall pay the Owner the difference between the amount specified in said
Bid and the Amount for which the Owner may procure the required work or supplies or both, if
the latter be in excess of the former, then the above obligation shall be void and of no effect,
otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body. In presence of:

(Individual Principal)

(SEAL)

(Partnership)

(Business Address)

(SEAL)

Attest:

(Business Address)

By: _____

(Corporate Principal)

(Business Address)

By: _____
Affix
Corporate
Seal

Attest:

(Corporate Surety)

By: _____
Affix
Corporate
Seal

Countersigned

by _____

Attorney-in-Fact, State of _____

(Power-of-Attorney for person signing for surety company must be attached to bond.)

PROPOSED SUBCONTRACTORS

THE BIDDER SHALL STATE THE NAMES OF ALL THE SUBCONTRACTORS THAT HE PROPOSES TO USE

If none, write "None" _____

*Description of Work _____

Proposed Subcontractor, Name _____

Address _____

*Description of Work _____

Proposed Subcontractor, Name _____

Address _____

*Insert description of work and subcontractors' names as may be required.

This is to certify that all names of the above-mentioned subcontractors are submitted with full knowledge and consent of the respective parties.

The Bidder warrants that none of the proposed subcontractors have any conflict of interest as respects this contract.

Bidder _____

(Fill in Name)

By _____

(Signature and Title)

STATEMENT OF BIDDER'S QUALIFICATIONS

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

1. Name of Bidder.
2. Permanent main office address.
3. When organized.
4. If a corporation, where incorporated.
5. How many years have you been engaged in the contracting business under Your present firm or trade name?
6. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate dates of completion.
7. General character of work performed by your company.
8. Have you ever failed to complete any work awarded to you? If so, where and why?
9. Have you ever defaulted on a contract? If so, where and why?
10. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.
11. List your major equipment available for this contract.
12. Experience in construction work similar in importance to this project.
13. Background and experience of the principal members of your organization including the officers.
14. Will you, upon request, fill out a confidential detailed financial statement and furnish any other information that may be required by the OWNER?

15. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Owner or representative in verification of the recitals comprising this Statement of Bidder's Qualifications.

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

(Name of Bidder)

By _____

Title _____

State of _____)
) ss.

County of _____)

_____ being duly sworn deposes and says that he is _____
_____ of _____
(name of organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct.

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

Notary Public

My Commission expires _____ 20__.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the Secretary of the corporation named as Principal in the within bond; that _____, who signed the said bond on behalf of the Principal was then _____ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was his duly signed, sealed, and attested to for and in behalf of said corporation by authority of this governing body.

(Corporate Seal)

Title: _____

NONDISCRIMINATION IN EMPLOYMENT

State of _____)
County of _____) ss

_____, being first duly sworn, deposes and says that:

(1) He is (owner, partner, officer, representative, or agent), of _____
_____, the bidder that has submitted the attached bid;

(2) Said bidder (has _____) (has not _____) previously performed work subject to the President's Executive Order No. 11246, or any preceding similar Executive Order.

Signed _____

Title

Subscribed and Sworn to before me

this _____ day of _____ 20 ____.

Title

My Commission expires _____, 20 ____.

AGREEMENT AND BOND FORMS

AGREEMENT

THIS AGREEMENT, made this _____, by and between the Town of Ledyard acting herein through its Mayor hereinafter called "OWNER" and _____, an individual, a partnership, a corporation doing business at _____, hereinafter called the "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned;

1. The CONTRACTOR will commence and complete the **Public Works Fuel Station Improvements**.
2. The CONTRACTOR will furnish all of the material not supplied by Owner, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein.
3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS WITHIN 10 calendar days after the date of the NOTICE TO PROCEED and will complete the same within 120 consecutive calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.
4. The CONTRACTOR agrees to perform all the work described in the CONTRACT DOCUMENTS and comply with the terms therein for the amount of \$ _____ as shown in the Bid schedule.
5. The CONTRACTOR agrees the sum of 5% of progress pay estimates will be retained until final acceptance of the PROJECT further the sum of 2% of the total PROJECT will be retained for a period of ninety days from final acceptance of the work.
6. The term "CONTRACT DOCUMENTS" means and includes the following:

Invitation to Bid
Information to Bidders
Supplemental Information for Bidders
Bid Proposal
Bid Bond
Proposed Subcontractors
Statement of Experience

Qualification Statement
Contract Agreement
Form of Payment Bond
Form of Performance Bond
General Conditions
Supplemental General Conditions
Special Conditions
Technical Specifications
Drawings prepared by CLA Engineers, Inc.
Specifications prepared by CLA Engineers, Inc.
Addenda:

No. _____, dated _____

No. _____, dated _____

7. The OWNER will pay the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the CONTRACT DOCUMENTS.
8. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns. IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in (3 copies) each which shall be deemed an original on the date first above written.

OWNER: Town Of Ledyard

CORPORATE SEAL:

BY _____

ATTEST _____

CONTRACTOR: _____

CORPORATE SEAL:

BY _____

ATTEST _____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____
(Name of Contractor)

_____ a _____
(Corporation, Partnership, or Individual)

hereinafter called "Principal" and _____
(Surety)

of , _____ State of _____ hereinafter called the

"Surety", are held and firmly bound unto The Town Of Ledyard, hereinafter
(Owner)

called "Owner", in the penal sum of _____ Dollars
(\$_____) in lawful money of the United States, for the payment made, we
bind ourselves, and successors, jointly presents of which sum well and truly to be our heirs,
executors, administrators and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered
into a certain contract with the Owner, dated the _____ day of _____, 20__, a copy
of which is hereto attached and made a part hereof for the construction of:

PUBLIC WORKS FUEL STATION IMPROVEMENTS

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties,
all the undertakings, covenants, terms, conditions, and agreements of said contract during the
original term thereof, and any extensions thereof which may be granted by the Owner, with or
without notice to the Surety, and if he shall satisfy all claims and demands incurred under such
contract, and shall fully indemnify and save harmless the Owner from all costs and damages
which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all
outlay and expense which the Owner may incur in making good any default, then this obligation
shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder of the specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work of to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary thereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the ____ day of ____, 20__.

ATTEST:

(Principal) Secretary
(SEAL)

Witness as to Principal

(Address-Zip Code)

ATTEST:

(Surety) Secretary
(SEAL)

Witness as to Surety

(Address-Zip Code)

Principal
By _____ (s)

(Address-Zip Code)

Surety

By _____
Attorney-in-Fact

(Address-Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute bond.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____
(Name of Contractor)

_____ a _____
(Corporation, Partnership, or Individual)

hereinafter called "Principal" and _____
(Surety)

of , _____ State of _____ hereinafter called

the "Surety", are held and firmly bound unto The Town of Ledyard
(Owner)

hereinafter called "Owner", in the penal sum of _____ Dollars
(\$ _____) in lawful money of the United States, for the payment made, we
bind ourselves, and successors, jointly presents of which sum well and truly to be our heirs,
executors, administrators and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered
into a certain contract with the Owner, dated the _____ day of _____, 20____, a copy
of which is hereto attached and made a part hereof for the construction of:

PUBLIC WORKS FUEL STATION IMPROVEMENTS

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties,
all the undertakings, covenants, terms, conditions, and agreements of said contract during the
original term thereof, and any extensions thereof which may be granted by the Owner, with or
without notice to the Surety, and if he shall satisfy all claims and demands incurred under such
contract, and shall fully indemnify and save harmless the Owner from all costs and damages
which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all
outlay and expense which the Owner may incur in making good any default, then this obligation
shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder of the specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work of to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the ____ day of _____, 20__.

ATTEST:

(Principal) Secretary
(SEAL)

Witness as to Principal

(Address-Zip Code)

Principal
By _____ (s)

(Address-Zip Code)

Surety

ATTEST:

(Surety) Secretary
(SEAL)

Witness as to Surety

(Address-Zip Code)

By _____
Attorney-in-Fact

(Address-Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute bond.

GENERAL CONDITIONS

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ARTICLE 1 CONTRACT AND CONTRACT DOCUMENTS

The drawings, plans, specifications, and addenda enumerated in Article 1 of the General Conditions, Special Conditions, the Advertisement for Bid, the Information for Bidders, and the Bid Proposal as accepted by the OWNER, shall be binding upon the parties to this Agreement as if fully set forth therein. Whenever the term Contract Documents is used it shall mean and include the drawings, specifications and addenda. The OWNER shall interpret his own requirements. In case of conflict or inconsistency between the provisions of the signed portions of the Contract Documents and those of the specifications, the provisions of the signed portions shall govern.

ARTICLE 2 DEFINITIONS

The following terms as used in this contract are defined as follows:

- A. Owner - The Owner of the project is the Town of Ledyard.
- B. Contractor - The term "Contractor" as hereinafter used shall refer to the General Contractor for this job.
- C. Owner's Representative - The term "Owner's Representative" as hereinafter used shall refer to any engineer or inspector whom the Owner may designate to inspect, test or oversee the work herein specified.
- D. Contract - Wherever the term "contract" is used in the General Conditions, it shall mean the actual bid form, specifications, Plans, General Conditions, Special Conditions and formal purchase order issued to successful bidder.

The rights and obligations of the CONTRACTOR under this contract shall include, but not be limited to the following:

ARTICLE 3 REPRESENTATIONS OF THE CONTRACTOR

The Contractor represents and warrants:

- a. That he is financially solvent and that he is experienced and competent to perform the type of work required under this contract and that he is able to furnish the plant, materials, supplies, or equipment that may be necessary to perform the work as specified.
- b. That he is familiar with all Federal, State and municipal laws, ordinances, orders, and regulations which may in any way effect the project work, or the employment of persons thereon, including but not limited to any special acts relating to the work or to the project of which it is a part.

- c. That such temporary and permanent work required by the contract documents to be done by him will be satisfactorily constructed and can be used for the purpose for which it was intended and that such construction will not injure any person or damage property.
- d. That he has carefully examined the drawings, specifications, and addenda, if any, and the site of the work and that from his own investigations, he has satisfied himself as to the nature and location of the work, the character of equipment and other facilities needed for the performance of the work, the general and local conditions, and all other items that may effect the work.
- e. That he is aware of the hazards involved in the work and the danger to life and property both evident and inherent and that he will conduct the work in a careful and safe manner without-injury to persons or property.

ARTICLE 4 CONTRACT SECURITY

The Contractor shall furnish a Performance Bond and Payment Bond in amounts equal to at least one hundred percent (100%) of the contract price as security for the faithful performance of the Contract, and for the payment of all persons performing labor on the project under this contract and furnishing materials, equipment and all other incidentals in connection with this contract. The Surety on such a bond shall be a from securities listed on the most recent IRS Circular 570, satisfactory to the Owner and the cost of the same shall be paid by the Contractor. prior to the starting of any work, the bonds must be approved by the Owner and be in the Owner's hands. The bonds must be from a surety company licensed and approved to do business in the State of Connecticut.

ARTICLE 5 CONTRACTOR'S OBLIGATIONS

The Contractor shall perform all work in a good workmanlike manner, and in accordance with the plans and specifications and any supplements thereto, and according to any directions or orders given by the Owner unless otherwise stipulated. He shall furnish all supplies, materials, except those supplies and materials furnished by the Owner, facilities, equipment, tools and anything else necessary or proper to perform and complete the work required by this contract. He shall furnish, erect, maintain, and remove any construction plant or temporary work as may be required. He alone shall be responsible for the safety, efficiency-, and adequacy of his plant, appliances, and methods and for any damage which may result from their failure or their improper construction maintenance, or operation. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the contract and specifications and shall do, carry on, and complete the entire work to the satisfaction of the Owner.

The Contractor shall be solely responsible for all the work and shall provide all precautionary measures necessary for preventing injury to persons or damage to property. All injury or damage of whatever nature resulting from the work or resulting to persons, property, or the work during its progress, from whatever cause, shall be the responsibility of the Contractor.

The Contractor shall hold the Owner and Engineer, or their duly authorized agents, harmless and defend and indemnify them against damages or claims for damages due to injuries to persons or property arising out of the execution of the project work, and for damages to materials furnished for the work, for infringement of inventions, patents, and patent rights used in doing the work, and for any act, omission, or instance of neglect by the Contractor, his agents, employees, or subcontractors.

The Contractor shall bear all losses resulting to him, including but not limited to losses sustained on account of the character, quality, or quantity of any part of the work, or all parts of the work, or because the nature of the conditions in or on the project site are different from what was estimated or indicted, or on account of the weather, elements, or other causes.

ARTICLE 6 SUPERINTENDENCE BY THE CONTRACTOR

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Owner in every possible way.

At the site of the work, the Contractor shall, at all times, employ a suitably experienced construction superintendent who shall have full authority to act for the Contractor. It is understood that the employment of such representative shall be acceptable to the Owner and shall be such a person as can be continued in the capacity for the duration of the contract, unless he ceases to be on the Contractor's payroll.

ARTICLE 7 CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

Within five (5) days after the date of "Notice to Proceed" the Contractor shall deliver to the Owner an estimated construction progress schedule in a form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the contract documents and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the progress schedule. The Contractor shall also furnish the Owner: 1. a detailed estimate, giving a complete breakdown of the contract price; and 2. periodic itemized estimates of the work done for the purpose of making partial payments thereon.

ARTICLE 8 USE OF PREMISES AND REMOVAL OF DEBRIS

The Contractor undertakes, at his own expense:

- a. To take every precaution against injuries to persons or damage to property.

- b. To store his apparatus, materials, equipment, and supplies in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or any others.
- c. To place upon the work or any part thereof, only such loads as are consistent with the safety of that portion of the work.
- d. To clean frequently all refuse, scrap, and debris caused by his operations, and to dispose of same away from the site, so that the work site is maintained in a neat, workmanlike appearance.
- e. To effect all cutting, fitting, or patching of his work required to make the same conform to the drawings and specifications, and except with the consent of the Owner, not to cut or otherwise alter the work of any other contractor.
- f. Before final payment, to remove all surplus materials false work, temporary structures, including foundations thereof, plants of any description, and debris of any nature resulting from his operations and to dispose of same away from the site, so that the site is left in a neat, orderly, and workmanlike condition.

ARTICLE 9 GENERAL WARRANTY

Neither the final certificate of payment nor any provision in the contract documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty workmanship or materials.

The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year (1) from the date of final acceptance of the work, unless a longer period is specified by the Owner. The Owner will give final notice of observed defects with reasonable promptness.

ARTICLE 10 PROTECTION OF WORK AND PROPERTY - EMERGENCY

- a. The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work, and that of adjacent property, from damage. The Contractor shall replace or make good any such damage, loss, or injury at no additional expense to the Owner.
- b. In case of an emergency which threatens loss or injury of property, and/or safety of life the Contractor will be allowed to act, without previous instructions from the Owner, in a diligent manner. He shall notify the Owner immediately thereafter. Any

- claim for compensation by the Contractor due to such extra work shall be promptly submitted to the Owner for approval.
- c. Where the Contractor has not taken action but has notified the Owner of an emergency threatening injury to persons or damage to the work or to any adjoining property, he shall act as instructed or authorized by the Owner.
 - d. The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided elsewhere in the contract documents.

ARTICLE 11 WEATHER CONDITIONS

In the event of temporary suspension of the work or during inclement weather, or whenever the Owner shall direct, the Contractor shall, and shall cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Owner, any work or materials are damaged or injured by reason of failure to protect them on the part of the Contractor, or any of his subcontractors, or otherwise damaged or injured by the Contractor's negligence, or are found to be defective, such materials or work shall be removed and replaced at the expense of the Contractor.

ARTICLE 12 THE OWNER'S AUTHORITY

The Owner shall give all orders and directions contemplated under this contract and specifications relative to the execution of the work. The Owner shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Owner's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any question shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the Owner shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected by such questions. The Owner shall decide 'the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found to be obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the Contractor and other contractors performing work for the Owner, shall be adjusted and determined by the Owner.

ARTICLE 13 ALL WORK SUBJECT TO CONTROL BY THE OWNER

- a. In the performance of the work, the Contractor shall abide by all orders, directions, and requirements of the Owner, and shall perform all work to the satisfaction of the Owner, and at such times and places, by such methods, and in such manner and sequence as he may require. The Owner shall determine the amounts, quality, acceptability, and fitness of all parts of the work. The Owner shall interpret the

drawings, specifications, contract documents, all other documents, and the extra work orders. The Owner shall also decide all other questions in connection with the work. The Contractor shall employ no plant, equipment, materials, methods or men to which the Owner objects and shall remove no plant, materials, or equipment or other facilities from the work site without the Owner's permission. Upon request the Owner will confirm in writing any oral order, direction, requirement, or determination.

- b. Inspectors shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all parts of the work and to the preparation or manufacture of the materials to be used. The presence or absence of an inspector shall not relieve the Contractor from any requirements of the contract. In case of any dispute arising between the Contractor and the inspector as to materials furnished or the manner in which the work is being executed, the inspector shall have the authority to reject material or suspend work until the question has been decided by the Owner. The inspector shall not be authorized to revoke, alter, enlarge, relax, or release any requirement of these specifications, nor to approve or accept any portion of the work, nor to issue instructions contrary to the drawings and specifications. The inspector shall in no case act as foreman or perform other duties for the Contractor, or interfere with the management of the work by the latter. Any advice which the inspector may give the Contractor shall in no way be construed as binding the Owner, or the Engineers in any way, nor releasing the Contractor from the fulfillment of the terms of the contract.

ARTICLE 14 THE OWNER'S CONTROL NOT LIMITED

The enumeration in this contract of particular instances in which the opinion, judgment, discretion, or determination of the Owner 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 performed, but without exception all the work shall be so governed and performed.

ARTICLE 15 RIGHT OF THE OWNER TO TERMINATE THE CONTRACT

In the event that any of the provisions of this contract are violated by the Contractor, or any of his subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate the contract, such notice to contain the reasons for such intention to terminate the contract. If within ten days (10) such violation or delay shall not cease and satisfactory arrangement of correction made, the contract shall, at the expiration of the ten days, cease and immediately serve notice thereof upon the Surety and the Contractor, and the Surety shall have the power to take over and perform the contract, provided, however, that if the Surety does not commence performing thereof within ten days (10) from the date of mailing to such Surety of Notice of termination, the Owner may take over the work and prosecute the same to completion by contract or force account at the expense of the Contractor, and the Contractor and his Surety shall be liable to the Owner for any excess cost occasioned the Owner thereby.

ARTICLE 16 INTERPRETATION OF THE DRAWINGS AND SPECIFICATIONS

Except for the Contractor's executed set, all drawings and specifications are the property of the Owner. The Owner will furnish the Contractor, without charge, three (3) sets of the drawings and specifications. Additional sets will be furnished upon request, at actual cost of reproduction. Such drawings and specifications are not to be used on other work and those sets in usable condition shall be returned to the Owner upon request at the completion or cessation of the work or termination of the contract.

The Contractor shall keep one (1) copy of the drawings and specifications at the work site at all times and shall give the Owner and their representatives access thereto. Anything on the drawings and not mentioned in the specifications, or anything in the specifications that is not shown on the drawings shall have the same force and effect as if mentioned in both. In case of conflict or inconsistency between the drawings and the specifications, the specifications shall take precedence. Any discrepancy in the figures and the drawings shall be immediately submitted to the Owner for decision and the decision of the Owner shall be final. In case of differences between small and large scale drawings, the larger scale drawings shall take precedence .

ARTICLE 17 INSPECTION

The authorized representatives and agents of the Owner shall be permitted to inspect all work materials, payrolls, records of personnel, invoices for materials, and other relevant data and records.

ARTICLE 18 REPORTS, RECORDS AND DATA

The Contractor and each of his subcontractors, shall submit to the Owner such schedules of quantities, and costs, progress schedules, payrolls, reports, estimates, records, and other data as the Owner may request concerning the work Performed or to be performed under this contract.

ARTICLE 19 RIGHTS-OF-WAY AND SUSPENSION OF WORK

Land and rights-of-way for the purpose of this contract shall be furnished by the Owner to the extent shown on the drawings; the Owner will use due diligence in acquiring said lands and rights-of-way as speedily as possible.

If however, lands or rights-of-way cannot be obtained before work on the project begins, the Contractor shall begin his work upon such land or rights-of-way as have been previously acquired by the Owner, and no claims for damages whatsoever will be allowed by reason of the delay in obtaining the remaining land and rights-of-way. Should the Owner be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement by reason of litigation, or by reason of its inability to procure the lands

or rights-of-way for the said work, the Contractor shall not be entitled to make or assert a claim for damages by reason of the said delay, or to withdraw from the contract except by consent of the Owner. Time for completion of work will be extended to such time as the Owner determines will compensate for the time lost by such delay, such determination to be set forth in writing.

ARTICLE 20 SUBCONTRACTORS

The Contractors may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.

The Contractor shall not award work to any subcontractor other than those listed in his bid, without the prior written approval of the Owner, which approval will not be given until the Contractor submits a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Owner may require.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work, to bind the subcontractors to the contract documents insofar as applicable to the subcontract work and to give the Contractor under any provisions of the contract documents.

Nothing contained in this contract shall create any contractual relationship between the Owner and any subcontractor.

ARTICLE 21 ASSIGNMENTS

The Contractor shall not assign the whole or any part of this contract or any monies due or to become due hereunder without the written consent of the Owner. In case the Contractor assigns all or part of any monies due or to become due under this contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to prior claims of all persons, firms, or corporations for services rendered or materials supplied for the performance of the work called for in this contract.

ARTICLE 22 MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts of neglect on the part of the Contractor, any other contractor or any subcontractor shall suffer loss or damage to the work, the Contractor agrees to settle with such other contractor or subcontractor by agreement or arbitration. If such other contractor or subcontractor shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor who shall indemnify and save harmless the Owner against any such claim.

ARTICLE 23 SEPARATE CONTRACTS

The Owner reserves the right to let other contracts in connection with the construction of the contemplated work of the project, or contiguous projects of the Owner. The Contractor, therefore, will afford to any such other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, will properly connect and coordinate his work with theirs, and will not commit or permit any act which will interfere with the performance of their work.

The Contractor shall coordinate his operations with those of other contractors. Cooperation will be required in the arrangement for storage of materials and in the detailed execution of the work. Failure by the Contractor to keep informed on the progress of the work, or failure to give notice of the lack of progress or defective workmanship by others, shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with and performance of his own work.

ARTICLE 24 SAFETY AND HEALTH REGULATIONS

These contract documents, and the joint and several phases of construction hereby contemplated, are to be governed, at all times, by the applicable provisions of the Federal law(s) including but not limited to the following:

1. Williams-Steiger Occupational Safety and Health Act, 1970, Public Law 92-596;
2. Part 1910 of the Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations.
3. This project is subject to all of the Safety and Health Regulations (CFR 29, Part 1926 and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974.

In the event of any inconsistencies between the above laws and regulations and the provisions of these contract documents, the laws and regulations shall prevail.

ARTICLE 25 SHOP OR SETTING DRAWINGS

- a. The Contractor shall submit promptly to the Owner six (6) copies of each shop or setting drawing prepared in accordance with a schedule predetermined by the Contractor. After examination of such drawings by the Owner, and the return thereof, if resubmission is required the Contractor shall make such corrections to the drawings as have been indicated and shall furnish the Owner with six (6) corrected copies. Regardless of corrections made in or approval given to such drawings by the Owner, the Contractor will, nevertheless, be responsible for the accuracy of such drawings

and for their conformity to the drawings and specifications, unless he notifies the Owner in writing of any deviations at the time he furnishes the drawings.

- b. Shop drawings of all fabricated work shall be submitted to the Owner for approval and no work shall be fabricated by the Contractor save at his own risk until approval has been given by the Owner.
- c. The Contractor shall submit all shop and setting drawings on dates sufficiently in advance of requirements to enable the Owner ample time for reviewing the same, including time for correcting, resubmission and reviewing if necessary, and no claim for delay will be granted the Contractor by reason of his failure in this respect.
- d. All shop drawings submitted must bear the stamp of the Contractor as evidence that the drawings have been checked by him. Any drawings submitted without this stamp of approval will not be considered and will be returned to the Contractor for resubmissions. If the shop drawings show deviations from the requirements of the contract documents because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his letter of transmittal to the Owner, in order that if acceptable, suitable action may be taken for proper adjustment; otherwise the Contractor will not be relieved of the responsibility for executing the work in accordance with the contract documents even though the shop drawings have been approved.
- e. Where shop drawings are submitted by the Contractor that indicate a departure from the contract which the Owner deems to be a minor adjustment in his interest and not involving a change in the contract price or extension of time, the Owner may approve the drawings but the approval will contain in substance, the following:

"The modification shown on the attached drawings is approved in the interest of the Owner to effect an improvement for the project and is ordered with the understanding that it does not involve any change in the contract price or an extension of time; that it is subject generally to all contract stipulations and covenants; and that it is without prejudice to any rights of the Owner under the contract and bond or bonds."
- f. The approval of the shop drawings will be general and shall not relieve the Contractor from the responsibility for adherence to the contract, nor shall it relieve him of the responsibility for any error which may exist.
- g. The Contractor agrees to hold the Engineer and the Owner harmless and defend them against damages or claims for damages arising out of injury to others or property of third persons which result from errors on shop, working, or setting drawings whether or not they have been approved by the Engineer and/or the Owner.

ARTICLE 26 ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

The Contractor will be furnished additional instructions and detail drawings as necessary to carry out the work included in the contract. The additional drawings and instructions thus supplied to the Contractor will coordinate with the contract documents and will be so prepared that they can be reasonably interpreted as part thereof. The Contractor shall carry out the work in accordance with the additional detail drawings and instructions. The Contractor and the Owner will prepare jointly a schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing, and installation of materials, supplies, and equipment, and the completion of the various parts of the work; each schedule to be subject to change from time to time in accordance with the progress of the work.

ARTICLE 27 MATERIALS, SERVICES AND FACILITIES

It is understood that, except as otherwise specifically stated in the contract documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever, necessary to protect, execute, complete, and deliver the work within the specified time.

It is necessary for some work to be performed after regular hours, on Saturdays, Sundays, or legal holidays as designated by the Owner. Any work necessary to be performed after regular hours, on Saturdays, Sundays, or legal holidays shall be performed by the Contractor without additional expense to the Owner.

ARTICLE 28 CONTRACTOR'S TITLE TO MATERIALS

No material, supplies, or equipment for the work shall be purchased by the Contractor or any subcontractor, subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies, and equipment installed or incorporated in the work and further warrants upon completion of all work, to deliver the premises, together with all improvements and appurtenances constructed or placed thereon by him, to the Owner free from any claims, liens, or charges, or encumbrances and further agrees that neither he nor any person, firm, or corporation furnishing any material or labor for any work covered by this contract shall have the right to a lien upon the premises or any improvement or appurtenance thereon.

ARTICLE 29 INSPECTION AND TESTING OF MATERIALS

All materials and equipment used in the construction of the project shall be new and of current manufacture. Testing will be done in accordance with accepted standards and as directed by the Owner; the laboratory or inspection agency shall be selected by the Owner. Except as specified elsewhere in these specifications, the Owner will pay for laboratory inspection.

All materials and workmanship shall be subject to inspection, examination, and testing by the Owner at any and all times during manufacture and/or construction and at any and all places where such manufacture and or construction is carried on, to establish conformance with these specifications and suitability for uses intended. Without additional charge the Contractor shall furnish promptly all reasonable facilities, labor, and materials necessary to make tests so required safe and convenient; he shall also furnish any mill, factory, or other such tests based on the Standards and Tentative Standards of the American Society for Testing Materials as required by the Owner.

ARTICLE 30 BRAND OR EQUAL CLAUSE

Recipients must incorporate in their specifications a clear and accurate description of the technical requirements for the material, product or service to be procured. Such description shall not, in competitive procurements, contain features which unduly restrict competition. The description shall include a statement of the qualitative nature of the material, product or service to be procured and, when necessary, shall set forth those minimum essential characteristics and standards to which it must conform if it is to satisfy its intended use. Detailed product specifications shall be avoided if at all possible when it is impractical or uneconomical to make a clear and accurate description of the technical requirements, a "brand name or equal" description approved by the Owner may be used as a means to define the performance or other salient requirements of a procurement. The specific features of the named brand which must be met by offerors shall be clearly stated.

ARTICLE 31 PATENTS

- a. The Contractor shall hold and save the Owner harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the- contract, including its use by the Owner.
- b. License and/or royalty fees for the use of a process which is authorized by the Owner must be reasonable, and paid to the holder of the patent, or his authorized agent, directly by the Contractor.
- c. If the Contractor uses any design, device, or material covered by letters, patent, or copyright, he shall provide for such use by suitable agreement with the owner of such patent or copyrighted design, device, or material.
- d. It is mutually agreed and understood that, without exception, the contract prices shall include all royalties, license fees or costs arising out of the use of such process, design, device or materials in any way involved in the work. The Contractor and/or his Surety shall indemnify and save the Engineer and the Owner harmless from all claims for infringement by reason of use of such patented material, device or design,

in connection with the work under this contract, and shall indemnify the Engineer and the Owner for any cost, expense or damage which it may be obligated to pay for reason of such infringement at any time during the prosecution of the work.

ARTICLE 32 CONTRACTOR'S BOND AND INSURANCE

Each Bidder must be able to enter into contract, covering the work, within 10 days from the acceptance of his proposal.

The successful bidder must, within 10 days from the date of acceptance of his proposal, furnish and file with the Owner, a corporate performance bond and payment bond or equivalent security, guaranteeing, completion of the job in accordance with the proposal. This bond or equivalent security shall be for 100% of the amount of the contract. The cost of a bond is to be figured as part of the cost of the job. The Surety Company must be one licensed to do business in the State of Connecticut, from securities listed on the most recent IRS Circular 570 and must be satisfactory to the Owner.

The successful bidder must, within 10 days from the date of acceptance of his proposal, file with the Owner, Workmen's Compensation, Comprehensive General Liability, Comprehensive Auto Liability, Certificates of Insurance satisfactory to the Owner, in compliance with the law, and in the following form and amount:

Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:

1. Premises Operations, including X, C and U coverages as applicable.
2. Independent Contractor' Protective.
3. Products and Completed Operations.
4. Personal Injury Liability with Employment Exclusion deleted.
5. Contractual.
6. Owned, non-owned and hired motor vehicles.
7. Broad Form Property Damage including Completed Operations.

Workers' Compensation

State:	Statutory
Voluntary Compensation	Same as State Workers'
(by any exempt entities)	Compensation
Employer's Liability	\$1,000,000 Each Accident
	\$1,000,000 Disease, Policy Limit
	\$1,000,000 Disease, Each Employee

General Liability (Including Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage):

(a) Bodily Injury:

\$1,000,000 Each Occurrence
\$3,000,000 Aggregate

(b) Property Damage:

\$1,000,000 Each Occurrence
\$3,000,000 Aggregate

(c) Property Damage Liability Insurance shall include coverage for the following hazards:

 X X (Explosion), X C (Collapse), X U (Underground)

(d) Contractual Liability (Hold Harmless Coverage) or included in Commercial General Liability Coverage:

(1) Bodily Injury:

\$1,000,000 Each Occurrence

(2) Property Damage:

\$1,000,000 Each Occurrence
\$3,000,000 Aggregate

(e) Personal Injury, (with Employment Exclusion deleted if applicable):

\$1,000,000 Aggregate

(f) If General Liability policy includes a General Aggregate, such General Aggregate shall not be less than \$3,000,000. Policy shall be endorsed to have General Aggregate apply to this Project only.

3. Umbrella Excess Liability or \$5,000,000 excess which would not require a retention.

\$5,000,000 Over Primary Insurance
\$10,000 Retention

4. Comprehensive Automobile Liability (owned, non-owned, hired):

(a) Bodily Injury: \$1,000,000 combined single limit.

Fire and Special Extended Coverage in Builder's Risk policy in the amount of 100% of insurable completed value.

The Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. This insurance shall provide coverage for not less than the following amounts:

(1)	Bodily Injury	\$1,000,000 Each Occurrence \$1,000,000 Annual Aggregate
(2)	Property Damage including Explosion Collapse and Under- ground coverage.	\$1,000,000 Each Occurrence \$1,000,000 Annual Aggregate

The Contractor shall purchase and maintain, until final payment, property insurance upon the Work at the site in an amount equal to the total bid price for the completed construction. This insurance shall include the interests of Owner, Contractor, Subcontractors, Engineer and Engineer's consultants in the Work, shall insure against the perils of fire and extended coverage, shall include "all risk" insurance for physical loss and damage including theft, vandalism, and malicious mischief, collapse and water damage, and shall include damages, losses and expenses rising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). This insurance shall be provided on the completed value form. If not covered under the "all risk" insurance or otherwise provided in these General Conditions, Contractor shall purchase and maintain similar property insurance on portion of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

The Town of Ledyard (Owner) and CLA Engineers, Inc. (Engineer) shall be named as additional insured on the above coverages.

If subcontractors are employed, same limits as named above shall apply and the certificate of insurance must be filed with the Owner.

No contract shall be binding upon the Owner until such bond shall have been given and until Comprehensive General Liability, Comprehensive General Auto Liability and Workmen's Compensation policy certificates indicated-above have been filed with the Owner and approved as to form and sufficiency by the Owner. The insurance policy certificate provided by the successful bidder and all subcontractors shall carry a statement by the insurance company that the Owner will receive at least ten (10) days notice prior to cancellation of any portion of the

policies or any modifications in the insurance coverage that may affect the Owner's interest. The cost of all insurance coverage shall be included in the price of the contract cost.

The insurance company must be licensed to do business in the State of Connecticut and must be satisfactory to the Owner. THE OWNER MUST BE NAMED AS ADDITIONAL INSURED.

ARTICLE 33 REPRESENTATIONS OF CONTRACTOR

The Contractor represents and warrants that he is financially solvent and that he is experienced and competent to perform the type of work outlined in the specifications and drawings and that he has carefully examined the drawings and specifications along with addendum (or addenda), if any, and the site of the work, and that from his own investigations, he has satisfied himself as to the nature and location of the work, the character, -quality and quantity of surface and sub-surface materials likely to be encountered, the character of equipment and other facilities needed for the performance of the work, the general and local conditions and all other materials which may in any way affect the work or its performance and that he is aware of the hazards involved in the work and the danger to life and property both evident and inherent and that he will conduct the work in a careful and safe manner without injury to persons or property. He further warrants that any injury to persons or property resulting from the work shall be the sole responsibility of the Contractor.

ARTICLE 34 INDEMNITY OF OWNER BY CONTRACTOR

The Contractor shall indemnify and save harmless the Owner against any and all damages to property or injuries to or death of any person or persons, including property and employees or agents of the Owner, and shall defend, indemnify and save harmless the Owner from any and all claims, demands, suits, actions or proceedings of any kind or nature including workmen's compensation claims, of or by anyone whomsoever, in any way resulting from or arising out of the operations in connection herewith, including operations of subcontractors and acts or omissions of employees or agents of Contractor or his subcontractors. Insurance coverage specified herein and in any special conditions constitutes the minimum requirements and said requirements shall in no way lessen or limit the liability of Contractor under the terms of the contract. The Contractor shall procure and maintain, at his own cost and expense, any additional kinds and amounts of insurance which, in his own judgment, may be necessary for his proper protection in the prosecution of the work. The Contractor agrees to well and truly save and indemnify and keep harmless, the Owner against all liability, judgments, costs and expenses which may in any wise come against the Owner or which may in any wise result from carelessness, omission or neglect of the Contractor or his agents, employees or workmen in any way arising or resulting from the operation in connection herewith, including all liability to the Owner resulting from the failure to erect or maintain sufficient railing or fence as required by Section 13a111, Connecticut General Statutes, and against all liability from defects claimed to be in violation of Section 13a-149, Connecticut General Statutes. Any additional cost of this save harmless insurance coverage shall be included in the price of the contract.

ARTICLE 35 TERMINATION FOR CONVENIENCE

The Owner hereby reserves the right to terminate the performance of this contract for any reason the Owner deems appropriate. The Owner will pay all actual costs to date of termination, however, the Contractor shall not be entitled to any profit on furnished or unearned work.

ARTICLE 36 COMPETENT HELP TO BE EMPLOYED

The Contractor shall employ experienced foreman, craftsmen and other workmen competent in the work in which they are to be engaged. All work shall be accomplished by able, skilled and competent personnel. If any person employed on the work by the Contractor shall appear to be incompetent or unreliable in any way, he shall be discharged immediately upon the request of the Owner and shall not -again be employed on the work.

ARTICLE 37 SPIRITUOUS LIQUORS AND DRUGS

The Contractor shall neither permit nor suffer the introduction or use of -spirituous liquors upon the work embraced in this contract. Dope or drugs of any kind unless ordered by a physician are prohibited. Any employee found using spirituous liquors, dope or drugs of any kind unless ordered by a physician shall be immediately discharged.

ARTICLE 38 PROHIBITING EMPLOYEE DISCRIMINATION BY CONTRACTOR

The Contractor agrees and warrants that in the performance of this contract he will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religion, national origin, sex, or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved in any manner prohibited by the laws of the United States or of the State of Connecticut, and further agrees to provide the commission on human rights and opportunities with such information requested by the commission concerning the employment practices and procedures of the Contractor as relate to the provisions of this section.

ARTICLE 39 CLAIMS FOR EXTRA WORK

After the contract has been signed, no claims for extra work will be honored. unless authorized in writing by the Owner.

ARTICLE 40 WORK CHANGES

The Owner may make changes in the scope of the work required to be performed by the Contractor under the Contract by making additions thereto, or by omitting work therefrom, without invalidating the Contract, and without relieving or releasing the Contractor from any of his obligations under the Contract or any guarantee given by him pursuant to the Contract provisions, and without affecting the validity of the guaranty bonds, and without relieving or

releasing the surety or sureties of said bonds. All such work shall be executed under the terms of the original Contract unless it is expressly provided otherwise.

Except for the purpose of affording protection against any emergency endangering life or property, the Contractor shall make no change in the materials used or in the specified manner of constructing and/or installing the improvements or supply additional labor, services or materials beyond that actually required for the execution of the Contract, unless in pursuance of a written order from the owner authorizing the Contractor to proceed with the change. No claim for an adjustment of the Contract price will be valid unless so ordered. Upon request the Contractor shall supply the Owner with a detailed proposal for the changes showing quantities of, and unit prices for his work and that of any subcontractor involved. No such change order shall be considered, however, unless approved by the Owner and their duly authorized representatives prior to its issuance. Upon receipt of the written order the Contractor shall proceed with the work as and when directed. The amount of compensation to be paid to the Contract for extra or additional work so ordered shall be determined as follows:

- (1) By such applicable Unit Price, if any, as set forth in the Agreement, or
- (2) If no such Unit Prices are so set forth, or if the total net change increases or decreases the total Contract price more than 25 percent (25%) then by a Lump Sum mutually agreed upon by the Owner and the Contractor, and establish as follows:

For work to be performed under a Lump Sum agreement the Contractor may apply a 15% allowance for overhead and profit against the net cost of work actually to be performed by him except that in the event the change in work to be performed by him results in a net omission then no percentage for overhead and profit shall be allowed.

The Contractor is permitted a 5% allowance to be applied against the net cost to a subcontractor for work actually performed by the subcontractor, but on any change involving more than one subcontractor, their net costs and/or net omission shall be combined as one before consideration is given to the application of the 5% for the Contractor's overhead and profit, and, in the event the Contractor shows a net omission for the changes as it affects the work actually to be performed by him, he is permitted only the 5% applied to the amount (if any) by which the net cost to the subcontractor exceeds the net omission by the Contractor.

For work to be performed by a subcontractor the cost to the Owner may include the net cost to the subcontractor plus an allowance of an amount not to exceed 15% of the net cost for the subcontractor's overhead and profit, except that in the event that the change in work results in a net omission for the subcontractor there shall be no application of the 15% overhead and profit.

Net cost to the Contractor and/or subcontractor shall be that defined in sub-section (3) of this article, but in every case taxes imposed by law upon labor employed at the site shall be excluded; and all credits (which in the case of the Contractor shall include net omissions by the subcontractor) shall be deducted before the percentage can be applied.

For the purposes of applying the provisions of the article, the Owner will not recognize other than a direct subcontractor of the Contractor nor permit the aggregate allowance to exceed 20% as applied above, to the net cost of work performed by any subcontractor.

- (3) If no such unit prices are set forth and if the parties cannot agree upon a lump sum, then the Owner may at his option either: 1) order the work to be done and compensated for in the following manner: by the actual net cost in money to the Contractor of the materials, the wages of applied labor, insurance, taxes imposed by law on labor employed on the work, plus such rental for equipment (other than tools) required and approved for such additional work. After excluding taxes imposed by law upon labor employed on the work, the Contractor shall receive 15% of the actual net cost outlined above as compensation for all other items of profit and costs or expenses including administration, overhead, superintendent, materials used in temporary structures, allowances (including provision for overhead and profit) made by the Contractor to subcontractors, additional premiums upon performance bond of the Contractor and the use of small tools; or (2) the Owner may order that item or portion of work omitted without invalidating any of the terms thereof, and there shall be deducted from the contract price the value as estimated by the Engineer of the labor and material omitted from the contract, if any be omitted.

ARTICLE 41 OWNER'S RIGHT TO DO WORK

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this contract, the Owner, after five (5) days written notice to the Contractor may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment, then or thereafter due the Contractor.

ARTICLE 42 PAYMENTS

Payment for the work will be made when the work outlined in the specifications is completed or in accordance with the terms stated herein. Invoices shall be prepared in prescribed form by the Contractor and shall be submitted to the Owner's Superintendent in triplicate for checking and certifications.

No payment or compensation of any kind shall be made to the Contractor for damages because of hindrance or delay from any cause in the progress of work. whether such hindrance or delays be avoidable or unavoidable.

ARTICLE 43 PAYMENT TO SUB-CONTRACTOR

The Owner assumes no obligation to pay to or to see to the payment of any sum to any sub-contractor.

ARTICLE 44 WORK IN INCLEMENT WEATHER

The Owner or the Owner's Superintendent will determine when conditions are unfavorable for work and may order the work or any portion of it suspended whenever, in his opinion the conditions are not such as will insure first class work. In general, work shall be prosecuted throughout the year and the Contractor will be expected to keep work going and employment of labor as continuous as possible. However, the Contractor shall, and shall cause his subcontractors to protect carefully his and their work against damage or injury from the weather. If this is not done to the Owner's satisfaction and any damage to the work occurs, the work shall be removed and replaced at the expense of the Contractor.

ARTICLE 45 ARCHEOLOGICAL FINDS

The Contractor, for the life of this contract, is herewith required to immediately notify the following organizations in the event that any articles such as "Charcoal", "bone", "shell", "cultural objects, fire cracked stones or stone flaking material" or any other such related items of historical significance are discovered:

David Pourier
Connecticut Historic Preservation Commission
59 South Prospect Street
Hartford, Connecticut 06106 (Tel. 566-3116)

and the resident engineer or inspector for the project.

ARTICLE 46 POWER AND WATER

Should the Contractor require electric power and/or water, he shall make necessary arrangements with the Owner for securing it and bear any expense involved, unless expressly provided for otherwise in the specifications.

ARTICLE 47 TOILET ACCOMMODATIONS

The Contractor shall provide necessary sanitary toilet accommodations for the workmen.

ARTICLE 48 LIENS

The final payment for the work will not be made until the Owner is satisfied that no liens have, or can be placed for material or labor on this work. If required by the Owner, waivers of liens may be required. If the Contractor, or any subcontractor refuses to furnish a release or waiver of liens, they may furnish a bond satisfactory to the Owner to indemnify the Owner against any liens.

ARTICLE 49 PROGRESS PAYMENTS

The CONTRACTOR may submit periodically, but not more than once each month, a Request for Payment for work done. The CONTRACTOR shall furnish the OWNER all reasonable facilities required for obtaining the necessary information relative to the progress and execution of the work.

Within fifteen (15) days of submission of any Request for Payment by the CONTRACTOR, the OWNER shall:

- a. Approve the Request for Payment as submitted, or
- b. Approve such other amount as he shall decide is due the CONTRACTOR, informing and CONTRACTOR in writing of his reasons for approving the amended amount, or
- c. Withhold the Request for Payment, informing the CONTRACTOR in writing of his reasons for withholding it.

Within thirty (30) days from the date of approval of the Request for Payment the OWNER will:

- a. Pay the Request for Payment as approved less a five percent (5%) retainage, until substantial completion of the project, at which time the retainage will be reduced to two percent (2%) until final completion.
- b. Withhold payment in whole or in part on an approved Request for Payment to the extent necessary to protect himself from loss on account of any of the following causes discovered provided he informs the CONTRACTOR in writing of his reasons for withholding payment in whole or in part:
 1. Defective work.
 2. Evidence indicating the probable filing of claims by other parties against the CONTRACTOR.
 3. Failure of the CONTRACTOR to make payments to Subcontractors, material suppliers or labor.
 4. Damage to another Contractor.

ARTICLE 50 GENERAL GUARANTEE

The Contractor shall guarantee his work for a period of one (1) year after the date of the Owner's Superintendent's final inspection and acceptance as evidenced by final payment. he shall during that period repair promptly, at his own cost and expense all breaks, failures or defects which

develop in his work as a result of faulty material or workmanship. The performance bond shall remain in effect through the guarantee period.

ARTICLE 51 FINAL INSPECTION AND ACCEPTANCE

Upon receipt of written notice from the Contractor that his work is complete, the Owner's Superintendent will make a final inspection and will notify the Contractor of all instances in which the work fails to comply with the specifications as well as any defects which he may discover. The Contractor shall thereupon immediately rebuild, alter and restore the work so that it will comply with the specifications and he shall remedy any defects at his own cost and expense and to the satisfaction of the Owner's Superintendent. Upon the completion of such alterations or repairs the Owner's Superintendent will issue his certificate of final acceptance of work. The issuance of such certificate of final acceptance by the Owner's Superintendent shall not prevent the Owner from recovering damages at any subsequent time for work found to be actually defective.

ARTICLE 52 FINAL PAYMENT

The acceptance by the Contractor of payment for the final invoice, made after the Owner's Superintendent's certification of final acceptance as provided for in these General Conditions, shall release the Owner and every agent of the Owner from all further claims or liabilities to the Contractor of whatever nature, except for the remaining sum or sums of money withheld under the provisions of the contract.

ARTICLE 53 CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT

The approval of the final Request for Payment by the Owner and the making of the final payment by the Owner to the Contractor shall NOT relieve and Contractor of the responsibility for faulty materials or workmanship. The Owner shall promptly give notice to faulty materials or workmanship and the Contractor shall promptly replace any such defects discovered within two years from the date of written acceptance of the work. The Owner shall decide all questions arising under this paragraph.

ARTICLE 54 USE OF "HE", "HIS" OR "HIM"

Whenever in these specifications the masculine words, "he", "his", or "him" are used pertaining to the Contractor, Owner, Engineer or any other entity or person it shall be for brevity, and in no way is any sexual discrimination intended.

SPECIAL CONDITIONS

INDEX TO SPECIAL CONDITIONS

ARTICLE	TITLE
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2.	CONTRACTOR TO CHECK DIMENSIONS AND SCHEDULES
3.	PROTECTION OF TREES
4.	SEQUENCE OF WORK
5.	STREETS AND SIDEWALKS TO BE KEPT OPEN
6.	LIGHTS, BARRIERS, WATCHMEN AND INDEMNITY
7.	NIGHT WORK
8.	BUS LINE INTERFERENCE
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10.	DISPOSAL OF MATERIALS
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29.	BLASTING
30.	EMERGENCY TELEPHONE NUMBERS

ARTICLE 1 GENERAL

- (a) The Owner and the Contractor agree that the following special conditions shall apply to the work to be performed under this Contract and that such provisions shall supersede any conflicting provisions of this Contract.
- (b) The rights and remedies of the Owner provided for in these clauses are in addition to any other rights and remedies provided by law and under this Contract.

ARTICLE 2 CONTRACTOR TO CHECK DIMENSIONS AND SCHEDULES

The Contractor will be required to check all dimensions and quantities shown on the drawings or schedules given to him by the Owner, and shall notify the Owner of all errors therein which he may discover by examining and checking the same. The Contractor shall not take advantage of any error or omissions in these specifications, drawings, or schedules. The Owner will furnish all instructions should such error or omissions be discovered, and the Contractor shall carry out such instructions as if originally specified.

ARTICLE 3 PROTECTION OF TREES

The Contractor shall take special care to preserve and protect from injury all trees located along the lines of construction, and no such trees shall be cut down, trimmed, or otherwise cut without permission from the Owner.

ARTICLE 4 SEQUENCE OF THE WORK

The Contractor shall be required to prosecute his work in accordance with a schedule prepared by him in advance, in accordance with additional requirements specified herein and approved by the Owner. This scheduling shall state the methods and shall forecast the times of doing each portion of the work. Before beginning any portion of the work, the Contractor shall give the Owner advance notice and ample time for making necessary preparation.

ARTICLE 5 STREETS AND SIDEWALKS TO BE KEPT OPEN

The Contractor shall at all times keep the streets and highways in which he may be working open for pedestrian and vehicular traffic. If in the opinion of the Owner, the interest of abutters and the public requires it, the Contractor shall bridge or construct planking across trenches at street crossings and roads or private ways. The Contractor shall conduct his work in such a manner as the Owner may direct from time to time. No sidewalk shall be obstructed where it is possible to avoid it.

The Contractor shall provide all necessary fire crossings at principal intersections or ways usually traveled by fire apparatus with provisions for the apparatus so it can travel along the line of the pipe installations.

ARTICLE 6 LIGHTS, BARRIERS, WATCHMEN, AND INDEMNITY

The Contractor shall erect and maintain such barriers, lighting, warning lights, danger warning signals, and signs that will prevent accidents during the construction work and protect the work and insure the safety of personnel and the public at all times and places; the Contractor shall indemnify and protect the Owner and the Engineer in every respect from injury or damage whatsoever caused by any act of neglect by the contractor or his subcontractors, or their servants or agents, including any claims arising out of failure to erect and maintain sufficient railing or fence as required by Section 13A-111 Connecticut General Statutes from claims or defect in violation of 12A-14q Connecticut General Statutes.

The fact that the Department of Public Works may retain control of the premises, or that it or its agents may take action to erect or maintain railings or fences shall not relieve the Contractor's obligations hereunder.

In addition to the above, when and as necessary, or when required by the Owner, the Contractor shall post sign and employ watchmen or flagmen for the direction of traffic at the site and for excluding at all times unauthorized persons from the work site.

The Contractor shall be responsible for excluding at all times from the land within the easement areas, all persons not directly connected with the work.

ARTICLE 7 NIGHTWORK

Nightwork, or work on Saturdays, Sundays, or legal holidays requiring the presence of an engineer or inspector, will not be permitted except as designated by the Owner in case of an emergency. Should it be necessary for the Owner to operate an organization for continuous nightwork or for emergency nightwork, the lighting, safety and other facilities which are deemed necessary shall be provided by the Contractor. Compensation for this work shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid, and no extra compensation will be paid by the Owner.

ARTICLE 8 BUS LINE INTERFERENCE

Whenever it may be necessary to interfere with any bus lines, notice shall be given to the corporation owning the same, and reasonable time will be given to said corporation to arrange the schedule for operation of the bus line, as it may be necessary.

ARTICLE 9 DIFFERING SITE CONDITIONS

- (a) The Contractor shall promptly and before such conditions are disturbed, notify the Owner in writing of: (1) sub-surface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered

- and generally recognized as inhering in work of the character provided for in this contract. The Owner shall promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.
- (b) No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in (a) above; provided, however, the time prescribed therefore may be extended by the Owner.
- (c) No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

ARTICLE 10 DISPOSAL OF MATERIALS

The materials used in the construction of the work, shall be disposed away from the site in such manner so that will not endanger persons or the work, and so that free access may be had at any time to all hydrants and gates in the vicinity of the work. The materials shall be kept trimmed up so that as little inconvenience as possible to the public or adjoining tenants is caused.

ARTICLE 11 LENGTH OF TRENCH TO BE OPENED

The length of trench opened at any time from the point where ground is being broken to complete backfill and also the amount of space in the streets or public and private lands occupied by equipment or supplies, shall not exceed the length or space considered reasonably necessary and expedient by the Owner. In determining the length of the open trench or spaces for equipment, material, and supplies and other necessities, the Owner will consider the nature of the lands or streets where work is being done, types and methods of construction and equipment being used, inconvenience to the public or to private parties, possible dangers and other matters. All work must be constructed with a minimum of inconvenience and danger to all parties concerned.

Whenever the trench obstructs pedestrians and vehicular traffic, or any public or private property, the Contractor shall take such means as is necessary to maintain such traffic and access. Until such time as the work may have attained sufficient strength to support backfill, or if for any reason it is not expedient to backfill the trench immediately, the Contractor shall construct and maintain suitable plank crossings and bridge crossings to carry essential traffic in or to the street or property in question, as specified or directed.

Suitable lights, signs, and such required items to direct traffic shall be furnished and maintained by the Contractor.

The Contractor shall keep streets free from obstructions, debris, and all other materials. The Owner may, at any time, order the removal of any such material from the work area - and should the Contractor fail to do so within 24 hours after such notice of removal of the same, the Owner may cause the material, debris, or other matter to be removed by some other such persons as he may employ, at the Contractor's expense. The cost thereof may be deducted from any payments due the Contractor under this contract. In special cases where public safety demands, the Owner may remove such materials without prior notice.

ARTICLE 12 INTERFERENCE WITH EXISTING STRUCTURES

Whenever it may be necessary to cross or interfere with existing culverts, drains, sewers, water pipes, fixtures, guardrails, fences, gas pipes, or other structures needing special care, due notice shall be given to the Owner, and the work shall be done according to his directions. Whenever required, all-objects shall be strengthened to meet any additional stress that the work herein specified may impose upon it, and any damage caused shall be thoroughly repaired. If so directed by the Owner, the location of any existing structure shall be changed to meet the requirements of the new work.

The Contractor shall be responsible for all broken mains or utilities encountered during the progress of the work and shall repair and be responsible for correcting all damages to the Owner. The Contractor shall contact the proper utility or authority to correct or make any changes due to utilities or other obstructions during the Project but the entire responsibility and expense shall be with the Contractor.

All damaged items of work or items required to be removed and replaced due to construction shall be replaced or repaired by the Contractor to the complete satisfaction of the property Owner and/or the Owner, and at no additional expense to the Owner.

ARTICLE 13 FINISHING AND CLEANING UP

In completing his operations, the Contractor shall immediately remove all surplus material, tools, and other property belonging to him, leaving the entire street or surroundings free and clean and in good order, at no additional expense to the Owner. The Contractor shall exercise special care in keeping the rights-of-way and private lands upon which work is performed free and clean of all debris, and shall remove all tools and other property when they are not in use.

ARTICLE 14 CLEAN UP AT THE CONTRACTOR'S EXPENSE

In case the Contractor fails or neglects to promptly remove all surplus materials, tools, and incidentals after backfilling, leaving the street or surrounding area clean and free of debris, and do the required repaving when ordered, the Owner may, after 24 hours notice, cause the work to be done and the cost thereof deducted from any payment due to the Contractor.

ARTICLE 15 RIGHTS OF ACCESS

Nothing herein contained or shown on the drawings shall be construed as giving the Contractor exclusive occupancy of the work area. The Owner or any other contractors employed by him, the various utility companies, - contractors or subcontractors employed by State or Federal agencies, or any other agencies involved in the general- project or upon public rights-of-way, may enter upon or cross the area of work or occupy portions of the area as is directed or necessary. When the territory of one contract is the convenient means of access to the other, the Contractor shall arrange his work in such a manner as to permit such access to the other and prevent unnecessary delay to the work as a whole.

ARTICLE 16 EXISTING UTILITIES OR CONNECTIONS

The location of existing underground pipes, conduits, and structures as shown has been collected from the best available sources and the Owner together with his agents, does not imply or guarantee the data and information in connection with underground pipes, conduits, structures, and such other parts, as to their completeness, nor their locations as indicated. The contractor shall assume that there are existing water, gas, and other utility connections to each and every building enroute, whether they appear on the drawings or not. Any expense and/or delay occasioned by utilities and structures or damage thereto, including those not shown, shall be the responsibility of the Contractor, at no additional expense to the Owner.

Before proceeding with construction operations, the Contractor shall make such supplemental investigations, including exploratory excavations by hand digging, as he deems necessary to uncover and determine the exact locations of utilities and structures and shall have no claims for damages due to encountering subsurface structures or utilities in locations other than those shown on the drawings, or which are made known to the Contractor prior to construction operations. The Contractor shall be responsible and liable for all damages to existing utilities and structures.

ARTICLE 17 PLANK CROSSINGS

As required or directed by the Owner, the Contractor shall install in selected locations suitable plank crossings, substantially built and reinforced to sustain vehicular traffic across excavations. No separate payment will be made for this work, the cost of which shall be included in the prices stipulated for the appropriate items in the work as listed in the bid.

ARTICLE 18 CLEANING FINISHED WORK

After the work is completed, the pipes, manholes, and structures shall be carefully cleaned free of debris and dirt, broken masonry, and mortar, and left in first class condition, ready to use. All temporary or excess materials shall be disposed of off-site and the work left broom clean, to the satisfaction of the Owner.

ARTICLE 19 DUST CONTROL

The Contractor shall exercise every precaution and means to prevent and control dust arising out of all construction operations from becoming a nuisance to abutting property owners or surrounding neighborhoods. Pavements adjoining the pipe trench shall be kept' broomed off and washed clean of excess materials wherever and whenever directed. Repeated daily dust control treatment shall be provided to satisfactorily prevent the spread of dust until permanent pavement repairs are made and until earth stockpiles have been removed, and all construction operations that might cause dust have been completed. No extra payment will be made for dust control measures, compensation shall be considered to be included in the prices stipulated for the appropriate items as listed in the bid.

ARTICLE 20 FIRE PREVENTION AND PROTECTION

All State and municipal rules and regulations with respect to fire prevention, fire-resistant construction, and 'fire protection shall be strictly adhered to and all work and facilities necessary therefor shall be provided and maintained by the Contractor in an approved manner.

All fire protection equipment such as water tanks, hoses, pumps, extinguishers, and other materials, and apparatus, shall be provided for the protection of the contract work, temporary work, and adjacent property. Trained personnel experienced in the operation of all fire protection equipment and apparatus shall be available on the site whenever work is in progress, and at such other times as may be necessary for the safety of the public and the work.

ARTICLE 21 WORK BY OTHERS

The Owner reserves the right to do any other work which may be connected with, or become a part of, or be adjacent to the work embraced by this contract, at any time, by contract or otherwise. The Contractor shall not interfere with the work of such others as the Owner may employ, and shall execute his own work in such a manner as to aid in the execution of the work of others as may be required. No backfilling of trenches or excavations will be permitted until such work by the Owner is completed.

ARTICLE 22 FIRE AND POLICE NOTIFICATION

If it becomes necessary at any time to temporarily barricade a street or cause detours to be put up, or rerouting of traffic, the Fire and Police Departments, SEAT, Board of Education, and American Ambulance shall be notified by the Contractor, and their consent obtained before any such action is initiated.

ARTICLE 23 TEMPORARY POWER

The Contractor shall make all the necessary arrangements with the power company for providing temporary electric power for his use. All unauthorized sources of power, such as from neighboring homes, shall be prohibited.

ARTICLE 24 FAILURE TO REPAIR

Any emergency rising from the interruption of electric, gas, water, telephone, sewer and cable service due to the activities of the Contractor, shall be repaired by the Contractor as quickly as is possible.

If and when, in the opinion of the Owner, the Contractor is not initiating repair work as expeditiously as possible upon notification to do so, the Owner may, at his own option, make the necessary repairs using his own forces or those of others. The cost of such repairs shall be subtracted from the payments due to the Contractor.

ARTICLE 25 TRAFFIC CONTROL

- A. The Contractor shall schedule and perform his work so as to cause minimum interference to traffic and to safeguard all highways and traffic therein, and to cause absolutely no interference to fire and emergency vehicles. Construction equipment and materials shall be located as to not endanger the work or obstruct traffic.
- B. Every reasonable means shall be made to reduce, to a minimum, interference with and inconvenience to business concerns on account of the construction work.
- C. The Contractor shall provide and maintain all signs, barricades, and traffic control equipment that may be required for the satisfactory performance of providing traffic control.

ARTICLE 26 CONTRACTOR TO LAY OUT HIS OWN WORK

The Owner will establish such general reference points as in his judgment will enable the Contractor to proceed with the work. The Contractor, at his own expense, shall provide all materials and equipment and such qualified helpers as the Owner may require for setting the general reference points and shall protect and preserve all stakes, benches, and other markers used to identify the reference points. The Contractor shall lay out all the Contract work from the above and shall be responsible for the accuracy of all lines, grades, and measurements. He will be required to employ at no extra expense to the Owner, a Connecticut registered land surveyor or registered professional engineer who shall perform all layout work for the construction of the Contract work, including all lines, grades, and measurements.

ARTICLE 27 - COOPERATION WITH UTILITIES

The Contractor shall coordinate his operations with the Owners of all underground or overhead utility lines within the project area.

The Contractor shall be liable for all damages or claims received or sustained by any persons, corporations or property in consequence of damage to the existing utilities, their appurtenances, or other facilities caused directly or indirectly by the operations of the Contractor.

ARTICLE 28 - WORK IN STATE HIGHWAY

Not Applicable.

ARTICLE 29 - BLASTING

The approval of the Owner shall first be obtained before blasting is permitted. Before any explosive, such as dynamite or detonator caps are stored or used, the Contractor shall contact the Fire Department of the Town of Ledyard for instructions relative to the regulations for possession and use of explosives in the Town of Ledyard, Connecticut. The Contractor shall obtain all required permits, or licenses for possession and use of explosives to be used on the site or sites of construction.

The Contractor shall also be responsible for the explosive materials at all times; for the keeping of records regarding the explosives open at all times to inspection by the Police and Fire Departments of the Town of Ledyard, Connecticut; for the storage of explosive materials in a secure manner away from all tools, overnight or for any length of time at the site or sites of construction; for the keeping of only such quantity of explosive material as may be needed for the work underway; for the immediate reporting to the Police and Fire Departments of the Town of Ledyard, Connecticut of all unaccounted for explosive materials; for completely, adequately and carefully covering all blasts with suitable blasting mats in such a manner to prevent damage to landscape features, structures, facilities, privately owned and all other properties and surrounding objects and in a manner that will prevent injury to persons.

Unless specifically permitted, no blasting shall be done between the hours of sunset and sunrise on any day and no blasting will be allowed on Sundays or legal holidays.

Receptacles especially constructed for use in the storage of explosives shall be provided for the storage of explosives and they shall be proof against bullets, fire or other conditions which might cause explosions of the contents. When the need for explosives is ended, all such materials remaining on the job shall be promptly removed from the premises.

ARTICLE 30 - EMERGENCY TELEPHONE NUMBER

The CONTRACTOR is required to provide the OWNER with a telephone number which can be used during emergencies, 24 hours per day, seven days per week, to reach the CONTRACTOR.

TECHNICAL SPECIFICATIONS

INDEX TO TECHNICAL SPECIFICATIONS

<u>SECTION</u>	<u>TITLE</u>
Section 02000	Site General Conditions
Section 02100	Site Preparation
Section 02200	Site Earthwork
Section 02211	Trench Excavation & Backfill
Section 02510	Paving, Sidewalks & Curbs
Section 02720	Storm Drainage
Section 02800	Site Improvements
Section 02900	Topsoil, Seed & Mulch
Section 03300	Cast-In-Place Concrete
Section 05120	Canopy

Mechanical Sections:

Section 15010	General Provisions
Section 15050	Basic Mechanical Materials & Methods
Section 15550	Fuel Dispensing Equipment

Electrical Sections:

Section 16010	General Provisions
Section 16050	Basic Materials & Methods
Section 16670	Lightning Protection (Alternate)

SECTION 02000
SITE GENERAL CONDITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Special Conditions, apply to this Section.

1.2 DEFINITIONS

- A. Form 816 refers to "State of Connecticut, Department of Transportation, State Highway Department, Standard Specifications for Roads, Bridges, and Incidental Construction – Supplemented Form 816, July 2013" and all supplements and amendments thereto. The word "Engineer" appearing in Form 816 shall be construed to mean Architect or Engineer. Articles dealing with Method of Measurement and Basis of Payment are inapplicable to this Contract.
- B. AASHTO means the latest standards and supplements thereto of the American Association of State Highway and Transportation Officials.
- C. ASTM means the latest standards and supplements thereto of the American society of Testing and Materials.
- D. ANSI means the latest standards and supplements thereto of the American National Standards Institute.
- E. ENGINEER refers to the designated representative of the Owner.

1.3 ORDER OF CONSTRUCTION

- A. Adapt all site work to the progress and order of construction of the work under this Contract. Carry out each section of work in such an order as the Engineer may direct.
- B. Schedule work to install any sub-surface site work before beginning the sub-grades for paved areas.
- C. Submit schedule for review and acceptance by Engineer.

1.4 SPECIAL REQUIREMENTS

- A. Verify and confirm all existing conditions and location of underground utilities in the field. No claim for extra compensation or for an extension of time will be allowed due to conditions inconsistent with the drawings and specification.

- B. Restore any and all areas outside the contract limit lines that are disturbed during the progress of work as directed by the Engineer at the Contractor's expense.
- C. Maintain existing roads passable for vehicles at all times. Access into the site is required by the Owner and shall be maintained by the Contractor.
- D. Construction Phasing Diagrams: The Contractor will provide construction phasing diagrams for proper execution of site work for approval by the Engineer. Contractor shall strictly follow the phasing diagrams.
- E. All erosion and sedimentation control shall conform to "Connecticut Guidelines for Soil Erosion and Sediment Control;" by the Connecticut Council on Soil and Water Conservation, 2002.
- F. Maintain access for firefighting equipment to all parts of the site at all times.
- G. Protect all streets, roads and sidewalks and maintain reasonably clear of dirt or other debris that is due to construction. Apply water as necessary for dust control.
- H. Warning: Contact "Call Before You Dig" at least 48 hours before any digging 1-800-922-4455.
- I. Coordinate work with the other Contractors for the building construction. Cooperate with such Contractor to ensure the steady progress of all work.
- J. Contractor to layout locations, lines, and grades of all site work using established permanent benchmarks. Maintain and protect established bounds and benchmarks and replace any which are destroyed or disturbed.
- K. In the event the Owner, or the Owner and the Contractor jointly are required to obtain any permits the Contractor shall familiarize himself with the conditions of said permits and shall be held to comply with all requirements of the permits and all specifications attached thereto, as if the permits were held solely by the Contractor.
- L. Whenever inspection, flagmen or other costs are incurred as a condition to the obtaining of permits, the Contractor shall be responsible for payment of said expenses. These costs shall be assumed to be included in the Contract unit prices.

1.5 EXAMINATION OF SITE

- A. Data contained in Contract Documents (site survey, elevations, etc.) represents the best information available. There is no guarantee, implied or otherwise, as to the accuracy or completeness of the information shown. Contractor shall be constantly on

- the alert for unknown, abandoned or mislocated utilities and for changing soil or subsurface water conditions.
- B. Prior to the start of construction the Contractor shall contact “Call Before You Dig” at 1-800-922-4455, to locate and mark the existing underground utilities in the work area
 - C. The Contractor shall examine carefully the site at which the work is to be performed, to satisfy himself as to the conditions to be encountered in the execution of the work.
 - D. Any conditions at the site of the contemplated work which are obvious and apparent upon examination of the site which were not indicated on the plans, but which the performance of the work called for by the plans and specifications would require the removal or correction thereof, shall be removed or corrected by the Contractor at no additional cost to the Owner.

1.6 PROTECTION

- A. The Contractor shall execute the operations under his division in such a manner that no damage or injury occurs to the public, adjoining and adjacent property, structures, streets, paving, sewers, water, electric and any other pipes, mains, conduits, overhead or underground lines, utility and any and all property. Should any damage or injury be caused by the Contractor or by work under this contract, he shall make good such damage and assume all financial and other responsibility for injury. Damaged streets or paving excludes that necessary for installing new pipelines; however, such required damage shall be restored to the original condition existing before commencement of work under this contract.
- B. The above shall also include the protection of all existing water mains, fire lines, utility poles, sanitary and storm sewers, culverts, and all other existing underground utilities which will remain in use within the boundary of the site and work areas.
- C. Monuments, benchmarks and other reference features shall be protected. Should these be disturbed in any manner, they shall be replaced, but only in accordance with the written instructions of the Owner’s representative.

END OF SECTION

SECTION 02100
SITE PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to work specified in this Section.

1.2 DESCRIPTION OF WORK

- A. Work Included: Providing all site preparation as shown on the Drawings, and as specified, including , but not limited to the following:
1. Installation and maintenance of silt fence and removal when no longer required.
 2. Removal of existing underground fuel tanks.
 3. Removal of existing fuel dispensing equipment.
 4. Stripping and stockpiling existing topsoil.
 5. Debris removal.

1.3 JOB CONDITIONS

- A. Peripheral: areas outside of the work area shall not be disturbed or used for storing materials.
- B. Any Damage: to existing plant material or other improvements is the responsibility of the Contractor and shall be repaired or replaced immediately.
- C. Topsoil Stockpile Area: must be approved by the Owner prior to placement of topsoil stockpiles.

PART 2 - PRODUCTS

2.1 FILTER BARRIERS

- A. Silt fence: Fabric sedimentation barrier of "Silt Fence with Belt" manufactured by Mirafi, Inc., P.O. Box 240967, Charlotte, North Carolina or equal approved by the Engineer.
- B. Hay bales of standard size; hay or straw, having no loose or decomposed baling twine. Stakes shall be 2 inches x 3 feet-0 inches long, pointed on one end.

2.2 FILTER FABRIC

- A. Filter fabric shall conform to section M.08.01-26 of Form 816.

PART 3 - EXECUTION

1.1 EROSION AND SEDIMENTATION CONTROL

- A. Before construction begins, install silt fence sedimentation barrier, hay bales, stone berms and check dams and wood chip berms where shown on the drawings, around drainage structures, and as required by field conditions, or Local Authorities.
- B. Conform to details on the drawings for silt fence sedimentation barrier: use stakes supplied by the fence manufacturer; follow installation instructions. Hay bales shall be held in place by minimum 2 stakes driven through each bale.

1.2 TANK REMOVAL

The scope of this project shall be to remove and replace the following:

- A. Remove two (2) underground 8,000 gallon single wall fiberglass fuel storage tanks and associated appurtenances. Also clean fill to replace tank void.
- C. Remove all existing underground fuel oil piping and conduits.
- D. Miscellaneous items including but not limited to tank fittings, vent piping, etc.
- E. Patching of areas disturbed with new structural fill and paving.
- F. The Contractor shall be responsible for the transfer of remaining fuel from the existing tanks to temporary tanks provided as add-alternate 1 & 2.
- G. Contractor shall be responsible to remove the bottom 6" of all existing oil from underground tank and disposing of it per state of Connecticut DEEP standards and requirements. Contractor shall be responsible for all permits, fees, etc. associated with the work and shall coordinate all work with the owners representatives and the building department. Also the contractor shall assist the owner with any required applications to the Department of Environmental Protection Agency if requested.
- H. The Contractor shall coordinate all required environmental sampling/testing for underground tank closure; The Owner will pay for the environmental specialist to provide testing and closure documents.**

The hereinafter attached sections outline the project's intent, but does not show every requirement for a completely designed system, the contractor shall act as the design/builder in that he shall be responsible for the complete design and installation of all portions of the project including but not limiting to all associated accessories, components, operating safety,

controls, power wiring, piping, concrete foundations, etc., under the direction of the owner and the engineer.

1.3 STRIPPING AND STOCKPILING TOPSOIL

- A. General: Topsoil is defined as friable loam surface soil. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2" in diameter, and without weed, roots and other objectionable material.
- B. Strip topsoil in a manner to prevent intermingling with the underlying subsoil, demolition debris, or other objectionable material.
 - 1. Prepare the areas of existing loam so as to provide clump free topsoil. Use a sod cutting rototiller, screen the topsoil, or use another method approved.
 - 2. Where trees are indicated to be left standing, hold topsoil stripping a sufficient distance away to prevent damage to the root system.
- C. Stockpile topsoil in storage piles constructed to freely drain surface water, as approved by the Owner's representative.
- D. Topsoil stockpiles shall be immediately seeded as outlined on the plans to prevent erosion.
- E. Upon completion of the project: any excess topsoil, if present, shall remain the property of the Owner and shall remain on site at a location of their choosing.

1.4 DEBRIS REMOVAL

- A. The Contractor is responsible for removal and disposal of all existing pavements, cement concrete and existing fuel dispenser equipment off site at their expense.
- B.

1.5 DISPOSAL

- A. All material and existing improvements designated for removal and disposal, debris removed, remain the property of the Contractor and shall be disposed of legally off-site by the Contractor.
- B. No burning or burying on-site will be allowed.
- C. The Owner will take existing clean fill on site at a location of their choosing.

END OF SECTION

SECTION 02200
SITE EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to work specified in this Section.

1.2 SECTION INCLUDES

- A. Site earthwork as shown on the Drawings and as specified herein shall include, but is not necessarily limited to, the following:
 - 1. Site grading, filling and compacting to the indicated elevations and contours, including general excavations and backfilling site improvements.
 - 2. Provide satisfactory fill materials as required to achieve indicated finished grade.
 - 3. The reuse or permanent stockpiling of existing gravels or subsoils.
 - 4. Subgrade preparation and compaction.
 - 5. Provide controlled fill under pavements, structures and other improvements as detailed.

1.3 SUBMITTALS

- A. Certified sieve/mechanical analysis are required to be provided by the Contractor of all off-site borrow materials and of any on-site materials proposed for use as controlled fill. Analysis shall include 200 sieve hydrometer wash as per ASTM D422 to isolate specific percentages of any silt and clay.
- B. Compaction test results.

1.4 QUALITY ASSURANCE

- A. Standards: as defined in State of Connecticut, Department of Transportation Standard Specifications Form 816 (DOT 816).
- B. Any materials which do not meet the description for Fill Materials shall not be used as fill, and shall be disposed of legally off-site, or as directed by the Owner's Representative.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Keep different types of fill and excavation materials well separated to insure proper positioning of various materials.

1.6 PROJECT CONDITIONS

- A. Dust Control: Use all means necessary to control dust on and near the construction areas caused by the Contractor's performance of work.
- B. Protect all existing improvements, utilities and pavements designated to remain.
- C. Call Before You Dig: Contractor shall contact Call Before You Dig at 1-800-922-4455 prior to commencing any earthwork operations.
- D. Protect excavations by shoring, sheeting, bracing, underpinning, pumping or other methods as required to prevent cave-ins or loose dirt from entering excavations. Barricade excavation. Post warning lights at work adjacent to public streets and walks. Adhere to all applicable laws and regulations.
- E. The Contractor shall acquaint himself with the located utilities. Protect all utilities designated to remain within the area of work. Any damage to existing facilities by reason of his performance of the work under this contract will be his responsibility and repaired at his expense in conformance with the applicable utility company, municipal and state requirements. Maintain existing systems in operation as required during installation of new work.
- F. Protect All Benchmarks, monuments, and property boundary markers. Replace if destroyed by the Contractor's operations.
- G. Do not proceed with any rock excavation until authorized by the Owner. Rock is defined herein as boulders measuring 2.0 cubic yards or more in volume; solid rock, ledge rock or rock hard cementitious deposits that require blasting or rippers to break up, prior to its removal when encountered within the limits of excavation. Any parts of stone, brick or concrete pavements and parts of cemented or masonry structures measuring 2.0 cubic yards or more that require blasting for removal will be included as rock when encountered within the limits of excavation.

1.7 PAYMENT

- A. If classified trench rock and earth excavation items are listed on the Bid Form, excavations will be measured and paid for in accordance with the Contract Unit Prices as established thereon. If classified trench excavation items are not listed on the bid Form, all excavation will be considered to be included in the Lump Sum Contract Amount, and no separate payment for these items will be made. Do not proceed with the excavation of any class of material until authorized by the Owner.

- B. Gravel fill utilized to replace unsuitable material below subgrade (not including tank removal refill areas) shall be paid for in accordance with the bid unit price.

PART 2 - PRODUCTS

- 2.1 CONTROLLED FILL: 3/8-inch crushed stone or granular material conforming to CTDOT Form 816, Section M.02 and the following gradation:

<u>Square Mesh Sieve</u>	<u>% Passing (by Weight)</u>
3½ - inch	100
¾ - inch	50-100
No. 4	25-75

The fraction passing the No. 4 sieve shall have less than 15% passing the No. 200 sieve

- 2.2 GENERAL FILL: Material used for general filling outside of limits of pavement, structures, and other improvements shall be approved material, obtained from off-site sources or from on-site excavation. General fill material shall be clean, free of boulders, clay and organic material and capable of achieving the specified compaction.
- 2.3 TRENCH BEDDING AND BACKFILL MATERIALS: Conform to the requirements of the individual utility specification.
- 2.4 CRUSHED STONE: 3/8" crushed stone, conforming to CTDOT Form 816, M.03.01-1, gradation No. 8.
- 2.5 PROCESSED ROCK:

- A. Class A Material: Secondary Rock Crushings conforming to the following:

<u>Square Mesh Sieve</u>	<u>% Passing (by Weight)</u>
3-inch	100
¾ - inch	50-100
¼ - inch	20-45
No. 40	10-30

- B. Class B Material: Primary Rock Crushings conforming to the following:

<u>Square Mesh Sieve</u>	<u>% Passing (by Weight)</u>
8 - inch	100
3 - inch	50-100
¼ - inch	15-45

- C. Class C Material: Unprocessed blasted rock with particle sizes under 24-inches, mixed with soil and possibly some processed rock.

- 2.6 BORROW/EXISTING GRAVEL MATERIALS: Borrow or existing gravel materials used for the formation of embankments shall conform to Article 2.02.03 of DOT Form 816 for performance when incorporated into embankments.

PART 3 - EXECUTION

3.1 GENERAL

- A. Make site excavation and fill operations to the lines and grades indicated on the plans and conduct the work so as to cause a minimum disturbance to adjacent areas.
- B. Do not fill when earth is frozen or in wet condition. Do not excavate to full depth in freezing temperature unless structures or footings are immediately installed.
- C. Areas to be filled shall be free of water, debris, refuse and compressible or decayable materials. Before placing any fill remove all topsoil, loose silty soils, existing fills, structures and all organic, excessively wet and other unsuitable materials.
- D. Provide a minimum 6-inch layer of 3/8" crushed stone capillary barrier as an initial layer over wet subgrades. The stone shall be compacted by 5 passes of a vibratory compactor with a static weight of at least 2 tons and a minimum dynamic force of 4 tons.

3.2 DEWATERING

- A. Provide all required channeling, piping and pumping necessary to keep excavated areas clear of standing water. Maintain site drainage at all times.
- B. Direct outfall to temporary settling basins. Prevent erosion or siltation of adjacent areas. Conform to Erosion and Sedimentation Control requirements.
- C. At the completion of dewatering activities, remove temporary facilities and restore any damaged areas.

3.3 COMPACTION REQUIREMENTS

- A. In fill areas, compact subsoil to at least 93% of modified optimum density.
- B. Compact all backfill and controlled fill beneath structures and under pavements to at least 95% modified optimum density in accordance with ASTM D-1557.
- C. Compact fill 2.5-feet or more below finished landscape area grades to at least 90% modified optimum density.
- D. Compact processed stone bases to at least 97% of the modified optimum density.

- E. Compact bituminous concrete to at least 94% of the Marshall Value.

3.4 PREPARATION FOR PAVEMENTS AND STRUCTURES IN EARTH CUTS OR FILLS

- A. Clear and grub in undisturbed areas.
- B. Remove topsoil, organic deposits and existing fills from beneath fill areas.
- C. Compact natural subgrade surface to at least 93% of modified optimum density. Remove subsoil which cannot be compacted to achieve this density.
- D. Remove wet subsoils to permit acceptable compaction of fills. Provide capillary water barrier.
- E. Provide 12-inch minimum subbase consisting of controlled fill or class A material or as outlined on the Contract Drawings.

3.5 PREPARATION FOR PAVEMENTS IN ROCK CUTS

- A. Remove rock or overblast to at least 2.5-feet below proposed finished grade.
- B. Excavate to at least 20" below finished pavement grades. Remove large rock that protrudes into the subgrades and any large loose rock pieces.
- C. Place a minimum 4" layer of 3/8" crushed stone.
- D. The material above the crushed stone shall be controlled fill or class A material or conform to the pavement section shown on the Contract Drawings.

3.6 SUBGRADE PREPARATION

- A. Prepare the subgrade by removing all unsuitable material and backfilling with controlled fill.
- B. After compacting, the subgrade shall be true to the required line and grade. Maintain the subgrade surface to permit proper drainage. Protect the completed subgrade from damage.
- C. Subgrade must be approved by the Owner's Representative prior to the application of any pavement base materials.
- D. Preparation of subgrades for lawns is specified in Section 02920.

3.7 EMBANKMENT FORMATION

- A. The formation of embankments shall conform to the requirements of Article 2.02.03 of DOT From 816.
- B. The prepared foundation for embankments shall be carefully shaped to the required cross-section and compacted as specified.
- C. Embankments shall be formed using controlled fill, processed blasted rock borrow or existing gravel materials as outline in Part 2 of this specification.
- D. The embankment materials shall be spread uniformly upon the required grade, in courses not to exceed the specified thickness after compaction. Embankment formation shall extend horizontally outside pavements and structures for a distance equal to at least the depth of the fill.
- E. After each course has been placed, its entire area shall be compacted with equipment specifically manufactured for that purpose. Compaction shall be continued until the entire course is uniformly compacted to not less than 95% of the dry density for that material when tested in accordance with ASTM D-1557.
- F. Each layer shall be compacted at optimum moisture content. No subsequent layer shall be placed until the specified compaction is obtained for the previous layer.
- G. Embankment formation to at least 3-feet below proposed finished pavement grades shall be controlled fill or class A material; compacted layers not exceeding 10-inches and compacted to at least 95% of the modified optimum density.
- H. The material 3-feet or more below the finished pavement grade may be class B material, and the material 6-feet or more below the finished pavement grade may be class C material.
- I. Class B material (if required for the depth of fill) shall not extend from the subgrade, or from the top of the class C material, and there shall be at least 3-feet of class B material between class C material and class A material. Class B material shall be placed in lifts not exceeding 16-inches and compacted to at least 95% of the modified optimum density.
- J. During wet periods, provide an initial 4-inch deep layer of 3/8-inch crushed stone on the natural subgrade beneath class B material.
- K. Class C material shall be placed in lifts not exceeding 30-inches and compacted to at least 95% of the modified optimum density. The surface shall be well choked with fines, or provided with a layer of 3/8-inch crushed stone at least 6-inches thick, prior to placement of the next layer.

3.8 TRENCH EXCAVATION AND BACKFILLING

- A. Unless otherwise specified, conform to CTDOT Form 816, Article 2.05.03 and Article 10.01.03, as applicable.
- B. Trench to the minimum width necessary for proper installation of the utility, with sides as nearly vertical as possible. Accurately grade the bottom to provide uniform bearing for the utility.
- C. Provide bedding as required.

3.9 ROCK EXCAVATION

- A. Remove and legally dispose of, or crush on-site, rock if encountered, as defined below when encountered.
 - 1. All solid rock, pavements, or structures that require breaking by hand power tools (jackhammers, etc.) prior to removal.
 - 2. Boulders, pavements, or structures measuring 2 cubic yard or more that require breaking for removal.
- B. Blasting if required shall conform to Article 1.07.08 of Form 816.
- C. Excavate rock within the following limits. No payment will be made for rock removal beyond these lines.
 - 1. 1 foot-0 inches beyond face of structures and footings, in a vertical a mane as is safe against collapse.
 - 2. 6 inches below bottom of structures and footings.
 - 3. 2 feet-6 inches below finished pavement grades.

3.10 DISPOSAL OF EXCESS OR UNSUITABLE MATERIALS

- A. Excess excavation and unsuitable materials shall remain on site and be stockpiled as directed by the Owner.**

3.11 TESTING AND INSPECTION

- A. Compaction testing: The Owner will employ and pay for independent testing laboratory services to perform compaction testing of subgrades, fills and granular materials.
 - 1. Notify the Owner and Laboratory 24 hours prior to the expected time for operations requiring inspection and testing services. Schedule compaction tests for every 4,000 square feet of fills placed 2' deep. (Approximately one test per every 300 cubic yards placed.) If tests indicate that required densities

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have not been achieved, continue compacting. All retesting in these areas shall be paid for by the Contractor.

2. Any additional Quality Assurance testing is the prerogative of the owner.
- B. The Contractor shall provide the Owner with sieve analysis of all fill materials brought on-site, and for on-site materials used as fill.

END OF SECTION

SECTION 02211
TRENCH EXCAVATION & BACKFILL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to work specified in this Section.

1.2 SECTION INCLUDES

- A. Trench excavation and backfill shall include, but is not necessarily limited to, the following:
 - 1. Layout and stake proposed work and set required elevations.
 - 2. Trench excavation, bedding and backfill necessary to install site drainage, structures and other improvements.
 - 3. Remove and stockpile excavated material unsuitable for fill or backfill for trenches and any excess trench material.

1.3 SUBMITTALS

- A. Analysis from approved independent testing laboratory showing that bedding materials, processed aggregate, gravel and stone and aggregate materials comply with specified requirements.
- B. Compaction test results.

1.4 DEFINITIONS

- A. Subgrade: The undisturbed earth or the compacted soil layer immediately below granular subbase, drainage fill, or topsoil materials.
- B. Structure: Buildings, foundations, slabs, tanks, curbs, or other man-made stationary features occurring above or below ground surface.
- C. Earth excavation: The removal of all materials other than "rock".
- D. Rock: A boulder of 2 cubic yards or more in volume and rock in definite ledge formation, the removal of which requires the use of mechanical equipment. Rock removed by scarification or ripping method is considered as a separate classification.

- E. Original grade: The grade, which exists at the time of the Contract award.
- F. Rough grade: The completed surface of required excavations greater than 13' in width.
- G. Trench excavation: The removal of material from areas 13 feet or less in its minimal horizontal dimensions and below the elevation of rough grade or original grade, whichever is lower.
- H. "State Specifications": Shall mean "State of Connecticut D.O.T. Standard Specifications for Roads, Bridges and Incidental Construction", Form 816, July 2013, including all supplements and revisions.

1.5 PROTECTION

- A. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods necessary to prevent cave-in or loose soil from falling into excavation. Shoring and bracing shall be entirely independent of footings and foundations and shall not thrust against any portion of the structure.
- B. Underpin adjacent structures that may be damaged by excavation work, including service utilities and pipe chases.
- C. Notify Engineer of unexpected subsurface conditions and discontinue effected work in area until condition is resolved.
- D. Protect bottom of excavations and soil adjacent to and beneath foundations and bottom of trenches against freezing when atmospheric temperature is less than 35 degrees F.
- E. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other de-watering system components necessary to convey water away from excavations.

1.6 FIELD INSPECTION AND TESTING

- A. The Contractor will retain and pay for an independent soil laboratory to perform inspection and testing of fill and other soil products as deemed necessary.
- B. Work required to correct faulty operation shall be at the Contractor's expense. Retesting will be by the Contractor, and the Contractor shall pay costs.

1.7 PAYMENT

- A. If classified trench rock and earth excavation items are listed on the Bid Form, excavations will be measured and paid for in accordance with the Contract Unit Prices as established thereon. If classified trench excavation items are not listed on the bid Form, all excavation will be considered to be included in the Lump Sum Contract Amount, and no separate payment for these items will be made. Do not proceed with the excavation of any class of material until authorized by the Owner.

PART 2 - PRODUCTS

2.1 BACKFILL

- A. Provide material free of organic or perishable material and without stones larger than 3 1/2 inches, with less than 10% by weight passing a No. 200 sieve.
- B. Do not backfill with material, which does not meet the above requirements. Furnish and satisfactorily place material conforming to "Borrow" Section 2.07.01 and 2.07.02 of Form 816.

2.2 SAND BEDDING

- A. Sand bedding for conduit duct banks shall conform to the requirements of form 816, Section M.05.01.3. Existing material may be used if it complies.

2.3 STONE BEDDING

- A. Stone bedding shall conform to section M.02.02-2 of Form 816, 3/4 inch size.

2.4 CAST-IN-PLACE CONCRETE

- A. Portland Cement Concrete for concrete shall conform to the requirements of form 816, Section M.03.01, Class "A".

2.5 FILTER FABRIC

- A. Filter fabric shall conform to section M.08.01-26 of Form 816.

2.6 GRAVEL FILL

- A. Gravel fill shall conform to section M.02.01 and requirements of material grading A as defined in M.02.06 of Form 816.

PART 3 - EXECUTION

3.1 ENGINEERING AND SURVEY WORK

- A. Contractor to layout all work shown on drawings. Furnish all engineering services required. Provide a registered engineer or licensed surveyor to lay out the initial stakes. Maintain and protect or replace stakes as required. Stake the proposed entrance drives, parking areas, and set finish elevations. Tie in control points so as to permit any portion of the layout to be reestablished without a complete survey.

3.2 TRENCH EARTH EXCAVATION AND BACKFILL

- A. Excavate pipes 2 feet beyond the inside diameter. Excavate structures to the widths and depths shown on drawings or as specified. Keep sides as vertical as practical. Comply with State, town and local specifications
- B. Furnish all shoring and bracing necessary for the completion of the work. Keep excavations dry. Do not excavate to full depth in freezing temperature unless pipes, structures, and footings are installed immediately. Where accidental excavations cause material removal below the required grade for proposed pipes and structures, backfill with gravel fill up to the required grade.
- C. Provide storm drainage trenches with continuous slope in direction of flow.
- D. Bedding shall be sand, sandy soil or gravel fill unless otherwise shown on the drawings. Construction methods for bedding and backfilling shall conform to Section 6.51.03 of Form 816.
- E. Backfill in layers not exceeding 12 inches in depth. Conform to Section 2.05.03 of Form 816. Do not backfill against any pipe, structure or footing until permission is given by the Engineer.
- F. Compact to 95% Modified AASHTO laboratory density (ASTM D-1557, Method C.)
- G. If pipes or structures are over fill areas, fill 12 inches higher than the top and compact to density required. Trench to required elevation. Extend fill and compaction at least 2 feet laterally on both sides of proposed pipe or structure

3.3 EXCAVATION PROTECTION AND MAINTENANCE

- A. Protect open excavations with fencing, warning lights, and/or other suitable safeguards.

- B. Shore, sheet, or brace excavations and trenches as required to maintain them secure and to protect adjacent existing structures. Remove shoring as the backfilling progresses, but only when banks are safe against caving or collapse.
- C. Provide, maintain, and operate pumps and related equipment, including stand-by equipment, of sufficient capacity to keep excavation free of water at all times, and under any and all contingencies that may arise until the structures attain their full strength. Notify the Engineer and receive approval before discontinuance of pumping. Maintain ground water in bearing strata at a safe level at all times by methods, which prevent loss of fines or other disturbances to the strata. If methods employed have not been adequate and the bearing value of the soil has been reduced, carry out remedial measures as directed by the Engineer. Keep trenches free of water until trenches have been backfilled.
- D. Dispose of water through temporary pipe lines with outfall as shown on the plans. Prevent erosion of surrounding areas. At completion of de-watering, remove temporary facilities and restore subgrade and any damaged areas.

3.4 TRENCH ROCK EXCAVATION

- A. Remove and legally dispose of, off site, rock if encountered, as defined below when encountered.
 - 1. All solid rock, pavements, or structures that require breaking by hand power tools (jackhammers, etc.) prior to removal.
 - 2. Boulders, pavements, or structures measuring 2 cubic yard or more that require breaking for removal.
- B. Blasting if required shall conform to Article 1.07.08 of Form 816.
- C. Excavate rock within the following limits. No payment will be made for rock removal beyond these lines.
 - 1. 1 foot-0 inches beyond face of structures and footings, in a vertical a mane as is safe against collapse.
 - 2. 6 inches below bottom of structures and footings.
 - 3. 2 feet-0 inches beyond inside diameter of pipes in as vertical a plane as is safe against collapse.
 - 4. 1 foot-0 inches below bottom of inside barrel of pipes.

END OF SECTION

SECTION 02510
PAVING & CURBS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to work specified in this Section.

1.2 SECTION INCLUDES

- A. Paving, sidewalks and curbs shall include, but is not necessarily limited to, the following:
 - 1. 2-course bituminous concrete pavement.
 - 2. Bituminous concrete curb.

1.3 QUALITY ASSURANCE

- A. Materials and methods of construction shall comply with the following standards:
 - 1. American Society for Testing and Materials (ASTM).
 - 2. American Association of State Highway and Transportation Officials (AASHTO).
 - 3. Asphalt Institute (AI).
 - 4. American Concrete Institute (ACI).
 - 5. State of Connecticut, Department of Transportation Standard Specification Supplemented Form 816, July 2013.
- B. Product Submittals:
 - 1. Bituminous Concrete: Material certificates signed by material producer and Contractor, certifying that material complies with specified requirements.

1.4 PROJECT CONDITIONS

- A. Weather Limitations: Install materials only when base is dry and air temperature is 40 degrees F or above and when the temperature has not been below 32 degrees F for twelve hours prior to installation.
- B. Grade Control: Establish and maintain the required lines and grades, including crowns and cross-slopes during construction activities.
- C. Do not install pavements or sidewalks over frozen or saturated base material.
- D. Protect adjacent work from damage, soiling, splattering or staining from construction activities.

PART 2 – PRODUCTS

- 2.2 BITUMINOUS CONCRETE PAVEMENT: Bituminous concrete pavement shall be Class 1 hot mix asphalt, conforming to Form 816, Section M.04.
- 2.3 BITUMINOUS CONCRETE CURB: Bituminous concrete curb shall be Class 3 hot mix asphalt, conforming to Form 816, Section M.04.
- 2.4 TACK COAT: CSS-1H cationic emulsion, diluted with water 1 to 1.

PART 3 – EXECUTION

3.1 GENERAL EXAMINATION

- A. Verify that the prepared subgrade, as detailed is true to line and grade, and is compacted to the required density. Surface to be smooth, free of irregularities, depressions, or unsuitable material which cannot compact or will become impervious. Insure proper drainage at all times. If required, form, shape and roll with 10-ton roller or equivalent.
- B. Verify that frames for drainage and utility structures within the work areas are installed or reset to the proper elevations.
- C. Verify that improvements and furnishings within the work areas are installed at their proper elevations.

3.2 BITUMINOUS CONCRETE PAVEMENT

- A. GRAVEL BASE & SUBBASE
 - 1. Spread processed stone base material uniformly using approved spreaders or stone boxes. The thickness of each course shall not be more than 4 inches after compaction. Extend base 8 inches beyond limits of all pavements.
 - 2. Compact base material with vibratory roller to minimum 98% of modified optimum density (ASTM D-1557). Compacting and binding operations shall conform to the requirements of Form 816-2004, Article 3.04.03.
- B. TWO COURSE BITUMINOUS CONCRETE PAVEMENT
 - 1. Coat the edge or surface of all abutting pavements with tack coat before installing bituminous concrete pavements. Insure that the abutting pavement has a clean, straight, saw cut edge. Limit of pavements to remain shall be parallel or perpendicular to directions of traffic. Feathering of edges and transitions between new and existing pavements is not acceptable.
 - 2. Conform to Article 4.06.03 of CDOT Form 816 including mixing, transporting, placing and compacting bituminous material. Where not curbed, edge of pavement shall be clean and true. Cleanly bevel and tamp all edges of pavement or install screed strips to produce a clean vertical edge. Secure

- strips to allow for proper compaction against bituminous. Do not remove until pavement is thoroughly compacted. Ravelled edges will not be accepted.
3. Thicknesses after compaction shall conform to the details on the Drawings. Compaction shall conform to CDOT Form 816, Article 4.06.03-5.
 4. Protect installed curbs and other improvements during paving operations. Correct any damage due to paving operations. Joints between the bituminous pavement and adjacent curbing shall be tightly compacted, and pavement shall be of equal density to other areas of pavement.
 5. Carefully make joints between old and new pavements, and between successive day's work, to ensure a continuous bond between adjoining work. Construct joints to have the same texture, density, and smoothness as other sections of the bituminous concrete course.
 6. Perform breakdown, second and finish rolling until the asphalt concrete mixture has been compacted to the required surface density and smoothness. Continue rolling until all roller marks are eliminated. Provide a smooth compacted surface true to thickness and elevations required.
 7. After final rolling, do not permit vehicular traffic on the pavement until it has cooled and hardened, and in no case sooner than 8 hours.
 8. Remove and replace all defective areas. Remove and replace materials that become mixed with foreign materials. Cut out such areas and fill with fresh not bituminous concrete. Compact by rolling to the required surface density and smoothness. Remove deficient areas for the full depth of the course. Cut sides perpendicular and parallel to the directions of traffic with edges vertical. Apply a tack coat before placing asphalt concrete mixture.

3.3 BITUMINOUS CONCRETE LIP CURB

- A. Construct to the lines and grades and details as shown on the Contract Drawings
- B. Installation shall be in accordance with Section 8.15.03 of DOT Form 816.

3.5 CLEAN-UP

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess imported materials, debris, and equipment. Repair damage resulting from paving or concrete operation.

END OF SECTION

SECTION 02720
STORM DRAINAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to work specified in this Section.

1.2 SECTION INCLUDES

Storm drainage shall include, but is not necessarily limited to the following:

- A. Furnish and install new storm drainage systems as indicated and as detailed on the drawings.
- B. Furnish and install canopy roof leader collection system.
- C. Clean the systems at the conclusion of the work of this Contract.

1.3 LOCAL REGULATIONS

- A. All work shall conform to the regulations of the Town and the State of Connecticut, each where applicable.

1.4 SUBMITTALS

- A. Submit shop drawings for culverts, metal for structures and precast units.
- B. As-Built Drawings: Record on a print, all deviations from Contract requirements. Record final and actual sizes, locations, and elevations of all components.

PART 2 - PRODUCTS

2.1 PERFORATED PIPE

- A. Perforated pipe shall conform to section M.08.01 of Form 816.

2.2 FILTER FABRIC

- A. Filter fabric shall conform to section M.08.01-26 of Form 816.

2.3 CRUSHED STONE

- A. Crushed stone shall conform to section M.02.01-1 or M.01.01 of Form 816 for the size and materials specified on the Contract Drawings.

2.4 PORTLAND CEMENT CONCRETE

- A. Portland cement concrete shall conform to section M.03.01, class "C" of Form 816.

2.5 PRECAST UNITS

- A. Precast units shall conform to section M.08.02-4 of Form 816.

2.6 CEMENT CONCRETE BLOCKS

- A. Cement concrete blocks shall conform to section M.08.02-3 of Form 816.

2.7 CEMENT CONCRETE BRICKS

- A. Cement concrete bricks shall conform to section M.08.02-2 of Form 816.

2.8 CLAY BRICKS

- A. Clay Bricks shall conform to section M.08.02-1 of Form 816.

2.9 CEMENT MORTAR

- A. Cement mortar shall conform to section M.11.04 of Form 816.

2.10 METAL FOR DRAINAGE STRUCTURES

- A. Metal for drainage structures shall conform to section M.08.02-5 of Form 816.

2.11 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

- A. HDPE shall conform to section M.08.01.25 of Form 816.

2.12 POLYVINYL CHLORIDE PIPE (PVC)

- A. PVC shall conform to section M.08.01.28 of Form 816.

2.13 GRAVEL FILL

- A. Gravel fill shall conform to section M.02.01 and the requirements of material grading A as defined in section M.02.06 of Form 816.

PART 3 - EXECUTION

3.1 CATCH BASINS, MANHOLES

- A. Construction of catch basins and manholes shall conform to Section 5.07.03 of Form 816.
B. Wet and mortar joints in pre-cast units; wet block before laying.
C. Fill joints thoroughly with mortar; joints not to exceed 1/4 inch on inside face: point all inside joints.
D. Set castings in full mortar bed true to lines and grades necessary. Set at temporary grades to provide drainage during construction.

3.2 STORM DRAINAGE LINES

- A. The installation of culverts shall conform to Section 6.51.03 of Form 816.
B. Culvert Joints shall be flexible, watertight, rubber-type gaskets. Conform to manufacturer's instructions and recommendation.
C. Maintain watertight stopper in pipe when pipe-laying is not in progress.

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3.4 CLEAN UP

- A. Remove accumulated debris and silt from all new drainage structures and pipes, after completion of work.
- B. Notify the Owner in writing when this work is done.

END OF SECTION

SECTION 02800
SITE IMPROVEMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to work specified in this Section.

1.2 SECTION INCLUDES

Site improvements shall include, but is not necessarily limited to the following:

- A. Installation of bollards.

1.3 SUBMITTALS

- A. Contractor shall submit shop drawings for bollards
- B. Contractor shall submit Manufacturer's product data, test reports, and materials certifications for cast-in-place concrete. Submit concrete mix designs for all types of concrete specified. Submit batch slips certifying concrete mix, air content, slump and time of loading.

PART 2 – PRODUCTS

2.1 CAST-IN-PLACE CONCRETE

- A. Cast-in-place concrete shall conform to Section 03300 of this specification.

2.2 BOLLARDS

- A. Bollards shall conform to the details shown on the Contract Drawings.

PART 3 - EXECUTION

3.4 BOLLARDS

- A. Bollards shall be constructed in the location and to the dimensions shown on the Contract Drawings or as ordered.

END OF SECTION

SECTION 02900
TOPSOIL, SEED & MULCH

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to work specified in this Section.

1.2 SECTION INCLUDES

- A. The topsoil, seed, fertilizing and mulching work shall consist of all labor, equipment and services required to complete all of the work called for on the Contract Drawings and these specifications.
- B. Prepare and seed the topsoiled areas and establish a stand of grass to stabilize all disturbed areas, acceptable to the Engineer
- C. Maintain seeded areas until acceptance.

1.3 SUBMITTALS

- A. Topsoil test results for approval prior to spreading.
- B. Species breakdown for specified seed mixtures.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver seed in original containers showing guaranteed analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging, and location of packaging.
- B. Damaged packages are not acceptable.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Topsoil shall conform to section M13.01-1 of Form 816.
- B. Pervious topsoil mix shall conform to the requirements outlined on the Contract Drawings.

2.2 SEED

- A. Seed for temporary vegetative cover shall be rye grass as specified on the plans.
- B. Seed for all disturbed areas shall be as shown on the Contract Drawings.

2.3 FERTILIZER

- A. Fertilizer shall conform to the requirement of Article M.13.03.

2.4 MULCH

- A. Mulch shall conform to Article M.13.05-1 and shall be hay or wood fiber.

2.3 SLOPE STABILIZATION / EROSION CONTROL MATTING

- A. Erosion Control Matting shall be North American Green Bionet C125BN or equal approved by the Engineer.

PART 3 - EXECUTION

3.1 TESTING AND SPREADING TOPSOIL

- A. Test, screen, and spread topsoil on all disturbed areas within the contract limit line upon which construction does not occur.
- B. At Contractor's expense, test representative samples of stockpiled topsoil and any borrow topsoil. Provide mechanical analysis and pH value. Topsoil shall conform to the requirements of Article M.13.01-1 of DOT Form 816.
- C. Provide subgrade 4 inches below finish grade elevation for lawns. Loosen subgrade by disking or scarifying to a depth of 2 inches minimum where compaction has occurred. Clear surface of all stumps, stones, or roots 2 inches in diameter or greater; cable, wire, grade stakes, and any other materials, which might hinder proper tillage or spreading. Obtain approval of the subgrade from the Engineer before applying topsoil.
- D. Spread topsoil uniformly to finish grades. Do not spread or work when topsoil or subgrade are frozen, muddy, or excessively dry. Place only when seeding and sodding operations can follow within a reasonable time.
- E. Remove weeds above 1 inch in height prior to seeding and sodding operations. Do not allow weeds to go to seed. Keep heavy equipment, trucks, etc., off of topsoiled areas. If compaction occurs, scarify to a depth of 4 inches. Maintain finish grades by adding topsoil in eroded or settled areas.

3.2 RATE OF APPLICATION

- A. The rate of application for each seed mixture shall be as specified on the plans.

3.3 HYDRAULIC SEEDING

- A. Mix materials with water. Keep in an agitated state so that the materials are uniformly suspended in the water.
- B. Spraying equipment shall be so designed that when the solutions are sprayed over an area, the resulting deposits of lime, fertilizer, grass seed, and mulch shall be equal, in quantity to those specified.
- C. Before commencing work, submit to the Engineer a certified statement of the quantities of materials per 100 gallons of water, and the area that this quantity can cover.

3.4 MECHANICAL SEEDING

- A. Apply lime and fertilizer evenly at rates determined by topsoil test results and thoroughly incorporate into the upper 4 inches of topsoil.
- B. Rake finished surface smooth.
- C. Sow seed applying half the quantity in one direction and the remaining quantity at right angles to it. Do not sow seed on a windy day, or when the ground is frozen, wet, or otherwise non-tillable.
- D. Cover seed with a thin layer of topsoil by raking or dragging.
- E. Roll with a hand roller not heavier than 300 lbs.
- F. Maintain a moist seedbed at all times. Water seed bed so that the topsoil is wet to a depth of 2 inches. Apply one complete coverage to the seeded area in an 8-hour period.
- G. Protect the seedbed with barricades, where necessary, to keep all traffic off the area.
- H. After the grass has appeared, reseed all areas, which have failed to show a uniform stand of grass.

3.5 SLOPE STABILIZATION

- A. All slopes 3H:1V or greater shall be stabilized per the slope stabilization detail shown on the Contract Drawing.

3.6 CLEAN UP

- A. Dispose of excess materials and debris resulting from seeding work off-site.

- B. Leave work areas clean and neat upon completion of the work.

3.7 MAINTENANCE

- A. Period Required: Immediately after seeding and continue until area is stabilized and accepted by the Engineer.
- B. Perform all reseeding, watering, mowing, weeding and rolling, insect or disease control, fertilizing, and repair of washouts if necessary.
- C. Water minimum 3 times per week so that the depth of moisture is minimum 4 inches.
- D. When average height of grass becomes 3 1/2 inches, mow to the height of 2 1/2 inches. Remove heavy clippings, minimum 2 mowings.

3.8 INSPECTION AND ACCEPTANCE

- A. Submit written notice requesting inspection by the Engineer at least 10 days prior to the anticipated date.
- B. No grass area will be inspected for acceptance: prior to the completion of this Contract; minimum 30 days from date of seeding prior to the completion of 2 mowings.
- C. An acceptable seeded grass area shall consist of a uniform stand of at least 60% established permanent grass species, with a uniform count of at least 100 plants per square foot.
- D. Unacceptable seeded areas shall be reconstructed under the direction of the Engineer.
- E. The Engineer and/or Owner shall be the judge of acceptance.

END OF SECTION

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, as applicable.
- B. Reinforcing Steel Certifications: Submit mill test certificates for all reinforcing steel furnished under this section, showing physical and chemical analysis. Include in chemical analysis for steel to be welded the percentages of carbon, manganese, copper, nickel, and chromium, and optionally the percentages of molybdenum and vanadium.
- C. Aggregates: Submit test reports showing compliance with specified quality and gradation.
- D. Concrete Quality Control Submittals: Submit the following information related to the quality control assurance requirements specified:
 - 1. Design Data: Submit proposed mix designs and test data before concrete operations begin. Identify for each mix submitted the method by which proportions have been selected.
 - a. For mix designs based on field experience, include individual strength test results, standard deviation, and the required average compressive strength calculations.
 - b. For mix designs based on trial mixtures, include trial mix proportions, test results, and graphical analysis and show required average compressive strength calculations.
 - c. Indicate quantity of each ingredient per cubic yard of concrete.
 - d. Indicate type and quantity of admixtures proposed or required.
 - 2. Certifications: Provide certification from manufacturer's of concrete admixtures that chloride content complies with specified requirements.
 - 3. Placement Schedule: Submit concrete placement schedule prior to start of any concrete placement operations. Include location of all joints indicated on drawings, plus anticipated construction joints.

4. Delivery Tickets: Submit copies of delivery tickets complying with ASTM C94 for each load of concrete delivered to the site.
5. Cold Weather Concreting: Submit, well in advance, a description of planned protective measures.
6. Hot Weather Concreting: Submit, well in advance, a description of planned protective measures.
7. Rebar Shop Drawings: Submit rebar shop drawings detailing bar size, strength, location, and quantities.

1.3 QUALITY ASSURANCE

- A. Codes and Standards: Comply with the following documents, except where requirements of the contract documents or of governing codes and governing authorities are more stringent:
 1. ACI 301
 2. ACI 318
 3. CRSI Manual of Standard Practice.
- B. Testing Agency Services: Owner will engage testing agency to conduct tests and perform other services specified for quality control during construction.
- C. Source of Materials: Obtain materials of each type from the same source during the project.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store cementitious materials in a dry, weather tight location. Maintain accurate records of shipment and use.
- B. Store aggregates to permit free drainage and to avoid contamination with deleterious matter or other aggregates. When stockpiled on ground, discard bottom 6 inches of pile.
- C. Handle aggregates to avoid segregation.
- D. Deliver reinforcement to project site bundled and tagged with metal tags indicating bar size, lengths, and other data corresponding to information shown on the placement drawings.

- E. Store concrete reinforcement materials to prevent damage and accumulation of dirt or rust.

1.5 PROJECT CONDITIONS

- A. Cold Weather Concreting: Comply fully with the recommendations of ACI 306. Well in advance of proposed concreting operations, advise the engineer of proposed protective measures including, but not limited to heating of materials, heated enclosures, and insulating blankets.
- B. Hot-weather Concreting: Comply fully with the recommendations of ACI 305R. Well in advance of proposed concreting operations, advise the engineer of proposed protective measures including, but not limited to cooling of materials, placement during evening to dawn hours, fogging during finishing and curing, shading, and windbreaks.
- C. Depositing concrete underwater: Contractor shall comply with CTDOT form 816 section 6.01.03 subsection 10 – “depositing concrete underwater” and subsection 11 – “Concrete exposed to Sea Water.”

PART 2 – PRODUCTS

2.1 FORMWORK

- A. Facing Materials:
 - 1. Unexposed finish concrete: Any standard form materials that produce structurally sound concrete.
 - 2. Exposed and textured finish concrete: Materials selected to offer optimum smooth, stain-free final appearance and minimum number of joints.
- B. Formwork Accessories:
 - 1. Form coating: Form release agent that will not adversely affect concrete surfaces or prevent subsequent application of concrete coatings.
 - 2. Metal ties: Commercially manufactured types; cone snap ties, taper removable bolt, or other type which will leave no metal closer than 1-1/2 inches from surface of concrete when forms are removed, leaving not more than a 1-inch-diameter hole in concrete surface.
 - 3. Embedded steel accessories: Galvanized where located less than 2 inches clear from galvanized reinforcing.

4. Fillets: Wood or plastic fillets for chamfered corners, in maximum lengths possible.
5. Isolation Material: Polystyrene insulation of required size and thickness.

2.2 REINFORCING MATERIALS

- A. Reinforcing Steel: ASTM A 615, Grade 60.
- B. Smooth dowels: ASTM A615, Grade 60, Plain billet steel free of burrs or deformations.
- C. Welded Wire Fabric: ASTM A185, cold-drawn steel, plain.
- D. Reinforcing Accessories:
 1. Tie wire: Black annealed type, 16-1/2 gage or heavier.
 2. Supports: Bar supports conforming to specifications of CRSI "Manual of Standard Practice."
 - a. Class 1 (plastic protected) at all formed surfaces which will be exposed to weather.
 - b. Class 1 (plastic protected) or Class 2 (stainless steel protected) at all formed surfaces which will be exposed to view but not to weather.
 - c. Precast concrete blocks of strength equal to or greater than specified strength of concrete or Class 3 supports equipped with sand plates, where concrete will be cast against earth. Concrete masonry units will not be accepted.

2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, and as follows:
 1. Type I, except where other type is specifically permitted or required. Type I may be replaced by Type III (high early strength) for concrete placed during cold weather.
- B. Water: Potable
- C. Aggregates: Normal weight concrete: ASTM C 33.
- D. Admixtures - General: Admixtures which result in more than 0.1 percent of soluble chloride ions by weight of cement are prohibited.

- E. Air-Entraining Mixture: ASTM C 260 and certified by manufacturer for compatibility with other mix components.
- F. Water Reducing Admixture: ASTM C 494, Type A.
- G. Water Reducing, Retarder Admixture: ASTM C 494, Type D.
- H. Water Reducing and Accelerating Admixtures: ASTM C 494, Type E.
- I. High Range Water Reducing Admixture (Super plasticizer): ASTM C 494, Type F or G.

2.4 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Waterstop: 1" x 3/4" Bentonite clay continuous strip, Volclay Waterstop-RX, or equal. Install per manufacturer's specifications.
- B. Nonshrink Grout: ASTM C 1107. Type: Provide non-metallic type only. Obtain 2 day compressive strength of 3400 psi, 28-day compressive strength of 10,000 psi.
- C. Plastic Curing Membranes: 4 mil polyethylene
- D. Liquid Curing Compounds: Comply with ASTM C 309, Type I. Prior to use, verify compatibility of curing compound with floor finishes.
- E. Expansion Joint Filler: Nonextruding bituminous type: ASTM D 1751.
- F. Anchor Bolts: ASTM A307, Grade A; with ASTM A563 hex nuts and flat washers.
- G. Joint Sealant: Conform to Section 8.9 of AASHTO Standard Specifications for Highway Bridges

2.5 CONCRETE MIX DESIGN

- A. Mix Design Review: Do not begin concrete operations until proposed mixes have been reviewed by the engineer.
- B. Proportioning of Normal Weight Concrete: Comply with recommendations of ACI 211.1.
- C. Required Average Strength: For each type and strength of concrete, establish the required average strength of the design mix on the basis of either field experience or trial mixtures as specified in ACI 301, and proportion mixes accordingly. If

trial mixtures method is used, employ an independent testing agency acceptable to the engineer for preparing and reporting proposed mix designs.

D. Admixtures:

1. Air Entraining Admixture: Add at rate to achieve specified air content.
2. Water-reducing admixture: Add as required for placement and workability.
3. Water-reducing and retarding admixture: Add as required in concrete mixes to be placed at ambient temperatures above 90 degrees F.
4. Water-reducing and accelerating admixture: Add as required in concrete mixes to be placed at ambient temperatures below 50 degrees F.
5. High-range water-reducing admixture (super plasticizer): Add as required to achieve a 7 inch slump for all concrete that will be placed against a form liner.
6. Do not use admixtures not specified or approved.

E. Concrete Mix Design: refer to Contract Drawings.

F. Mix Adjustments: Provided that no additional expense to owner is involved, contractor may submit for engineer's approval requires for adjustment to approved concrete mixes when circumstances such as changed project conditions, weather, or unfavorable test results occur. Include laboratory test data substantiating specified properties with mix adjustment requests.

2.6 CONTROL OF MIX IN FIELD

A. Slump: A tolerance up to 1 inch above the specified will be permitted for 1 batch in 5 consecutive batches tested. Concrete lower than that specified may be used, provided proper placing and consolidation is obtained.

1. If slump upon arrival at the site is lower than 1 inch below the specified value, one addition of water with ASTM C 94 will be permitted to bring the slump within tolerance, provided that:
 - a. A positive means is available to measure the amount of water added at the site.
 - b. The specified maximum water content is not exceeded.
 - c. Not more than 45 minutes since batching has elapsed.

B. Air Content: A tolerance of plus or minus 1½ percent of that specified will be allowed for field measurements.

C. Do not use batches that exceed tolerances.

2.07 CONCRETE MIXING

- A. Transit Mixers: Mix concrete in transit mixers, complying with the requirements of ASTM C 94.
 - 1. At ambient temperatures of 85 to 90 degrees F, reduce mixing and delivery time to 75 minutes.
 - 2. At ambient temperatures above 90 degrees F, reduce mixing and delivery time to 60 minutes.

PART 3 – EXECUTION

3.1 CONCRETE FORM PREPARATION

- A. General: Comply with requirements of ACI 301 for formwork, and as herein specified. The contractor is responsible for design, engineering, and construction of formwork, and for its timely removal.
- B. Earth Forms: Earth forms are not permitted unless shown on contract drawings or approved in writing by the Structural Engineer.
- C. Design: Design and fabricate forms for easy removal, without impact, shock, or damage to concrete surfaces or other portions of the work. Design to support all applied loads until concrete is adequately cured, within allowable tolerances and deflection limits.
- D. Construction: Construct and brace formwork to accurately achieve end results required by contract documents, with all elements properly located and free of distortion. Provide for necessary openings, inserts, anchorages, and other features shown on otherwise required.
 - 1. Joints: Minimize form joints and make watertight to prevent leakage of concrete. Align joints symmetrically at exposed conditions.
 - 2. Chamfers: Provide chamfered edges and corners at exposed locations, unless specifically indicated otherwise on the drawings.
 - 3. Permanent openings: Provide openings to accommodate work of other trades, sized and located accurately. Securely support items built into forms; provide additional bracing at openings and discontinuities in formwork.
 - 4. Temporary openings: Provide temporary openings for cleaning and inspection in most inconspicuous locations at base of forms, closed with

tight-fitting panels designed to minimize appearance of joints in finished concrete work.

- E. Tolerances for Formed Surfaces: Comply with minimum tolerances established in ACI 117, unless more stringent requirements are indicated on the drawings.
- F. Release Agent: Provide either form materials with factory-applied non absorptive liner or field-applied form coating. If field-applied coating is employed, thoroughly clean and recondition formwork and reapply coating before each use. Rust on form surfaces is unacceptable.

3.2 REMOVAL OF FORMS AND SUPPORTS

- A. Non-Load-Bearing Formwork: Provided that concrete has hardened sufficiently that it will not be damaged, forms not actually supporting weight of concrete or weight of soffit forms may be removed after concrete has cured at not less than 50 degrees F for 24 hours. Maintain curing and protection operations after form removal.
- B. Keep supports in place until heavy loads due to construction operations have been removed.

3.3 PLACING REINFORCEMENT

- A. General: Comply with requirements of ACI 301 and as herein specified.
- B. Preparation: Clean reinforcement of loose rust and mill scale, soil, and other materials which adversely affect bond with concrete.
- C. Placement: Place reinforcement to achieve not less than minimum concrete coverage required for protection. Accurately position, support, and secure reinforcement to prevent displacement. Provide Class B tension lap splices complying with ACI 318 unless otherwise indicated. Do not field-bend partially embedded bars unless otherwise indicated or approved.
 - 1. Use approved bar supports and tie wire, as required. Set wire ties to avoid contact with or penetration of exposed concrete surfaces. Tack welding of reinforcing is not permitted.
 - 2. Wire fabric: Install in maximum lengths possible, lapping adjoining pieces not less than one full mesh. offset end laps to prevent continuous laps in either direction, and splice laps with tie wire.
 - 3. Smooth Dowels: Install smooth dowels perpendicular to formed surface. Secure dowels in place prior to placement of concrete.

- D. Welding: Welding of reinforcement is not permitted, except with the Engineer's specific approval. Perform welds in accordance with AWS D1.4.

3.4 FIELD QUALITY CONTROL - REINFORCING STEEL

- A. Inspection of the in-place reinforcing steel and its conformance with the contract documents shall be performed by an inspection services designated by the Owner, and unless otherwise note, all costs and expenses occasioned by the employment of such inspection service shall be paid by the Owner.
- B. Inspection service to inspect all reinforcing placement for its conformance to the contract documents. If reinforcing does not conform to contract documents, then the Inspection service is to notify the contractor of non conforming items. If the contractor fails to remedy the non conforming items, then the Inspection service is to report to the Engineer, by phone and in writing, prior to the start of concrete placement.
- C. The Contractor is to cooperate with the Inspection Service and the Engineer to ensure that the reinforcing is placed properly. Contractor to notify Inspection Service and Engineer 24 hours prior to the time that reinforcing can no longer be inspected due to formwork placement or concreting operations.
- D. Contractor to rectify reinforcing placement errors that are identified by the Inspection Service and/or Engineer at no additional costs to the Owner.

3.5 JOINT CONSTRUCTION

- A. Construction Joints: Locate and install construction joints as indicated on drawings. If construction joints are not indicated, locate in manner which will not impair strength and will have least impact on appearance, as acceptable to the engineer.
 - 1. Keyways: Provide keyways not less than 1-1/2 inches deep at footings, walls and beams.
 - 2. Reinforcement: Continue reinforcement across and perpendicular to construction joints, unless details specifically indicate otherwise.
 - 3. Water stops: Provide water stops if indicated, installing to form continuous, watertight dam, with field joints fabricated in strict accordance with manufacturer's instructions.

- B. Expansion Joints: Construct expansion joints where indicated. Install expansion joint filler to full depth of concrete. Recess edge of filler to depth indicated to receive joint filler specified.

3.6 INSTALLATION OF EMBEDDED ITEMS

- A. General: Set anchorage devices and other items required for other work connected to or supported by cast-in-place concrete, using templates, setting drawings, and instructions from suppliers of items to be embedded. Set edge forms and intermediate screeds as necessary to achieve final elevations indicated for finished slab surfaces.

3.7 CONCRETE PLACEMENT

- A. Preparation: Provide materials necessary to ensure adequate protection of concrete during inclement weather before beginning of installation of concrete.
- B. Inspection: Before beginning concrete placement, inspect formwork, reinforcing steel, and items to be embedded, verifying that all such work has been completed.
- C. Placement - General: Comply with requirements of ACI 304 and as follows:
 - 1. Schedule continuous placement of concrete to prevent the formation of cold joints.
 - 2. Provide construction joints if concrete for a particular element or component cannot be placed in a continuous operation.
 - 3. Deposit concrete as close as possible to its final location, to avoid segregation.
- D. Placement in Forms: Limit horizontal layers to depths which can be properly consolidated, but in no event greater than 24 inches.
 - 1. Consolidate concrete by means of mechanical vibrators, inserted vertically in freshly placed concrete in a systematic pattern at close intervals. Penetrate previously placed concrete to ensure that separate concrete layers are knitted together.
 - 2. Vibrate concrete sufficiently to achieve consistent consolidation without segregation of coarse aggregate.
 - 3. Do not use vibrators to move concrete laterally.
 - 4. Vibrate against all forms to consolidate concrete and prevent honeycombing.
- E. Cold Weather Placement: Comply with recommendations of ACI 306 when air temperatures are expected to drop below 40 degrees F either during concrete placement operations or before concrete has cured.

1. Do not use frozen or ice-laden materials.
 2. Do not place concrete on frozen substrates.
- F. Hot Weather Placement: Comply with recommendations of ACI 305R when ambient temperature before, during, or after concrete placement is expected to exceed 90 degrees F or when combinations high air temperature, low relative humidity, and wind speed are such that the rate of evaporation from freshly poured concrete would otherwise exceed 0.2 pounds per square foot per hour.
1. Do not add water to approved concrete mixes under hot weather conditions.
 2. Provide mixing water at lowest feasible temperature, and provide adequate protection of poured concrete to reduce rate of evaporation.
 3. Use fog nozzle to cool formwork and reinforcing steel immediately prior to placing concrete.
- G. Depositing concrete underwater: Contractor shall comply with CTDOT form 816 section 6.01.03 subsection 10 – “depositing concrete underwater”.

3.9 FINISHING FORMED SURFACES

- A. Repairs, General: Repair surface defects, including tie holes immediately after removing formwork.
1. Remove honeycombed areas and other defective concrete down to sound concrete, cutting perpendicular to surface or slightly undercutting. Dampen patch location and area surrounding it prior to applying bond compound or patching mortar.
 2. Before bonding compound has dried, apply patching mixture matching original concrete in materials and mix except for omission of coarse aggregate, and using a blend of white and normal portland cement as necessary to achieve color match. Consolidate thoroughly and strike-off slightly higher than surrounding surface.
- B. Textured Form Finish: Repair tie holes and patch defective areas to match pattern created by form construction or form liners.
- C. Unexposed Form Finish: Repair tie holes and patch defective areas. Rub down or chip off fins or other raised areas exceeding 1/4 inch in height.
- D. Exposed Form Finish: Repair and patch defective areas, with fins or other projections completely removed and smoothed.

1. Smooth rubbed finish: Apply to surfaces indicated no later than 24 hours after removal of forms. Wet concrete surfaces to be finished and rub with Carborundum brick or other abrasive until uniform color and texture are achieved. Do not apply separate grout mixture.
2. Contiguous unformed surfaces: Strike smooth and float to a similar texture tops of walls, horizontal offsets, and other unformed surfaces adjacent to or contiguous with formed surfaces. Continue final finish of formed surfaces across unformed surfaces, unless otherwise specifically noted.

3.10 CONCRETE CURING AND PROTECTION

A. General:

1. Prevent premature drying of freshly placed concrete, and protect from excessively cold or hot temperatures until concrete has cured.
2. Provide curing of concrete by one of the methods listed and as appropriate to service conditions and type of applied finish in each case.

B. Curing Period:

1. Not less than 7 days for standard cements and mixes.
2. Not less than 4 days for high early strength concrete using Type III cement.

C. Formed Surfaces: Cure formed concrete surfaces by moist curing with forms in place for full curing period or until forms are removed.

1. Keep wooden or metal forms moist when exposed to the heat of the sun.
2. If forms are removed prior to completion of curing process, continue curing by one of the applicable methods specified.

D. Surfaces Not in Contact with Forms:

1. Start curing as soon as free water has disappeared, but before surface is dry. Place to protect adjacent concrete edges. Acceptable curing methods:
 - a. Curing compound: Apply at rate stated by manufacturer to conform to moisture-retention requirements specified, using second, immediate application to right angles first, if necessary, and reapply if damaged by rain.
 - b. Curing and hardening compound: Apply one or more applications as recommended by manufacturer to achieve maximum hardness and at rate stated by manufacturer to conform to moisture-retention requirements specified.

- c. Use curing compounds only in locations permitted or requires, and where use will not interfere with other finishes, coatings, or coverings to be applied.
- E. During and following curing period, protect concrete from temperature changes of adjacent air in excess of 5 degrees F per hour and 50 F degrees per 24 hours. Progressively adjust protective measures to provide uniform temperature changes over entire concrete surface.

3.11 MISCELLANEOUS CONCRETE ITEMS (AS APPLICABLE)

- A. Fill-In: Fill in holes and openings left in concrete structures left for passage of work by other trades or after such work is in place. Place such fill-in concrete to blend with existing construction, using same mix and curing compounds.

3.13 CONCRETE REPAIRS

- A. Perform cosmetic repairs of concrete surfaces as specified under concrete application.
- B. Perform structural repairs with prior approval of engineer for method and procedure, using epoxy-bonded systems. The engineer's approval is required for repair methods using materials other than specified.
- C. Repair existing concrete elements as specified on the Contract Drawings.

3.14 QUALITY CONTROL TESTING DURING CONSTRUCTION

Concrete testing shall be coordinated by the contractor. The cost of testing shall be paid for by the owner. The cost of additional testing shall be paid by the Contractor when unacceptable concrete has been verified.

- A. Composite Sampling, and making and curing of specimens, ASTM C 172 and ASTM C 31.
 - 1. Take samples at point of discharge.
 - 2. For pumped concrete, perform sampling and testing at the frequencies specified herein at point of delivery to pump, and perform additional sampling and testing at the same frequency at discharge from line obtained at discharge from line shall be used for acceptance of concrete.
- B. Slump: ASTM 143. One test per strength test and additional tests if concrete consistency changes. Modify testing to comply with ASTM C 94.

- C. Air Content of Normal Weight Concrete: ASTM C 173 or ASTM C 231. One test per strength test performed on normal weight concrete.
- D. Concrete Temperature:
 - 1. Test hourly when air temperature is 40 degrees F or below.
 - 2. Test hourly when air temperature is 90 degrees F or above.
 - 3. Test each time a set of strength test specimens is made.
- E. Compressive Strength Tests: ASTM C 39.
 - 1. Compression Test Specimens: Mold and cure one set of 4 standard cylinders for each compressive strength test required. Mold an additional cylinder and cure on site using conditions similar to the concrete sampled, contractor shall provide a curing box for site cured concrete.
 - 2. Testing for acceptance of potential strength of as-delivered concrete:
 - a. Obtain samples on a statistically sound, random basis.
 - b. Minimum frequency:
 - i. Once each day a given class is placed, nor less than,
 - ii. Once for each 150 yd³ of each class placed each day, nor less than,
 - iii. Once for each 5000ft² of slab or wall surface area placed each day.
 - iv. When the above testing frequency would provide less than 5 strength tests for a class of concrete during the project, conduct tests from not less than 5 randomly selected batches, or from each batch if fewer than 5.
 - c. Test one specimen per set at 7 days for information unless an earlier age is required.
 - d. Test two specimens per set for acceptance of strength potential; test at 28 days unless other age is specified. The test result shall be the average of the two specimens. If one specimen shows evidence of improper sampling, molding, or testing, the test result shall be the result of the remaining specimen; if both show evidence disregard the test and contact the engineer.
 - e. Retain one specimen from each set for later testing, if required.
 - f. Strength potential of as-delivered concrete will be considered acceptable if all of the following criteria are met:
 - i. No individual test result falls below specified compressive strength by more than 500 psi.

- ii. Not more than 10 percent of individual test results fall below specified compressive strength f'_c .
 - iii. Average of any three consecutive test results equals or exceeds the specified compressive strength.
 - 3. Testing for evaluation of field-curing:
 - a. Frequency: 1 field set of concrete specimens per day for each type of concrete poured during cold weather concreting.
 - b. Mold specimens from same sample used for strength acceptance tests. Field-cure, and test at same age as for strength acceptance tests.
 - c. Evaluate construction and curing procedures and implement corrective action when strength results of field-cured specimens are less than 85 percent of test values of companion laboratory-cured specimens.
 - 4. Removal of Forms and Supports: Mold additional specimens and field cure with concrete represented; test to determine strength of concrete at proposed time of form and support removal.
- F. Test Results: Testing agency shall report test results in writing to engineer and contractor within 24 hours of test.
- 1. Test results shall contain following data:
 - a. Project name, number, and other identification.
 - b. Name of concrete testing agency.
 - c. Date and time of sampling.
 - d. Concrete type and class.
 - e. Location of concrete batch in the completed work.
 - f. All information required by respective ASTM test methods.
 - 2. Nondestructive testing devices such as impact hammer or sonoscope may be used at engineer's option for assistance in determining probable concrete strength at various locations or for selecting areas to be cored, but such tests shall not be the sole basis for acceptance or rejection.
 - 3. The testing agency shall make additional tests of in-place concrete as directed by the engineer when test results indicate that specified strength and other concrete characteristics have not been attained.
 - a. Testing agency may conduct tests of cored cylinders complying with ASTM C 42, or tests as directed.

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- b. Cost of additional testing shall be borne by the contractor when unacceptable concrete has been verified.

END OF SECTION

SECTION 05120
CANOPY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and general provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to work specified in this Section.

1.2 SECTION INCLUDES

- A. Design and installation of fuel station canopy.

1.3 SUBMITTALS

- A. Contractor shall submit shop drawings for canopy and foundation design.

PART 2 – PRODUCTS

2.1 CANOPY

- A. Canopy shall be pre-fabricated steel and designed in accordance with local and state building codes and loading requirements provided on the contract drawings.
- B. Canopy dimensions shall be in accordance with the contract drawings. The canopy shall incorporate an internal gutter system and lighting.
- C. Canopy design specifications and features shall be equal to “Superior Canopy Corporation” specification.
- D. The canopy manufacturer shall provide a foundation design that meets local and state building codes and loading requirements provided on the contract drawings.

PART 3 - EXECUTION

3.4 CANOPY

- A. Canopy installation shall be in accordance with manufacturer’s specifications and instructions.

END OF SECTION

DIVISION 15 - MECHANICAL**SECTION 15010 - GENERAL PROVISIONS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Instructions to Bidders, AIA Document A201 – 2007, “General Conditions of the Contract for Construction,” the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this work. Note also all Addenda.

1.2 SCOPE

The work covered by this section includes the materials, methods, workmanship and general requirements which shall apply to the work covered by Sections 15050 and 15550 following.

- A. **The project scope includes all components and equipment of the new proposed Refueling System that includes but is not limited to the 12,000 gallon combination diesel/gasoline (7000/5000) double walled storage and vehicle refueling facility, with (4) fuel pumps, (4) fuel dispensing equipment, (2) vents, (2) spill containment fill boxes, Multi-tank monitoring and leak detection system, Vehicle and personal usage recording and access control systems , (4) sets of hoses and nozzles and hose support systems, and all other required parts and components, etc.**
- B. The entire project shall be assumed to be a **“TURN KEY”** installation with the following specifications providing an **outline specification** for the product and its installation requirements, etc.
- C. Contractor shall be responsible for all required trenching, cutting, patching, and concrete work required for the installation of the proposed refueling facility as a whole.

1.3 SHOP DRAWINGS

- A. Contractor shall submit for approval shop drawings of all equipment to be used in the installation in accordance with the General and Supplementary Conditions.
- B. General Bulletins or catalogs will not be accepted as shop drawings unless the equipment on which approval is to be obtained is specifically marked, and all

information pertaining to the item including dimensions where required for installation is included.

1.4 DRAWINGS AND COORDINATION

- A. The Civil drawings accompanying these specifications show the general layout for the Refueling Station and some of the components of the system. However, they do not show specific details of all equipment locations, etc.
- B. Drawings, in general, are based on the particular type and make of equipment named by the specifications. Contractor shall be responsible for any new drawings or additional material required for the proper installation of the accepted equipment where it differentiates from that shown on the drawings.
- C. Ductwork, piping, conduits, and accessories the location and arrangement of which are affected by the design of equipment which must be approved shall not be installed until the equipment is approved and the whole assembly coordinated.
- D. Contractor shall install work as closely as possible to layout shown, but he shall make, without extra charge, any changes in the routing of piping, conduit, or ductwork as necessary to meet job conditions and clear equipment and services of other trades shown on other drawings. Locations of services are approximate and subject to modifications required by job conditions.
- E. The right to make any reasonable changes in locations of piping, or conduit and equipment up to time of installation is reserved by the Owner and Architect without involving any additional expense to the Owner.
- F. Methods of running lines and making connections shall be in accordance with best practice, and in all cases satisfactory to the Architect.
- G. Elevations shown are approximate and are for Contractor's guidance. He must, however, take his own measurements and be responsible for proper pitch and clearances.

1.5 EXAMINATIONS OF SITE

- A. Before submitting his bid, the Contractor shall visit the site with plans and specifications in hand and shall become thoroughly familiar with all conditions under which his work will be installed he will be held responsible for any assumption he may make in regard thereto.

1.6 COORDINATION OF TRADES

- A. The Contractor shall become familiar with the work of all trades and shall coordinate the work in those areas where work of other trades are indicated. Contractor shall coordinate with the owner and architects office. Work installed, making it impossible to install work of other trades because of lack of coordination is subject to removal, if required, at no additional cost to the Owner, such cost being fully borne by the Contractor making the improper installation including the cost of any cutting, patching or relocation of work by another Contractor.
- B. Bidders, during the period of figuring the job for submission of bid, shall secure a complete set of Plans and Specifications for the project so that he will have a clear and concise understanding about the work he has in relation with those trades.

1.7 METHODS AND PROCEDURES

- A. The Contractor agrees to carry on the work in an orderly manner, and under the constant supervision of a competent foreman who shall be on the job at all times during the progress of the work.
- B. Carefully examine all plans and specifications and check them against the conditions under which the work is to be done and the Contractor shall assume all responsibility thereof.
- C. The Contractor is responsible for keeping himself advised of construction details that are available to him at the general contractor's office. He (she) shall plan and install his work in a manner adapted to the construction called for and satisfactory to the Architect.
- D. The Contractor shall direct and supervise the progress of the work described and shall perform the work at the proper time so as not to unnecessarily delay any work being performed under another contract.

1.8 SUBSTITUTIONS

- A. Whenever an item is described or indicated by a specific make, model, or figure number, it is understood that comparable articles of other manufacturers may be acceptable, but only provided they are equal in the opinion of the Architect and acceptable to Owner and Architect, and formal written approval thereof is obtained. Note: If 2 or more equal manufacturers are listed, any substitutions shall be limited to those names only.

1.9 RECORD DRAWINGS

- A. The Contractor shall keep an accurate record of all changes in the layout from original plans. Refer to the General Conditions and Supplementary Conditions for more complete instructions.
- B. In additions, shop drawings for any equipment, including wiring or piping diagrams, which is not finally installed in accordance with the original submittals, shall be corrected and resubmitted for approval in the same manner as required for original submissions.

1.10 CONSTRUCTION ERRORS

- A. When any part of a system has been installed and which must be removed or relocated because of error by installing contractor in properly coordinating the work, such cost must be fully borne by the Contractor who made the error, including any cutting and patching or rearrangement of work of another sub-contractor.

1.11 MANUFACTURERS' INSTRUCTIONS AND CODES

- A. In general, all equipment and piping shall be installed in accordance with manufacturers' instructions and Local Codes having jurisdiction. If they conflict with contract requirements, Contractor shall obtain written instructions from the Architect before proceedings with the installation.
- B. Where the specifications exceed the manufacturers' or Codes minimum requirements Contractor shall install equipment or piping in accordance with the specifications.

1.12 MATERIALS

- A. All equipment, materials, and workmanship, whether specifically described or shown, or whether implied is to be new of latest model, first-quality, and grade satisfactory to the Architect. The Architect shall have the right to reject any part of the work in case equipment, materials, or workmanship is not of satisfactory quality, the Contractor shall replace same with acceptable work at his own expense.
- B. No damaged equipment or material shall be repaired by contractor and used in the installation without first obtaining written approval from the Architect.

1.13 EQUIPMENT CLEARANCES

- A. Install equipment with adequate clearances for maintenance and operation both of the equipment and of adjacent equipment.

1.14 ANCHOR BOLTS

- A. Contractor shall furnish all anchor bolts as required for his equipment. Where installed in concrete or masonry work he shall submit drawings for and supervise their installation.

1.15 NAME PLATES

- A. In general, all electrical, fueling equipment, and misc accessories and controls shall be identified by name plates where their function is not apparent. Where such accessories also appear on wiring diagrams, etc. they shall be similarly identified.
- B. Name plates shall be made of laminated plastic material not less than 1/8" x 1" x 2" with 1/4" high engraved lettering or field fabricated with a typewriter on contrasting aluminum tape.
- C. Attach name plates with screws, bolts, adhesive, or rivets to a fixed part or on the wall above or below the item.

1.16 INSTRUMENTATION

- A. Where indicating or control equipment is installed in pressure lines they shall be designed for a working pressure of not less than 150% of the static pressure of the system, whichever is the higher.
- B. Where such instruments have a range or scale the operating point setting shall be approximately midpoint. The range or scale of all instruments shall be kept to a minimum.

1.17 ELECTRICAL REQUIREMENTS

- A. The existing electrical service to the building is 120/208 volt, 3 phase, 4 wire. In general, all new motors for this project shall operate on 115/120 volts, single phase. All controls and monitoring systems shall operate on 115/120 volts, single phase.
- B. All electrical equipment and wiring shall conform to the Electrical Division requirements.
- C. All pump starters and relays for the proposed new equipment shall be provided as part of the packaged equipment by the tank manufacturer and their sub manufactured products so that they are fully compatible and approved for use with this refueling facility.

1.18 PIPING TESTS

- A. All piping systems shall be tested as described below. Where necessary to suit progress of general construction, parts or sections of these systems shall be separately tested, with all required temporary connections and closure provided. Contractor shall apply a preliminary test in each case to satisfy himself that the work is satisfactory and shall then give the Architect 48 hours advance notice of the official test which must be witnessed and approved by the Architect or his designated representative.
- B. The various systems shall be made tight under the following test conditions in the field, after installation:
 - 1. Fuel piping at 50 psi for 2 hours.
- C. Contractor shall submit to the Architect, 2 typewritten reports of all tests specified or required. Reports shall indicate date of test, material tested, results of tests, and test witnesses.

1.19 PAINTING

- A. General painting is required for all exposed pipes, equipment, etc. unless they have galvanized finishes.
- B. This shall include all hangers, structural supports and bare ferrous pipe,
- C. All equipment which is to receive finish painting shall be primed one coat of primer and two coats of epoxy enamel final paint finish.

1.20 LUBRICATION

- A. All equipment shall be thoroughly lubricated just before Owner's acceptance. At least one device of each type required for conveniently adding lubrication shall be formally presented to Architect at site with written list of such submission. Such devices shall be as necessary for Owner to follow the lubricant instructions which Contractor has been required to submit.

1.21 PRELIMINARY OPERATION

- A. All mechanical equipment furnished under the Mechanical Sections and subject to operation or adjustment must be operated and adjusted with constant supervision during normal working hours by the Contractor, just prior to acceptance, for not less than 3 full days and as many more required to the satisfaction of the owner, to obtain specified operations, including air and water balance.

1.22 CLEANING OF SYSTEMS AND EQUIPMENT

- A. Before formal acceptance by Owner all equipment shall be thoroughly cleaned. Surfaces shall be wiped clean of oil, grease, stickers, tags, drippings, and dirt, and gauge glasses, thermometers, etc. cleaned off.

1.23 OPERATING INSTRUCTIONS

- A. Two copies of maintenance, lubrication, and operating instructions of all equipment having moving parts shall be provided by the Contractor for Owner's use. This literature may be delivered with shop drawings or at time of delivery of equipment and shall include list of replacement parts. Such submission must be made formerly through the General Contractor to the Architect.
- B. Each subcontractor must thoroughly instruct Owner's personnel as to proper operation of his system and each shall provide qualified personnel to give at least 6 hours undivided supervision therefore.

1.24 OWNER'S ACCEPTANCE TEST

- A. After the various systems are complete as determined by the preliminary operating tests, the Contractor shall arrange for the Owner's final acceptance tests.
- B. The Contractor shall have present at each acceptance test representatives of the several contractors whose work is directly or indirectly involved, with instruments as necessary to indicate that the system is functioning in accordance with the design and to include the following:
 - 1. All equipment installed and operating in accordance with the specifications.
 - 2. All systems are operating in accordance with the specifications.
 - 3. All safety and controls operating as specified.
 - 4. All motors installed with proper thermal over load protection and not operating under overload conditions as determined by ammeter readings.
- C. The date of the Owner's acceptance of the equipment shall be the start of the one year's guarantee period.

1.25 GUARANTEE

- A. In addition to any supplemental guarantee obtained from any equipment manufacturer, contractor shall guarantee the prompt replacement of any faulty section of his installation (equipment and materials including labor) without cost to the Owner if indication thereof occurs within one year of acceptance (substantial completion date as established by the architect) of equipment by the Owner, except for failure caused by Owner's negligence or through physical abuse of the equipment.

1.26 DEBRIS REMOVAL

- A. Each contractor shall, at all times, keep the premises free from the accumulation of waste materials and rubbish caused by his operations and shall remove the waste materials and rubbish from the job site on a periodic basis. If any contractor does not conform to this requirement, the owner shall have this work done and deduct the cost thereof from funds due the contractor from the Owner. Coordinate dumpster arrangements with the owner.

1.27 CONTRACT STANDARDS

The following industry standards shall be considered as minimum requirements under this specification:

- A. **State Building Code – 2009 Amendment to the 2005 Connecticut Supplement:** All of the following are applicable, except as amended, altered or deleted by this Connecticut Supplement and are hereby adopted by reference as the 2005 State Building Code. The requirements of the 2009 Amendment to the 2005 State Building Code shall apply to all work for which a permit application was made on or after August 1, 2009.
- 2003 International Building Code
 - 2003 International Existing Building Code
 - 2003 International Plumbing Code
 - 2003 International Mechanical Code,
 - 2009 International Energy Conservation Code
 - 2003 International Residential Code
 - 2005 NFPA 70 National Electrical Code
 - 2009 Amendment to the 2005 Connecticut Supplement
 - Amendments to the 2003 International Building Code
- B. **Connecticut Fire Safety Codes:**
NFPA 101 National Fire Safety Code
Amendments to the CT Fire Safety Code
- C. **Handicap:**
ASME/ANSI A17.1 Safety Code for Elevators & Escalators

Addenda to ASME/ANSI A.17.1

- D. **Connecticut Boiler Codes:**
CGS Chapter 540, Sections 29-232 through 29-244

1.28 DEMOLITION

- A. The contractor shall be responsible for all demolition shown or not shown on the drawings and the removal and proper disposal of all materials. Demolition shall include the complete demolition of the existing underground fuel tanks and all accessories, all buried fuel piping, conduits and wiring, and any left over refueling equipment.
- B. The existing tanks are Underground Fiberglass single wall but they may be double walled and the contractor shall assume the worst case. All product in the tanks shall be fully removed and disposed of per State of CT DEEP requirements including disposal certification letters for record. All underground piping and the fuel tanks shall be thoroughly cleaned on the interior for all residue prior to cutting up and disposal. Again they must be disposed of per the state requirements and disposal certificates issued to the owner for record.

1.29 ALTERNATES

Refer to the Drawings and the alternate section of the Specifications for any additional notes and directions. These alternates shall be included in the Bid Form.

END OF SECTION 15010

DIVISION 15 - MECHANICAL**SECTION 15050 - BASIC MATERIALS & METHODS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Instructions to Bidders, AIA Document A201 – 2007, “General Conditions of the Contract for Construction,” the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this work. Note also all Addenda.

1.2 SCOPE

The work covered by this section includes all labor, materials, equipment and accessories to complete piping systems for refueling facility and its equipment that is not provided with the packaged equipment.

PART 2 - PRODUCTS**2.1 MATERIALS OF PIPING**

- A. Diesel and Gasoline fuel piping above ground shall be schedule 40 black steel with mandible screwed fittings. All piping and fittings , etc shall be degreased and properly painted to prevent corrosion, The piping system shall be primed one coat of auto primer and have two final coats of epoxy enamel or Rustolium final coats that shall be of a color to match the tank stone colors. All degreasing and painting shall be done by a qualified painting contractor.
- B. All nipples shall be of the same material and strength of pipe, except that when 6" or less in length in steel piping they shall be extra heavy. Close nipples shall not be used.
- C. The two tank vent pipes shall be schedule 40 black steel with mandible screwed fittings. Paint same as noted above to protect from rusting. These vent pipes shall be vented up to above canopy and terminated at least 2 to 3 above the deck with proper vent caps, or may be installed at the end of the tanks where the miss the canopy and terminate a minimum of 1 foot above the canopy top.

2.2 JOINTS AND UNIONS

- A. Unions shall be provided on both sides of all equipment.

- B. Unions in screwed ferrous pipe shall be 300 lb. pattern malleable iron with ground joint and brass to iron seat, or 500# pattern steel with ground joint brass to brass seat.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. Contractor is responsible for installing all piping in such a manner as to provide expansion without warping lines and dislocating or straining connected equipment. Provide offsets if required, and anchors of approved design where necessary for all horizontal and vertical piping. Piping shall be installed to clear all building construction and sleeves in order to avoid rubbing.
- B. All shall be run on top of the tank and out of site as much as possible.
- C. Store all pipe and materials pending installation in clean areas, protected against becoming fouled and ferrous materials against weather damage. Each pipe length shall be up ended and rapped free of dirt, scale, etc. just prior to installation.
- D. All fuel piping shall be drainable and shall pitch just enough so it will drain back to the tank.
- E. During construction all ends of piping must be kept closed off with caps or plugs except while actually working on lines. Caps or plugs, temporary or permanent, must be of the same material as piping or equipment in which they are installed.
- F. Both vertical, horizontal lines, and equipment connections must be run straight, and shall be securely hung with whatever braces, guides, anchors, expansion loops, etc. needed to prevent vibration, distortion, or undue stress and strain.
- G. All pipe ends shall be cut clean, reamed and left without burrs inside.
- H. Any Valves in horizontal piping shall be installed with stem at or above the center line of the pipe.
- I. All operating equipment in piping systems such as valves, checks, strainers, drains, etc. must be accessible for operation and service.
- J. Provide unions or flanges and valves in all connections to all equipment.

- K. Provide all tees, etc. as required for control and indicating instruments required in the piping system and elsewhere specified.

3.2 SHOP DRAWINGS SUBMITTALS

- A. Submit shop drawings for the following items:
 - 1. Piping material list.
- B. Shop drawings which do not comply with Subparagraph 15010 - 1.3 B will be rejected.

END OF SECTION 15050

DIVISION 15 - MECHANICAL**SECTION 15550 – FUEL DISPENSING EQUIPMENT****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Instructions to Bidders, AIA Document A201 – 2007, “General Conditions of the Contract for Construction,” the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this work. Note also all Addenda.

1.2 SCOPE

- A. **The project scope includes all components and equipment for the new proposed Refueling System that includes but is not limited to the 12,000 gallon combination diesel/gasoline (5000 diesel/7000 gasoline) double walled storage and vehicle refueling facility, with (4) fuel pumps, (4) fuel dispensing equipment, (2) vents, (2) spill containment fill boxes, Multi-tank monitoring and leak detection system, Vehicle and personal usage recording/inventory and access control systems with vehicle and personal key fobs , (4) sets of hoses and nozzles and hose support systems, tank overfill alarm and reset assembly, Precast Concrete grade pad under the tank, proper fill materials, and all other required parts and components, etc.**
- B. The project shall also include all required software, programming, tech support and training of owner’s personnel.
- C. The entire installation and all equipment, materials and labor shall be considered part of a “TURN KEY” installation. The bid for this work shall be all inclusive.
- D. **The installation shall be done by Certified licensed contractor holding a 2085, P-9 license.**
- E. The Fuel dispensing facility shall be fully prepiped, with premounted equipment prior to shipping to the site. At the contractor’s option, the equipment may be field assembled and piped as long as the installing contractor holds the proper licenses, etc.

PART 2 - EQUIPMENT**2.1 CONVAULT VAULTED ABOVE GROUND STORAGE TANK ASSEMBLY**

A. Tank Specifications

1. Steel tanks shall be manufactured in accordance with U.L. 142.
2. Steel tanks shall be rectangular in shape and have continuous welds on all sides conforming with The American Welding Society Standard for Continuous weld. They shall consist of a combination of 5000 diesel and 7000 gasoline fuel storage within a nominal 12,000 gallon enclosure.
3. Steel Tanks shall be pressure tested at 5 psi for 24 hours.
4. Steel tanks each shall have emergency vent as required by N.F.P.A. Steel tank openings shall be threaded, including detector tube.
5. Outer surface of steel tanks shall be covered by ¼ inch minimum thick insulating spacer panels of polystyrene which melts on contact with leaking petroleum products.
6. Secondary containment shall consist of a 30 mil. non-permeable high density Polyethylene liner enclosing the polystyrene spacer panels.
7. Steel tanks shall be pressurized to 5 psi until concrete sets to provide expansion space between concrete and steel tank during use.
8. Steel tanks shall be supported by internal bracing.
9. No steel or insulating spacer panels in unit shall come in direct contact with concrete or any other corrosive material with the exception of tank top openings which must be schedule 40 steel pipe.

B. Concrete Encasement

1. Steel tanks and secondary containment shall be encased in homogenous layer of a minimum 5,000 psi factory poured reinforced concrete 6 inches thick with no penetrating metal elements except at the top.
2. Vault shall be of a continuous and visually verifiable monolithic (seamless) pour on top, bottom and sides of steel tank and contain no cold joints or heat sinks (heat transfer points) on bottom and sides.

3. Vault shall have capability of physical monitoring between primary and secondary containment.
4. Vaulted tank shall be tested in accordance with U.L. Standard 1709 and shown to have a two hour fire wall as mandated by the Uniform Fire Code.
5. Complete tank and vault assembly including secondary containment U.L. 2085 for insulated and protected tanks

C. Installation, Compliance and Other Specifications

1. Unit shall have concrete exterior finish with protective coating or architectural finish.
2. Unit shall have permanent exterior warning signs of proper location and configuration to meet applicable code requirements.
3. Unit shall be approved for stage I and Stage II Balance Recovery (California Air Resources Board Executive Order G-70-116).
4. Vaults shall have concrete support legs of unitized monolithic construction. Unit shall be placed on a foundation of a minimum eight inch thick reinforced concrete pad.
5. Tank shall have seven gallon overfill system, U.L. listed, with internal reservoir or optional exterior overfill and normally closed U.L. listed drain port where required.
6. Vaulted tank design shall have been in manufacturing production and commercial use for a minimum of ten years.
7. Tank and concrete vault shall be finished as one unit at factory and requires no assembly, construction or completion at installation site.

D. Tank Details

1. PRIMARY TANKS: The primary tanks (consisting of a combination of 5000 diesel and 7000 gasoline fuel storage within a nominal 12,000 gallon enclosure) shall be both rectangular in shape and have continuous welds on all 4 sides of EACH tank and conforming with The American Welding Society Standard for continuous weld. The primary tank shall be minimum 0.125 inch thick carbon steel approved per U.L. Standard 142. The tank shall be warranted for 20 years (optional 30 years) by the manufacturer.

Provide the facility with a Convault Above Ground Tank System. Additional details may be obtained by contacting United Concrete Products, Inc. at 800-234-3119.

2. **CONCRETE ENCASEMENT:** The concrete encasement shall be 6 inches thick with minimum design strength of 5,000 psi. The concrete design shall include the following for long-term durability; air entrainment, water-reducing admixture, rebar reinforcement. Vault shall be a coated concrete exterior and of a continuous and visually verifiable monolithic (seamless) pour on top, bottom and sides of steel tank and contain no cold joints or heat sinks (heat transfer points) on bottom and sides. The steel tank shall be pressurized at 5 psi during concrete encasement.
3. **FIRE RESISTANCE:** The tank system shall be designed and tested to provide 2 hour fire protection for the primary tank. No Steel members shall penetrate the walls or floor of the concrete encasement to assure isolation from pool fire heat. The fire resistance of the tank shall be tested in accordance with the procedure established in U.L. 1709 by Warnock-Hersey International, a certified fire testing facility. The monolithic concrete construction provides a 2 hour fire protection rating and is listed in accordance with Underwriters Laboratory subject 2085. The U.L. subject 2085 listing establishes not only fire protection, but also resistance to impact, bullet resistance and environmental resistance.
4. **THERMAL AND CORROSION PROTECTION:** The tank construction shall include thermal insulation to protect against temperature extremes and corrosion by isolating the steel tank from the concrete. No Steel or insulating spacer in unit shall come in direct contact with concrete or any other corrosive material.
5. **SECONDARY CONTAINMENT WITH LEAK MONITORING:** The tank system shall include an impervious barrier to contain leaks from the primary tank. A leak detection access tube shall be located between the inner tank and secondary barrier. In the event of a leak, a positive space shall be available to permit leaked fluid to flow to the detection tube.
6. **OVERFILL/SPILL CONTAINMENT:** The tank system shall include a minimum 7 gallon internal overflow/spill containment surrounding the fill pipe, which is U.L. Listed. The local authority may find equivalency in existing external overflow/spill containment devices. The overflow/spill container shall include a normally-closed plunger valve to release spilled product into the main tank. An

optional external overfill/spill container is available. Both units are part of the primary steel tank, but are slightly different in configuration.

7. **OVERFILL PROTECTION:** Overfill protection shall be provided by one or more of the following methods: a) direct reading level gauge at tank visible from fill pipe access; b) valve located within fill pipe to close automatically at a specified fill level; c) audible high level alarm activated by a float switch at a specified fill level.
8. **EXTERIOR FINISH:** The tank system has a concrete exterior to resist weather, reflect sunlight and inhibit corrosion. An optional architectural finish is available.
9. **VENTING:** Tank system shall conform to local jurisdiction.
10. **SUPPORT LEGS:** Vaults shall have concrete support legs of unitized Monolithic construction to provide visual inspection capability.

E. Execution

1. The tank system, including accessories shall be installed in strict accordance with the manufacturers recommendations and applicable fire and environmental codes. State and local permits shall be obtained prior to installation.
2. Tanks shall be installed on a reinforced concrete slab designed to support the fully loaded tank. Protective bollards may be installed on sides exposed to vehicles. Bollards shall be a minimum 4 inch diameter concrete filled steel pipe and shall be a minimum 6 feet long and installed in concrete a minimum of 3 feet into the ground. Location of bollards shall be in accordance with state and local codes.
3. Tanks shall be marked on all sides with warning signs: "FLAMMABLE", "NO SMOKING", product identification, and other signs as required by the applicable codes.
4. Electrical work shall be in accordance with local codes and shall be rated for hazardous area as required.
5. Unit shall be approved for Phase II Balance Recovery for gasoline and methanol (California Air Resources Board Executive Order G-70-116).

6. Vaulted tank design shall have been in manufacturing production and commercial use for a minimum of ten years.
7. Tank and concrete vault shall be shop-fabricated as one unit at factory and require no assembly, construction or completion at installation site.

2.2 TANK MONITORING AND LEAK DETECTION SYSTEM

- A. Furnish and install a complete Veeder-Root TLS-300C MULTI-TANK monitoring system which shall be configured to provide in-tank leak detection for above ground double wall storage tanks with MINIMUM OF two 8463 Mag Plus Magnetostrictive Inventory Measurement Probes to support above ground storage tank (AST) applications.
- B. Additional configurable options are designed to provide printed documentation and remote monitoring flexibility. The optional integral printer provides fast, quiet continuous printouts. The optional SiteFax option can be programmed to transmit leak detection and inventory reports, as well as real-time alarm reporting to fax machines or other communication devices.
- C. Standard features include high quality, low cost family of sensors and includes interstitial leak sensors for steel tanks, piping sump sensors, hydrostatic sensors, and discriminating dispenser pan and containment sump sensors.
- D. Features:
 - RS-232 Communication Interface with Auxiliary Port provides two 25-pin D-connectors for data transmission to computers or point-of-sale terminals.
 - Automatic continuous leak sensing: tank interstitial; piping sump.
 - Audible alarm and display indicate leak location.
 - In-tank warnings and alarms are activated for the following conditions: leak, overfill, low product, sudden loss, high water, delivery needed, test failure, tank test not performed.
 - Accepts up to eight interstitial/containment float sensors.
 - Interstitial and piping sump warnings and alarms are activated for the following conditions: fuel presence, low liquid, high liquid.
 - Alarm relays can trigger alarm/security devices.
 - Two built-in output relays provide for outputs to overfill alarms and external audible and visual warning devices.

- Either relay can shut down the submersible if power to the monitor is lost or a leak is detected.
- Emergency generator applications are selectable via programming.
- One system handles a mix of standard and emergency generator tanks.
- Records generator activity.
- Complete inventory reports before and after generator operations.

E. Configurable Features:

- Continuous statistical leak detection for in-tank leak detection without tank shutdown.
- Integral printer, which documents inventory leak detection, alarms and setup information.
- SiteFax modem for remote management of leak detection and inventory alarms and reports.
- Two Veeder-Root Magnetostrictive Probes for 0.1 GPH in-tank leak detection with 4" float kit and 5" cable.
- TWO Veeder-Root Inventory Only Probes for inventory control with 4" float kits and 5" cables.

F. Unit shall carry a one (1) year parts and labor warranty.

2.3 FUEL DISPENSING ACCESS CONTROL SYSTEM

- A. Furnish and install a MULTI_TANK Series FSC3000™ Fuel Site Controller for standard in fuel-management systems. The FSC3000™ is the most comprehensive solution for your fleet-fueling or petroleum-marketing applications, featuring the capability to conveniently track and report fueling transactions by driver and vehicle. **Furnish the owner with a minimum of 150 key fobs for personnel use and 150 swipe credit tpe cards along with all necessary programming as directed by the owner.**
- B. The FSC3000™ Fuel site Controller interfaces with many authorization and commercial fueling networks, as well as proprietary network cards. It allows the user to set fueling restrictions that limit specific vehicles to the type of fuel used and quantities purchased, thereby assuring complete fueling-system security, accountability and control.
- C. The FSC3000™ also provides various methods for controlling fuel dispensers, which may feature both mechanical and electronic pumps, along with Gilbardo CRIND and Wayne CAT in-dispenser card readers.
- D. Features:

- Each FSC3000™ shall be able to control up to 12 FITs or Dispenser Terminal Controls (DTC) with a maximum of 32 hoses per site.
- Optional Direct Pump Control communication via current loop or serial interface for Gilbarco, Wayne or Gasboy dispensers.
- PetroLink™ RFID access.
- ChipKey™ Read/Write Mileage Reasonability.
- Optional Dispenser Terminal Control allows communication to Gilbarco CRINDs and Wayne CAT in-dispenser card readers.
- Provide with Wireless 3G modem, Bluetooth™, 802.11 WiFi communication devices allow communication to remote locations in order to facilitate updates and retrieval of transaction data.
- Provide with 900 MHz wireless communication reduces installation cost from installing Petro-Net™ twisted-pair wires between the Fuel Island Terminal and building.

E. Benefits:

- Memory to support larger card files (more than 64,000 cards with optional memory card expansion).
- Embedded hardware platform for ultimate 24/7 reliability.
- Uses Flash technology to remotely download software updates.
- Integrated FSC3000™ can be installed inside a Fuel Island Terminal for installations where no building is available.
- Interfaces with OPW Tank Gauges for polling inventory and delivery data.
- Built-in Ethernet port for network connectivity.
- Multiple communication methods to access the system.
- Standard USB memory key for transaction backup/transfer, allowing for the option to update card files.

F. Memory:

- Standard memory 2,000 proprietary cards and 500 transactions.
- Expandable to 64,000 proprietary cards and 2,000 transactions.

G. Phoenix™ Software:

- Phoenix™ Plus – poll transactions, perform card updates, and run reports.
- Phoenix™ Premier – all of the Phoenix™ Plus features, plus tank-gauge interface for reconciliation.
- Phoenix™ SQL – a Web-based multi-user browser interface with controlled user access. Polls transactions and tank gauges

simultaneously, dramatically reducing data collection times for multiple fuel sites.

H. Networks:

- The FSC3000™ interfaces with many authorization and commercial fueling networks to accept the following cards:
CFN, Bank Cards, TCH, Fuelman®/GASCARD, Comdata, Fleet One®, Wright Express®, T-Chek™, EFS, Pacific Pride and Bypass
- Dual Network option reduces wait times for accessing two networks simultaneously.
- The registered bankcard feature permits 24-hour fueling in areas where unattended fueling is generally restricted.
- Optional IP Authorization Gateway gives the FSC3000™ the capability to use a high-speed Internet connection instead of a dial-up phone line to authorize fleet and credit-card transactions with dial-up backup.

I. Direct Pump Control:

- Support for Gasboy, Wayne and Gilbarco dispensers.
- Connects directly to pump manufacturer's distribution box.
- Serial to current-loop communication (Gilbarco or Wayne).
- Serial to RS-485 communication (Gasboy).

2.4 FUEL DISPENSING EQUIPMENT

- A. Furnish and install a total of (4) a fuel dispensing units, submersible pumps with electric solenoid and shear valves, hose, nozzle and swivel adaptor that shall be connected to individual $\frac{3}{4}$ hp submersible pump sets. Each entire assembly shall be factory installed and shipped to the site complete and ready for power and control connections. The pump shall include a motor starter, relays, and all necessary controls for proper operation.
- B. The systems shall be Wayne #S-1 Self-mounted Fleet Fuel Dispenser assemblies complete with all components Model G6101D series.
- C. The systems shall be fully compatible with the fuel management system and shall be capable of pumping up to 22 GPM (actual pumping rate dependant on submersible pump set but shall provide a minimum of 12 GPM flow rate for the gasoline pumping and 17 GPM flow rate for the diesel pumping rate, with the specified pumps.

- D. Units shall have register, Meters, Solenoid Valves and operate on 120 vac, 60 Hz.
- E. The cabinets shall be fabricated from Galvanealed steel for corrosion resistance, locking cover.
- F. Provide with Nozzle Boots and Hooks, Hose Hanger assemblies.
- G. The systems shall be C-UL-US Listed, Sealable by US weights and measures.
- H. Also provide with Hose Masts and OPW 10 Series Emergency Shut off valves # 10.

2.5 CRANE AND RIGGING SERVICES

- A. The project installation shall also include all costs associated with a crane service, shipping and trucking costs, loading and unloading costs for the delivery of the tank system and the pre-cast concrete pad.

2.6 MISCELLANEOUS EQUIPMENT AND PARTS

- A. Furnish and install hose retractor systems to keep the hose assembly off the ground during storage.
- B. Provide a Morrison fuel gauge at the top of each tank to show the tank's volume.
- C. Provide (2) Guillotine 4" 2000 fill limiters.
- D. Provide (2) vent package that shall consist of a 250-2000 Atmos Vent, and an Emergency Vent.
- E. Provide a Leak Detection Monitoring Tubes and sensors.
- F. Provide a Convault Base Slab 12,000. 5000 PSI Type III SCC Concrete.
- G. Provide an Overfill alarm (remote mounted at the building wall that shall have reset and acknowledge buttons.) for each tank.
- H. Provide with a 2" galvanized vent pipe with vent cap that shall be piped up through the roof as noted on the drawings and terminate a minimum of 3 feet above the roof line.
- I. Provide for each tank , remote side fill assemblies for filling the tanks from the delivery trucks. Each remote fill assembly shall have locking covers,

shall be water proof construction, stainless steel housing, have spill containment area with manual drain assemblies, fill check valves and fill quick connect hose connectors and isolation valves. Pipe the fill assemblies to the tank inlet connections with unions.

2.7 WARRANTEE

- A. The tank assembly shall be warranted as a Convault 12,000 gallon multi-tank assembly having a 20 year standard warranty.

2.8 FIRE EXTINGUISHERS

- A. Provide a minimum of (2) 20# capacity B-C type fire extinguishers one each mounted on each side of the tank assembly and mounted on the overhead canopy columns. They shall be complete with mounting and hanging brackets, and shall be listed for Class B fire use. The extinguishers shall be rated for use outdoors and be corrosion resistant construction. The final approved extinguisher proposed shall be first pre approved by the local fire marshal's office in writing.

PART 3 - EXECUTION

3.1 INSTALLATION, ADJUSTMENTS AND GUARANTEE:

- A. All tank control equipment shall be mounted no higher than 5'-0" off floor except where noted. The tank access control sensors shall be mounted no higher than 48 above finished grade
- B. All low voltage wiring , all conduits, etc shall be required to be installed by this division whether it be the tank installer's electrician or using the general electrical contractor. All costs associated with any of this line and low voltage shall be carried in the total cost proposal for this division. All mounting of the equipment shall be required under this division, etc.
- C. Provide laminated plastic name plates for all equipment so that their functions are know and understood. Provide itemized direction plates for the use of the gas filling operations, etc. This shall be as directed by the owner. Provide to the electrical contractor a detailed wiring diagram of each of the equipment that requires power wiring.
- D. After completion of the installation the contractor shall calibrate, regulate, and test and adjust all devices and other equipment in his contract.
- E. Contractor shall furnish at completion full control instructions to Owner's personnel, and shall provide framed and glassed control diagram together

with 3 bound copies of complete control manuals covering operating and full description of the individual components. These shall be submitted to the Architect.

- F. The contractor shall be required to provide at least 4 hours of training of the use of the fuel dispensing systems and their monitors, etc.
- G. The installation and set up shall be installed by certified contractors that shall have a 2085, P-9 License.
- H. The Pumps and dispensers shall be wired to dedicated separate 120 vac 20 amp, 1p circuit breakers.

3.2 SHOP DRAWINGS

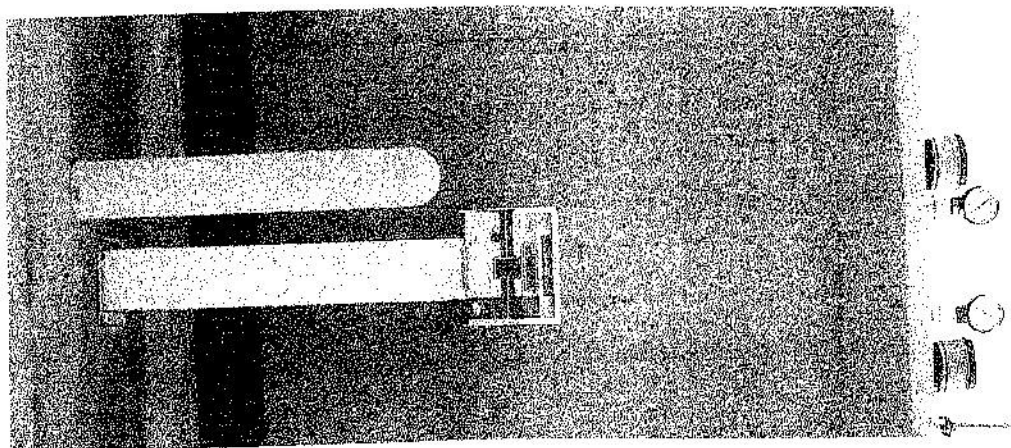
- A. Submit only required shop drawings as required per section 15010 paragraph 1.08 for the following items:
 - 1. Concrete tank pad.
 - 2. Fuel storage tanks and accessories.
 - 3. Venting ports.
 - 4. Piping and wiring diagrams.
 - 5. Tank monitoring system and wiring diagrams.
 - 6. Tank monitoring and inventory control system and wiring diagrams.
 - 7. Fuel pumps and dispensing equipment.
 - 8. Remote overfill alarm system and wiring diagrams.
 - 9. Filling port equipment.
 - 10. Misc equipment and parts.
- B. Submittals must comply with the requirements of Paragraph 15010 - 1.3 B.

3.3 ATTACHMENTS

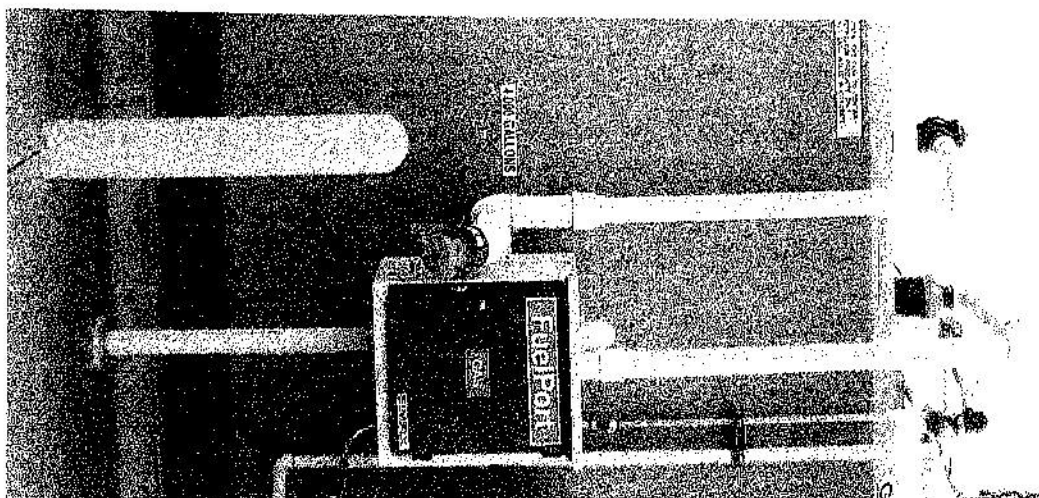
- A. Refer to the following two attachments for “A Typical details of the tank assembly arrangement that we are expecting as the final product installed.
- B. Install the fill ports on the ends of the tanks, install the refueling assemblies on the sides, 1-diesel and 1- gasoline on each side. Install the access control on the front end center of the tank. Install concrete bollards on 5 foot centers all around tank, the bollards shall have PVC covers.

END OF SECTION 15550

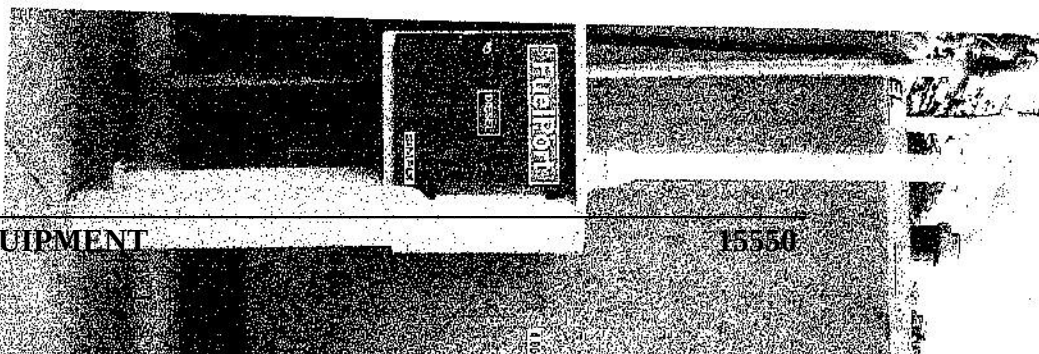
ACCESS CONTROL ASSY

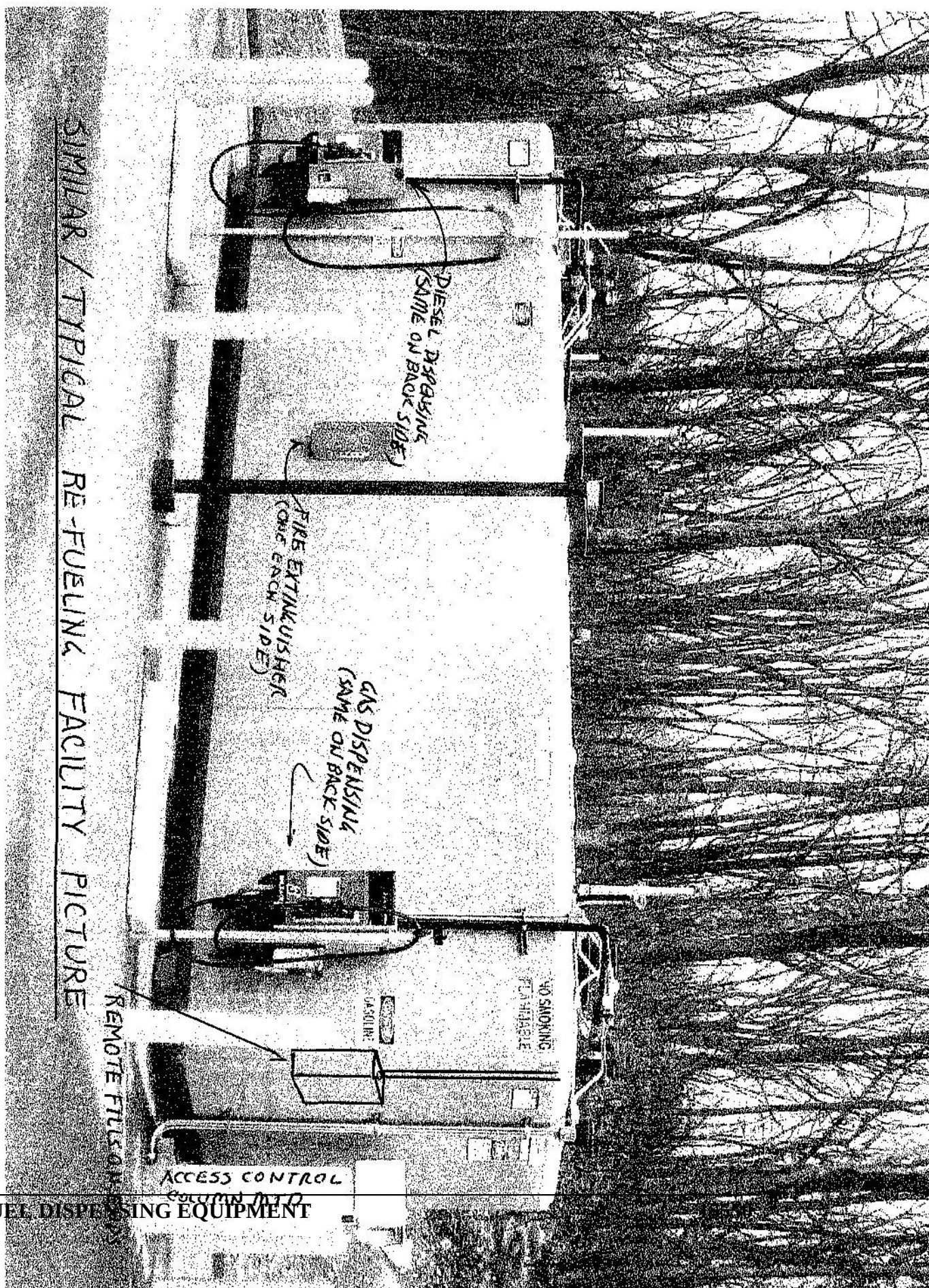


GAS FUEL FILLING PORT



DIESEL FUEL FILLING





DIVISION 16 - ELECTRICAL**SECTION 16010 - GENERAL PROVISIONS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Instructions to Bidders, AIA Document A201 – 2007, “General Conditions of the Contract for Construction,” the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SCOPE

The work covered by this section includes the materials, labor, methods, workmanship and general requirements which shall apply to the work covered by the other Sections of this Division which follow.

1.3 DESIGN BUILD SCOPE OF WORK

- A. This specification outlines the requirements for the design/build electrical power, canopy lighting, lightning protection, tank monitoring-control wiring requirements for this project. The project specifications relate to the installation of the entire system as a TURN KEY installation with all required work included to properly install and operate the new proposed diesel and gas dispensing facility and structural canopy with lighting and lightning protection.
- B. The contractor shall be required at a minimum to provide the following: Understand that this is just an outline of work required. Actual required work shall be coordinated with the general contractor for the project.
 - 1. Provide a new local power panel that shall be dedicated to the fuel dispensing facility that shall consist of a new 120/240 or 208 volt single or three phase 125 amp panelboard with main circuit breaker and feeder to the building’s electric service main distribution panel. Match the voltage and phase to the existing service. Provide a new 60 to 100 amp circuit breaker in that panel if space is available or tap the panel per the NEC tap rules and provide the breaker external in a NEMA 1 enclosure. Install the new panel near the exterior wall where the new underground conduits exist the building and where directed by the owner. The panel shall have a minimum of 12 active 20amp, single pole circuit breakers and space for 6 future.

2. Provide a minimum of (12) power circuits for the following:
 - 4-submersible fuel pumps, 20a, 1-pole each
 - 4-dispensing units, 20a, 1-pole each
 - 1-fuel management system, 20a, 1-pole
 - 1-access control system, 20a, 1p
 - 2- canopy lighting circuits. 20a,1-pole each (verify- might be 208v)

All wiring shall be installed to meet Article 514 for hazardous location installations.

3. Provide an engineered Lightning Protection System for the new canopy that shall be fully designed and installed by certified Lightning Protection contractor.
4. Provide connection and wiring for the new canopy lighting fixtures that shall be provided with the canopy system. Coordinate installation of the fixtures as well.
5. Provide all new underground conduits (RIGID GALVANIZED) from the building and out to the new canopy and tank pumps, and control systems.
6. Provide wiring and conduits for the remote overfill alarm system.
7. Provide wiring and conduits for the remote emergency stop system.
8. Provide tagging and identification as well as panel circuit labeling of the panelboard circuits. Also provide labeling of all equipment as needed.
9. Provide all above ground conduits and wiring as required at the tank and pumps as required by the supplied tank assembly instructions.
10. Provide electronic time clock (DPST) for the two canopy lighting circuits and wire to the light fixtures. Install inside building near new panelboard.
11. Provide power wiring and low voltage control wiring for both the fuel tank monitoring and leak detection system as well as the vehicle and personnel security access system panel at tank and the controller inside the building.
12. Provide temporary wiring , home run and circuits for the proposed Alternate temporary fueling tank assembly if accepted. This shall consist of circuits run above ground in conduit to the building where

shown and noted on the civil drawing. Including any additional safety wiring and controls if required by code or the installer.

1.4 DRAWINGS AND COORDINATION

- A. The Civil Drawings accompanying these specification show the general layout, however, they do not show every fitting, offset, conduit, etc. and the Contractor is to furnish all fittings and offsets and other parts necessary to make this installation complete and left in good operating condition.
- B. Drawings are based, in general, on the particular type and make of equipment named by the specifications, and therefore, wiring diagrams, etc. of various systems are not final subject to receipt of shop drawings of the system.
- C. Conduits and accessories, the location and arrangement of which must be approved, shall not be installed until the equipment is approved, and the entire assembly coordinated.
- D. Contractor shall install work as closely as possible to layout shown, but he shall make, without extra charge, any changes in the routing of conduit as necessary to meet job conditions and clear equipment and services of other trades shown on other drawings. Locations of services are approximate and subject to modifications required by conditions.
- E. The right to make any reasonable changes in locations of conduit and equipment up to time of installation is reserved by the Civil Engineer without involving any additional expense to the Owner.
- F. Methods of running conduit and making connections shall be in accordance with best practices, and in all cases satisfactory to the owner, Architect or Engineer.

1.5 EXAMINATION OF SITE

- A. Before submitting his bid, the Contractor shall visit the site with plans and specifications in hand and shall become thoroughly familiar with all conditions under which his work will be installed, since he will be held responsible for any assumption he may make in regard thereto, particularly where fitting new work to existing construction.

1.6 COORDINATION OF TRADES

- A. The Contractor shall become familiar with the work of all trades and shall coordinate the work in those areas where work of other trades are indicated.

Work installed, making it impossible to install work of other trades because of lack of coordination is subject to removal, if required, at no additional cost to the Owner, such cost being fully borne by the Contractor making the improper installation including the cost of any cutting, patching or relocation of work by another Contractor. Coordinate installation under the supervision of the GC. Coordinate all work with the other trades.

- B. Bidders, during the period of figuring the job for submission of bid, shall secure a complete set of Plans and Specifications for the project so that he will have a clear and concise understanding about the work he has in relation with those trades.

1.7 METHODS AND PROCEDURES

- A. The Contractor agrees to carry on the work in an orderly manner, and under the constant supervision of a competent foreman who shall be on the job at all times during the progress of the work.
- B. Carefully examine all plans and specifications and check them against the conditions under which the work is to be done and the Contractor shall assume all responsibility thereof.
- C. The Contractor shall direct and supervise the progress of the work described and shall perform the work at the proper time so as not to unnecessarily delay any work being performed under another contract.

1.8 SUBSTITUTIONS

- A. Whenever an item is described or indicated by a specific make, model or figure number, it is understood that comparable articles of other manufacturers may be acceptable, but only provided they are equal in the opinion of the Architect and acceptable to Owner, and formal written approval thereof is obtained.

1.9 SHOP DRAWINGS

- A. Contractor shall submit for approval shop drawings of all equipment to be used in the installation in accordance with the General and Supplementary Conditions.
- B. General bulletins or catalogs will not be accepted as shop drawings unless the equipment on which approval is to be obtained is specifically marked, and all information pertaining to the item including dimensions where required for installation is included.

1.10 RECORD DRAWINGS

- A. Contractor is to keep an accurate record of any changes in locations, and conduit runs from those shown on the plans. Refer to the General Conditions for more complete instructions.
- B. In addition, shop drawings for any equipment, including wiring or piping diagrams, which is not finally installed in accordance with the original submittals, shall be corrected and resubmitted for approval in the same manner as required for original submissions.
- C. Contractor shall red line (2) clean sets of prints of all changes to the project at the end of the completed work and turn these sets over to the owner for final record.

1.11 CONTRACT STANDARDS

The following industry standards shall be considered as minimum requirements under this specifications:

- A. **State Building Code – 2009 Amendment to the 2005 Connecticut Supplement:** All of the following are applicable, except as amended, altered or deleted by this Connecticut Supplement and are hereby adopted by reference as the 2005 State Building Code. The requirements of the 2009 Amendment to the 2005 State Building Code shall apply to all work for which a permit application was made on or after August 1, 2009.
 - 2003 International Building Code
 - 2003 International Existing Building Code
 - 2003 International Plumbing Code
 - 2003 International Mechanical Code,
 - 2009 International Energy Conservation Code
 - 2005 NFPA 70 National Electrical Code
 - 2009 Amendment to the 2005 Connecticut Supplement
 - Amendments to the 2003 International Building Code
- B. **Connecticut Fire Safety Codes:**
NFPA 101 National Fire Safety Code
Amendments to the CT Fire Safety Code
- C. **Handicap:**
ASME/ANSI A17.1 Safety Code for Elevators & Escalators
Addenda to ASME/ANSI A.17.1

1.12 MATERIALS

- A. All equipment, materials, and workmanship, whether specifically described or shown, or whether implied, is to be new of latest model, first-quality, and grade satisfactory to the owner. The owner shall have the right to reject any part of the work in case equipment, material, or workmanship is not of satisfactory quality and the Contractor shall replace same with acceptable work at his own expense.
- B. No damaged equipment or material shall be replaced by the Contractor and used in the installation without first obtaining written approval from the Architect.

1.13 MANUFACTURER'S INSTRUCTIONS AND CODES

- A. In general, all equipment and conduit shall be installed in accordance with manufacturer's instructions and Local Codes having jurisdiction. If they conflict with contract requirements, Contractor shall obtain written instructions from the Architect before proceeding with the installation.
- B. Where the specifications exceed the manufacturer's or Code's minimum requirements, Contractor shall install equipment or conduit in accordance with the specifications.

1.14 NAME PLATES

- A. Identify all electrical accessories, boxes, switches and controls with name plates where their function is not apparent. Where such accessories also appear on wiring diagrams, etc., they shall be similarly identified.
- B. Name plates shall be made of laminated plastic material not less than 1/8" X 1" X 2" with 1/4" high engraved lettering or field fabricated with a typewriter on contrasting aluminum tape.
- C. Attach name plates with screws, bolts, adhesive, or rivets to a fixed part or on the wall above or below the item.

1.15 SEISMIC REQUIREMENTS

- A. Provide lateral bracing and/or support for all electrical conduits as shown in the typical details on the drawings
- B. All electrical equipment shall be securely fastened to floors or walls (to partition studs where used.)

- C. Refer to the latest Codes regarding additional requirements. Seismic restraints shall not be required for the following installations:
 - 1. All electrical conduit less than 2-1/2-inch inside diameter, where hung more than 12" from structure.
 - 2. All electrical conduit secured directly to structure.

1.16 PULL BOXES

- A. Provide pull boxes and cable ducts for the pulling, nesting, or concealment of wires or cables where shown and also where required and not shown.
- B. Boxes and covers shall be hot dipped galvanized and built of code gauge steel with angle iron supports and braces. Insulated racks shall be provided where required. Access shall be by means of removable screw covers.

1.17 SUPPORTS

- A. Provide supports and braces where required for the proper installation of all panels, boxes, switches, and control equipment, conduits, raceways, cables, as well as all other equipment installed and connected in accordance with these specifications and accompanying drawings.
- B. Furnish free standing or floor supports where required for equipment not mounted on walls. Do not mount electrical equipment on other equipment without approval of the Architect.
- C. Where exposed conduit runs are necessary, the conduit shall be supported by individual hangers or malleable iron two-hole pipe straps, or where multiple runs are installed and they shall be supported to multiple hangers at not more than 8 ft. spacing on centers to prevent sagging.
- D. In no instance shall conduit be installed on hangers for plumbing, heating, or any other piping nor have any physical contact with same except where the system is grounded on the street side of the water meter.
- E. Support cabinets, pull boxes, and outlet boxes independently of the conduit. Where exposed conduit or cable runs are found to be necessary the Contractor shall notify the Architect at once as to the reason for running them exposed.
- F. Use Ackerman-Johnson, Steel City, Unistrut, or approved equal inserts for small work and expansion shields for larger work. No wooden plugs will be allowed.

1.18 GROUNDING

- A. Standards set forth by the N.E.C. relative to protective grounding and bonding of all equipment and services, shall be followed together with the rules and regulations of the Local Utility Company.
- B. Contractor shall be responsible for complete and proper grounding and bonding of all parts of the conduit system, gas pumps, fueling stations, control panels, access control system and connection to the new canopy steel structure and its separate ground rods. The contractor shall demonstrate its efficiency if required by the building department by means of application of a 120 volt, 15 amp. load applied through any part of conduit system as directed.
- C. All grounding and bonding material shall be of copper or brass construction using Burndy, O.Z., T & B or approved equal grounding fittings where grounds are connected to service pipe, etc.
- D. Properly bond flexible conduit connections to motors with copper at both ends to avoid breaking of continuity of grounding due to vibration.

1.19 TESTS

- A. At the time of final inspection and test, all wiring, and connections throughout the building must be completed, devices and equipment properly operating, all lighting fixtures installed, power and lighting circuits and control wiring clearly identified with approved tags ready for acceptance. Each system must test free from short circuits and from grounds, and have insulation resistance in accordance with the N.E.C. Complete tests of all systems shall be made in the presence of the owner.

1.20 INSTALLATION REQUIREMENTS

- A. Secure all apparatus and materials supported on masonry with expansion bolts or equal materials.
- B. All electrical equipment such as junction and pull boxes, panelboards, switches, controls, and such other apparatus requiring maintenance and operation shall be made easily accessible.
- C. All feeders in pull boxes and cabinets and branch circuits in outlets and pull boxes having more than one circuit shall have fiber tag attached, designating the name or number of the circuit.

- D. Install and properly connect the proper number of wires to make the lighting, power, and auxiliary systems wiring complete ready for satisfactory service.
- E. Before ordering any material or doing any work the Contractor shall verify all conditions and measurements existing, and shall be responsible for the correctness of same, particularly fitting new work to existing construction. No extra charge nor compensation will be allowed on account of differences between actual dimensions and measurements indicated on the drawings, the owner for consideration and decision before proceeding with the work.

1.21 OPERATING INSTRUCTIONS

- A. Two (2) copies of maintenance, lubrication, and operating instructions for all equipment having moving parts shall be provided by the Contractor for Owner's use. This literature may be delivered with shop drawings or at time of delivery of equipment and shall include list of replacement parts. Such submission must be made formally through the Owner and architect to the Architect.
- B. Each Subcontractor must thoroughly instruct Owner's personnel as to proper operation of his system and each shall provide qualified personnel to give at least (2) 4 hour sessions of undivided supervision therefore.

1.22 GUARANTEE

- A. In addition to any supplemental guarantees obtained from any equipment manufacturer, the Contractor shall guarantee the prompt replacement of any faulty section of his installation without cost to the Owner if indication thereof occurs within one (1) year of acceptance of equipment by the Owner.

1.23 DEBRIS REMOVAL

- A. Each contractor shall at all times keep the premises free from the accumulation of waste materials and rubbish caused by his operations and shall remove the waste materials and rubbish from the job site on a periodic basis to the on site dumpster supplied by the general contractor. If any contractor does not conform to this requirement the owner shall have this work done and deduct the cost thereof from funds due the contractor from the Owner.

1.24 DEMOLITION

- A. The contractor shall be responsible for all demolition of all existing electrical work associated with the existing underground tanks and

existing abandoned and removed fuel dispensing system that shall include but not be limited to the following:

- Remove all existing underground conduits and circuits from the existing pump island and all associated wiring and conduit.
- Remove existing fuel tank monitoring system and associated wiring from the underground tanks. Secure the circuit to the panel as required.

END OF SECTION 16010

DIVISION 16 - ELECTRICAL**SECTION 16050 - BASIC MATERIALS & METHODS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Instructions to Bidders, AIA Document A201 – 2007, “General Conditions of the Contract for Construction,” the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SCOPE

The work covered by this Section includes all labor, materials, equipment and accessories to complete the installation of the electrical power and lighting systems specified hereinafter and/or shown on the drawings, including but not limited to the following major items:

- A. Furnishing and installation of the following electrical work that shall be **installed to comply with Article 514 for hazardous wiring where applicable:**
1. New power panelboard and circuit breakers.
 2. Feeders, conduits, raceways, etc. for all new equipment and controls as well as for the temporary fueling facility if the alternate is accepted.
 3. Devices, including switches, receptacles and misc devices.
 4. Branch circuits, wire and conduits, raceways, etc.
 5. Equipment power, wiring and conduits, circuits, etc.
 6. Power wiring and controls for outdoor gas/diesel fueling station.
 7. Canopy lighting circuiting, etc.
 8. Grounding systems complete with cable and connections for system and grounding. Also “Halo Grounding system and system extensions with outdoor grounding grid and bonding back to the service equipment.

9. All cabinets, conduit fittings, outlet boxes, hangers, supports, fuses and such other items required and incidental for a complete installation.
10. Complete design and installation for the Lightning Protection system for the building and all its components, etc.

PART 2 - PRODUCTS

2.1 POWER PANELBOARD

- A. Contractor shall furnish and install where shown on plans, (1) new power and branch panelboard for the required circuits of the refueling system and its canopy lighting.
- B. Panel shall be rated 125 amps for the service voltage at the facility and be provided with a main 60 to 100 amp circuit breaker. Run a new feeder to the existing building's main distribution panel and add (1) 60 to 100 amp , 2 or 3 pole pole circuit breaker, run #3 AWG copper feeder with neutral and ground. If there is insufficient space in the panelboard , tap the panel per the NEC tap rules and install in a NEMA 1 enclosure nearby. Provide with (12) 20a, 1-pole circuit breakers or other breakers as needed for the new equipment and lighting circuits + 4 spaces for future circuit breakers. (field verify these circuit requirements and voltages, etc prior to ordering the panel and wiring.)
- C. All panelboards shall be as manufactured by General Electric Company, Square D, or ITE.
- D. Circuit breakers shall be of 1, 2 or 3 pole bolted construction as required and shall be rated 250 V.A.C. respectively as required with trip element calibrated (15 to 200 amps) in capacities as indicated on plans.
- E. Breakers shall have a quick make and quick break toggle mechanism inverse time limit characteristics and shall be trip free on overload or short circuit. Automatic release shall be secured through the medium of a thermal magnetic trip element engaged in the releasing catch of the mechanism. Automatic tripping shall be indicated by the handle automatically assuming a position between the manual "OFF" and "ON" position.
- F. Individual trip units shall be calibrated and scaled to eliminate tampering or unauthorized changes in lighting calibration. Breakers shall be interchangeable and capable of being operated in any position as well as

being removable from the front of the panelboard without disturbing adjacent units.

- G. Boxes shall be made of code gauge sheet steel and the edges shall be turned in a sufficient distance to properly support the trim. Boxes shall be provided with wiring gutters at top, bottom and sides.
- H. Front shall be of code gauge full finish steel. Trim shall be attached to box by means of adjustable trip clamps provided in sufficient quantities so that trim will be rigid.
- I. The door shall be fastened in trim with concealed hinges and provided with flush type combination catch and lock. All locks to be arranged for same master key. Panelboards shall be provided with removable barriers.
- J. Panelboards will be of the surface mounted type as required and shall be set plumb and symmetrical with surrounding objects.
- K. Furnish a card index holder on inside of door, with type written index clearly indicating room, location or individual equipment each circuit controls.

2.2 OUTLET BOXES

- A. Boxes shall be sized to accommodate; - (1) structural conditions, (2) size and number of raceways and conductors entering, and (3) device or fixture for which required.
- B. Provide suitable blank covers for all outlet boxes used as junction boxes or outlets not used.
- C. Boxes shall be Appleton, General Electric, National Electric Products, Knight Electric Co. or approved equal in masonry construction, and in furred ceilings with two 1/8" X 3/8" bars of sufficient length to reach ceiling super structure and attach thereto with galvanized wire.

2.3 CONDUIT

- A. All line and low voltage wiring shall be run in conduit.
 - 1. Conduit outside above ground and below ground shall be heavy wall rigid metal with threaded joints and fittings. Also fill all voids around conduits penetrating Fire Rated Wall Assemblies with approved fire caulk. Refer to Paragraph A-8 under conduit and Division 07270 for additional information and requirements. **All**

wiring associated with this work shall be in compliance with Article 514 for hazardous locations.

2. Conduit run in dry locations inside building shall be EMT with standard fittings.
 3. All conduit runs shall have a separate green ground wire installed.
 4. No aluminum conduit will be permitted.
 5. Conduits run through Fire or Smoke Rated Walls & floors. Fill the voids around conduit with a soft incombustible material having a UL1479 classification equal to "Flame-safe " # FSP1100 fire stop putty. Putty shall be installed to a depth of 1 1/4" on both sides of wall.
- B. Minimum size of conduit shall be 3/4" with larger sizes as required by the N.E.C. or as called for on plans. It is recommended that all runs out to the refueling station be a minimum of 1".
- C. Joints shall be made tight with standard couplings, and corners turned with elbows or long radius bends in pipe or by means of pipe hickey without damage to conduit.
- D. All threaded joints in conduit runs outdoors and underground shall be made watertight by red leading with the lead applied to the make thread only. A conductive lubricant, T & B Kopr/shield or equal, shall be applied over the red lead. This also applies to steel conduits run underground.
- E. All conduit fittings where used shall be the threaded type and shall be Crouse-Hinds, Appleton, General Electric or equal.
- F. Running threads will not be permitted but conduit unions such as "Erickson" conduit couplings made by Thomas & Betts, General Electric, Appleton, or equal will be permitted.
- G. Exposed single conduits shall be hung with Bergen-Paterson or equal #100 clevis hangers using beam clamps or similar supports.
- H. Ream all conduits, remove all burrs, and clean conduit for the proper introduction of wire. All conduit ends shall be capped and plugged with standard conduit accessories as soon as conduit has been permanently installed in place.

- I. All conduits shall be capped with metal cap until the Contractor is ready to pull wires. When he is ready to pull wires the caps shall be removed and mandrel or swab is to be pulled through all conduit in order that any foreign particles may be removed.
- J. All conduit of 1-1/4" and larger shall have insulating bushings in panel or pull boxes.
- K. All conduits will be subject to continuity tests either before concealing or before wires are pulled in.
- L. All rigid conduit shall have double locknut and bushing at each pressed steel box or cabinet.
- M. Provide 18" of "Sealtite" flexible conduit at all motors or frames so that motor noises and hum will not be transferred to other parts of the building. Connections to insertion type control equipment shall be of sufficient length to allow removal for servicing.
- N. Furnish and install junction or pull boxes in conduit runs as shown on drawings and also where not shown but as required by the N.E.C. Boxes shall be sized in accordance with the N.E.C. based on the number and sizes of the conduits, number and sizes of the wiring, etc.

2.4 CANOPY LIGHTING CONTROLLER

- A. Provide for the two lighting circuits at the new Canopy – photocell controllers that shall bring on the lighting whenever the sun is down (adjustable) these can be mounted on the canopy side or at the building.

2.5 WIRE AND CABLE

- A. All wire used shall be Type THHN or THWN. All wiring shall be solid or stranded conductor copper for #10 AWG and smaller and stranded copper for #8 AWG and larger. No aluminum or copper clad aluminum conductors will be allowed.
- B. Control wire for 120 volt service shall not be smaller than #14 and shall be copper. Control wire for 24 volt service shall not be smaller than #16. For general wiring, no wire shall be less than #12 unless otherwise noted or specified.
- C. All wiring shall have the neutral conductor in white color. Grounded conductor shall be green in color.

- D. Wire shall be as manufactured by National Electric Products, General Electric, Anaconda, or approved equal.

2.6 WIRING DEVICES (Where required)

- A. The following itemized list, is given for the purpose of conveying to the Contractor the quality and rating of wiring devices to be installed under the Contract. Any or all devices may be as manufactured by LEVITON, or approved equal to Bryant Electric Co., Arrow Hart & Hegeman, Harvey Hubbell. A complete itemized list of all devices must be submitted for approval before installation.
 - 1. Convenience Outlets: IF required
 - a. Duplex GFI Grounded Receptacle Spec grade - 15 amp., 125 volt, #6598-I-GFI , in white or ivory per architect.
 - 2. Wall Plates:
 - a. All plates shall be of the high abuse NYLON type, Leviton Series #80700 for receptacles, switches, etc., single or gang plates as required. Color- Ivory, red, blue, ivory and white as noted and or directed by the Architect.

2.7 FIRE CAULKING (where required by code)

- A. Floor or Wall Assembly – Light weight or normal-weight (100 – 150 pcr) concrete. Except as noted in table under Item 4, minimum thickness of solid concrete floor or wall assembly is 4 ½ inches. Floor may also be constructed of any minimum 6” thick UL Classified hollow-core Precast Concrete Units. When floor is constructed of hollow-core precast concrete units, packing material (Item 3) and caulk fill material (Item 4) to be installed symmetrically on both sides of floor, flush with floor surface. Wall assembly may also be constructed of any UL Classified Concrete Blocks.
- B. Through Penetrants – One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Maximum annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Minimum annular space between pipe or conduit and edge of through opening is zero inches (point contact). Pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
 - 1. Conduit – Nom 6-inch diameter (or smaller) rigid steel conduit.

2. Conduit – Nom 4-inch diameter (or smaller) steel electrical metallic tubing.
- C. Packing Material – Polyethylene backer rod or nom 1-inch thickness of tightly packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of caulk fill material (Item 4).
- D. Fill, Void or Cavity Material – Caulk – Applied to fill the annular space flush with top surface of floor. In wall assemblies, required caulk thickness to be installed symmetrically on both sides of wall, flush with wall surface. At point contact location between penetrant and sleeve or between penetrant and concrete, a minimum $\frac{1}{4}$ inch diameter bead of caulk shall be applied at top surface of floor and at both surfaces of wall. The hourly F Ratings and the minimum required caulk thicknesses are dependent upon a number of parameters, as shown in the following table:

Minimum Floor Or Wall F <u>Thickness, Inches</u> <u>Rating, Hour</u>	Nom Conduit <u>Diameter, Inches</u>	Max Annular <u>Space, Inches</u>	Minimum Caulk <u>Thickness, Inches</u>
2 $\frac{1}{2}$	$\frac{1}{2}$ - 12	1 $\frac{3}{8}$	$\frac{1}{2}$ 2
2 $\frac{1}{2}$	$\frac{1}{2}$ - 12	3 $\frac{1}{4}$	1 2
4 $\frac{1}{2}$	$\frac{1}{2}$ - 6	1 $\frac{3}{8}$	$\frac{1}{4}$ (a) 2
4 $\frac{1}{2}$	$\frac{1}{2}$ - 12	1 $\frac{1}{4}$	$\frac{1}{2}$ 3
4 $\frac{1}{2}$	$\frac{1}{2}$ - 20	2	1 3
4 $\frac{1}{2}$	$\frac{1}{2}$ - 20	2	1 3
4 $\frac{1}{2}$	$\frac{1}{2}$ - 12	3 $\frac{1}{4}$	1 3
4 $\frac{1}{2}$	22 – 30	2	2 3
5 $\frac{1}{2}$	$\frac{1}{2}$ - 6	1 $\frac{3}{8}$	1(b) 4

- a. Minimum 2 inch thickness of mineral wool batt insulation required in annular space.
- b. Minimum 1 inch thickness of mineral wool batt insulation required in annular space on both sides of floor or wall assembly. Minimum 1 inch thickness of caulk to be installed flush with each surface of floor or wall assembly.

PART 3 – EXECUTION

3.1 WIRING FEATURES

- A. **All wiring shall be installed to meet Article 514 for hazardous location installations.**
- B. The proper number of wires shall be installed and properly connected in order to make the lighting and power systems wiring complete, ready for satisfactory service.
- C. Connect all wires in outlet boxes, leaving only those ends, at least 6" long, which will be connected to fixture wires.
- D. All feeders in pull boxes and cabinets and branch circuits in outlets and pull boxes having more than one circuit shall have a fiber tag attached, designating the name or number of the circuit.
- E. Receptacles shall be wired with 6" pigtails, no loop allowed.
- F. Splices of wires are to be eliminated wherever possible and where necessary are only to be made in readily accessible pull and outlet boxes.
- G. "Y-ER-EAS" may be used as a lubricant to facilitate the pulling of wires.

3.2 SHOP DRAWINGS

- A. Submit required shop drawings for the following item:
 - 1. Power Panels.
 - 2. Wiring Devices.
 - 3. Wire and cable.
 - 4. Electronic Time Clock
- B. Shop drawings that do not comply with Sub-paragraph 16010 1.9 B. will be rejected.

END OF SECTION 16050

DIVISION 16 – ELECTRICAL**SECTION 16670 – LIGHTNING PROTECTION (ALTERNATE)****PART 1 -GENERAL****1.1 RELATED DOCUMENTS**

- A. Instructions to Bidders, AIA Document A201 – 2007, “General Conditions of the Contract for Construction,” the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this Work. Note also all Addenda.

1.2 STANDARDS

- A. The following specifications and standards of the latest issue form a part of this Specification:
1. Underwriters Laboratories, Inc., (UL)
Installation Requirements for Lightning Protection Systems, UL 96A
 2. Underwriters Laboratories, Inc.,
Lightning Protection Components, UL 96
 3. National Fire Protection Association
Standard for the Installation of Lightning Protection, NFPA 780

1.3 SYSTEM DESIGN

- A. The work covered by this section of the specifications consists of furnishing all labor, materials and items of service required for the completion of a functional and unobtrusive lightning protection system for the protection of the Refueling Station Canopy and structure. **The bid for this lightning protection system shall be assumed to be an ALTERNATE. Refer to the bid form and provide the cost at the appropriate bid line.**
- B. The designer shall be responsible for the complete design of the lightning protection system that shall include locating and defining all locations of lightning rods, types of arresters to be used, wiring and grounding system, protection of all rooftop mechanical equipment including rooftop AC units, fans, misc mechanical systems, vent pipes, etc. If any departure from the contract documents or submittal drawings, covered below are deemed necessary by the Contractor, details of such departures and reasons therefore

shall be submitted as soon as practical to the architect and engineer for approval.

- C. The lightning protection system shall be designed by a Lightning Protection Certified Master Designer and the drawing shall bear the seal. The seal shall be current at the time of submission and shall be signed by the Master Designer. This shall be accepted in lieu of a state certified engineers stamp on the lightning protection drawings.
- D. The lightning protection installation company shall employ LPI Certified Master Installers to do the actual installation and the certification shall be part of the submittal package. The card shall be carried onsite at all times.

1.4 SUBMITTALS

- A. Complete design drawings showing the type, size, and locations of all grounding, down conductors, through-roof / through-wall assemblies, roof conductors, and air terminals shall be submitted to the architect and engineer for approval.

1.5 QUALITY ASSURANCE

- A. The lightning protection system shall conform to the requirements and standards for lightning protection systems of UL and NFPA. Upon completion, application shall be made to the Underwriters Laboratories, Inc. for inspection and issuance of the UL Master Label.

PART 2 – PRODUCTS

2.1 STANDARD

- A. The system to be furnished under this specification shall be the standard product of a manufacturer regularly engaged in the production of lightning protection equipment and shall be the manufacturer's latest approved design. The equipment shall be UL listed and properly UL labeled. All equipment shall be new, and of a design and construction to suit the application where it is used in accordance with accepted industry standards and UL and NFPA requirements.

Acceptable Manufacturers:

Northeast Lightning Protection, Bloomfield, CT
East Coast Lightning Protection Equipment, Winsted, CT
Advanced Lightning Technologies - Argyle, TX

2.2 EQUIPMENT

- A. Provide and install a complete lightning protection system in compliance with the specifications and standards of the most current editions of the National Fire Protection Association's Lightning Protection Standard NFPA-780, and Underwriters Laboratories Lightning Protection Standard UL96-A. The system shall be installed by a lightning protection contractor who is listed by Underwriters Laboratories, Inc.

2.3 MATERIALS

- A. All lightning protection materials and components shall comply in weight, size and composition with UL 96 and NFPA-780 lightning protection material requirements for this type of structure. All materials shall be copper, bronze, or stainless steel. Aluminum components shall be used in locations where system components are mounted to aluminum surfaces to avoid galvanic corrosion of dissimilar metals. Class I materials shall be used on structures not more than 75 feet in height. Class II materials shall be used on structures over 75 feet in height.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The installation shall be accomplished by an experienced installation company that is listed with Underwriters Laboratories for lightning protection installation. The installation company shall utilize Lightning Protection Institute Certified Master Installers. All equipment shall be installed in a neat, workmanlike manner. The system shall consist of a complete conductor network at the roof and include air terminals, connectors, splices, bonds, down leads and proper ground terminals.

3.2 COORDINATION

- A. The lightning protection installer will work with other trades to ensure a correct, neat and unobtrusive installation. The roofing contractor will be responsible for sealing and flashing all lightning protection roof penetrations as per the roof manufacturer's recommendations.

Note: Lightning Protection penetrations and/or attachment procedures should be addressed in the roofing section of the specifications. It shall be the responsibility of the lightning protection installer to assure a sound bond to the main water service and to assure interconnection with other ground systems.

3.3 INSPECTION AND CERTIFICATION

- A. Surge protection as required by UL96a, and labeled for lightning protection systems by UL, must be in place at the time of a UL inspection for the project to receive a full Master Label. The units shall be provided by the individual system (CATV, TELCO, Electric and antenna) providers on the service disconnect of CATV, TELCO, Electric system and at any antenna. Upon completion of the lightning protection installation, the contractor shall furnish the Master Label issued by Underwriters Laboratories, Inc. for this system. If the protected structure is an addition to, or is attached to (as defined by UL96a), an existing structure that does not have a lightning protection system, the contractor shall advise the Owner of installation requirements on the existing structure to obtain the Master Label. If the existing structure does have a lightning protection system, the contractor shall advise the Owner of any additional work required on the existing system to achieve compliance with current UL Master Label requirements.

3.4 WARRANTY

- A. There shall be a one (1) year warranty from the manufacturer.

END OF SECTION 16670

GEOTECHNICAL REPORT

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

227 Williams Street • P.O. Box 397
Glastonbury, CT 06033-0397

(860) 633-4623 / FAX (860) 657-2514

February 4, 2014

Mr. Robert A. DeLuca, P. E.
CLA Engineers, Inc.
317 Main Street
Norwich, CT 06360

Re: Geotechnical Study for Proposed Above Grade Fuel Storage Tank at Ledyard Public Works Garage, Ledyard, CT

Dear Robert:

1.0 Herewith are boring data pertaining to the above. Four borings were drilled at the proposed tank to auger refusal at a maximum depth of 14.5 feet. The approximate boring locations are shown on the attached plan. *Borings were drilled by Clarence Welti Associates, Inc. and sampling was conducted by this firm solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.*

2.0 The **Subject Project** will include 12,000 gallon above grade fuel tank. The tank will be located over and around the area with the present pump island. The tank plus a full tank of fuel would weigh about 200 kips. The base of the tank (34' x 8.1') is about 275 sf and will be placed over a larger concrete slab. The pressure on bottom of the concrete mat would be less than 600 psf.

3.0 The **Geologic Origin** of the natural soils at the subject site appears to be from glacial moraine deposits. There is 3 to 6 feet of fill overlying the natural soils.

3.1 The **Soils Cross Section** from the borings is generally as follows:

From existing grades

Bituminous Concrete to 3" to 4"

FILL; fine to coarse SAND, some Gravel, little Silt, trace Cobbles to 3 to 6 feet, medium compact to dense

Locally; SILT and fine SAND to 7 feet, dense

Fine to coarse SAND, some Gravel, little to some Silt, few Cobbles to auger refusal on probable bedrock at 8.5 to 14.5, dense

3.2 The **Ground water** was at 8.5 to 11.5 feet below the existing grades at the completion of the borings.

4.0 **The Foundation Performance Criteria** are considered to be as follows:

1. The maximum structure settlement shall be less than 1" and the maximum differential settlement shall be less than ½ the maximum settlement.
2. Foundations must address the seismic requirements of the building code if applicable.

These criteria are those normally applied to structure of similar character. If the structural engineer or owner has other criteria, the writer should be notified for possible supplemental input.

4.1 Regarding item 2 the **Seismic Site Soil Profile Classification** is "C". The Mapped MCE Spectral Acceleration for Ledyard, CT are as follows: For short periods $S_s = 0.215$ and for one second periods $S_1 = 0.058$.

5.0 The preparation for placement for the concrete pad supporting the tank shall include the following:

1. Remove bituminous concrete and excavate to 6" below the proposed concrete mat.
2. Surficially compact the subgrade of existing fill with at least 5 passes of a vibratory roller with a static weight of at least 3 Tons.
3. Place and compact 6" of ½" crushed stone as a base for the concrete slab. This will allow for uniform pressure on the base of the slab.

5.1 The slab can be designed with a sub grade modulus of 250 pci.

5.2 The stiffness the modulus of the soil beneath proposed slab will be at least 500 Tons/sf. With an applied loading of 0.5 Tons/sf on the mat, the settlement would be less than 1/4".

5.3 The required **Frost Protection Depth** is 3.5 feet below finish grades. However the soils beneath the site are essentially non-frost susceptible and the subject structure may not be required to meet this depth. If frost protection does apply, the slab would have depressed edges and the crushed stone beneath the slab would be carried to 3.5 feet. Alternatively 4" stiff styrofoam (equivalent to 2 feet of soil) could be placed in lieu of the crushed stone to 3.5 feet.

5.4 The following is a summary of design parameters

Design Parameter	Value
Soil Unit Weight	125 psf
Bearing Capacity on footings on the compact existing fills or natural soil	2 Tons/sf
Subgrade modulus for Slab Design	250 pci
Frost Protection Depth	3.5'
Sliding Coefficient	0.6
Seismic Site Soil Profile Classification	C
Mapped MCE Spectral Acceleration for Short Periods S_s	0.215
Mapped MCE Spectral Acceleration for One Second Periods S_1	0.058

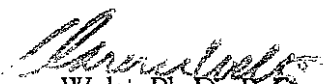
6.0 Regarding Earthwork the soils at the subject site will fall in OSHA Class C and any cuts in excess of 5 feet and are unshored, must be cut back to slopes, not exceeding 34°.

7.0 This report has been prepared for specific application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. In the event that any changes in the nature, design and location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analyses and recommendations, submitted in this report, are based in part upon data obtained from the referenced explorations. The extent of variation between explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

Dr. Clarence Welti, P.E.; P.C. should perform a general review of the final design and specifications in order that geotechnical design recommendations may be properly interpreted and implemented, as they were intended.

Very truly yours,



Clarence Welti, Ph.D., P. E.

Pres. Dr. Clarence Welti, P. E.; P. C.



CWA

DR. CLARENCE WELTI, PE, PC

P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033 • (860) 633-4623

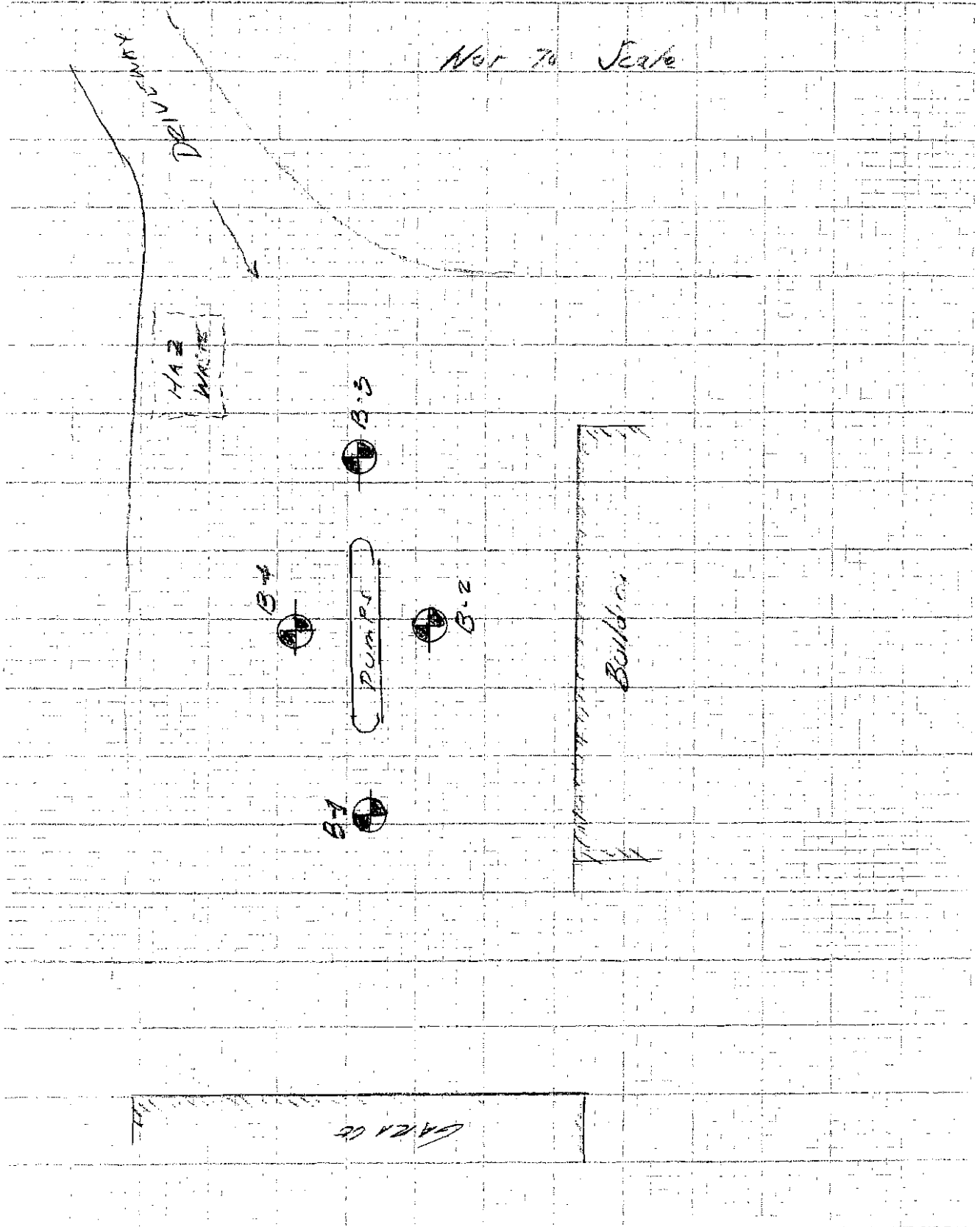
CLIENT Town of Glastonbury Public Works

PROJECT On-Grade Fuel Tank

SUBJECT Boring Locations

BY CW DATE 2/4/10

SHEET NO. _____



CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033				CLIENT TOWN OF LEDYARD		PROJECT NAME ABOVE GROUND FST @ DPW LOCATION	
AUGER		CASING	SAMPLER	CORE BAR.	OFFSET	SURFACE ELEV	HOLE NO. B-2
TYPE	HSA		SS		LINE & STA.	GROUND WATER OBSERVATIONS	
SIZE I.D.	3.75		1.375"		N. COORDINATE	AT 11.3 FT AFTER 0 HOURS	START DATE 1/24/14
HAMMER WT.			140 lbs		E. COORDINATE	AT FT AFTER HOURS	FINISH DATE 1/24/14
HAMMER FALL			30"				

DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS	ELEV.
	NO.	BLOWS/6"	DEPTH			
0					ASPHALT	0.3
	1	36-26-30	1.00'-2.42'		BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT - FILL	
	2	6-6-4-8	3.00'-5.00'		BR. FINE-MED. SAND, LITTLE TO SOME SILT, LITTLE GRAVEL	3.0
5	3	12-60	5.00'-6.17'		GREY/BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES	5.5
10	4	30-40-38	10.00'-11.50'			
15					AUGER REFUSAL @ 14.5'	14.5
20						
25						
30						
35						

LEGEND: COL. A: SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%					DRILLER: J. BREWER INSPECTOR:	
					SHEET 1 OF 1	HOLE NO. B-2

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033				CLIENT TOWN OF LEDYARD		PROJECT NAME ABOVE GROUND FST @ DPW	
						LOCATION	
	AUGER	CASING	SAMPLER	CORE BAR.	OFFSET	SURFACE ELEV.	HOLE NO. B-3
TYPE	HSA		SS		LINE & STA.	GROUND WATER OBSERVATIONS AT 11.5 FT AFTER 0 HOURS	
SIZE I.D.	3.75		1.375"		N. COORDINATE	START DATE 1/24/14	
HAMMER WT.			140 lbs		E. COORDINATE	AT FT AFTER HOURS FINISH DATE 1/24/14	
HAMMER FALL			30'				

DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS	ELEV.
	NO.	BLOWS/6"	DEPTH			
0					ASPHALT 0.25	
	1	18-22-49-24	1.00'-3.00'		BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT - FILL	
	2	35-28-18-14	3.00'-5.00'		DARK GREY/BR. FINE-MED. SAND, SOME SILT, LITTLE GRAVEL - FILL 2.5	
5	3	7-9-7-60	5.00'-7.00'		GREY SILT AND FINE SAND 6.0	
					GREY/BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES 7.0	
10	4	44-60	10.00'-11.00'			
					AUGER REFUSAL @ 12.5' 12.5	
15						
20						
25						
30						
35						

LEGEND: COL. A: SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%		DRILLER: J. BREWER INSPECTOR:	
		SHEET 1 OF 1	HOLE NO. B-3

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033				CLIENT TOWN OF LEDYARD		PROJECT NAME ABOVE GROUND FST @ DPW	
						LOCATION	
	AUGER	CASING	SAMPLER	CORE BAR.	OFFSET	SURFACE ELEV	HOLE NO. B-1
TYPE	HSA		SS		LINE & STA.	GROUND WATER OBSERVATIONS AT 8.5 FT AFTER 0 HOURS AT FT. AFTER HOURS START DATE 1/24/14 FINISH DATE 1/24/14	
SIZE I.D.	3.75"		1.375"		N. COORDINATE		
HAMMER WT.			140 lbs		E. COORDINATE		
HAMMER FALL			30"				
DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS		ELEV.
	NO.	BLOWS/6"	DEPTH				
0					ASPHALT 0.3 BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES - FILL BR. FINE-CRS. SAND, SOME SILT & GRAVEL, FEW COBBLES 3.0		
	1	50-54-60	1.00'-2.25'				
	2	8-8-28-36	3.00'-5.00'				
5	3	24-36-60	5.00'-7.00'				
10					AUGER REFUSAL @ 9.0' 9.0		
15							
20							
25							
30							
35							
LEGEND: COL. A: SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%						DRILLER: J. BREWER INSPECTOR:	
						SHEET 1 OF 1	HOLE NO. B-1

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033				CLIENT TOWN OF LEDYARD		PROJECT NAME ABOVE GROUND FST @ DPW LOCATION	
AUGER		CASING	SAMPLER	CORE BAR.	OFFSET	SURFACE ELEV	HOLE NO. B-4
TYPE	HSA		SS		LINE & STA.	GROUND WATER OBSERVATIONS	
SIZE I.D.	3.75		1.375"		N. COORDINATE	AT none FT AFTER 0 HOURS	START DATE 1/24/14
HAMMER WT.			140 lbs		E. COORDINATE	AT FT AFTER HOURS	FINISH DATE 1/24/14
HAMMER FALL			30"				
DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS		ELEV
	NO.	BLOWS/6"	DEPTH				
0					ASPHALT 0.25		
	1	34-24-44-52	1.00'-3.00'		BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT		
					DARK BR. FINE-MED. SAND, SOME SILT, LITTLE GRAVEL, FEW COBBLES - FILL 2.0		
	2	27-34-60	3.00'-4.33'				
5					GREY/BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES & BOULDERS 5.0		
	3	7-21-44-50	5.00'-7.00'				
					AUGER REFUSAL @ 8.5' 8.5		
10							
15							
20							
25							
30							
35							

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
 INSPECTOR:
 SHEET 1 OF 1 HOLE NO. **B-4**

PREVAILING WAGE RATES

Project: Ledyard Public Works Fuel Station Improvements

**Minimum Rates and Classifications
for Heavy/Highway Construction**

ID#: H 18820

**Connecticut Department of Labor
Wage and Workplace Standards Division**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:

Project Town: Ledyard

FAP Number:

State Number:

Project: Ledyard Public Works Fuel Station Improvements

CLASSIFICATION

Hourly Rate

Benefits

01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. **See Laborers Group 5 and 7**

1) Boilermaker	33.79	34% + 8.96
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1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	32.50	27.06
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2) Carpenters, Piledrivermen	30.45	21.65
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As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

2a) Diver Tenders	30.45	21.65
3) Divers	38.91	21.65
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	44.25	17.75
4a) Painters: Brush and Roller	30.62	17.75
4b) Painters: Spray Only	33.62	17.75
4c) Painters: Steel Only	32.62	17.75
4d) Painters: Blast and Spray	33.62	17.75

Project: Ledyard Public Works Fuel Station Improvements

4e) Painters: Tanks, Tower and Swing	32.62	17.75
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	37.60	22.22+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	33.50	28.98
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	39.31	26.27
----LABORERS----		
8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	26.40	17.15
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen, air tool operator	26.65	17.15

As of:

Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

10) Group 3: Pipelayers	26.90	17.15
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block pavers and curb setters	26.90	17.15
12) Group 5: Toxic waste removal (non-mechanical systems)	28.40	17.15
13) Group 6: Blasters	28.15	17.15
Group 7: Asbestos Removal, non-mechanical systems (does not include leaded joint pipe)	27.40	17.15
Group 8: Traffic control signalmen	16.00	17.15

----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	31.28	17.15 + a
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13b) Brakemen, Trackmen	30.37	17.15 + a
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----CLEANING, CONCRETE AND CAULKING TUNNEL----

14) Concrete Workers, Form Movers, and Strippers	30.37	17.15 + a
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15) Form Erectors	30.68	17.15 + a
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----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL
IN FREE AIR:----

16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	30.37	17.15 + a
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As of:

Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

17) Laborers Topside, Cage Tenders, Bellman	30.26	17.15 + a
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18) Miners	31.28	17.15 + a
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----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----

18a) Blaster	37.41	17.15 + a
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19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	37.22	17.15 + a
--	-------	-----------

20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	35.35	17.15 + a
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21) Mucking Machine Operator	37.97	17.15 + a
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Project: Ledyard Public Works Fuel Station Improvements

----TRUCK DRIVERS----(*see note below)

Two axle trucks	27.88	18.27 + a
Three axle trucks; two axle ready mix	27.98	18.27 + a
Three axle ready mix	28.03	18.27 + a
Four axle trucks, heavy duty trailer (up to 40 tons)	28.08	18.27 + a
Four axle ready-mix	28.13	18.27 + a
Heavy duty trailer (40 tons and over)	28.33	18.27 + a

As of:

Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	28.13	18.27 + a
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----POWER EQUIPMENT OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over. (Trade License Required)	36.05	21.55 + a
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Group 2: Cranes (100 ton rate capacity and over); Backhoe/Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer). (Trade License Required)	35.73	21.55 + a
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Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	34.99	21.55 + a
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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	34.60	21.55 + a
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Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	34.01	21.55 + a
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Project: Ledyard Public Works Fuel Station Improvements

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	34.01	21.55 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	33.70	21.55 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and Under Mandrel).	33.36	21.55 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	32.96	21.55 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	32.53	21.55 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	30.49	21.55 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	30.49	21.55 + a

Project: Ledyard Public Works Fuel Station Improvements

Group 12: Wellpoint Operator.	30.43	21.55 + a
Group 13: Compressor Battery Operator.	29.85	21.55 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	28.71	21.55 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	28.30	21.55 + a
Group 16: Maintenance Engineer/Oiler	27.65	21.55 + a
Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	31.96	21.55 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	29.54	21.55 + a

As of:

Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

****NOTE: SEE BELOW**

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Dynamite Man	44.36	3% + 13.70
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21) Heavy Equipment Operator	39.92	3% + 13.70
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22) Equipment Operator, Tractor Trailer Driver, Material Men	37.71	3% + 13.70
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23) Driver Groundmen	33.27	3% + 13.70
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----LINE CONSTRUCTION----

As of:

Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.10	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

Project: Ledyard Public Works Fuel Station Improvements

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional \$1.25 per hour for truck drivers.*

***Note: Hazardous waste premium \$3.00 per hour over classified rate*

Crane with 150 ft. boom (including jib) - \$1.50 extra

Crane with 200 ft. boom (including jib) - \$2.50 extra

Crane with 250 ft. boom (including jib) - \$5.00 extra

Crane with 300 ft. boom (including jib) - \$7.00 extra

Crane with 400 ft. boom (including jib) - \$10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyman instructing and supervising the work of each apprentice in a specific trade.

*~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work
~~*

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

*The annual adjustments will be posted on the Department of Labor's Web page:
www.ct.gov/dol.*

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of:

Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

**Minimum Rates and Classifications
for Building Construction**

ID# : B 18820

**Connecticut Department of Labor
Wage and Workplace Standards Division**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:
State#:

Project Town: Ledyard
FAP#:

Project: Ledyard Public Works Fuel Station Improvements

CLASSIFICATION

Hourly Rate

Benefits

1a) Asbestos Worker/Insulator (Includes application of insulating materials, protective coverings, coatings, & finishes to all types of mechanical systems; application of firestopping material for wall openings & penetrations in walls, floors, ceilings

35.00

27.41

1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**

2) Boilermaker

35.24

25.01

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	32.50	27.46 + a
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3b) Tile Setter	33.05	23.28
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3c) Terrazzo Mechanics and Marble Setters	31.69	22.35
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3d) Tile, Marble & Terrazzo Finishers	25.95	19.82
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3e) Plasterer	32.50	27.46
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-----LABORERS-----

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

4) Group 1: Laborers (common or general), acetylene burners, carpenter tenders, concrete specialists, wrecking laborers, fire watchers.	26.40	17.15
4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofer/mixer/nozzleman, fence erector.	26.65	17.15
4b) Group 3: Jackhammer Operators/Pavement Breaker, mason tender (brick) and mason tender (cement/concrete)	26.90	17.15
4c) **Group 4: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license) (the pipelayer rate shall apply only to one or two employees of the total crew who primary task is to actually perform the mating of pipe sections) P6 and P7 rate is \$26.80	26.65	17.15
4d) Group 5: Air track operators, Sand blasters	27.15	17.15
4e) Group 6: Nuclear toxic waste removers, blasters	29.40	17.15

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped)	27.40	17.15
4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew	26.90	17.15
4h) Group 9: Top men on open air caisson, cylindrical work and boring crew	26.40	17.15
4i) Group 10: Traffic Control Signalman	16.00	17.15
5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	30.45	21.65
5a) Millwrights	30.78	22.15

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	37.60	22.22+3% of gross wage
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7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	47.15	26.785+a+b
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-----LINE CONSTRUCTION-----

Groundman	24.37	6.5%+10.04
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Linemen/Cable Splicer	44.30	6.5%+17.70
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8) Glazier (Trade License required: FG-1,2)	34.18	17.75
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As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	33.50	28.98
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----OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer 2 drums or over, front end loader (7 cubic yards or over); work boat 26 ft. and over. (Trade License Required)	36.05	21.55 + a
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Group 2: Cranes (100 ton rate capacity and over); Backhoe/Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer). (Trade License Required)	35.73	21.55 + a
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Group 3: Excavator; Backhoe/Excavator under 2 cubic yards; Cranes (under 100 ton rated capacity), Grader/Blade; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	34.99	21.55 + a
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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper).	34.60	21.55 + a
--	-------	-----------

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	34.01	21.55 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller; Pile Testing Machine.	34.01	21.55 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	33.70	21.55 + a
Group 7: Asphalt roller, concrete saws and cutters (ride on types), vermeer concrete cutter, Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrell).	33.36	21.55 + a
Group 8: Mechanic, grease truck operator, hydroblaster; barrier mover; power stone spreader; welding; work boat under 26 ft.; transfer machine.	32.96	21.55 + a
Group 9: Front end loader (under 3 cubic yards), skid steer loader regardless of attachments, (Bobcat or Similar): forklift, power chipper; landscape equipment (including Hydroseeder).	32.53	21.55 + a

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	30.49	21.55 + a
Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	30.49	21.55 + a
Group 12: Wellpoint operator.	30.43	21.55 + a
Group 13: Compressor battery operator.	29.85	21.55 + a
Group 14: Elevator operator; tow motor operator (solid tire no rough terrain).	28.71	21.55 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	28.30	21.55 + a

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

Group 16: Maintenance Engineer/Oiler.	27.65	21.55 + a
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Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	31.96	21.55 + a
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Group 18: Power safety boat; vacuum truck; zim mixer; sweeper; (Minimum for any job requiring a CDL license).	29.54	21.55 + a
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-----PAINTERS (Including Drywall Finishing)-----

10a) Brush and Roller	30.62	17.75
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10b) Taping Only/Drywall Finishing	31.37	17.75
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As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

10c) Paperhanger and Red Label	31.12	17.75
10e) Blast and Spray	33.62	17.75
11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	39.31	26.27
12) Well Digger, Pile Testing Machine	33.01	19.40 + a
13) Roofer (composition)	31.70	17.36
14) Roofer (slate & tile)	32.20	17.36

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	33.84	31.18
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16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	39.31	26.27
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-----TRUCK DRIVERS-----

17a) 2 Axle	27.88	18.27 + a
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17b) 3 Axle, 2 Axle Ready Mix	27.98	18.27 + a
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17c) 3 Axle Ready Mix	28.03	18.27 + a
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As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

17d) 4 Axle, Heavy Duty Trailer up to 40 tons	28.08	18.27 + a
17e) 4 Axle Ready Mix	28.13	18.27 + a
17f) Heavy Duty Trailer (40 Tons and Over)	28.33	18.27 + a
17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	28.13	18.27 + a
18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	39.76	19.87 + a
19) Theatrical Stage Journeyman	22.22	6.53

As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

Welders: Rate for craft to which welding is incidental.

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The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

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As of: Monday, March 03, 2014

Project: Ledyard Public Works Fuel Station Improvements

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

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All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

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~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: Monday, March 03, 2014

LEDYARD

PUBLIC WORKS FUEL STATION

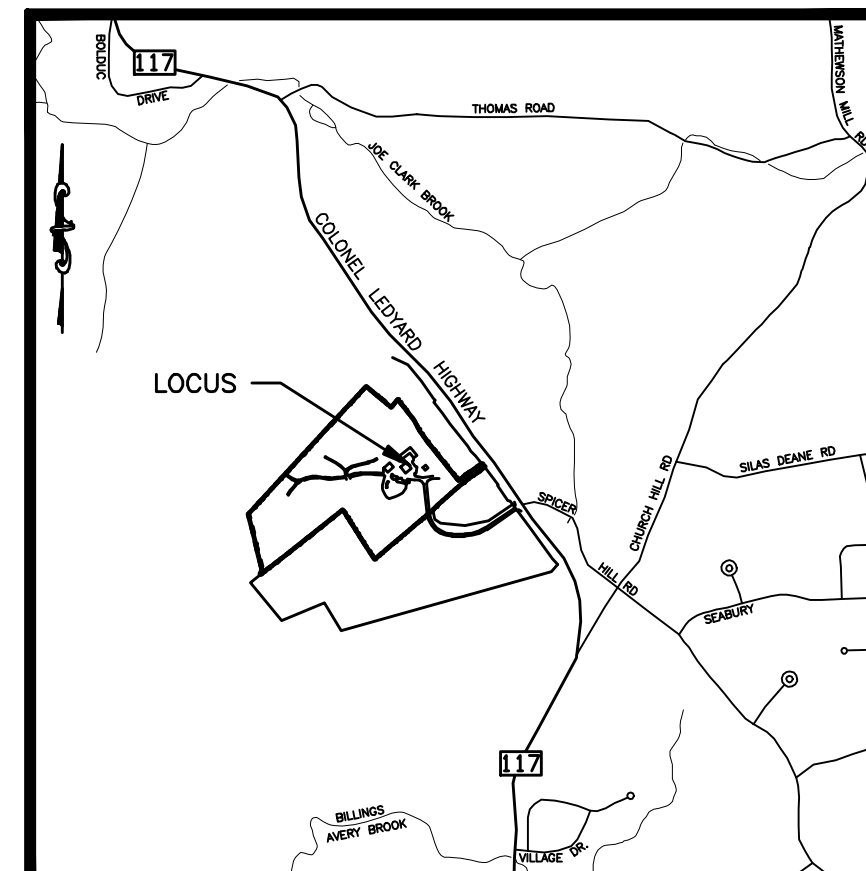
IMPROVEMENTS

Prepared For

TOWN OF LEDYARD

GENERAL NOTES:

1. EXISTING PROPERTY LINES AND RIGHT-OF-WAY LINES WHERE SHOWN ARE APPROXIMATE AND ARE INTENDED FOR GENERAL INFORMATION ONLY.
2. ALL PROPOSED WORK MAY BE VARIED IN THE FIELD BY THE OWNER TO MATCH EXISTING CONDITIONS.
3. UPON COMPLETION OF THE WORK, ALL DISTURBED AREAS SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN EXISTED PRIOR TO CONSTRUCTION.
4. PRIOR TO BIDDING THE PROJECT, THE CONTRACTOR SHALL VISIT THE SITE TO VERIFY EXISTING CONDITIONS.
5. CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" 1-800-922-4455 PRIOR TO THE START OF CONSTRUCTION.
6. ALL STREET SIGNS, MAILBOXES, PLANTINGS, ORNAMENTAL OBJECTS, LIGHTS, LANDSCAPE SHRUBBERY, ETC., SHALL BE PROTECTED FROM DAMAGE AND SHALL BE REPLACED IN THE SAME OR BETTER CONDITION BY THE CONTRACTOR IS DISTURBED OR DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION.
7. INFORMATION SHOWN ON THE DRAWINGS RELATING TO MATERIALS, CONDITIONS, AND OR LOCATIONS OF EXISTING STRUCTURES AND UTILITIES HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING FIELD SURVEY, UTILITY COMPANY AND CITY RECORD MAPS AND DRAWINGS, AND IS NOT GUARANTEED ACCURATE OR COMPLETE.
8. THE TOWN OF LEDYARD SHALL BE NOTIFIED BY THE CONTRACTOR 48 HOURS BEFORE CONSTRUCTION BEGINS. THE CONTACT PERSON IS FIRST SELECTMAN.
9. THE CONTRACTOR SHALL MAINTAIN A SET OF RECORD DRAWINGS WHICH SHALL BE SUBMITTED TO THE OWNER AT THE COMPLETION OF THE PROJECT.
10. GROUND LINE AS SHOWN ON THESE PLANS IS BASED ON FIELD SURVEY.
11. IF IT DEEMED NECESSARY BY THE OWNER THAT THE CONTRACTOR EXECUTE WORK AT CERTAIN POINTS IN THE CONTRACT AT CERTAIN TIMES AND SEASONS, THE CONTRACTOR SHALL PERFORM SAID WORK AT NO ADDITIONAL EXPENSE TO THE OWNER, WITHIN THE TIME SET FORTH IN THE CONTRACT.
12. ALL DISTURBED UNDEVELOPED AREAS SHALL BE RESTORED WITH 6" TOPSOIL, SEED, FERTILIZER AND MULCH. ALL OTHER DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITIONS UPON COMPLETION OF WORK.
13. EXCESS TOPSOIL OR FILL MATERIAL SHALL BE THE PROPERTY OF THE OWNER AND SHALL BE STOCKPILED AT THE OWNERS DISCRETION.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SURVEY AND LAYOUT OF ALL WORK.
15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE FILL MATERIAL AS NEEDED TO MEET GRADES AS SHOWN ON PLAN. THE COST OF ANY FILL OBTAINED FROM OFF-SITE SOURCES SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE.



LOCATION MAP

SCALE: 1"=1000'

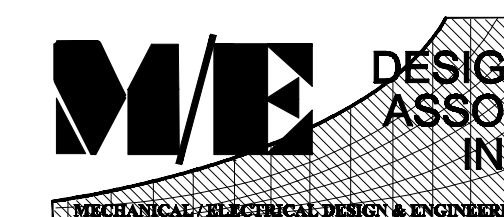
INDEX TO DRAWINGS

DRAWING NO.	DESCRIPTION OF DRAWINGS
1	SITE PLAN
2	DETAILS
3	DETAILS

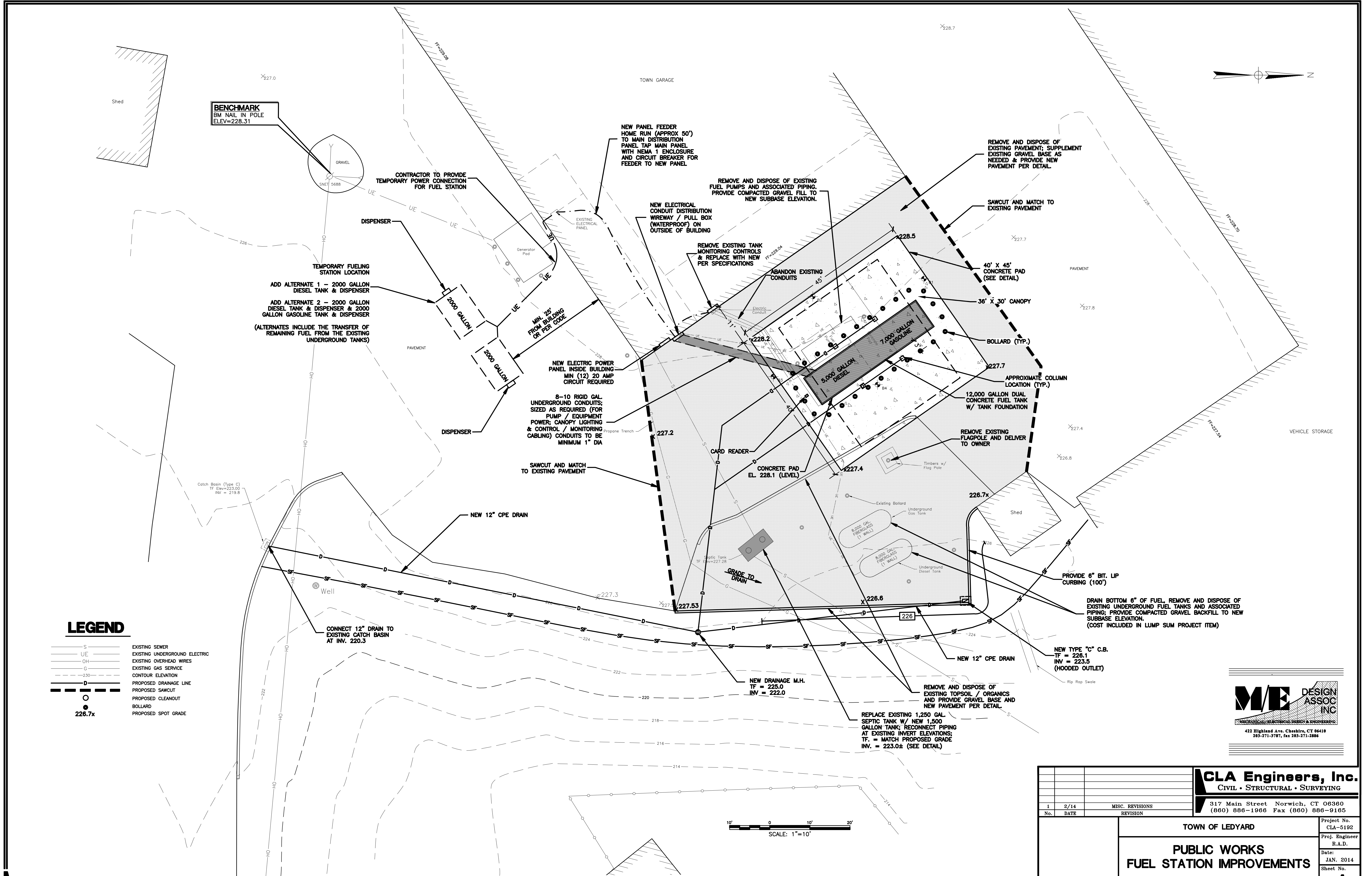
JANUARY 2014
REVISED FEBRUARY 2014

CLA Engineers, Inc.
CIVIL • STRUCTURAL • SURVEYING

317 Main Street Norwich, CT 06360
(860) 886-1966 Fax (860) 886-9165

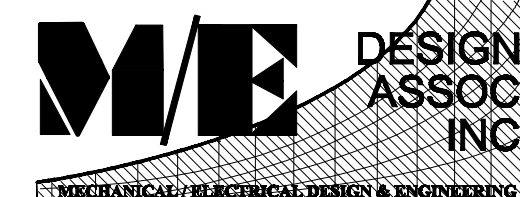


422 Highland Ave. Chebogue, CT 06410
203-271-3787, fax 203-271-2886



LEGEND

S	EXISTING SEWER
UE	EXISTING UNDERGROUND ELECTRIC
OH	EXISTING OVERHEAD WIRES
G	EXISTING GAS SERVICE
---	CONTOUR ELEVATION
D	PROPOSED DRAINAGE LINE
---	PROPOSED SAWCUT
O	PROPOSED CLEANOUT
●	BOLLARD
226.7x	PROPOSED SPOT GRADE



423 Highland Ave. Cheshire, CT 06410
203-271-3787, fax 203-271-2886

CLA Engineers, Inc. CIVIL • STRUCTURAL • SURVEYING

317 Main Street Norwich, CT 06360
(860) 886-1966 Fax (860) 886-9165

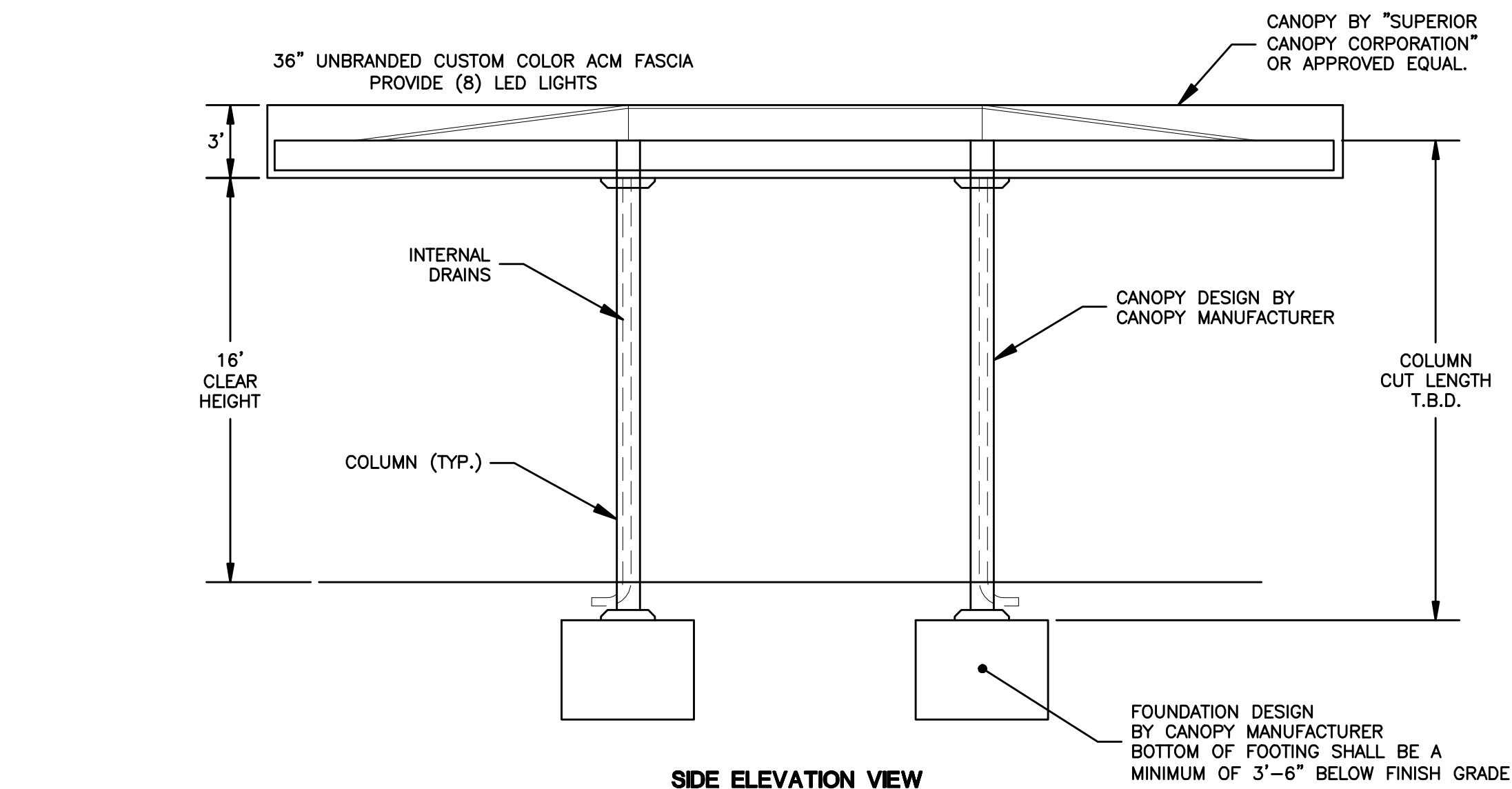
TOWN OF LEDYARD

PUBLIC WORKS FUEL STATION IMPROVEMENTS

SITE PLAN

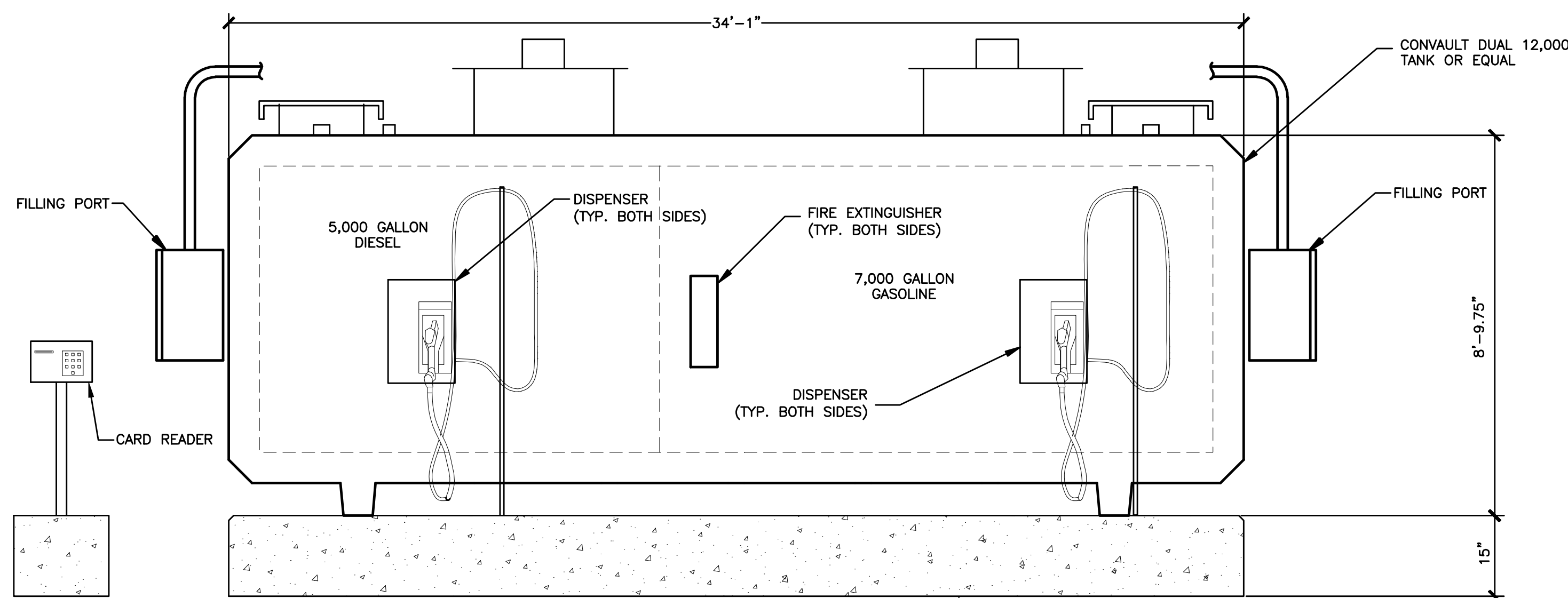
Project No.
CLA-5192
Proj. Engineer
R.A.D.
Date:
JAN. 2014
Sheet No.

1



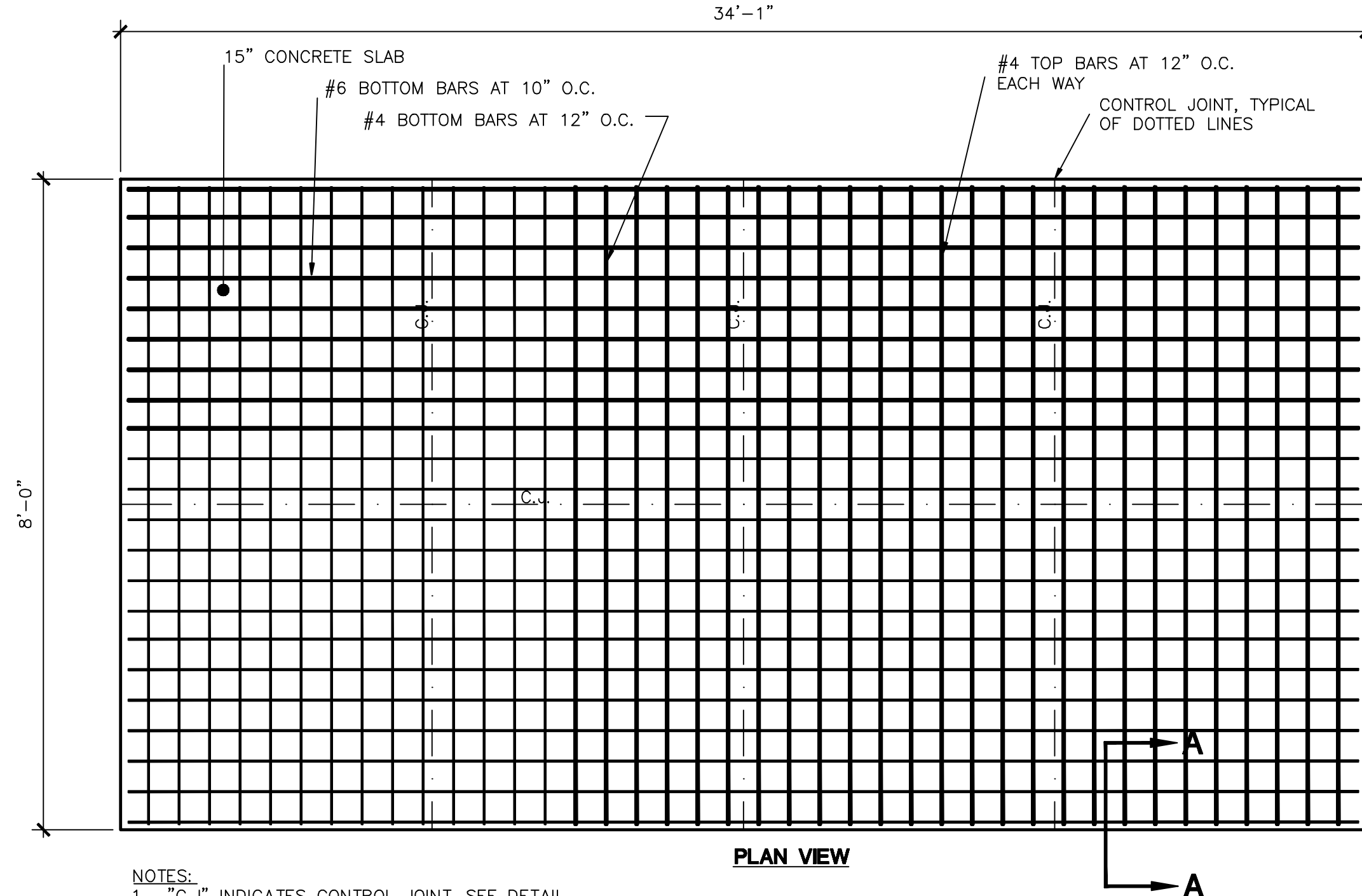
SIDE ELEVATION VIEW

CANOPY DETAILS
NOT TO SCALE



ELEVATION VIEW

CONCRETE FOUNDATION;
SEE DETAIL



PLAN VIEW

- NOTES:
- "C.J." INDICATES CONTROL JOINT-SEE DETAIL.
 - TOTAL TANK WEIGHT= 210,000 LBS.
 - PAD SHALL BE PLACED IN A SINGLE POUR (NO CONSTRUCTION JOINTS).
 - CONTRACTOR SHALL LEGALLY DISPOSE OF ANY EXISTING SOILS THAT ARE REQUIRED TO BE REMOVED FROM THE SITE.
 - SEE SITE PLAN FOR ADDITIONAL INFORMATION REGARDING LAYOUT OF PROPOSED EQUIPMENT.
 - INSTALL CONTROL JOINTS WHERE NOTED (C.J.) ON PLAN, SEE TYPICAL DETAIL.

TANK FOUNDATION DETAILS
NOT TO SCALE

DESIGN LOADS TABLE	
ROOF LIVE LOADS (SNOW)	
GROUND SNOW LOAD (Pg)	30 PSF
FLAT ROOF SNOW LOAD (Pf)	30 PSF
WIND LOADS	
BASIC WIND SPEED (3-SEC)	115 MPH
WIND EXPOSURE	B
SEISMIC (EARTHQUAKE) LOADS	
MAPPED SPECTRAL RESPONSE ACCELERATION	
Ss	0.215
S1	0.058
SOIL CLASSIFICATION	C

GENERAL STRUCTURAL NOTES

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2003 INTERNATIONAL BUILDING CODE (IBC), THE 2005 CONNECTICUT SUPPLEMENT, AND THE 2009 AMENDMENTS.
- THE OWNER/CONTRACTOR SHALL SUBMIT 2 COPIES MINIMUM OF SHOP DRAWINGS FOR ALL COMPONENTS OF THE PRIMARY STRUCTURAL SYSTEM FOR REVIEW BY THE ENGINEER OF RECORD. THE OWNER/CONTRACTOR SHALL ALLOW A MINIMUM OF TWO(2) WEEKS FOR THE REVIEW BY THE ENGINEER OF RECORD.
- THE GENERAL CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR MEANS AND METHODS OF CONSTRUCTION AND SAFETY ON THE JOB SITE.
- ALL DIMENSIONS SHOWN ON THE DRAWINGS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR IS TO VERIFY ALL DIMENSIONS, ANGLES, ELEVATIONS, etc. PRIOR TO THE START OF CONSTRUCTION OR THE FABRICATION OF BUILDING COMPONENTS.
- THE GENERAL CONTRACTOR SHALL FURNISH COMPLETE SETS OF DRAWINGS TO ALL SUBCONTRACTORS FOR USE IN SHOP DRAWING PREPARATION.
- CONTRACTOR SHALL IDENTIFY ALL EXISTING LOAD BEARING ELEMENTS PRIOR TO WORK AND SHALL DESIGN AND PROVIDE SHORING AS REQUIRED TO SUPPORT CONSTRUCTION.

FOUNDATION / SOILS

- ALL FOUNDATIONS SHALL BEAR ON NATIVE, VIRGIN NON-ORGANIC MATERIAL OR COMPACTED STRUCTURAL FILL WITH 4000 PSF SAFE SOIL BEARING CAPACITY.
- STRUCTURAL FILL MATERIAL SHALL CONSIST OF PREDOMINATELY GRANULAR SOIL WITH THE FOLLOWING GRADATION:

PERCENT PASSING	SIEVE SIZE
100	3.5"
50-100	3/4"
25-75	#4
0-10	#200
- COMPACTION: ALL FILL MATERIAL SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM "MODIFIED" OPTIMUM DRY DENSITY (ASTM 1557-D) IN 8" THICK LOOSE LIFTS.
- WHERE THE GROUNDWATER TABLE IS ENCOUNTERED, A MINIMUM OF 6" OF 1/2" CRUSHED STONE SHALL BE PLACED UNDER FOOTINGS.
- ALL FOOTINGS SHALL BE BELOW EXISTING FILLS AND ORGANIC MATERIALS.
- ALL EXCAVATION WORK SHALL CONFORM TO OSHA 29CFR 1926 SUBPART P-EXCAVATIONS.
- FOUNDATION DESIGNS AND SOIL BACKFILL SHALL BE IN ACCORDANCE WITH GEOTECHNICAL REPORT BY DR. CLARENCE WELTI DATED FEBRUARY 4, 2014.

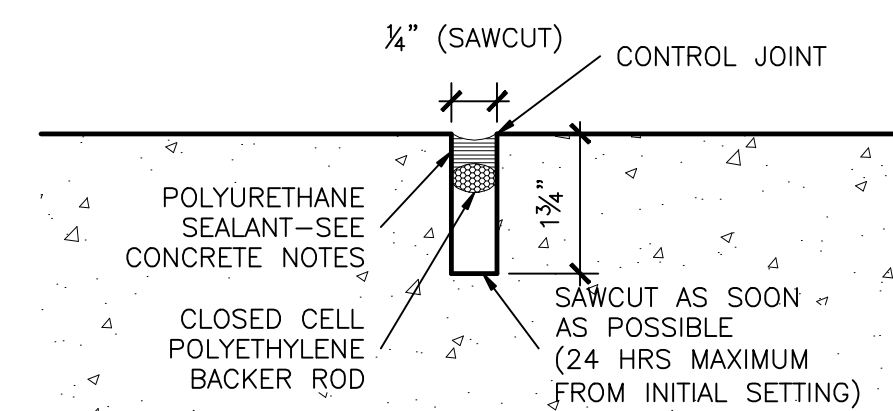
REINFORCED CONCRETE

- GENERAL: ALL CONCRETE WORK SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTES (ACI) "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING" (ACI 301-95) AND "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-95).
- CONCRETE MIX DESIGN:

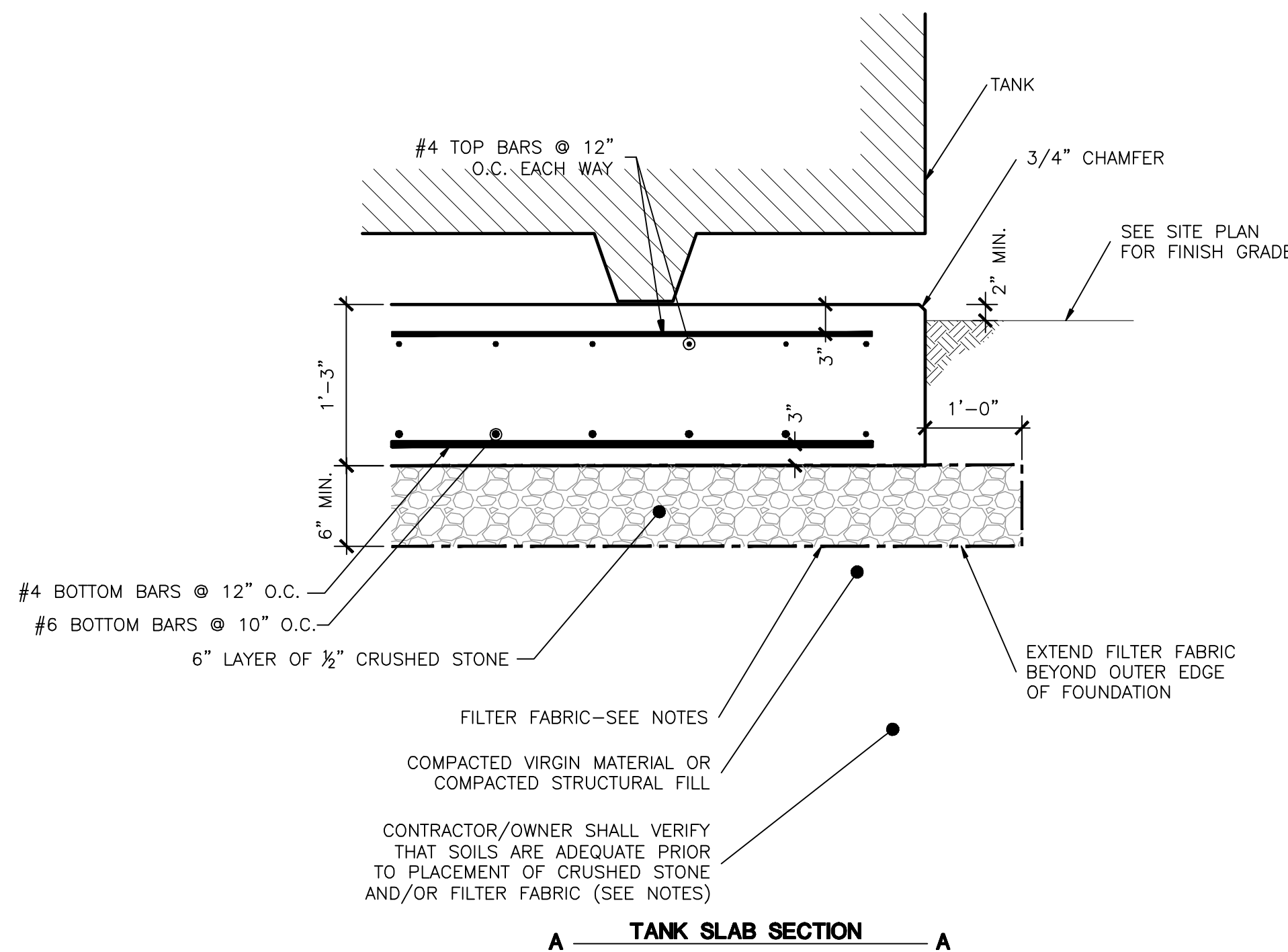
FOUNDATION:
f'c = 3500 PSI (MIN.) AT 28 DAYS
w/c RATIO = 0.50 (MAX)
MIN. CEMENT PER C.Y. = 540 LBS.
SLUMP = 4"
AIR ENTRAINMENT: 6% FOR EXTERIOR EXPOSED CONCRETE

SUBMIT CONCRETE MIX DESIGN FOR APPROVAL PRIOR TO CONCRETE PLACEMENT.
- REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
- BAR DETAILING SHALL BE IN ACCORDANCE WITH THE "ACI DETAILING MANUAL-1998." PLACEMENT DRAWINGS SHALL SHOW THE NUMBER AND LOCATION OF ALL BAR SUPPORT AND ACCESSORIES.
- CONCRETE COVER SHALL BE AS FOLLOWS:

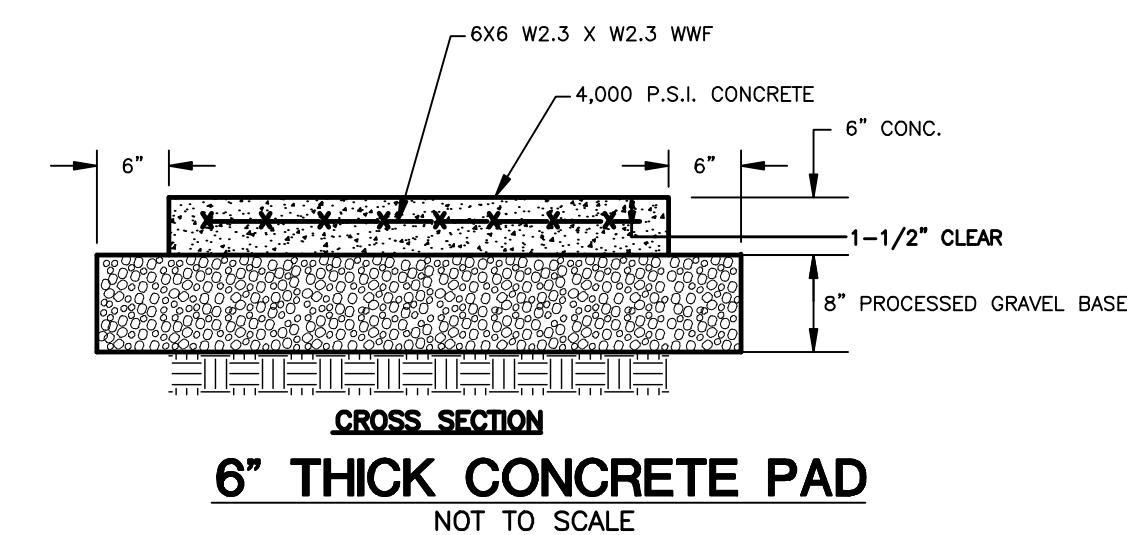
CONCRETE PLACED AGAINST EARTH.....	3"
CONCRETE PLACED IN FORMS BUT EXPOSED TO EARTH/WEATHER:	
#5 BARS AND SMALLER	1 1/2"
#6 BARS AND LARGER	2"
- SLAB REINFORCING STEEL SHALL BE SUPPORTED ON CLASS 3 SUPPORTS WITH SAND PLATES IN SUFFICIENT QUANTITY TO MAINTAIN THE REINFORCING'S LOCATION IN THE SLAB. PRECAST CONCRETE BLOCKS/BRICK SHALL NOT BE USED.
- THE CONTRACTOR SHALL FURNISH, LOCATE AND INSTALL ALL ACCESSORIES FOR PROPER ANCHORAGE OF STEEL FRAMING. HE SHALL BE SOLELY RESPONSIBLE FOR FURNISHING, LOCATING, AND ENSURING PROPER QUANTITY OF FASTENING DEVICES.
- WHEN INSTALLING EXPANSION OR ADHESIVE ANCHORS, THE CONTRACTOR SHALL TAKE MEASURES TO AVOID DRILLING OR CUTTING OF EXISTING REINFORCING AND DESTRUCTION OF CONCRETE. HOLES SHALL BE BLOWN CLEAN PRIOR TO PLACING BOLTS OR ADHESIVE ANCHORS.



TYP. CONTROL JOINT DETAIL



TANK SLAB SECTION

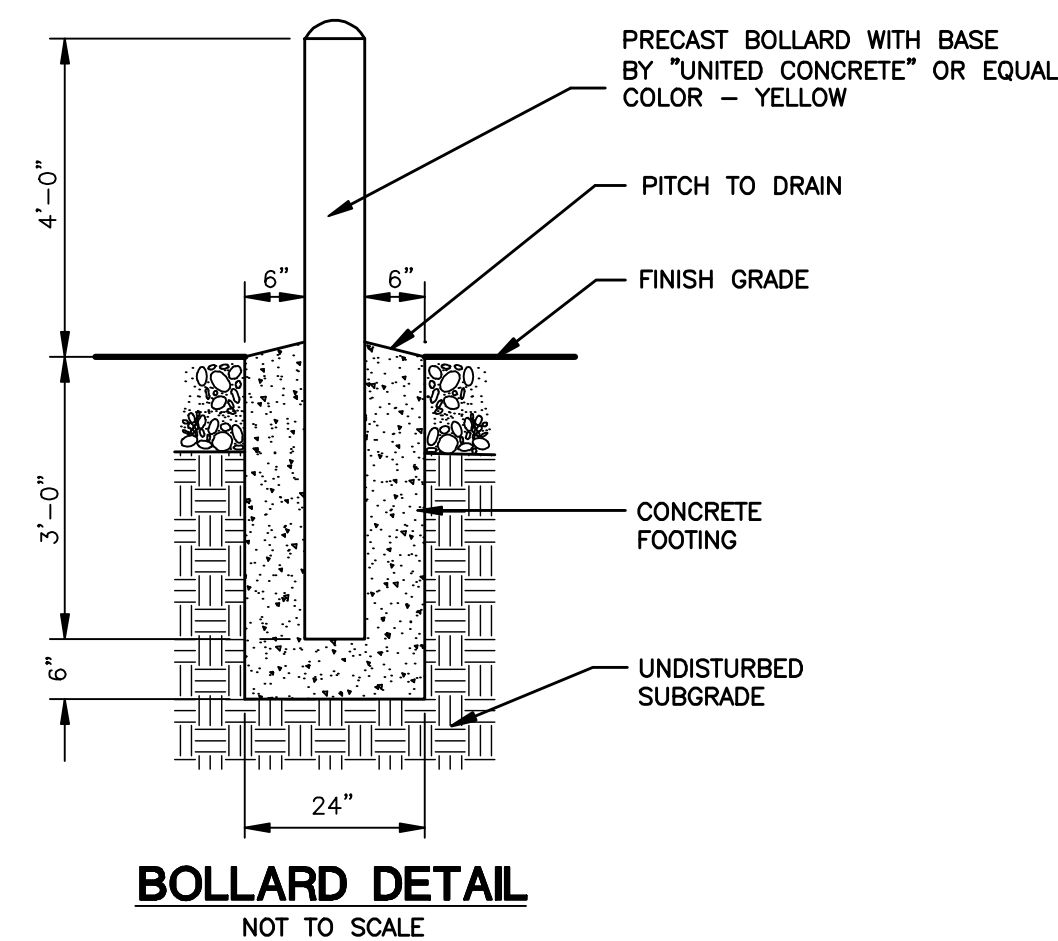
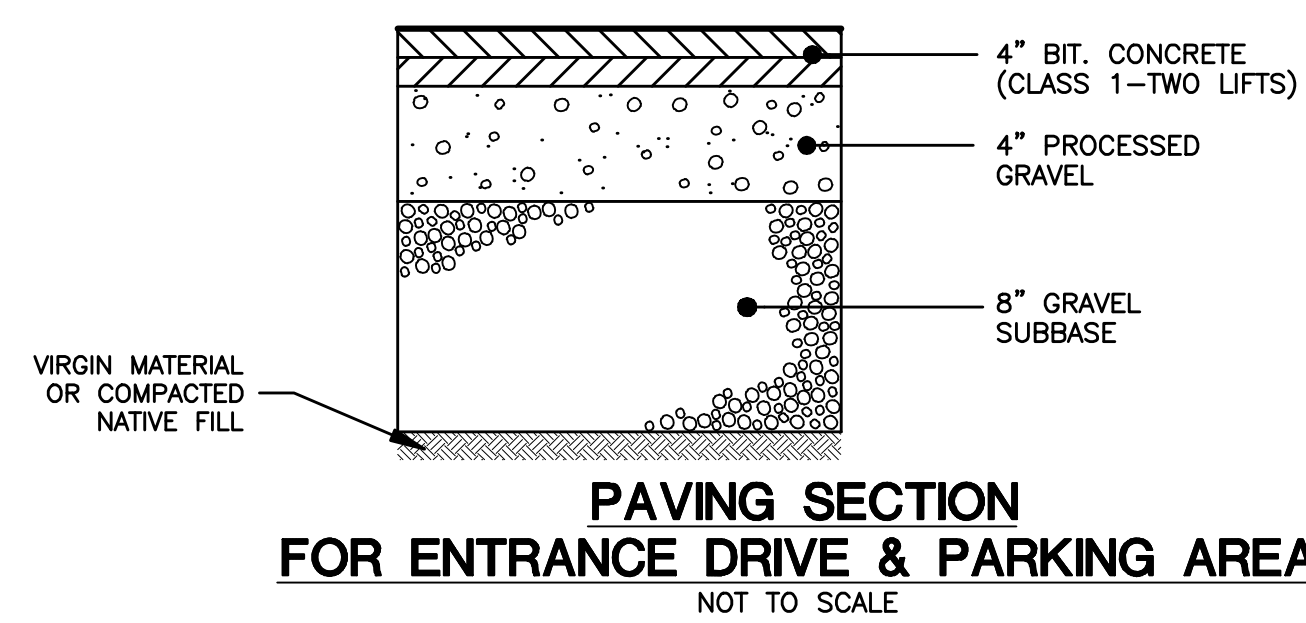
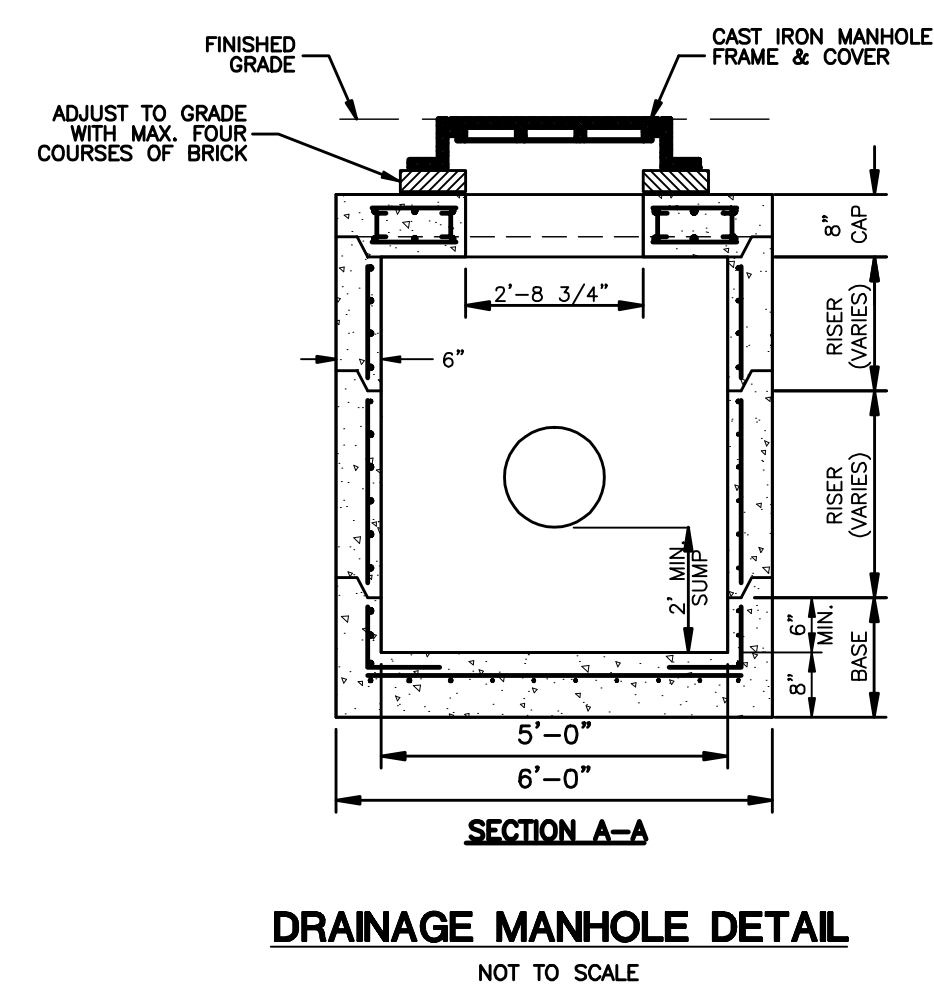
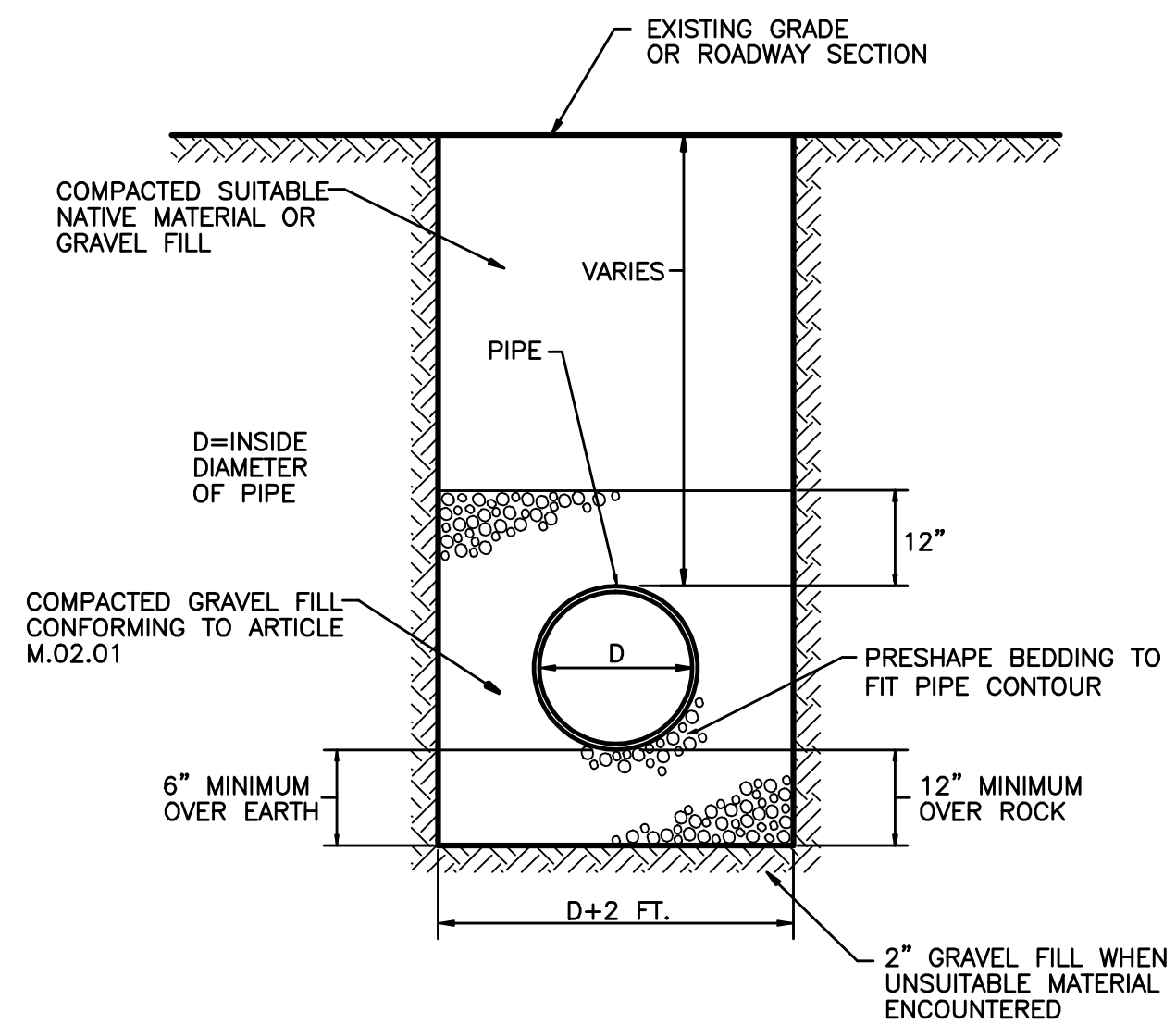
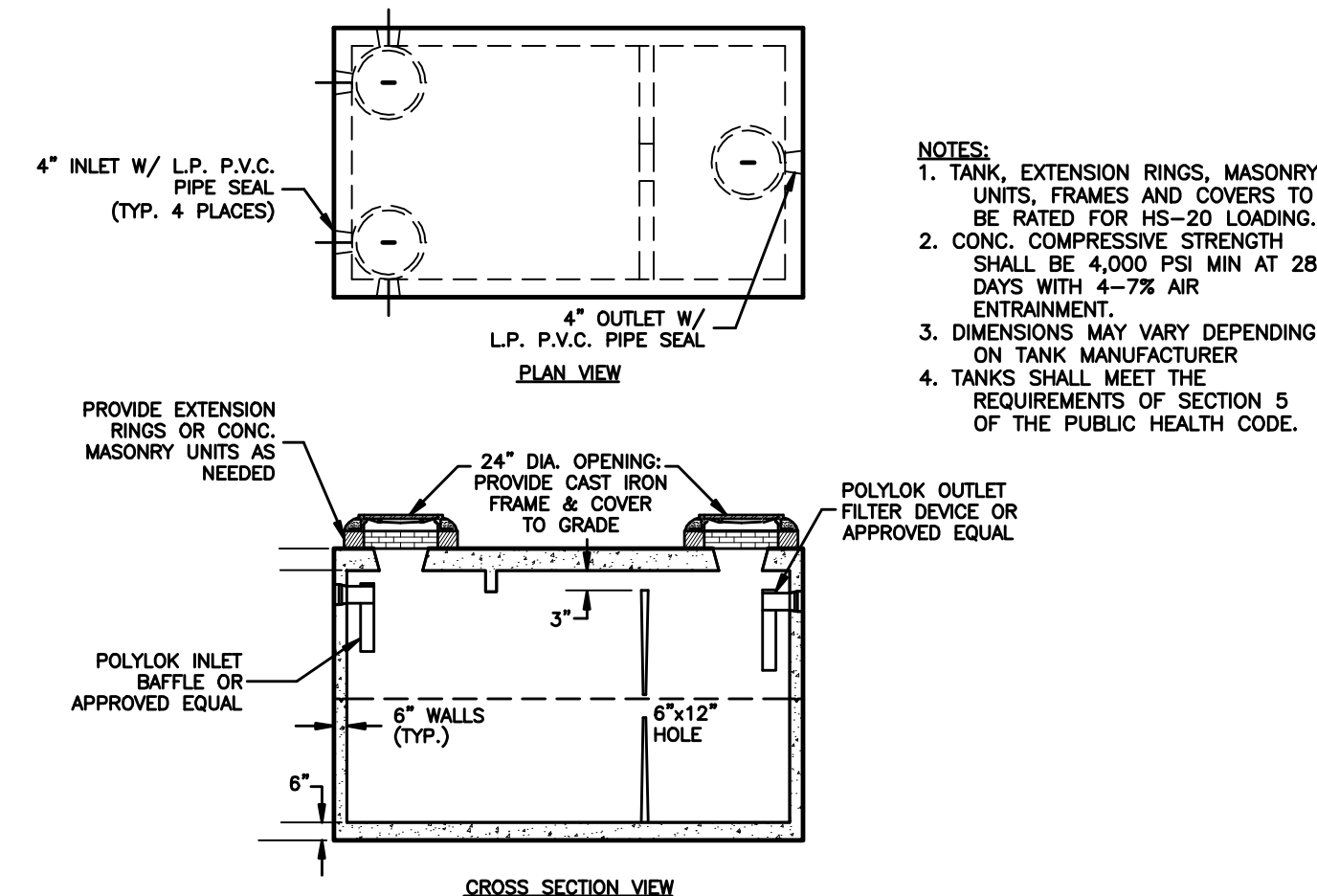
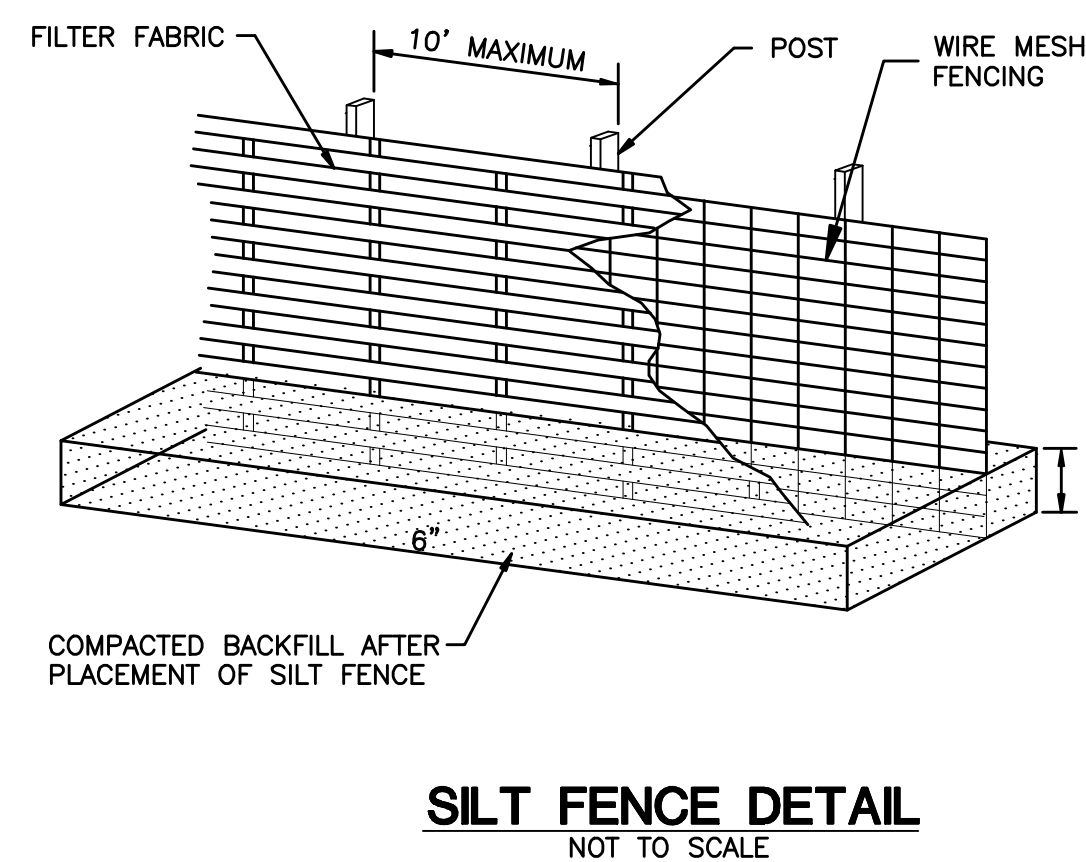
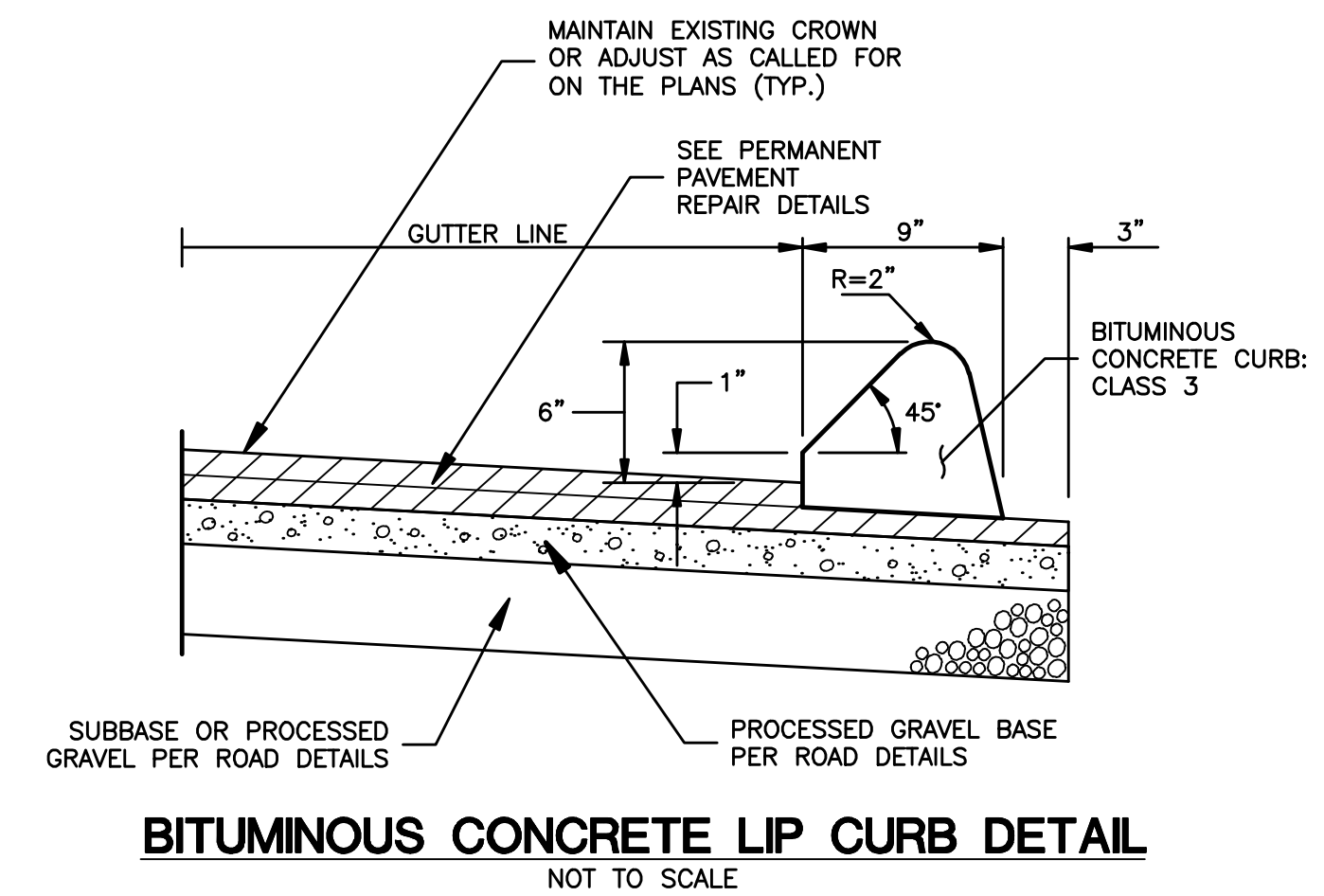
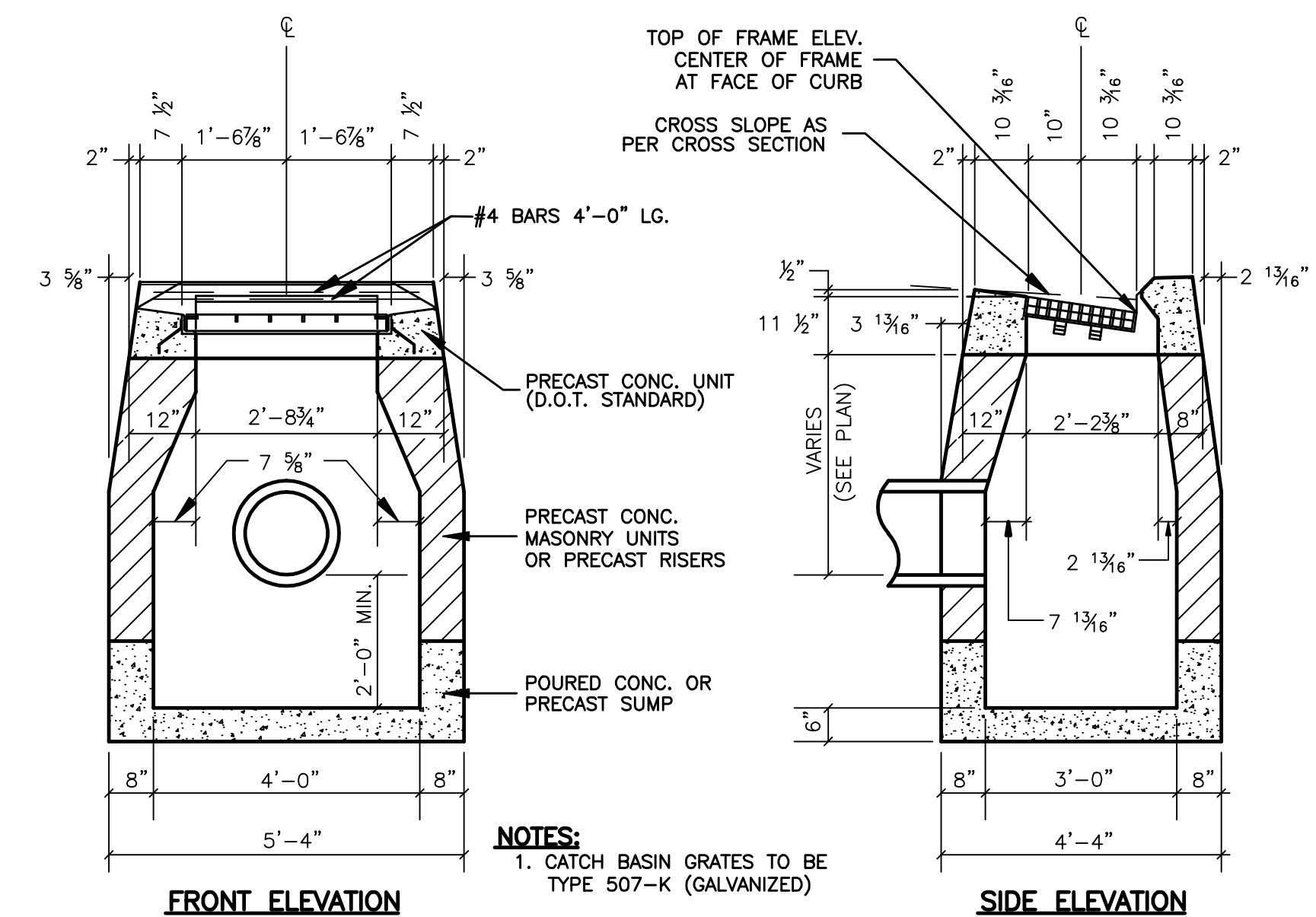
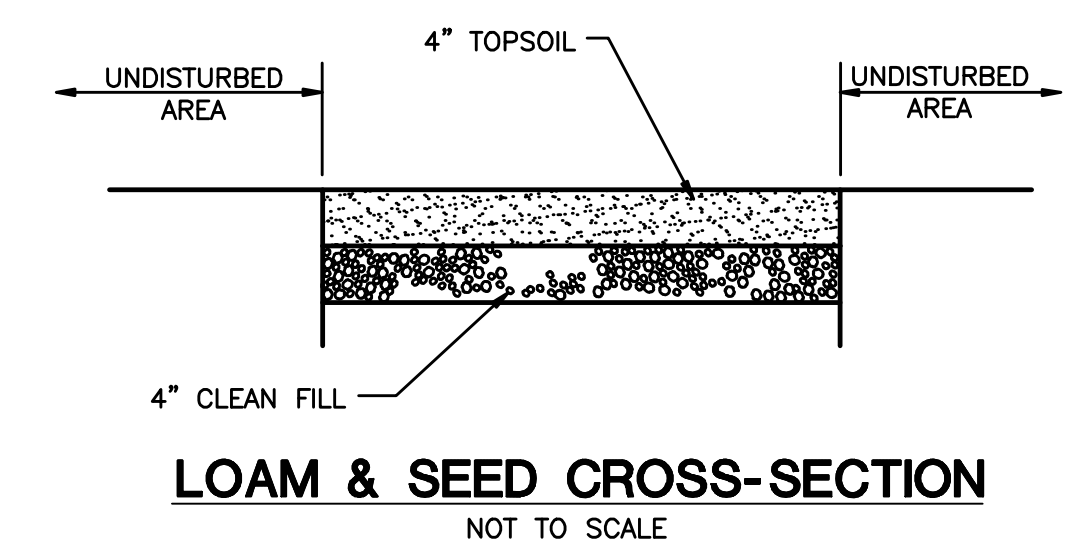
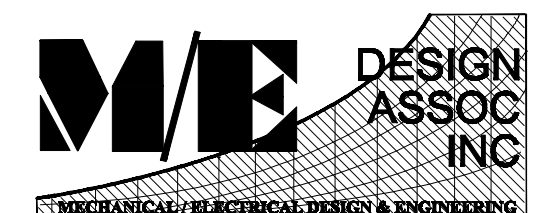


CROSS SECTION

6" THICK CONCRETE PAD
NOT TO SCALE



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No.	DATE	REVISION	Proj. Engineer R.A.D.	
			Date: JAN. 2014	
			Sheet No. 2	
			TOWN OF LEDYARD	
			PUBLIC WORKS FUEL STATION IMPROVEMENTS	
			DETAIL SHEET	



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