SECTION 00 11 16

INVITATION TO BID

Legal Notice

NEW MILFORD PUBLIC SCHOOLS
Facilities Department
386 Danbury Rd – New Milford, CT 06776
Tel (860) 355-6060

Notice is hereby given that sealed bids by which the New Milford Public Schools will contract for the:
Schaghticoke Middle School Underground Storage Tank Project

will be received either by mail or in person drop off until **Friday, June 27, 2025 at 12:00 PM**
Bids will be opened publicly and read aloud at **2PM**. Bidders may be present at the opening.

A mandatory pre-bid meeting between prospective bidders and the Engineering Firm will convene outside the Rear Entrance of the School, 23 Hipp Road, New Milford, on **Friday, June 6, 2025 at 3PM** when project details will be discussed. All prospective bidders must attend.
Bids must be held firm and may not be withdrawn for sixty (60) days after the bid opening.

Contractors must carry minimum insurance coverage limits, as indicated in the bid specifications. A certificate of insurance must accompany all bids. Attention of bidders is directed to certain requirements of this contract which require payment of minimum wages and compliance with certain local, state, and federal requirements. This contract is subject to state set-aside and contract compliance requirements. Plans and specifications must be obtained directly from the New Milford Public Schools website, https://www.newmilfordps.org/fiscalservices at no cost to the Contractor. Each bidder is responsible for checking the websites to determine if any addenda have been issued.

The New Milford Public Schools reserves the right to accept or reject any and all bids, or any part thereof, to waive defects in same, or to accept any proposal it deems to be in the District's best interest.

AN AFFIRMATIVE ACTION/EQUAL OPPORTUNITY EMPLOYER MBE's, WBE's, and SBE's ARE ENCOURAGED TO APPLY

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END OF SECTION

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

PART 1- PROPOSAL INSTRUCTIONS

All proposals for service shall remain valid and be binding upon the respondent if accepted by the District within sixty (60) calendar days of the proposal submission date. All proposals shall be signed by an authorized representative of such company.

Proposals shall include a statement of understanding of the work and of qualification of the firm/organization submitting the proposal and those employees that will be providing services to the District.

State of Connecticut Prevailing Wages and Regulations will apply to this project if the project's contract value, at any point, exceeds $100,000.

PART 2- TIMELINE

Mandatory Pre-Bid Site Visit:	Friday, June 6, 2025 3PM New Milford High School 388 Danbury Rd New Milford, CT, 06776
Questions Due From Bidders:	Monday, June 9, 2025 3PM
Proposals Due:	Friday, June 27, 2025 12PM New Milford Public Schools Facilities Office 386 Danbury Rd New Milford CT , 06776
Public Bid Opening:	Friday, June 27, 2025 2PM New Milford Public Schools Facilities Office 386 Danbury Rd New Milford CT , 06776

PART 3- COMPLETION DATE

All work as required by these specifications and drawings shall be completed by the date stipulated in the Contractor's Bid Form. There is no exception to this contract requirement, unless approved otherwise by contract change order.

PART 4- RESPONSIBILITY FOR MEASUREMENT OF QUANTITIES

The Contractors shall have sole responsibility for the accuracy of all measurements and for estimating the material quantities required to satisfy these specifications.

PART 5- QUESTIONS AND COMMUNICATIONS

Bidders are hereby notified not to contact any member of District staff and its elected officials, except as provided herein regarding this proposal until such time as a contract has been awarded. All questions about the proposals should be directed to Matt Cunningham, Director of Facilities, by email at cunninghamm@newmilfordps.org by Monday, June 2, 2025 at 3PM. Answers to all received questions will be posted on the District website at https://www.newmilfordps.org/fiscalservices.

PART 6- ADDENDA

The District reserves the right to revise any part of this RFP by issuing an addendum at any time prior to the submittal deadline. Should a Bidder find any discrepancies in the Drawings and Specifications, or should they be in doubt as to their meaning, they shall notify the Owner at once, who will send a written Addendum to all Bidders concerned. Oral instructions or decisions, unless confirmed by Addenda, will not be considered valid, legal, or binding. No change order requests will be authorized or considered because of the failure of the Contractor to include work called for in the Addenda in their bid. Addenda notifications will be emailed to all persons on record from the mandatory pre-bid conference and posted on the District's website at https://www.newmilfordps.org/fiscalservices.

PART 7- FORMAT

The submitted proposals must follow the rules and format established within this RFP. Failure to comply with all provisions of this RFP may result in the proposal being disqualified. All proposals must be securely bound. Proposals must submit completed appendices.

- Provide references including names for at least three (3) references from similar sized clients with contact information. References submitted using SECTION 01 42 00

References

- A lump sum bid using SECTION 00 41 00 FORM OF GENERAL BID.
    - A description of the firm/organization's billing process and any special payment terms should be included.
- A letter of transmittal indicating the firm's interest in providing the service and any other information that would assist the District in making a selection. This letter must be signed by a person legally authorized to bind the firm to a contract.
- Name, email address and telephone number of person(s) to be contacted for further information or clarification.
- Copy of any necessary State of Connecticut or local licenses and/or permits necessary to perform the work required.

PART 8 - SUBMISSION

Each proposal must be submitted in a sealed envelope bearing the bid number **RFP E- 2425-013** and titled **" SCHAGHTICOKE MIDDLE SCHOOL: UST Replacement Project "**. Three (3) printed copies of the proposal and one (1) electronic copy on a USB drive must be provided. Proposals must be delivered to New Milford Public Schools Facilities Office, 386 Danbury Rd, New Milford, CT 06776 by Friday, June 27, 2025 at 12PM. Proposals submitted after this time will not be considered. Each Bidder shall be responsible for all costs incurred in order to prepare and submit their response to this RFP. All submitted materials including any work product, instruments of service and other deliverables shall become the property of the District, and the Bidders shall not claim any ownership interest in the same.

Submissions received after the deadline of Friday, June 27, 2025 at 12pm will be considered informal and rejected.

SECTION 00 31 43

PERMITS

PART 1 – GENERAL

1.01 DESCRIPTION:

This Section provides specific information and defines specific requirements of the Contractor regarding the preparation and acquisition of permits required to perform the work of this project.

1.02 RELATED WORK:

A. Section 01 11 00, CONTROL OF WORK AND MATERIALS

B. Section 01 14 19.16, DUST CONTROL

C. Section 01 57 19, ENVIRONMENTAL PROTECTION

D. Section 02 65 00, REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS

E. Section 31 00 00, EARTHWORK

F. Section 31 23 19, DEWATERING

G. Section 33 56 13, UNDERGROUND FUEL STORAGE TANK

1.03 GENERAL REQUIREMENTS:

A. The Contractor shall obtain and pay for all permits required for the completion of the project, including but not limited to underground storage tank (UST) system removal permit, UST installation permit, and electrical permit.

PART 2 - PRODUCTS

Not Used.

PART 3 – EXECUTION

3.01 PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS:

A. The Contractor shall perform the work in accordance with the Contract Documents and any applicable municipal requirements.

B. Prior to commencing any construction activities, the Contractor shall demonstrate to the Owner and the Engineer, through on-site inspection and submitting copies of permits or approvals, that it is in full compliance with the terms and conditions of all required permits. The Contractor shall maintain full compliance with all permits throughout the performance of the work, and upon request, grant access to permitting authorities to inspect the site for the purpose of verifying such compliance.

SECTION 00 41 00
BID FORMS

Proposal of _____(hereinafter called "Bidder")*

(__) a corporation, organized and existing under the laws of the State of _____

(__) a partnership

(__) a joint venture

(__) a limited liability company

(__) an individual doing business as _____

*Check corporation, partnership, joint venture, LLC or individual as applicable.

To the New Milford, CT Public Schools (hereinafter called "District").

Everyone:

The undersigned Bidder, in compliance with your invitation for bids for construction of the Underground Storage Tank Replacement Project having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all superintendence, labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies, bailing, shoring, removal, and all other things necessary to construct the project in accordance with the contract documents, within the time set forth below, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this bid is a part.

The Bidder hereby agrees that if selected as the Contractor it will commence work under this contract on or before a date to be fixed in the written “Notice to Proceed” given by the District to the Contractor and to fully complete the project by July 31, 2026.

Bidder acknowledges receipt of the following addenda:

No. _____ Dated: _____

No. _____ Dated: _____

No. _____ Dated: _____

No. _____ Dated: _____

The proposed Contract Price (Total of Item 1 & Items 2) is:

_____dollars ($_____).
(in words) (in numbers)

Item 1: Base Lump Sum
Bidder agrees to perform all the work described in the specifications and shown on the plans with the exception of Items 2a, 2b, 2c, and 2d for the sum of:

_____Dollars ($_____)
(Words) (Numbers)

Item 2: UNIT PRICES

Item 2a. Removal and Disposal of Tank Contents and Sludge as described in Section 01 22 00 MEASUREMENT AND PAYMENT SECTION.

3,000 Gallons x $_____per gallon = $ _____
(in numbers) (in numbers)

Item 2b. Excavation, Management, Transportation, and Disposal - Petroleum Impacted Soil as described in Section 01 22 00 MEASUREMENT AND PAYMENT SECTION.

0 Tons x $_____per ton = $ _____
(in numbers) (in numbers)

Item 2c. Removal and Disposal of Free-Phase Petroleum and/or Petroleum-Impacted Groundwater as described in Section 01 22 00 MEASUREMENT AND PAYMENT SECTION.

Vacuum Truck

8 Hours x $_____ per hour = $ _____
(in numbers) (in numbers)

Disposal

500 Gallons x $_____ per gallon = $ _____
(in numbers) (in numbers)

Item 2d. Additional Granular Fill as described in Section 01 22 00 MEASUREMENT AND PAYMENT SECTION.

0 CY x $_____ per cubic yard = $ _____
(in numbers) (in numbers)

Total of Item 2 (Sum of 2a, 2b, 2c, 2d**)**

$_____
(in numbers)

The BASE LUMP SUM and the above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, bond premiums, engineering costs, etc., to cover the finished work of the several kinds called for.

The Bidder understands that all bids for this project are subject to the applicable bidding laws of the State of Connecticut.

Bidder understands that the District reserves the right to reject any or all bids and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of 60 days, Saturdays, Sundays and legal holidays excluded, after the opening of bids.

Within 10 days of receipt of the written notice of acceptance of this bid, the Bidder will execute the formal agreement and provide the requisite payment and performance bonds and certificates of insurance.

The selected Contractor shall furnish a performance bond and a payment bond in an amount at least equal to one hundred percent (100%) of the contract prices.

The undersigned offers the following information as evidence of its qualifications to perform the work as bid upon according to all the requirements of the plans and specifications.

1. Have been in business under present name for _____years.

2. The names and addresses of all persons interested in the bid (if made by a partnership or corporation) as Principals, are as follows:

_____

_____

_____

_____

_____

(Attach supplementary list if necessary)

The undersigned Bidder hereby certifies that (1) it is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and 3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity which sells materials, equipment or supplies used in or for, or engages in the performance of, the same or similar construction, reconstruction, installation, demolition, maintenance or repair work or any part thereof.

The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the State of Connecticut under applicable debarment provisions of the Connecticut General Statutes or any rule or regulations promulgated thereunder.

Respectfully submitted:

Date _____ By _____

(Signature)

_____

(Name - Typed or Printed)

_____

(Title)

(SEAL - if bid is by a corporation)

_____

(Business Name)

_____

(Federal ID Number)

_____

(Business Address)

_____

(City and State)

_____

(Telephone Number)

END OF BID FORMS

SECTION 00 45 36

EQUAL EMPLOYMENT OPPORTUNITY AFFIDAVIT

The New Milford Public Schools is an Equal Opportunity Employer and will not transact business with firms that are not in compliance with all Federal and State Statutes and Executive Orders pertaining to non‐ discrimination.

This form is required to be filled in (enter company name above lines below), signed and returned with any Invitation to Bid, Request for Proposal, or other public solicitation document in order to transact any business with the New Milford Public Schools.

_____ will not make employment decisions (including decisions related to hiring, assignment, compensation, promotion, demotion, disciplinary action and termination) on the basis of race, color, religion, age, sex, marital status, sexual orientation, national origin, alienage, ancestry, disability (including pregnancy), genetic information, veteran status or gender identity or expression, or any other legally recognized protected class status except in the case of a bona fide occupational qualification.

It is the policy of _____ that any form of discrimination or harassment on the basis of race, religion, color, national origin, alienage, sex, sexual orientation, marital status, age, disability (including pregnancy), genetic information, veteran status or gender identity or expression, or any other protected class status prohibited by state or federal law is prohibited.

_____ will also take affirmative action as called for by applicable laws and Executive Orders to ensure that minority group individuals, females, disabled veterans, recently separated veterans, other protected veterans, Armed Forces service medal veterans, and qualified disabled persons are introduced into our workforce and considered for promotional opportunities.

_____ will remain in full compliance with the above while under contract with or performing work for the New Milford Public Schools.

_____ _____

Signed _____

_____ Business Address

Name/Title of Company Officer

_____ _____

Date Phone

SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

PART 1- CONTRACTOR ELIGIBILITY

Contractors shall have been in business for a minimum of five (5) years and provide a least of three (3) completed projects of similar size and scope including Point Of Contact and telephone number. Only those contractors that are properly licensed in the State of Connecticut for this type of work may bid on this project

PART 2- SELECTION PROCESS

Proposals will be evaluated by a selection committee based upon the response to the criteria presented in the request and any other factual information it deems appropriate. The committee will make a recommendation to the Superintendent of Schools and Board of Education for final acceptance of the selection. During the evaluation process, a firm/organization may be asked to make an oral presentation. The District reserves the right without prejudice to reject any or all proposals or parts thereof for any reason, to negotiate changes to proposal terms, waive minor inconsistencies with the request for proposals, and to select the proposal the committee deems best fits the needs of the District.

The District reserves the right to negotiate any and all elements of any proposal directly with the provider. No changes in or to the proposal submissions will be permitted subsequent to the proposed target date unless approved by the District. The District may request clarifications on any portion of the proposal in order to develop a comprehensive assessment of the proposal.

PART 3- DISCLAIMERS AND DISCLOSURES

The District has prepared this document to give background information to interested parties for participating in the RFP process. While the District has taken due care in the preparation of this RFP document and believes it to be accurate, neither the District nor the Town of New Milford nor any of their respective officers, employees, agents or advisors (collectively the "District Parties") give any warranty or make any representations, express or implied, as to the completeness or accuracy of the information contained in this document or any information which may be provided in association with it.

The information is not intended to be exhaustive. The information disclosed herein is provided on the basis that it is non–binding on the District Parties. The District reserves the right to alter/increase/decrease the scope of work requirements as later determined. The District reserves the right not to proceed with the Project or to change the configuration of the Project, to alter the time table reflected in this document or to change the process or procedure to be applied. It also reserves the right to decline to discuss the matter further with any party expressing interest. No reimbursement of cost of any type will be paid to persons or entities expressing interest. The

District reserves the right to accept or reject, in full or in part, any or all the offers without assigning any reason whatsoever. The District does not bind itself to accept the lowest or any offered RFP and reserves the right to reject all or any or cancel the RFP without assigning any reason whatsoever. The District also has the right to re-issue the RFP without the Contractors having the right to object to such reissue. No oral statement of any representatives of the District shall be effective to waive, change or otherwise modify any of the provisions of this RFP, and no proposer shall rely on any alleged statement.

The District may elect to meet with any, all, or none of the bidders or prospective bidders prior to selection. The District reserves the right to reject any or all of the proposals submitted, to negotiate changes to proposal terms and to waive minor inconsistencies with the request for proposal. The District reserves the right to negotiate the cost of this proposal and to award the work to other than the proposer with the lowest cost, if it is in the best interest of the District. Submission of a proposal indicates acceptance by the proposer of the conditions contained in this request for proposals unless clearly and specifically noted in the proposal submitted and confirmed in the contract between the District and the proposer selected. The District may, before or after proposal opening and in its sole discretion, clarify, modify, amend or terminate this request for proposals if it is determined that doing so is in the District's best interests. Any such action shall be communicated to prospective consultants via a posting on the District's website. Each prospective bidder shall be responsible for checking the District's website at https://www.newmilfordps.org/fiscalservices to determine if the District has clarified, modified or amended this request for proposals and if so ensuring that its proposal is in accordance with the terms of the clarified, modified or amended request for proposal.

PART4- TERMS AND CONDITIONS

Based on the outcome of this process, evaluation, design and specifications, and cost estimates need to be completed within 30 days of award notice or contract signing, whichever is later.

The selected bidder will be required to execute a form of contract, subject to the terms set forth in this request for proposal. By submitting a proposal, bidders agree to incorporate all the terms and conditions of this RFP into the contract entered into for performance of the project except as may be expressly waived by the District. Any objection to incorporation to a term or condition of this RFP must be noted in proposals. The District anticipates requiring performance and payment bonds in connection with this project.

PART 5- INDEMNITY

To the fullest extent permitted by law, the Contractor agrees on behalf of itself and its successors and assigns, covenants and agrees at its sole cost and expense, to protect, defend, indemnify, release and hold the New Milford Board of Education, Town of New Milford, its agents, servants, officials, employees, volunteers and members of its boards and commissions (Collectively the "Board and Town of New Milford"), harmless from and against any and all

Losses (defined below) imposed upon or incurred by or asserted against the Board and Town of New Milford by reason of bodily injury, personal injury, death, or property damage of whatsoever kind or nature, to any individuals or parties (including, but not limited to the Board and Town of New Milford, the Contractor, or any other third party) arising out of or resulting from, or alleged to arise out of or arise from the Contractor's performance of its work under the Contract, but only to the extent such Losses are attributable to the negligent or intentional act, error or omission of the Contractor or any person or organization employed or engaged by the Contractor to perform all or any part of the Contract. The term "Losses" includes any losses, damages, costs, fees, expenses, claims, suits, judgments, awards, liabilities (including, but not limited to, strict liabilities), obligations, debts, fines, penalties, charges, amounts paid in settlement, foreseeable and unforeseeable consequential damages, litigation costs, attorneys' fees, expert's fees, and investigation costs, of whatever kind or nature, and whether or not incurred in connection with any judicial or administrative proceedings, actions, claims, suits, judgments or awards.

Upon written request by the Board, the Contractor shall defend and provide legal representation to the Board and/or Town of New Milford with respect to any of the matters referenced above. Notwithstanding the foregoing, the Board may, in its sole and absolute discretion, engage its own attorneys and other professionals to defend or assist it with respect to such matters and, at the option of the Board, its attorneys shall control the resolution of such matters. Upon demand, the Contractor shall pay or, in the sole and absolute discretion of the Board, reimburse, the Board and/or Town of New Milford for the payment of reasonable fees and disbursements of attorneys and other professionals in connection with this contract

THE BOARD and TOWN OF NEW MILFORD DO NOT AGREE TO INDEMNIFY THE CONTRACTOR IN CONNECTION WITH ANY LOSSES ARISING OUT OF OR RESULTING FROM, OR ALLEGED TO ARISE OUT OF OR ARISE FROM THE SERVICES PROVIDED BY THE CONTRACTOR PURSUANT TO THIS CONTRACT.

PART 6- ASSIGNMENT OF RIGHTS, TITLES, & INTERESTS

Any assignment or subcontracting for work to be performed related to this request, in whole or in part, and any other interest in conjunction with the District's procurement shall not be permitted without the express written consent of the District.

PART 7- AVAILABILITY OF FUNDS

Any contract award associated with this RFP is contingent upon the availability of District funding. If funds for the continued fulfillment are at any time not forthcoming or are insufficient, through failure of any entity to appropriate funds or otherwise, then the District will have the right to terminate the Contract at no additional cost and with no penalty whatsoever by giving prior written notice documenting the lack of funding. The District will provide at least thirty (30) days advance written notice of such termination and will use reasonable efforts to ensure appropriated funds are available. In the event that funds are not available, any agreement resulting from this RFP shall become null and void.

PART 8- TAX EXEMPT

The District is tax exempt under state and federal law. The successful contractor will be responsible for any and all federal, state and local taxes including personal property tax. Such taxes must not be included in the bid price.

PART 9- INSURANCE

Prior to the commencement of any work and no later than ten (10) days after notice of award of the contract, the selected bidder shall submit to the District evidence of insurance demonstrating that the contractor has coverage for Workmen's Compensation Insurance, Liability, Property Damage, and Automobile/Truck insurance with the minimum limits of liability set forth herein. Certificates of insurance shall contain a provision that such policies shall not be canceled or permitted to expire until at least thirty (30) days prior written notice has been provided to the selected bidder. Further, the District, the Town of New Milford and their current and former officers, members, agents and employees shall be named as an additional insured on a primary and non-contributory basis. The contractor and its insurers shall waive all rights of subrogation against the Town of New Milford and New Milford Board of Education and their current and former officers, members, agents and employees. Proof of insurance must accompany proposals.

a) Worker's Compensation Insurance shall not be written for less than the statutory limits and shall include Employer's Liability Insurance at a limit of not less than Five Hundred Thousand Dollars ($500,000);
b) General Liability Insurance shall be insured at a limit of not less than One Million Dollars ($1,000,000) for each occurrence and Two Million Dollars ($2,000,000) for total aggregate liability; additionally, shall be insured with an umbrella coverage not less than One Million Dollars ($1,000,000).
c) Property Damage Insurance shall be written at a limit of not less than One Million Dollars ($1,000,000) for each occurrence and One Million Dollars ($1,000,000) for each aggregate Liability.

PART 10- FREEDOM OF INFORMATION ACT

All information submitted in a proposal or in response to a request for additional information is potentially subject to disclosure under the Connecticut Freedom of Information Act as amended and judicially interpreted. Proposals and the information contained therein shall not be treated as or considered confidential by the District.

PART 11- WARRANTY

Guarantee workmanship and material provided against defective manufacture or installation. Repair or replace defective workmanship and material appearing within a period of one (1) year after completion date, which will be defined as the date on the check of the final payment for the project. At such time the contractor will transfer the manufacturer's warranty to the District**.**

CONNECTICUT DEPARTMENT OF LABOR

Partner of the American Job Center Network

THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 25-4743

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: New Milford
State#: FAP#:
Project: Schaghticoke Middle School: Underground Storage Tank Replacement

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	48.21	30.01
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	43.14	34.74
2) Carpenters, Piledrivermen	42.03	29.19
2a) Diver Tenders	42.03	29.19
3) Divers	50.49	29.19
03a) Millwrights	43.25	29.13
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	57.85	25.95
4a) Painters: Brush and Roller	38.07	25.80
4d) Painters: Blast and Spray	41.07	25.80

As of: May 8, 2025

4e) Painters: Tanks, Tower and Swing	40.07	25.80
4f) Elevated Tanks (60 feet and above)	47.07	25.80
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)	45.4	33.57+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	41.27 + a
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)	49.58	35.25
----LABORERS---- -		
8) Group 1: General Laborers and concrete specialist	35.7	28.85
8) Group 1a: Acetylene Burners (Hours worked with a torch)	36.7	28.85
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	35.95	28.85
10) Group 3: Pipelayers	36.2	28.85
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	36.2	28.85
12) Group 5: Toxic waste removal (non-mechanical systems)	37.7	28.85
13) Group 6: Blasters	37.45	28.85

As of: May 8, 2025

Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	38.7	28.85
Group 8: Traffic control signalmen	21.42	28.85
Group 9: Hydraulic Drills	36.45	28.85
Group 10: Toxic Waste Removers A or B With PPE	38.7	28.85
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	37.93	28.85 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	36.96	28.85 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	36.96	28.85 + a
15) Form Erectors	37.29	28.85 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	36.96	28.85 + a
17) Laborers Topside, Cage Tenders, Bellman	36.85	28.85 + a
18) Miners	37.93	28.85 + a

As of: May 8, 2025

----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: -----		
18a) Blaster	44.42	28.85 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	44.22	28.85 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	42.24	28.85 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	45.01	28.85 + a
----TRUCK DRIVERS----(*see note below)		
Two Axle Trucks, Helpers	33.16	32.36 + a
Three Axle Trucks; Two Axle Ready Mix	33.27	32.36 + a
Three Axle Ready Mix	33.33	32.36 + a
Four Axle Trucks	33.39	32.36 + a
Four Axle Ready-Mix	33.44	32.36 + a
Heavy Duty Trailer (40 tons and over)	35.66	32.36 + a
Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	33.44	32.36 + a
Heavy Duty Trailer (up to 40 tons)	34.39	32.36 + a

Snorkle Truck	33.54	32.36 + a
----POWER EQUIPMENT OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over). (Trade License Required)	58.19	29.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	53.33	29.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	57.78	29.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	56.79	29.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer).	52.92	29.80 + a
Group 3: Excavator; 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)	51.92	29.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper).	51.42	29.80 + a
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" mandrel)	50.63	29.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	50.63	29.80 + a

Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	50.22	29.80 + 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)	49.77	29.80 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	49.25	29.80 + 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), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	48.67	29.80 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	45.96	29.80 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	45.96	29.80 + a
Group 12: Wellpoint Operator.	45.87	29.80 + a
Group 13: Compressor Battery Operator.	45.12	29.80 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	43.6	29.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	43.06	29.80 + a
Group 16: Maintenance Engineer.	42.2	29.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	47.91	29.80 + a

As of: May 8, 2025

Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	44.7	29.80 + a
Surveyor: Chief of Party	48.16	29.80 + a
Surveyor: Assistant Chief of Party	44.41	29.80 + a
Surveyor: Instrument Man	42.73	29.80 + a
Surveyor: Rodman or Chairman	36.78	29.80 + a

**NOTE: SEE BELOW

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

20) Lineman, Cable Splicer, Technician	48.84	18.07
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
23) Driver Groundmen	26.5	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76

----LINE CONSTRUCTION----

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20

As of: May 8, 2025

26) Heavy Equipment Operators	37.1	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

Welders: Rate for craft to which welding is incidental.

Surveyors: Hazardous material removal: $3.00 per hour premium.

*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 journeyperson 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. For those without internet access, please contact the division listed below.

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.

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

As of: May 8, 2025

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: May 8, 2025

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine
Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007,* where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

STATUTE 31-55a

- SPECIAL NOTICE –

To All State and Political Subdivisions,Their Agents, and Contractors
Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement 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 Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.
- 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.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860)263-6790.

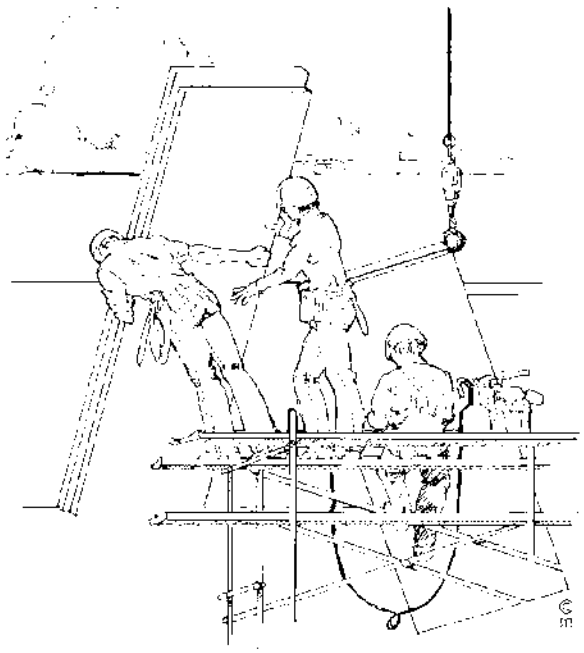
~NOTICE~

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached "Contracting Agency Certification Form" to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

✎ Inquiries can be directed to (860) 263-6790.



CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION
CONTRACT COMPLIANCE UNIT

CONTRACTING AGENCY CERTIFICATION FORM

I, _____, acting in my official capacity as _____,
authorized representative title

for _____, located at _____,
contracting agency address

do hereby certify that the total dollar amount of work to be done in connection with

_____, located at _____,
project name and number address

shall be $_____, which includes all work, regardless of whether such project

consists of one or more contracts.

CONTRACTOR INFORMATION

Name:_____

Address:_____
Authorized Representative:_____
Approximate Starting Date: _____

Approximate Completion Date:_____

_____ _____
Signature Date

Return To: Connecticut Department of Labor
Wage & Workplace Standards Division
Contract Compliance Unit
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date Issued: _____

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

I,_____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signed

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

_____
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:			SUBCONTRACTOR NAME & ADDRESS	WORKER'S COMPENSATION INSURANCE CARRIER POLICY # EFFECTIVE DATE: EXPIRATION DATE:
PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS		

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S HOURS WORKED EACH DAY	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							

12/9/2013 *IF REQUIRED
WWS-CP1

*SEE REVERSE SIDE

PAGE NUMBER ______OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such person is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

_____ _____ _____

(Signature) (Title) Submitted on (Date)

*****THIS IS A PUBLIC DOCUMENT*****
*****DO NOT INCLUDE SOCIAL SECURITY NUMBERS*****

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:
Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE / HOURS WORKED EACH DAY: S	M	T	W	TH	F	S	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS: FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

*IF REQUIRED

12/9/2013
WWS-CP2

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine *"job classification"* on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- ***ASBESTOS WORKERS***

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- ***ASBESTOS INSULATOR***

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- ***BOILERMAKERS***

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- ***BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS***

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- ***CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS***

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

• The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

• If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

• An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- ***ELECTRICIANS***

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- ***ELEVATOR CONSTRUCTORS***

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ****License required by Connecticut General Statutes: R-1,2,5,6.***

- ***FORK LIFT OPERATOR***

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- ***GLAZIERS***

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- ***IRONWORKERS***

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- ***INSULATOR***

• Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- ***LABORERS***

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- ***PAINTERS***

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- ***LEAD PAINT REMOVAL***

• Painter's Rate
1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

• Laborer's Rate
1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- ***PLUMBERS AND PIPEFITTERS***

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- ***POWER EQUIPMENT OPERATORS***

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- ***ROOFERS***

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- ***SHEETMETAL WORKERS***

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- ***SPRINKLER FITTERS***

Installation, alteration, maintenance and repair of fire protection sprinkler systems. ****License required per Connecticut General Statutes: F-1,2,3,4.***

- ***TILE MARBLE AND TERRAZZO FINISHERS***

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ****License required, drivers only, per Connecticut General Statutes.***

For example:

• Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
• Hauling material off site is not covered provided they are not dumping it at a location outlined above.
• Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➢ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6790.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

⇨ Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

SECTION 01 10 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS:

A. The Project consists of work to be performed at the Schaghticoke Middle School in New Milford, Connecticut, as described in the Drawings and Specifications (Contract Documents) entitled Underground Storage Tank Replacement Project, prepared by Weston & Sampson Engineers, Inc., dated April 2025.

1.02 SUMMARY OF WORK:

A. The work under this Contract shall include the removal and off-site disposal/recycling of an existing 20,000-gallon underground storage tank (UST) system, including residual fuel oil within the UST and piping, concrete cover pad, and associated piping, conduits, sumps, and other appurtenances, and replacement with a new 12,000-gallon, double-walled, fiberglass-reinforced plastic (FRP) UST and associated piping, conduits and wiring, sumps, other appurtenances, tank monitoring system, and concrete cover pad. During removal of the existing 20,000-gallon UST system, the Contractor shall assist the Engineer with collection of closure samples from within the UST and piping excavations. The Contractor shall fully restore disturbed areas of the site to match existing conditions, including but not limited to paving and re-striping of parking areas. All work shall be completed as specified in, and in accordance with, the Contract Documents.

B. The Contractor shall furnish all personnel, supervision, labor, materials, and equipment, including the new 12,000-gallon UST, necessary to construct the project in accordance with the Contract Documents.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 11 00

CONTROL OF WORK AND MATERIALS

PART 1 – GENERAL

Not Used.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 HAULING, HANDLING AND STORAGE OF MATERIALS:

A. The Contractor shall, at its own expense, handle and haul all materials furnished by it and shall remove any of its surplus materials at the completion of the work.

B. The Contractor shall provide suitable and adequate storage for equipment and materials furnished by it that are liable to injury and shall be responsible for any loss of or damage to any equipment or materials by theft, breakage, or otherwise.

C. All excavated materials and equipment to be incorporated in the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the work. Materials and equipment shall be kept neatly piled and compactly stored in such location as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

D. The Contractor shall be responsible for all damages to the work under construction during its progress and until final completion and acceptance even though partial payments have been made under the Contract.

3.02 OPEN EXCAVATIONS:

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at its own expense, provide suitable and safe means for completely covering all open excavations and for accommodating travel when work is not in progress.

B. The dimensions of open excavations will be controlled by the particular surrounding conditions but shall always be confined to the limits prescribed by the Engineer.

3.03 CARE AND PROTECTION OF PROPERTY:

The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be promptly restored by the Contractor, at its expense, to a condition similar or equal to that existing before the damage was done, to the satisfaction of the Engineer.

3.04 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES:

A. All existing buildings, utilities, pipes, poles, wires fences, curbings, property line markers and other structures which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the contractor. Should such property be damaged, it shall be restored by the Contractor, at no additional cost to the Owner.

B. The Contractor shall determine the location of all underground structures and utilities (including existing water services, drain lines, electrical lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by Contractor.

C. When fences interfere with the Contractor's operations, it shall remove and (unless otherwise specified) promptly restore them in accordance with Section 01 14 19.19 EXISTING FENCES.

D. On paved surfaces the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels which are shaped so as to cut or otherwise damage such surfaces.

E. All property damaged by the Contractor's operations shall be restored to a condition at least equal to that in which it was found immediately before work was begun. Suitable materials and methods shall be used for such restoration.

F. Restoration of existing property and structures shall be carried out as promptly as practicable and shall not be left until the end of the construction period.

3.05 REJECTED MATERIALS AND DEFECTIVE WORK:

A. Materials furnished by the Contractor and condemned by the Engineer as unsuitable or not in conformity with the specifications shall forthwith be removed from the work by the Contractor, and shall not be made use of elsewhere in the work.

B. Any errors, defects or omissions in the execution of the work or in the materials furnished by the Contractor, even though they may have been passed or overlooked or have

appeared after the completion of the work, discovered at any time before the final payment is made hereunder, shall be forthwith rectified and made good by and at the expense of the Contractor and in a manner satisfactory to the Engineer.

C. The Contractor shall reimburse the Owner for any expense, losses or damages incurred in consequence of any defect, error, omission or act of the Contractor or its employees, as determined by the Engineer, occurring previous to the final payment.

3.06 SANITARY REGULATIONS:

Sanitary conveniences for the use of all persons employed on the work, properly screened from public observation, shall be provided in sufficient numbers in such manner and at such locations as may be approved. The contents shall be removed and disposed of in a satisfactory manner as the occasion requires. The Contractor shall rigorously prohibit the committing of nuisances within, on or about the work. Any employees found violating these provisions shall be discharged and not again employed on the work without the written consent of the Engineer. The sanitary conveniences specified above shall be the obligation and responsibility of the Contractor.

3.07 SAFETY AND HEALTH REGULATIONS:

This project is subject to the Safety and Health regulations of the U.S. Department of Labor set forth in 29 CFR, Part 1926, and to the Connecticut Department of Labor Division of Occupational Safety and Health (CONN-OSHA). Contractors shall be familiar with the requirements of these regulations.

3.08 SITE INVESTIGATION:

The Contractor acknowledges that it has satisfied itself as to the conditions existing at the site of the work, the type of equipment required to perform this work, the quality and quantity of the materials furnished insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the drawings and specifications made a part of this contract. Any failure of the Contractor to acquaint itself with available information will not relieve it from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusion or interpretation made by the Contractor on the basis of the information made available by the Owner.

3.09 HANGERS, PADS, AND SUPPORTS:

A. Unless otherwise indicated, hangers and supports shall be by the trade providing the supported item.

B. Except where detailed or specified, design of hangers and supports shall be the responsibility of the Contractor. All parts of such hangers or supports shall be designed in accordance with accepted engineering practice, using a factor of safety of at least 2½.

C. When proprietary hangers, etc., are supplied, satisfactory evidence of the strength of such items shall be furnished.

D. Hangers for items hung from steel and concrete shall be centered on the vertical center of gravity of the beam.

E. Locations and sizes of openings, sleeves, concrete pads, steel frames, and other equipment supports are indicated on the drawings for bidding purposes only. Final sizes and locations of such items shall be obtained from the shop drawings.

3.10 SLEEVES, HOLES, HANGERS, INSERTS, ETC.:

A. Except where holes and openings are dimensioned, and hangers, inserts, and supports are fully called for on the architectural and structural drawings (or reference is made thereon to drawings containing such information) to accommodate mechanical or electrical items, they shall be by the mechanical or electrical trade concerned.

B. Sleeves, inserts, anchors, etc., supplied under the mechanical and electrical contracts in sufficient time to so permit, shall be set in concrete, masonry, etc., or fastened to steel deck, etc., by the respective architectural or structural trade. Where not supplied in sufficient time, installation of such items shall be the responsibility of the mechanical or electrical trade involved.

C. Nothing shall be suspended from the steel roof deck and no fastenings made to it, except with the prior permission of the Engineer. Request for permission shall be accompanied by full details of the hanger or fastener, including the weight of the item to be suspended.

D. Nailers and other wood members attached to steel or masonry, for which fasteners are not indicated on the design drawings or in the specification, shall be fastened with the equivalent of ½-inch diameter bolts at 3 feet o.c.

E. Openings for mechanical and electrical items in finished areas of the building shall be closed off with near escutcheon plates or similar closures. These closures shall be by the mechanical or electrical trade involved.

3.11 HAZARDOUS WASTE:

Should the Contractor, while performing work under this contract, uncover hazardous materials, as defined in Connecticut Remediation Standard Regulations, it shall immediately notify the Engineer. The Contractor is not, and has no authority to act as, a handler, generator, operator or disposer of hazardous or toxic substances found or identified at the site, and the Owner shall undertake all such functions.

END OF SECTION

SECTION 01 14 00

SPECIAL PROVISIONS

PART 1 - GENERAL

Not used

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.01 WATER FOR CONSTRUCTION PURPOSES:

A. In locations where water is in sufficient supply, the Contractor may be allowed to use water without charge for jetting backfill and other construction purposes. The express approval of the Owner shall be obtained before water is used. Waste of water by the Contractor shall be sufficient cause for withdrawing the privilege of unrestricted use.

B. If no water is available, the Contractor shall supply water at no additional cost to the Owner.

3.02 PIPE LOCATION:

Pipe shall be located substantially as indicated on drawings. The Owner reserves the right, acting through the Engineer, to make such modifications as may be deemed desirable to avoid interference with existing structures or for other reasons.

3.03 DIMENSIONS OF EXISTING STRUCTURES:

Where the dimensions and locations of existing structures are of critical importance in the installation or connections of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment that is dependent on the correctness of such information.

3.04 OCCUPYING PRIVATE PROPERTY:

The Contractor shall not enter upon nor occupy with men, equipment or materials any property outside of the public highways or Owner’s easements, except with the written consent of the property owner or property owner’s agent.

3.05 EXISTING UTILITY LOCATIONS – CONTRACTOR'S RESPONSIBILITY:

A. The location of existing underground services and utilities shown on the drawings is based on available records. It is not warranted that all existing utilities and services are shown, or that shown locations are correct. The Contractor shall be responsible for having the utility companies locate their respective utilities on the ground prior to excavating.

B. To satisfy the requirements of Connecticut law, the Contractor shall, at least 72 hours, exclusive of Saturdays, Sundays and holidays, prior to excavation in the proximity of telephone, gas, cable television and electric utilities, notify the utilities concerned by calling "CALL BEFORE YOU DIG" at telephone number: 1-800-922-4455.

C. The Contractor shall coordinate all work involving utilities and shall satisfy itself as to the existing conditions of the areas in which it is to perform its work. It shall conduct and arrange its work so as not to impede or interfere with the work of other contractors working in the same or adjacent areas.

3.06 COORDINATION OF WORK:

The General Contractor shall be responsible for coordinating its own work as well as that of any subcontractors. It shall be responsible for notification of the Engineer when each phase of work is expected to begin and the approximate completion date.

3.07 TIME FOR COMPLETION OF CONTRACT:

The time for completion of this contract is stipulated in the Form of/for General Bid. The Bidder shall base its bid on completing the proposed work by the completion date stipulated in the Specifications.

3.08 MAINTENANCE OF TRENCH SURFACE:

After backfilling and compacting the trench, the Contractor shall be responsible for keeping the ground surface dry and passable at all times until the surface has been restored to original conditions.

3.09 DESIGN OF EQUIPMENT:

Attention is directed to the fact that the layout of certain equipment is based on that of one manufacturer. If other equipment is submitted for approval, the Contractor shall prepare and submit for approval at its expense, detailed structural, mechanical and electrical drawings, equipment lists, maintenance requirements, and any other data required by the Engineer, showing all necessary changes and embodying all special features of the equipment it proposes to furnish. Such changes, if approved, shall be made at the expense of the Contractor.

3.10 SERVICES OF MANUFACTURER'S REPRESENTATIVE:

A. The Contractor shall arrange for a qualified service representative, at a time suitable to the Engineer, from the company manufacturing or supplying certain equipment as indicated on the detailed specifications, to perform the duties described herein.

B. After installation of the listed equipment has been completed and the equipment is presumably ready for operation, but before others operate it the representative shall inspect, operate, test, and adjust the equipment. The inspection shall include, but shall not be limited to, the following points as applicable:

1. Soundness (without cracks or otherwise damaged parts); completeness in all details, as specified; correctness in setting, alignment, and relative arrangement of various parts; adequacy and correctness of packing, sealing and lubricants.

2. The operation, testing, and adjustment shall be as required to prove that the equipment is left in proper condition for satisfactory operation under the conditions specified. Where called for in the specifications, vibration readings shall be made and the equipment balanced accordingly.

3. On completion of its work, the Contractor shall submit in triplicate to the Engineer the manufacturer's or supplier representative's complete signed report of the results of its inspection, operation, adjustments, and test. The report shall include detailed descriptions of the points inspected, tests and adjustments made, quantitative results obtained if such are specified, and suggestions for precautions to be taken to ensure proper maintenance. The report shall also include a certificate that the equipment conforms to the requirements of the contract and is ready for permanent operation and that nothing in the installation will render the manufacturer's warranty null and void.

4. After the Engineer has reviewed the reports from the manufacturer's representative, the Contractor shall make arrangements to have the manufacturer's representative present when the field acceptance tests are made.

3.11 COMPLIANCE WITH PERMITS:

A. The Contractor shall perform all work in conformance with requirements of the Permits, which appear in Section 00 31 43 – PERMITS.

3.12 CUTTING, FITTING AND PATCHING:

A. The Contractor shall do all cutting, fitting, or patching of its work that may be required to make its several parts come together properly and fit it to receive or be received by work of other Contractors, as shown upon or reasonably implied by the drawings and the specifications for the completed structure, including all existing work.

B. The Contractor shall not endanger any work by cutting, digging, or otherwise and shall not cut or alter the work of any other Contractor, save with the consent of the Engineer.

C. All holes or openings required to be made in new or existing work, particularly at pipe, conduit, or other penetrations not covered by escutcheons or plates shall be neatly patched. All such holes shall be made completely watertight as approved by the Engineer.

D. Size and locations of holes required in steel, concrete, or other structural or finish materials for piping, wiring, ducts, etc., which have not been located and detailed on the drawings shall be approved by the Engineer prior to layout and cutting thereof. All holes shall be suitably reinforced as required by the Engineer.

E. Workmanship and materials of patching and repair work shall match the adjacent similar work and shall conform to the applicable sections of the specification. Patches and joints with existing work shall provide, as applicable in each case, visual, structural, and waterproofing continuity.

3.13 CONTRACTOR'S REPRESENTATIVE:

The Contractor shall designate a representative who will be available to respond to emergency calls by the Owner at any time day and night and on weekends and holidays should such a situation arise.

3.14 OPERATOR TRAINING:

A trained representative of the manufacturer of all equipment shall instruct the Facility operating personnel on the operation and maintenance of the equipment. The Owner reserves the right to videotape all training sessions.

3.15 HOURS OF CONSTRUCTION ACTIVITY:

A. The Contractor shall conduct all construction activity between 7:00 a.m. and 5:00 p.m., Monday through Friday. No construction work shall be allowed on Saturdays, Sundays or Holidays without written authorization from the Owner.

B. The Owner will provide personnel for assistance in locating and operating valves at no cost to the Contractor during the Owner's normal working hours **(Monday through Friday 7:00 a.m. to 3:00 p.m.).** When this assistance is required by the Contractor outside of the Owner's normal working hours the cost will be incurred by the Contractor at the prevailing overtime rate of pay for the personnel providing the assistance. The Owner will bill the Contractor directly.

3.16 CONSTRUCTION CREWS:

The Contractor shall not increase the number of construction crews assigned to the work without providing one-week advance notice to the Engineer.

END OF SECTION

SECTION 01 14 19.16

DUST CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION:

This section of the specification covers the control of dust via calcium chloride and water, complete.

PART 2 - PRODUCTS

2.01 CALCIUM CHLORIDE:

A. Calcium chloride shall conform to the requirements of AASHTO-M 144, Type I or Type II and Specification for Calcium Chloride, ASTM D98. The calcium chloride shall be packaged in moisture proof bags or in airtight drums with the manufacturer, name of product, net weight, and percentage of calcium chloride guaranteed by the manufacturer legibly marked on each container.

B. Calcium chloride failing to meet the requirements of the specifications or that which has become caked or sticky in shipment, may be rejected by the Engineer.

2.02 WATER:

A. Water shall not be brackish and shall be free from oil, acid, and injurious alkali or vegetable matter.

PART 3 - EXECUTION

3.01 APPLICATION:

A. Calcium chloride shall be applied when ordered by the Engineer and only in areas which will not be adversely affected by the application. See Section 01 57 19, ENVIRONMENTAL PROTECTION.

B. Calcium chloride shall be uniformly applied at the rate of 1-1/2 pounds per square yard or at any other rate as required by the Engineer. Application shall be by means of a

mechanical spreader, or other approved methods. The Engineer shall determine the number and frequency of applications.

C. Water may be sprinkler applied with equipment including a tank with gauge-equipped pressure pump and a nozzle-equipped spray bar.

D. Water shall be dispersed through the nozzle under a minimum pressure of 20 pounds per square inch, gauge pressure.

END OF SECTION

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SECTION 01 22 00

MEASUREMENT AND PAYMENT

1. GENERAL

A. The following sections describe the measurement and payment for the work to be done under the respective items listed in the FORM OF GENERAL BID.

B. The lump sum and unit prices stated in the FORM OF GENERAL BID shall constitute full compensation as herein specified, for all of the work completed in accordance with the drawings and specifications. All other activities required in connection with performance of the work, including all work required under Division 1, GENERAL REQUIREMENTS, whether described in the contract documents or mandated by applicable codes, permits and laws, will not be separately paid for unless specifically provided for in the form of general bid, but will be considered to be incidental to performance of the overall project.

2. ITEM 1 Base Lump Sum

The lump sum price for Item 1, Base Lump Sum, shall constitute full compensation for furnishing all labor, materials, tools and equipment and constructing the project, as shown on the drawings and called for in the specifications, with the exception of Item 2 Unit prices. This item shall include, but is not limited to, saw cutting of bituminous asphalt, removal and disposal of said bituminous asphalt, removal and disposal of the underground storage tank, associated piping and appurtenances, and the installation of complete and operable new UST systems including associated fuel piping, tank monitoring system, electrical work and all appurtenances required for the system.

3. UNIT PRICE ITEM 2A - Removal and Disposal of Tank Contents and Sludge, per gallon

Residual tank contents and sludge removal and disposal shall be measured for payment per gallon of UST contents disposal based on certified manifests / disposal slips and shall be paid at the contract unit price for removal, handling, transport and disposal of residual fuel oil and sludge remaining in the underground storage tank.

This unit price item constitutes full compensation to provide removal of tank contents and sludge, and the necessary volume of cleaning fluids as described in and required by the Contract Documents including, but not limited to; furnishing all labor, material, tools, and equipment required to containerize, handle, sample, characterize, load, legally transport by licensed carrier, and disposal at a licensed disposal facility.

4. UNIT PRICE ITEM 2B - Excavation, Management, Transportation, and Disposal of Petroleum-Impacted Soil

Work under Item 2B includes the removal and disposal of petroleum-impacted soil. The removal and disposal of contaminated soil shall include, but not be limited to, the

excavation, stockpiling, soil sampling and analysis for waste characterization, preparation of soil disposal paperwork, taxes, transportation, and disposal of the soil, as specified in Section 02 61 13 – EXCAVATION AND STOCKPILING OF CONTAMINATED MATERIAL and Section 02 61 00.16 – TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL. The soil shall be disposed at a non-RCRA lined landfill or recycling or thermal desorption facility. Payment for this unit price will be made on a per ton basis based on actual quantities.

5. UNIT PRICE ITEM 2C - Removal and Disposal of Free-Phase Petroleum and/or Petroleum-Impacted Groundwater

Work under Item 2C includes the removal and disposal of free-phase petroleum product and/or petroleum-impacted groundwater encountered within an excavation using a vacuum truck. Removal and disposal shall include, but not be limited to, pumping, any required analyses needed for disposal, preparation of disposal paperwork, transportation, disposal, and taxes. Payment for this unit price will be made on a per hour basis for the vacuum truck and on a per gallon basis based on actual quantities.

6. UNIT PRICE ITEM 2D - Additional Granular Fill:

In the event petroleum-contaminated soil is found and disposed of off-site per Item 2B, the Contractor shall provide granular fill backfill to replace the removed soil. Furnishing granular fill backfill shall include, but not be limited to, furnishing, placing, compacting, and testing granular fill as specified in Section 31 00 00 – EARTHWORK and Section 02 65 00 – REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS. Payment for this unit price will be made on a per cubic yard basis based on actual quantities.

END OF SECTION

SECTION 01 33 23

SUBMITTALS

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. The Contractor shall provide the Engineer with submittals as required by the contract documents.

1.02 RELATED WORK:

A. Divisions 1 – 33 of these specifications that require submittals.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 GENERAL:

A. As required by the General Conditions, Contractor shall submit a schedule of shop and working drawing submittals.

B. The Contractor shall submit the shop and working drawing submittals either electronically or hard copy.

3.02 ELECTRONIC SUBMITTALS:

A. In accordance with the accepted schedule, the Contractor shall submit promptly to the Engineer by email (WallinZ@wseinc.com) or on Compact Disc (mail to Weston & Sampson Engineers, attention: CSD), one electronic copy in Portable Document Format (PDF) of shop or working drawings required as noted in the specifications, of equipment, structural details and materials fabricated especially for this Contract.

B. Each electronic copy of the shop or working drawing shall be accompanied by the Engineer's standard shop drawing transmittal form, included as Exhibit 1 of this section (use only for electronic submittals), on which is a list of the drawings, descriptions and

numbers and the names of the Owner, Project, Contractor and building, equipment or structure.

C. The Contractor shall receive a shop drawing memorandum with the Engineer's approval or comments via email.

3.03 HARD COPY SUBMITTALS:

A. In accordance with the accepted schedule, the Contractor shall submit promptly to the Engineer, by mail (to Weston & Sampson Engineers, attention: CSD), six (6) copies each of shop or working drawings required as noted in the specifications, of equipment, structural details and materials fabricated especially for this Contract.

B. Each shipment of drawings shall be accompanied by the Engineer's (if applicable) standard shop drawing transmittal form on which is a list of the drawings, descriptions and numbers and the names of the Owner, Project, Contractor and building, equipment or structure.

3.04 SHOP AND WORKING DRAWINGS:

A. Shop and working drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish of shop coat, grease fittings, etc., depending on the subject of the drawings. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for this Contract.

B. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from its subcontractors and returning reviewed drawings to them. All shop and working drawings shall be prepared on standard size, 24-inch by 36-inch sheets, except those, which are made by changing existing standard shop or working drawings. All drawings shall be clearly marked with the names of the Owner, Project, Contractor and building, equipment or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by the Engineer's (if applicable) standard shop drawing transmittal form on which is a list of the drawings, descriptions and numbers and the names mentioned above.

C. Only drawings that have been prepared, checked and corrected by the fabricator should be submitted to the Contractor by its subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Contract Documents in all respects. Shop drawings shall be reviewed and marked with the date, checker's name and indication of the Contractor's approval, and only then shall be submitted to the Engineer. Shop drawings unsatisfactory to the Contractor shall be returned directly to their source for correction, without submittal to the Engineer. Shop drawings submitted to the Engineer without the Contractor's approval stamp and signature will

be rejected. Any deviation from the Contract Documents indicated on the shop drawings must be identified on the drawings and in a separate submittal to the Engineer, as required in this section of the specifications and General Conditions.

D. The Contractor shall be responsible for the prompt submittal and resubmittal, as necessary, of all shop and working drawings so that there will be no delay in the work due to the absence of such drawings.

E. The Engineer will review the shop and working drawings as to their general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections of comments made on the drawings during the review do not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating its work with that of all other trades; and performing its work in a safe and satisfactory manner. The review of the shop drawings is general and shall not relieve the Contractor of the responsibility for details of design, dimensions, code compliance, etc., necessary for interfacing with other components, proper fitting and construction of the work required by the Contract and for achieving the specified performance. The Engineer will review submittals two times: once upon original submission and a second time if the Engineer requires a revision or corrections. The Contractor shall reimburse the Owner amounts charged to the Owner by the Engineer for performing any review of a submittal for the third time or greater.

F. With few exceptions, shop drawings will be reviewed and returned to the Contractor within 30 days of submittal.

G. No material or equipment shall be purchased or fabricated especially for this Contract nor shall the Contractor proceed with any portion of the work, the design and details of which are dependent upon the design and details of equipment or other features for which review is required, until the required shop and working drawings have been submitted and reviewed by the Engineer as to their general conformance and compliance with the project and its Contract Documents. All materials and work involved in the construction shall then be as represented by said drawings.

H. Two copies of the shop and working drawings and/or catalog cuts will be returned to the Contractor. The Contractor shall furnish additional copies of such drawings or catalog cuts when it needs more than two copies or when so requested.

3.05 SAMPLES:

A. Samples specified in individual Sections include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual

effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the work.

B. The number of samples submitted shall be as specified. Submittal and processing of samples shall follow the procedures outlined for shop and working drawings unless the specifications call for a field submittal or mock-up.

C. Acceptance of samples will be acknowledged via a copy of the transmittal noting status. When samples are not acceptable, prompt resubmittal will be required.

3.06 OPERATING AND MAINTENANCE MANUALS AND SPARE PARTS LISTS:

A. Where reference is made in technical specification sections to operating and maintenance manuals and/or spare parts lists, the Contractor shall submit four copies to the Engineer for review in accordance with the instructions furnished under "Shop and Working Drawings." If the submittal is complete and does not require any changes, an acknowledgement (copy of transmittal) will be returned noting status. If the submittal is incomplete or does require changes, corrections, additions, etc., two copies of the submittal will be returned with a copy of transmittal noting status. Four copies of the final operating and maintenance manuals and/or spare parts list shall be delivered to the Engineer prior to or with the equipment when it is delivered to the job site. For systems requiring field adjustment and balancing, such as heating and ventilating, the Contractor shall submit separate test results and adjustment data on completion of the work, to be incorporated into the system manual.

B. The information included in the manual shall be as described in the specification sections, but as a minimum shall contain clear and concise instructions for operating, adjusting, lubricating and maintaining the equipment, an exploded assembly drawing identifying each part by number and a listing of all parts of the equipment, with part numbers and descriptions required for ordering spare parts. Spare parts lists shall include recommended quantity and price.

C. Operating and maintenance manuals shall be in durable loose-leaf binders, on 8½-inch by 11-inch paper, with diagrams and illustrations either on 8½-inch by 11 inch or multiple foldouts. The instructions shall be annotated to indicate only the specific equipment furnished. Reference to other sizes or models of similar requirement shall be deleted or neatly lined out.

END OF SECTION

EXHIBIT 1 TO SECTION 01 33 23 SUBMITTALS

SHOP DRAWING TRANSMITTAL FORM

Shop Drawing Transmittal

Weston & Sampson℠

Instruction for Preparing Transmittal

No action will be taken on any item unless accompanied by this form.
TRANSMITTAL NOS. to be consecutive (1, 2, 3, etc.).
Each resubmittal of same item shall use same number with suffix letter (A, B, etc.).
SPEC. SECT. NO: Only one spec. section no. to each transmittal.
DESCRIPTION: Complete identification of document or group of documents.
SOURCE: Originator of document(s) being submitted.

DRAWING NO: Identification of document(s).
CONTRACT DRAWING REFERENCE: Contract drawing number(s) showing details of document(s).
SPECIAL INSTRUCTIONS: Special cases and emergencies, changes in distribution and special handling requests, etc. should be entered here.
SIGNATURE OF CONTRACTOR: Signature of individual who reviews and approves material prior to submittal to engineer.

THIS SECTION TO BE COMPLETED BY CONTRACTOR

TRANSM. NO.	SPEC. SECT. NO.	DATE	CONTRACTORS JOB NO.	W&S JOB NO.

PROJECT NAME & CONTRACT NO.	LOCATION

TO	FROM
Attention: CSD (WallinZ@wseinc.com) Weston & Sampson Engineers, Inc. 712 Brook St, Suite 103 Rocky Hill, CT 06067	

						BY W&S	
ITEM NO.	DESCRIPTION	SOURCE	DRAWING NO. CATALOG NO. BROCHURE, ETC	NO. OF COPIES	CONTRACT DRAWING REF.	ACTION CODE	REVIEWED BY
1							
2							
3							
4							

THIS CERTIFIES THAT ALL ITEMS SUBMITTED HEREWITH HAVE BEEN CHECKED BY THE CONTRACTOR, ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, EXCEPT AS NOTED, AND ARE APPROVED BY THE CONTRACTOR FOR THIS PROJECT.	SIGNATURE & TITLE	

THIS SECTION TO BE COMPLETED BY W&S

ACTION CODE:	
1. FURNISH AS SUBMITTED 2. FURNISH AS NOTED 3. REVISE AND RESUBMIT 4. REJECTED- SEE REMARKS 5. ACKNOWLEDGEMENT 6. SUBMITTAL NOT REQUIRED, RETURNED WITHOUT REVIEW	a. INSTALLATION SHALL PROCEED ONLY WHEN ACTION CODE IS 1 OR 2 b. ACTION CODED 3 SHALL BE RESUBMITTED WITHIN TIME LIMIT SET IN CONTRACT c. REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY OF COMPLIANCE WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS

Weston & Sampson

SECTION 01 35 29

HEALTH AND SAFETY PLAN

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. Prior to the start of work on the site, Contractor shall prepare and submit a site-specific health and safety plan in accordance with paragraph 1.04 below.

1.02 REFERENCES:

A. OSHA 29 CFR 1910.120

1.03 RELATED WORK:

A. Section 00 31 43 – PERMITS
B. Section 01 11 00 – CONTROL OF WORK AND MATERIALS
C. Section 01 14 19.16 – DUST CONTROL
D. Section 01 57 19 – ENVIRONMENTAL PROTECTION
E. Section 02 41 16 - DEMOLITION
F. Section 02 61 00.16 – TRANSORTATION AND DISPOSAL OF CONTAMINATED MATERIAL
G. Section 02 61 13 – EXCAVATION AND STOCKPILING OF CONTAMINATED MATERIAL
H. Section 02 65 00 – REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS
I. Section 31 23 00 – EARTHWORK

1.04 PREPARATION OF A SITE-SPECIFIC HEALTH AND SAFETY PLAN:

A. Prior to the start of work on the Site, and no later than seven (7) calendar days after the date of the Notice to Proceed, Contractor shall prepare and submit an initial Site-specific Health and Safety Plan which includes consideration of all known and potential hazards at the Site. Work may not proceed at the project Site until the Contractor's Health and Safety Plan has been received by Engineer.

B. The Health and Safety Plan shall be submitted to the Engineer, before any work can be initiated. The Contractor is responsible for its workers' and Subcontractors' health and safety. The Contractor shall implement, maintain, and enforce these procedures during all phases of the Work associated with the description of work described in this Section.

C. The Health and Safety Plan shall include Site access provisions that effectively limit access to work areas to only those persons in full compliance with the requirements of the Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.120.

D. The Contractor shall be cognizant of the minimum health and safety plan standards set forth in 29 CFR 1910.120 and 29 CFR 1926. The Health and Safety Plan shall include, but not be limited to, the minimum requirements specified in Part 2 of this Section.

PART 2 – PRODUCTS

2.01 HEALTH AND SAFETY PLAN:

A. The health and safety plan shall include, but not necessarily be limited to the following:

1. Identification of Contractor's Site Safety Officer.

2. Identification of Hazards and Risks Associated with Project.

3. Contractor's Standard Operating Procedures, Including Personnel Training and Field Orientation.

4. Respiratory Protection Training Requirements.

5. Levels of Protection and Selection of Equipment Procedures.

6. Type of Medical Surveillance Program.

7. Personal Hygiene Requirements and Guidelines.

8. Zone Delineation of the Project Site.

9. Site Security and Entry Control Procedures.

10. Field Monitoring of Site Contaminants.

11. Contingency and Emergency Procedures.

12. Listing of Emergency Contacts.

PART 3 - EXECUTION

3.01 PERSONAL PROTECTIVE EQUIPMENT:

A. The personal protective equipment required to provide the appropriate level of dermal and respiratory protection shall be determined based on the results of continuous air monitoring performed by the Contractor and the standards set forth in the Contractor's health and safety

plan. The Engineer may conduct duplicate air monitoring for quality control purposes. Modified Level D protection shall be the minimum requirement for all on-site personnel.

END OF SECTION

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SECTION 01 42 00

REFERENCES

In the interest of securing competent contractors, we are requiring the following information be provided with your Proposal. Failure to provide this information may jeopardize your firm being awarded this project.

Please provide three references for projects or services of similar size and scope to this RFQ/RFP:

Project #1

Project Name: _____
Customer Name/Organization/Phone Number: _____
Date Project Completed: _____

Description of Project:

_____

_____

_____

_____

Project #2

Project Name: _____
Customer Name/Organization/Phone Number: _____
Date Project Completed: _____

Description of Project:

_____

_____

_____

_____

Project #3

Project Name: _____
Customer Name/Organization/Phone Number: _____
Date Project Completed: _____

Description of Project:

_____

_____

_____

_____

SECTION 01 57 19

ENVIRONMENTAL PROTECTION

PART 1 – GENERAL

1.01 DESCRIPTION:

A. The work covered by this section of the specifications consists of furnishing all labor, materials, tools and equipment and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.

B. Prior to commencement of work, the Contractor shall meet with representatives of the Engineer to develop mutual understandings relative to compliance of the environmental protection program.

1.02 RELATED WORK:

A. Section 00 31 43, PERMITS

B. Section 01 14 19.16, DUST CONTROL

C. Section 01 33 23, SUBMITTALS

D. Section 31 00 00, EARTHWORK

E. Section 31 23 19, DEWATERING

F. Section 31 50 00, SUPPORT OF EXCAVATION

1.03 SUBMITTALS:

A. The Contractor shall submit details and literature fully describing environmental protection methods to be employed in carrying out construction activities within 100 feet of wetlands or across areas designated as wetlands.

PART 2 - PRODUCTS

Environmental protection measures identified on the drawings shall conform to the following product specifications, as applicable.

2.01 SILT FENCE:

A. The silt fence shall consist of a 3-foot wide continuous length sediment control fabric, stitched to a mesh backing, and stapled to preweathered oak posts installed as shown on the drawings. The oak posts shall be 1-1/4-inches by 1-1/4-inches (Minimum

Dimension) by 48-inches and shall be tapered. The bottom edge of the silt fence shall be buried as shown on the drawings.

B. The silt fence shall be DOT Silt Fence PPDM3611, as manufactured by U.S. Silt & Site Supply/Getsco, Concord, NH, or approved equal.

C. Silt fence properties:

Physical Properties	Test Method	Minimum Value
Grab Strength, lbs.	ASTM-D-4632	124
Grab Elongation, %	ASTM-D-4632	15
Mullen burst, psi	ASTM-D-3786	300
Puncture, lbs.	ASTM-D-4833	65
Trapezoidal Tear, lbs.	ASTM-D-4533	65
UV Resistance2, %3	ASTM-D-4355	80@500 hrs.
AOS, US Sieve No.	ASTM-D-4751	30
Flow Rate, gal/min/sq ft	ASTM-D-4491	10
Permittivity, (1/sec) gal/min/sq ft	ASTM-D-4491	0.05 sec^{-1}

2.02 STRAW BALES:

A. Straw bales shall consist of certified seed free stems of agricultural grain and cereal crops and shall be free of grasses and legumes. Standard bales shall be 14-inches high, 18- inches wide and 36- to 40-inches long tied with polypropylene twine and weigh within 5 percent of 7 lbs. per cubic ft.

2.03 STRAW WATTLES:

B. Straw Wattles shall consist of a 100% biodegradable exterior jute or coir netting with 100% wheat straw interior filling as manufactured by Granite Environmental, Inc., Sebastian, Florida (Phone: 888-703-9889; website: `www.GraniteEnvironmental.com`), or approved equal.

2.04 SILT CURTAIN:

A. The silt curtain shall be a Type-1-Silt-Barrier consisting of 18-ounce vinyl fabric skirt with a 6-inch marine quality floatation device. The skirt shall be ballasted to hang vertical in the water column by a minimum 3/16-inch galvanized chain. The silt curtain shall extend into the water as shown on the drawings. If necessary, join adjacent ends of the silt curtain by connecting the reinforcing grommets and shackling ballast lines.

2.05 COMPOST FILTER TUBES:

A. Compost filter tubes shall be a tubular filter sock of mesh fabric. The fabric will have openings of between 1/8" to 1/4" diameter. The mesh material will either photo degrade within one year or be made of nylon with a life expectancy of 24 months. The sock shall be filled with a mix of composted leaf mulch, bark mulch, and wood chips that have been composed for at least one year. The sock will have a minimum diameter of 12-inches.

PART 3- EXECUTION

3.01 NOTIFICATION AND STOPPAGE OF WORK:

The Engineer will notify the Contractor in writing of any non-compliance with the environmental protection requirements of the Project. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or its authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Owner may order stoppage of all or part of the work through the Engineer until satisfactory corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop work orders shall be made unless it was later determined that the Contractor was in compliance.

3.02 AREA OF CONSTRUCTION ACTIVITY:

A. Insofar as possible, the Contractor shall confine its construction activities to those areas defined by the plans and specifications. All land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work under this contract.

3.03 PROTECTION OF WATER RESOURCES:

A. The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acids or other harmful materials. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers and streams.

B. Special measures should be taken to insure against spillage of any pollutants into public waters.

3.04 PROTECTING AND MINIMIZING EXPOSED AREAS:

A. The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, temporary vegetation, mulching or other protective measures shall be provided as specified.

B. The Contractor shall take account of the conditions of the soil where temporary cover crop will be used to insure that materials used for temporary vegetation are adaptive to the sediment control. Materials to be used for temporary vegetation shall be approved by the Engineer.

3.05 LOCATION OF STORAGE AREAS:

A. The location of the Contractor's storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Engineer. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Engineer.

B. No excavated materials or materials used in backfill operations shall be deposited within a minimum distance of one hundred (100) feet of any watercourse or any drainage facility. Adequate measures for erosion and sediment control such as the placement of compost filter tubes around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.

C. The Engineer may designate a particular area or areas where the Contractor may store materials used in its operations.

3.06 DISCHARGE OF DEWATERING OPERATIONS:

A. Any water that is pumped and discharged from the trench and/or excavation as part of the Contractor's water handling shall be filtered by a method approved by the Engineer prior to its discharge into a receiving water or drainage system.

3.07 DUST CONTROL:

A. During the progress of the work, the Contractor shall conduct its operations and maintain the area of its activities, including sweeping and sprinkling of surfaces as necessary, to minimize creation and dispersion of dust. If the Engineer decides it is necessary to use calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed. Calcium chloride shall be as specified under Section 01 14 19.16, DUST CONTROL.

B. Calcium Chloride shall not be used for dust control within a drainage basin or in the vicinity of any source of potable water.

3.08 CATCH BASIN PROTECTION:

A. Catch basin protection shall be used for every catch basin, shown on the plans or as required by the Engineer, to trap sediment and prevent it from clogging drainage systems and entering wetlands. Siltation fabric shall be securely installed under the catch basin grate. Care shall be taken to keep the siltation fabric from breaking apart or clogging. All deposited sediment shall be removed periodically and at times prior to predicted precipitation to allow free drainage flow. Prior to working in areas where catch basins are to be protected, each catch basin sump shall be cleaned of all debris and protected. The Contractor shall properly dispose of all debris at no additional cost to the Owner.

3.09 COMPOST FILTER TUBES:

B. The compost filter tubes shall be regularly inspected and before and after every forecasted major weather event. All deposited sediment shall be removed and not allowed to accumulate to the top of the compost filter tubes. Compost filter tubes damaged during construction shall be repaired or replaced as required by the Engineer at no additional cost to the Owner.

C. The Contractor shall remove all compost filter tubes after construction is completed.

END OF SECTION

SECTION 01 73 29

CUTTING, CORING AND PATCHING

PART 1 - GENERAL

1.01 WORK INCLUDED:

This Section covers the cutting, coring, rough and finish patching of holes and openings in existing structures.

1.02 RELATED WORK:

A. SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 2 - PRODUCTS

2.01 SEALING MATERIALS:

A. Mechanical seals shall be modular, adjustable, bolted, mechanical type consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and sleeve. The seal shall be rated by the manufacturer for 40 feet of head or 20 psig. Mechanical seals shall be Link-Seal, manufactured by Thunderline Corp., Wayne, MI., or approved equal.

B. Sealant shall be a two part foamed silicone elastomer as manufactured by Dow Corning Co., product No. 3-6548 silicone R.T.V.; 3M brand fire barrier products caulk C.P. 25 and 3M brand putty 303; Flame-Safe fire stop systems Fig. No. FS-500 by Thomas & Betts Corporation, or approved equal. Packing shall be a fire retardant pliable material, Fig. 310 by Sealtite Co.; White Oakum W.S.-600 by American Manufacturing Co., or approved equal. Sealant bead configuration, depth and width shall be in accordance with manufacturer's recommendations.

2.02 MISCELLANEOUS MATERIALS:

A. Bonding compound shall be Sikadur Hi-Mod epoxy by Sika Corporation, or equivalent by Euclid Chemical Corporation, Master Builders Company, or approved equal.

B. Non-shrink grout shall be Masterflow 713 by Master Builders Company; Euco N-S by Euclid Chemical Co.; Five Star Grout by U.S. Grout Corp. or approved equal.

C. Materials for finish patching shall be equal to those of adjacent construction.

PART 3 - EXECUTION

3.01 GENERAL:

A. The Contractor shall leave all chases or openings for the installation of its own or any other contractor's or subcontractor's work, or shall cut the same in existing work, and shall see that all sleeves or forms are at the work and properly set in ample time to prevent delays. It shall see that all such chases, openings, and sleeves are located accurately and are of proper size and shape and shall consult with the Engineer and the contractors and subcontractors concerned in reference to this work.

B. In case of its failure to leave or cut all such openings or have all such sleeves provided and set in proper time, Contractor shall cut them or set them afterwards at its own expense, but in so doing he shall confine the cutting to the smallest extent possible consistent with the work to be done. In no case shall piers or structural members be cut without the written consent of the Engineer.

C. The Contractor shall not cut or alter the work of any subcontractor or any other contractor, nor permit any of its subcontractors to cut or alter the work of any other contractor or subcontractor, except with the written consent of the contractor or subcontractor whose work is to be cut or altered or with the written consent of the Engineer. All cutting and patching or repairing made necessary by the negligence, carelessness, or incompetence of the Contractor or any of its subcontractors shall be done by or at the expense of the Contractor and shall be the responsibility of the Contractor.

D. All cutting and coring shall be performed in such a manner as to limit the extent of patching.

E. All holes cut through concrete and masonry walls, slabs or arches shall be core drilled unless otherwise approved. No structural members shall be cut without the approval of the Engineer and all such cutting shall be done in a manner required by them. No holes

may be drilled in beams or other structural members without obtaining prior approval. All work shall be performed by mechanics skilled in this type of work.

3.02 CORING:

A. Coring shall be performed with an approved non-impact rotary tool with diamond core drills. Size of holes shall be suitable for pipe, conduit, sleeves, equipment or mechanical seals to be installed.

B. If holes are cored through floor slabs they shall be drilled from below.

C. All equipment shall conform to OSHA standards and specifications pertaining to plugs, noise and fume pollution, wiring and maintenance.

D. Provide protection for existing equipment, utilities and critical areas against water or other damage caused by drilling operation.

E. Slurry or tailings resulting from coring operations shall be vacuumed or otherwise removed from the area following drilling.

3.03 CUTTING:

A. Cutting shall be performed with a concrete saw and diamond saw blades of proper size and application.

B. Provide for control of slurry generated by sawing operation on both sides of wall or slab.

C. When cutting a reinforced concrete wall, the cutting shall be done so as not to damage bond between the concrete and reinforcing steel left in the structure. Cut shall be made so that steel neither protrudes nor is recessed from the face of the cut.

D. Adequate bracing of area to be cut shall be installed prior to start of cutting. Check area during sawing operations for partial cracking and provide additional bracing as required to prevent a partial release of cut area during sawing operations.

E. Provide equipment of adequate size to remove cut panel.

F. For cutting a trench in a floor slab, a full-depth cut shall be made using a concrete saw for the desired width of the trench. A partial-depth cut shall be made to expose the reinforcing bars. The width of the partial cut shall be to the required lap length of the reinforcing bars. Care shall be taken not to cut exposed reinforcing bars but if any are cut, dowel holes shall be drilled and dowels epoxied in. Reinforcing of the same size, as the

existing shall be tied to the existing exposed reinforcing and/or dowels with the proper lap length.

3.04 PATCHING:

Rough patching shall be such as to bring the cut or cored area flush with existing construction unless otherwise shown. Finish patching shall match existing surfaces as approved.

Trenches in floor slabs shall be repaired as described in 3.03F above and concrete meeting the requirements of Section 03 30 00 CAST-IN-PLACE CONCRETE shall be poured and cured.

END OF SECTION

SECTION 01 74 13

CLEANING UP

PART 1 - GENERAL

1.01 DESCRIPTION:

The Contractor must employ at all times during the progress of its work adequate cleanup measures and safety precautions to prevent injuries to persons or damage to property. The Contractor shall immediately, upon request by the Engineer provide adequate material, equipment and labor to clean up and make safe any and all areas deemed necessary by the Engineer.

1.02 RELATED WORK:

A. Section 01 11 00 CONTROL OF WORK AND MATERIALS

B. Section 01 14 00 SPECIAL PROVISIONS

C. Section 01 57 19 ENVIRONMENTAL PROTECTION

PART 2 - PRODUCTS

Not applicable

PART 3 - EXECUTION

3.01 DAILY CLEANUP:

A. The Contractor shall clean up, at least daily, all refuse, rubbish, scrap and surplus material, debris and unneeded construction equipment resulting from the construction operations and sweep the area. The site of the work and the adjacent areas affected thereby shall at all times present a neat, orderly and workmanlike appearance.

B. Upon written notification by the Engineer, the Contractor shall within 24 hours clean up those areas, which in the Engineer's opinion are in violation of this section and the above referenced sections of the specifications.

C. If in the opinion of the Engineer, the referenced areas are not satisfactorily cleaned up, all other work on the project shall stop until the cleanup is satisfactory.

3.02 MATERIAL OR DEBRIS IN DRAINAGE FACILITIES:

A. Where material or debris has washed or flowed into or has been placed in existing watercourses, ditches, gutters, drains, pipes, structures, such material or debris shall be

entirely removed and satisfactorily disposed of during progress of the work, and the ditches, channels, drains, pipes, structures, and work shall, upon completion of the work, be left in a clean and neat condition.

3.03 REMOVAL OF TEMPORARY BUILDINGS, STRUCTURES AND EQUIPMENT:

A. On or before completion of the work, the Contractor shall, unless otherwise specifically required or permitted in writing, tear down and remove all temporary buildings and structures it built; shall remove all temporary works, tools and machinery or other construction equipment it furnished; shall remove all rubbish from any grounds which it has occupied; shall remove silt fences and hay bales used for trapping sediment; and shall leave the roads and all parts of the property and adjacent property affected by its operations in a neat and satisfactory condition.

3.04 RESTORATION OF DAMAGED PROPERTY:

A. The Contractor shall restore or replace, when and as required, any property damaged by its work, equipment or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk and landscaping work. Materials, equipment, and methods for such restoration shall be as approved by the Engineer.

3.05 FINAL CLEANUP:

A. Before acceptance by the Owner, the Contractor shall perform a final cleanup to bring the construction site to its original or specified condition. This cleanup shall include removing all trash and debris off of the premises. Before acceptance, the Engineer shall approve the condition of the site.

B. Before acceptance by the Owner, the Contractor shall perform a final cleanup to bring the building to a "clean" condition. This cleanup shall include removing all trash and debris from the premises; sweeping and mopping of all floors; washing of all walls, windows and doors; cleaning and polishing of all finish metal surfaces; cleaning of all equipment, utilizing proper solvents for removal of oil and grease; cleaning of dirt and debris out of all mechanical and electrical cabinets; and all other related work required to render the building suitable for use. Before acceptance, the Engineer shall approve the condition of the building.

END OF SECTION

SECTION 01 78 00

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section covers administrative and procedural requirements for closing out the project, including, but not limited to:

1. Project as-built documents

2. Checkout and Certification

3. Startup and Testing

4. Final Cleaning

5. Substantial Completion

6. Closeout Procedures

7. Final Completion

8. Correction/Warranty Period

B. Closeout checklist to be completed by the Engineer.

1.02 RELATED WORK:

A. General Requirements in their entirety.

B. Section 01 74 13, CLEANING UP

C. Section 01 75 00, STARTUP AND TESTING

D. Section 01 78 39, PROJECT AS-BUILT RECORD DRAWINGS

F. Division 2 through Division 33.

1.03 AS-BUILT DOCUMENTS:

A. Contractor shall maintain on site, separate from the documents used for construction, one set of the documents listed below, and as construction progresses, shall legibly record on these documents all changes made during construction.

1. Contract Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other Modifications to the Contract.

5. Reviewed shop drawings, product data, and samples.

6. Written interpretations and clarifications.

7. Field Orders.

8. Field test reports properly verified.

B. The draft and completed set of as-built documents shall be submitted to the Engineer and Owner in conformance with the requirements of Section 01 78 39.

1.04 CHECKOUT AND CERTIFICATIONS:

A. Prior to checkout and certifications the following tasks shall be completed:

1. Construction shall be complete. For this purpose, completion of construction is defined as follows:

a. The Contractor has completed construction and erection of the work in conformance with the Contract Drawings and Specifications.

b. The Contractor has installed and adjusted operating equipment, systems, or facilities, as applicable, as defined by the manufacturers' erection, installation, operation and maintenance instructions.

2. All shop drawings shall have final approval.

3. All shop tests shall be complete and approved test results submitted to the Engineer.

1.05 START-UP AND TESTING:

A. Prior to start-up the following tasks shall be complete:

1. All checkout and certifications shall be satisfactorily completed,

2. All operations and maintenance manuals shall be approved,

3. All preliminary training by the manufacturer's representative shall be completed,

4. An approved start-up procedure shall be in place.

B. Refer to Section 01 75 00 for start-up and testing requirements.

1.06 FINAL CLEANING:

A. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

1. Clean the site, including landscape development areas of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to smooth, even textured surfaces.

2. Remove waste and surplus materials, rubbish, fencing equipment, temporary utilities and construction facilities from the site, unless otherwise required by the Engineer.

3. Comply with requirements of Section 01 74 13 CLEANING UP.

1.07 SUBSTANTIAL COMPLETION:

A. Substantial Completion is officially defined in the General and Supplementary Conditions. The date of substantial completion will be certified by the Engineer. This date will not be certified until the following requirements have been satisfied by the Contractor:

1. All Contract requirements are coordinated into a fully operational system. All individual units of equipment and treatment are fully operative and performing at specified efficiencies. Where efficiencies are not specified, performance shall meet acceptable standards for the particular unit.

2. All field tests have been satisfactorily completed and reports forwarded to the Engineer.

3. All final training has been completed by the manufacturers' representatives.

4. All spare parts and lubricants have been satisfactorily delivered to the Owner. Spare parts are for the exclusive use of the Owner when the facility has been turned over. Contractor is responsible for all maintenance and repair materials required until the facility is accepted by the Owner.

5. Final record drawings have been submitted to the Owner.

1.08 CLOSEOUT PROCEDURES:

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and is complete in accordance with Contract Documents and ready for Engineer's and Owner's inspection.

B. Accompany Engineer and Owner on inspection to verify conformance with the Contract Documents. Prepare a punch list of work items that have been determined by inspection to not conform to Contract Documents. Punch list items shall include work items that are missing, incomplete, damaged, incorrect items, or improperly installed or constructed. The Contractor shall correct the punch list deficiencies by re-work, modifications, or replacement, as appropriate, until the items conform to the Contract Documents. The initial punch list shall be produced by the Contractor, with copies to the Engineer and Owner. When the Contractor has reduced the number of deficient items to a reasonable level, the Engineer will develop a definitive punch list for the use of the Contractor.

C. Provide submittals to Engineer that are required by governing or other authorities.

D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due. The Contractor shall submit the following documents with or prior to Final Application for Payment: Set of as-built documents, Contract Completion and Acceptance Certificate, Consent of Surety to Final Payment, Release and Waiver of Liens and Claims (SECTION 01 78 00 – ATT. A), Affidavit of Payment of Debts and Claims, and remaining releases, waivers, warranties/guarantees, and all other data required by the Contract Documents.

1.09 FINAL COMPLETION:

A. Prior to final completion, the following tasks shall be completed:

1. All items in the punch list shall be completed.

2. All Contract closeout documentation shall be submitted to and accepted by the Engineer.

1.10 CORRECTION/WARRANTY PERIOD:

A. During the correction period, the Contractor shall correct all deficiencies in equipment and materials.

B. During the warranty period, the Contractor shall perform all corrective work on warranty deficiencies.

C. Corrective work will be identified by the Engineer or Owner, as appropriate. The Contractor will be notified of the item(s) requiring corrective work.

D. The Contractor shall begin work on all corrective work within ten days of being notified of the deficiency by the Engineer and shall then work continuously until the deficiency is

corrected. Upon completion of the corrective work, the Contractor shall submit a letter report to the Engineer describing the deficiency and the corrective action that was taken.

E. The Contractor shall coordinate all corrective work with the Engineer and/or the Owner.

1.11 COMPLETION CHECKLIST:

A. The Project Completion Checklist, which follows, shall be completed by the Contractor as the project nears completion. When the project has been fully completed, Final Payment can be approved.

PROJECT COMPLETION CHECKLIST

Owner _____ Job No.

Project

As part of the project closeout, all items listed below must be checked off as being complete or otherwise accounted for. The person verifying completion of the item shall list the completion date and their initials.

Project Closeout Checklist		
	Date Completion Verified	Verified by
AS-BUILT DOCUMENTS HANDED OVER		
1. Contract Drawings		
2. Specifications		
3. Addenda		
4. Change Orders/Contract Modifications		
5. Reviewed Shop Drawings, Product Data and Samples		
6. Written Interpretations/Clarifications		
7. Field Orders		
8. Field Test Reports		
EQUIPMENT CHECKOUT AND CERTIFICATIONS		
1. Construction Complete per Drawings/Specifications		
2. Equipment Installed and Adjusted		
3. All Shop Drawings have Final Approval		
4. All Shop Tests Complete and Results Submitted		

Project Closeout Checklist		
	Date Completion Verified	Verified By
START-UP AND TESTING		
1. All Checkout and Certifications Complete		
2. All O&M Manuals Approved		
3. All Preliminary Training by Manufacturers Rep. Completed		
FINAL CLEANING		
1. All Construction Facilities Removed		
2. All Construction Debris Removed		
3. All Areas Swept/Cleared		
SUBSTANTIAL COMPLETION		
1. All Items Coordinated Into a Fully Operational System		
2. All Equipment Units Operational at Specified Efficiencies		
3. All Field Tests Completed and Reports Submitted		
4. All Final Training by Manufacturer's Rep. Completed		
5. All Spare Parts and Lubricants Provided		
CLOSEOUT PROCEDURES		
1. Written Certification Submitted that Work is Ready for Owner & Engineer Inspector		
2. Inspection by Owner, Engineer, Contractor completed		
3. Punch List of Nonconforming Items Prepared		
4. Documents Required by Governing or Other Authorities Submitted (List Them)		
5. Final Application for Payment Received		
6. Contract Completion and Acceptance Certificate Submittal		
7. Consent of Surety to Final Payment Submittal		
8. Release and Waiver of Liens and Claims Submitted		
9. Affidavit of Payment of Debts and Claims Submitted		

Project Closeout Checklist		
	Date Completion Verified	Verified By
10. Warranties/Guarantees Submitted		
11. Other Required Releases and Waivers Submitted (List Them)		
12. Permits Submitted (List Them)		
13. Weekly Payrolls Submitted as Required by Law		
FINAL COMPLETION		
1. All Items in Punch List Completed		
2. All Other Required Documentation Submitted (List It)		
CORRECTION/WARRANTY PERIOD		
1. Correction Period Start Date: _____ End Date: _____		
2. Specific Warranties Provided Item Warranty Duration		

Full name of persons signing their initials on this checklist:

_____

_____

_____

_____

_____

END OF SECTION

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SECTION 01 78 00

PROJECT CLOSEOUT

ATTACHMENT A

RELEASE AND WAIVER OF LIEN

GENERAL CONTRACTOR'S OR SUBCONTRACTOR'S

RELEASE AND WAIVER OF LIEN

For and in consideration of the receipt of $ _____, in payment for labor and/or materials furnished, the undersigned does hereby waive, release and relinquish any and all claims, demands and rights of lien for all work, labor, materials, machinery or other goods, equipment or services done, performed or furnished for the construction located at the site hereinafter described, to wit:

_____ (name of project)

_____ (location)

_____ (name of project owner)

The undersigned further warrants and represents that any and all valid labor and/or materials and equipment bills, now due and payable on the property herein above described in behalf of the undersigned, have been paid in full to date of this waiver.

$ _____

Total Paid to Date This Contract

$ _____

Balanced Owed After This Payment

$ _____

Total Billed to Date This Contract

_____

Contractor/Subcontractor

_____

Witness Signature

By: _____

_____

Witness Printed Name

_____

Printed Name

Title: _____

_____

Date

SECTION 01 78 39

PROJECT AS-BUILT RECORD DRAWINGS

PART 1 - GENERAL

1.01 WORK INCLUDED:

This Section covers the Contractor's As-Built Record drawings for the project. The As-Built Record drawings for the project shall include, but are not limited to:

A. The Contractor's construction coordination drawings for all the project disciplines. The Contractor's construction coordination drawings for the project disciplines shall be submitted to the Engineer prior to Construction of the said discipline. The Contractor's construction coordination drawings for the project disciplines shall include but are not limited to the following:

1. Architectural
2. Civil
3. Structural
4. Electrical
5. Mechanical
6. Plumbing
7. Process
8. Instrumentation

B. Draft Record Documents Review

Upon completion of the project construction the Contractor shall submit a complete copy of 24- by 36-inch Record Drawings to the Owner and the Engineer for review. The Owner and the Engineer shall jointly review the Record Drawings and provide comments to the Contractor. The Contractor shall modify the Record Drawings as necessary based on the comments provided by the Owner and the Engineer.

C. Final Record Documents

Upon incorporation and acceptance of the Draft Record Drawings comments from the Owner and the Engineer, the Contractor shall submit the Final Record Drawings and documentation. The Contactor shall submit two sets of 24- by 36-inch Record Drawings to the Owner and an additional two sets of 24- by 36-inch Record Drawings to the Engineer for their records. The Contractor shall also submit to the Engineer a minimum 20 gigabyte flash drive with the electronic Record Drawing files. The electronic Record Drawing files shall be obtained from the Owner (the Engineer shall provide on behalf of the Owner if the Engineer was the project designer) and developed in AutoCAD 2010/Revit 2017 (or later) and the submittal shall include the Final AutoCAD DWG/Revit RVT file documents, drawing line

types, blocks, etc. The actual version of AutoCAD/Revit shall be coordinated with the Engineer.

D. Pre- and Post-Construction Survey

The Contractor shall perform a pre- and post-construction survey of the entire project area. The topographic survey shall be performed by or under the supervision of and certified by a Registered Land Surveyor in the State of Massachusetts. The Contractor shall also submit to the Engineer a minimum 20 gigabyte flash drive with the electronic pre- and post-construction survey files. The Contractor shall send the electronic pre- and post-construction survey files to the Engineer which shall be developed in AutoCAD 2010/ Revit 2017 (or later) and the submittal shall include the Final AutoCAD DWG / Revit RVT file documents, drawing line types, blocks, etc. The actual version of AutoCAD / Revit shall be coordinated with the Engineer. The Contractor shall notify the Owner and Engineer at least 48-hours in advance of each survey.

1.02 RELATED WORK:

A. General Requirements in their entirety.

B. Division 02 through Division 33.

1.03 AS-BUILT DOCUMENTS:

A. Contractor shall maintain on site, separate from the documents used for construction, one complete set of the documents listed below, and as construction progresses, shall legibly record on these documents all changes made during construction.

1. Contract Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other Modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.
6. Written interpretations and clarifications.
7. Field Orders.
8. Field test reports properly verified.

B. The completed set of documents shall include but are not limited to:

1. Significant deviations of any nature made during construction.

C. The completed set of as-built documents shall be submitted to the Engineer with the final Application for Payment.

PART 2 - MATERIALS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

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SECTION 02 61 00.16

TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL

PART 1 – GENERAL

1.01 DESCRIPTION:

A. The intended purpose of the Section is to address the off-site transportation and disposal of contaminated material that may be encountered during construction activities.

B. Furnish all labor, materials, equipment, and incidentals necessary to transport and dispose of contaminated materials at an off-site approved disposal or recycling facility. Work includes preparing Bills of Lading and Hazardous Waste Manifests, as required, obtaining approval from disposal or recycling facilities, and loading and hauling of excavated materials.

C. Excavated materials not approved by the Owner and/or Engineer for backfilling because of physical or chemical characteristics shall be disposed of as specified herein.

1.02 RELATED WORK:

A. Section 01 33 23 – SUBMITTALS

B. Section 01 35 29 – HEALTH AND SAFETY PLAN

C. Section 01 57 19 – ENVIRONMENTAL PROTECTION

D. Section 02 61 13 – EXCAVATION AND STOCKPILING OF CONTAMINATED MATERIAL

E. Section 02 65 00 – REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS

F. Section 31 00 00 – EARTHWORK

1.03 SUBMITTALS:

A. Submit to the Owner and Engineer, for review, and in accordance with the requirements of the general specifications, the information required by Paragraph 1.03 B., no more than 14 days after issuance of the Notice to Proceed:

B. The Contractor shall submit a Soil Management Plan, to include the following information:

1. Procedures/sequence of activities related to soil excavation, transport, and disposal.

2. All pertinent information relating to the transport of contaminated material. The information, at a minimum, shall include:

a. Name and address of all transporters.
b. Transporter identification number and expiration date.
c. Proof of permit, license, or authorization to transport contaminated material in all affected states.
d. Details of containers to be used for transporting contaminated material. Refer to Paragraph 2.01 B. of this Section.

3. The Contractor shall identify each waste stream and propose an appropriate disposal facility that will accept the contaminated material. The Contractor shall submit to the Owner and Engineer within 14 days of the issuance of the Notice to Proceed, approvals or letters of intent and facility information for each facility proposed. For each facility, the Contractor shall submit the following information:

   a. General Information

      i. Facility Name
      ii. Facility Address
      iii. Name of Contact Person
      iv. Title of Contact Person
      v. Telephone Number of Contact Person
      vi. Permit Number

   b. The facility shall specify the volume of material that can be accepted from the site on a weekly and a total basis.

   c. The facility shall provide written confirmation that they are permitted to accept and will accept the classified material of the general quality and quantity described by these Specifications.

   d. The facility shall provide a listing of all current and valid permits, licenses, letters of approval, and other authorizations to operate that they hold, pertaining to the receipt and management of the soils or materials specified in this contract.

   e. The Contractor shall submit a complete list of the permitted/allowable contaminant levels and physical characteristic requirements for contaminated material for each disposal facility and list any required regulatory approvals for individual waste streams.

1.04 REFERENCES:

The Contractor shall comply with all applicable local, state, and federal regulations, including at a minimum the regulations provided by Paragraph 1.04 A.

A. Applicable Codes, Standards, and Specifications, including, but not limited to:

1. Connecticut Department of Energy and Environmental Protection (CTDEEP) Remediation Standard Regulations – Section 22a-133(k)-1 through 22a-133(k)-3 of the Regulations of Connecticut State Agencies (RCSA)

2. OSHA Hazard Communication Standard 29 Code of Federal Regulations (CFR) 1910

3. OSHA Safety and Health Regulations for Construction 29 CFR Part 1926

4. Resource Conservation and Recovery Act (RCRA), 40 CFR Part 268

5. Toxic Substances Control Act (TSCA), 40 CFR 761.00.

6. All other applicable local, state, and federal regulations.

1.05 DEFINITIONS:

A. Contaminated Material: Soil indicated by field screening results to contain contamination warranting removal, as determined by Engineer, or indicated by analytical results to contain any substances at concentrations greater than the applicable CTDEEP RSR criteria, or any reportable or cleanup requirement established in RCRA or TSCA.

1.06 PERMIT REQUIREMENTS:

A. The Contractor shall obtain all local, state, and federal permits required for the transport and disposal of contaminated material. The Contractor shall adhere to all permit requirements.

B. The Contractor shall document that the disposal facilities proposed have all certifications and permits as required by local, state, and federal regulatory agencies to receive and dispose of the contaminated material.

PART 2 – PRODUCTS

2.01 GENERAL:

A. All Contractor personnel shall wear personal protective equipment and protective clothing consistent with the levels of protection for this Work as indicated in Section 01 35 29, HEALTH AND SAFETY PLAN.

B. Containers used for hauling the contaminated material shall be constructed of steel, in good condition and designed for the intended purpose of safe, secure storage of hazardous material during loading and transport to an approved facility. The containers shall have a secure cover which will prevent the release of material during transportation. The container and covers shall be approved by the Engineer prior to mobilization of trucks/containers. The containers must be approved by and labeled in accordance with the U.S Department of Transportation (DOT). The containers shall be sift proof and water resistant in accordance with the DOT regulations.

2.02 EQUIPMENT AND VEHICLE DECONTAMINATION:

A. The Contractor shall provide an equipment and vehicle decontamination station as required in Section 01 35 29 – HEALTH AND SAFETY PLAN.

PART 3 – EXECUTION

3.01 GENERAL:

A. Prior to excavating any soil, erosion and sediment control measures shall be installed in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control (DEP Bulletin 34), Section 01 57 19 – ENVIRONMENTAL PROTECTION, and the contract drawings.

B. The Owner is the generator and will sign (or their designated representative will sign) all waste manifests, Bills of Lading, or other required waste transportation/disposal documentation. The Contractor shall prepare all Bills of Lading and waste manifests and shall submit all transportation paperwork, as required in the Soil Management Plan, to the Owner and Engineer for approval prior to shipment.

C. Utilization of a Hazardous Waste Manifest shall require the use of a licensed hazardous material transporter in conformance with state and federal regulations.

D. The Owner shall have final approval over all disposal options based on the analytical data.

3.02 MANAGEMENT OF CONTAMINATED MATERIAL:

A. All contaminated material designated for off-site disposal shall be transported in accordance with applicable CTDEEP and DOT requirements and delivered to the designated disposal facility.

3.03 WEIGHT AND MEASUREMENT**:**

A. The tare and gross weight for every vehicle, container, and trailer transporting contaminated material for off-Site reuse, recycling, treatment, or disposal shall be measured to determine the net weight.

B. The Contractor shall provide certified tare and gross weight slips for each load received at the accepting Facility, which shall be attached to each returned manifest. A final report of materials disposition shall be provided to Owner and Engineer after completion of contaminated material disposal activities.

3.04 WASTE PROFILES AND MANIFESTS:

A. The Contractor shall prepare and submit to the Owner for review all waste profile applications and questionnaires, and coordinate with disposal facilities and all Federal and State Environmental Agencies. Refer to Paragraph 1.03 B.

B. The Contractor shall prepare all Hazardous Waste Manifests, Bills of Lading, and material shipping records with all applicable analytical backup, notification, and control forms. Final Bills of Lading shall be signed by the Owner (or their designated representative) as generator following submission and approval by the Engineer of draft documents.

C. The Contractor shall provide certified tare and gross weight slips for each load received at the designated facility which shall be attached to each returned manifest. Refer to Paragraph 3.03 B.

D. The Owner (or their designated representative) will be designated as generator and will sign all manifests and waste profile applications or questionnaires.

E. The Contractor shall furnish all generator copies of the Hazardous Waste Manifest to the Owner for submittal to the appropriate regulatory agencies and to retain for the Owner's records.

F. The Contractor shall submit to the Owner, prior to receiving progress payment, documentation certifying that all materials were transported to, accepted, and disposed of at the selected disposal facility. The documentation shall include the following, as a minimum:

1. Documentation shall be provided for each load from the site to the disposal facility, including all manifests and any other transfer documentation, as applicable.

2. All ORIGINAL signatures (including signatures of Owner and disposal facility's representative) associated with shipment of any material from the site under a Bill of Lading.

3.05 TRANSPORT OF CONTAMINATED MATERIAL:

A. The Contractor shall not be permitted to transport contaminated materials off-site until all disposal or recycling facility documentation has been received, reviewed, and approved by the Engineer.

B. The Contractor shall take all precautions and any actions necessary, at no additional cost to the Owner, to prevent contamination to areas outside the work area resulting from the transportation of contaminated materials. If warranted, the Contractor shall utilize an equipment and vehicle decontamination station to clean vehicles prior to leaving the site.

C. The Contractor, or their designated sub-contractor, shall transport contaminated materials from the site to the disposal, reuse, or recycling facility in accordance with all DOT, USEPA, and CTDEEP regulations.

D. The Hauler(s) shall be licensed in all states through which transportation may be required.

E. The Contractor shall be responsible for ensuring that free liquid is properly transported. "Wet soils" shall not be loaded for transport. The Contractor shall dewater "wet soils",

and properly dispose of free liquid. The Contractor shall dispose of any free liquids that may result during transportation at no additional cost to the Owner.

F. Temporarily stockpiled contaminated materials must be removed from the site in accordance with applicable regulatory deadlines, no later than ninety (90) days after excavation, and no later than the completion date of this Contract as may be extended.

3.06 DISPOSAL:

A. Dispose of contaminated materials at an approved facility in accordance with all local, state, and federal regulations.

B. The Contractor shall perform analyses on the contaminated material as necessary to fulfill any disposal testing requirements of the approved Facility.

1. The Contractor shall notify the Engineer at least two (2) days prior to sampling and shall provide a sampling plan and schedule to the Engineer.

2. The Contractor shall bear all costs associated with sampling and laboratory analyses as required by the disposal or recycling facility.

3. The Contractor shall submit a copy of all sample analytical results to the Engineer within two (2) days of receipt of the laboratory report. Analytical data shall be kept confidential.

END OF SECTION

SECTION 02 61 13

EXCAVATION AND STOCKPILING OF CONTAMINATED MATERIAL

PART 1 – GENERAL

1.01 DESCRIPTION:

A. Although not anticipated, should excavation of contaminated soils beyond the extent of the UST system excavation be required by the Owner or Engineer, it shall be conducted by a CT-Permitted Spill Cleanup Contractor.

B. Furnish all labor, materials, equipment, and incidentals necessary to properly excavate, remove, and/or segregate contaminated soils including debris piles and other material for off-site disposal.

C. Contaminated soils within the limit of work shall be excavated, as directed by the Engineer. All excavated contaminated soil shall be stockpiled on and securely covered with minimum 10-mil thick polyethylene sheeting while awaiting disposal characterization results. Stockpiles shall be surrounded by hay bales, compost filter tubes, or equivalent, in such a manner as to prevent migration of any sediments and/or contaminants contained therein, and to prevent infiltration of stormwater.

D. The Contractor shall be responsible for the collection of all disposal characterization samples as required by the disposal facility(ies). The Contractor will also be responsible for the cost of analytical testing of all disposal characterization samples.

E. Contaminated materials may include soil, peastone, sand, or debris removed from below grade for removal/disconnection/abandonment of underground storage tank (UST) systems or utilities removed from below grade for demolition of below grade structures and foundations, segregated from stockpiles of soil and debris, and any other demolition activity associated with this contract.

1.02 RELATED WORK:

A. Section 01 14 19.16 – DUST CONTROL

B. Section 01 35 29 – HEALTH AND SAFETY PLAN

C. Section 01 57 19 – ENVIRONMENTAL PROTECTION

D. Section 02 61 00.16 – TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL

E. Section 02 65 00 – REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS

F. Section 02 83 19 – LEAD-BASED COATINGS REMOVAL

G. Section 31 00 00 – EARTHWORK

1.03 SUBMITTALS:

A. The Contractor shall submit a Soil Management Plan to the Owner and Engineer for review no more than 14 days after issuance of the Notice to Proceed. The Soil Management Plan shall include the following:

1. Proof that the Contractor is or will retain a CT-Permitted Spill Cleanup Contractor.

2. Procedures for excavating, stockpiling, and laboratory testing to facilitate the offsite disposal of contaminated soil generated during construction, remediation, and/or site preparation.

3. A schedule detailing the proposed sequence of contaminated soil excavation, stockpiling, and sampling.

4. Prepare health and safety information and requirements for the work associated with this Section. The information and requirements shall be incorporated into the site-specific Health and Safety Plan submitted under Section 01 35 29 - HEALTH AND SAFETY PLAN.

5. Refer to Section 02 61 00.16 TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL, Paragraph 1.03 B, for additional Soil Management Plan requirements.

B. Laboratory results for all samples collected and/or analyzed by the Contractor shall be submitted to the Engineer within 2 days of receipt. The results shall include all Chain-of-Custody forms and all documentation provided by the laboratory.

1.04 REFERENCES:

A. Applicable Codes, Standards, and Specifications, including, but not limited to:

1. Connecticut Department of Energy and Environmental Protection (CTDEEP) Remediation Standard Regulations (RSRs) –Section 22a-133(k)-1 through 22a-133(k)-3 of the Regulations of Connecticut State Agencies (RCSA)

2. OSHA Hazard Communication Standard 29 Code of Federal Regulations (CFR) 1910

3. OSHA Safety and Health Regulations for Construction 29 CFR Part 1926

4. Resource Conservation and Recovery Act (RCRA), 40 CFR Part 268

5. Toxic Substances Control Act (TSCA), 40 CFR 761.00

6. Connecticut General Statutes (CGS) 22a-454

7. All other applicable local, state, and federal regulations

1.05 DEFINITIONS:

A. CT-Permitted Spill Cleanup Contractor: Contractor permitted by the State of Connecticut to perform spill cleanup activities per CGS Section 22a-454.

B. Contaminated Material: Soil indicated by field screening results to contain contamination warranting removal, as determined by Engineer, or indicated by analytical results to contain any substances at concentrations greater than the applicable CTDEEP RSR criteria, or any reportable or cleanup requirement established in RCRA or TSCA.

1.06 QUALITY CONTROL:

A. The work shall conform to applicable local, state, and federal regulatory agencies governing the handling of contaminated soils and hazardous materials.

B. Best Management Practices shall be implemented while performing the work described in this Section.

PART 2 – PRODUCTS

2.01 GENERAL:

A. At the expense of the Contractor, all personnel shall wear personal protective equipment and protective clothing consistent with the levels of protection required for this work as indicated in the site-specific Health and Safety Plan and in accordance with Section 01 35 29 – HEALTH AND SAFETY PLAN.

2.02 FILL MATERIALS:

A. The backfill material shall meet the requirements specified in Section 31 00 00 – EARTHWORK.

B. The Contractor shall submit to the Engineer a minimum of 10 business days prior to initiation of backfill activities, documentation of the source of the proposed backfill material and certification that the backfill material is free of contaminants, and/or the results of laboratory samples.

PART 3 – EXECUTION

3.01 GENERAL:

A. Prior to excavation, Contractor or CT-Permitted Spill Cleanup Contractor shall mark the work area and contact Call Before You Dig to request underground utility clearance at least 72 hours prior to beginning excavation or otherwise required by law.

B. The CT-Permitted Spill Cleanup Contractor shall excavate and convey materials to perform the site work described in this Contract.

C. The CT-Permitted Spill Cleanup Contractor shall segregate materials excavated during the course of the Work that are suspected to be contaminated based on existing analytical data and/or visual and olfactory appearance or other physical indications of contamination, as directed by Engineer.

3.02 FIELD SCREENING:

A. The Engineer, with CT-Permitted Spill Cleanup Contractor assistance if requested, may conduct field screening during excavation activities. Soils demonstrating impact may be segregated and stockpiled for analytical testing, as directed by Engineer.

3.03 EXCAVATION AND RELOCATION OF CONTAMINATED MATERIAL:

A. Where soils are determined by the Engineer or confirmatory testing to be impacted to a degree warranting removal, the CT-Permitted Spill Cleanup Contractor shall excavate additional soil, as required, and secure within the pre-determined soil stockpile location(s) designated for contaminated material.

B. Contractor shall backfill excavated areas only once approved by the Engineer. Backfilled areas shall match existing grades as applicable, in accordance with the Drawings and Section 31 00 00 – EARTHWORK.

3.04 CHARACTERIZATION:

A. The Contractor shall be responsible for characterizing the material for the purpose of obtaining approvals from the disposal facility(ies).

1. The Contractor shall perform all requested lab analyses of contaminated material as required by the receiving facility.

2. The Contractor may be required to perform additional testing of the contaminated material as required by the facility at no additional cost to the Owner.

3.05 STORAGE OF EXCAVATED MATERIAL:

A. The Contractor shall be allowed to stockpile potentially contaminated excavated material onsite pending approval/manifests for transport and disposal or reuse if the following conditions are met:

1. The stockpiled contaminated material must be removed off-site as soon as possible and in all cases within ninety (90) calendar days of excavation.

2. The stockpiled contaminated material shall be placed on pavement and shall be stored on and covered with a minimum 10-mil thick polyethylene sheeting. Polyethylene sheeting shall be properly secured and ballasted to prevent exposure of the stockpiled material to wind and rain.

3. Stockpiles shall be surrounded by hay bales, compost filter tubes, or equivalent, in such a manner as to prevent migration of any sediments and/or contaminants contained therein, and to prevent infiltration of stormwater.

4. The base of the temporary stockpile shall be sloped to create leachate collection points. Contractor shall collect and dispose of all leachate generated from the stockpiles in accordance with applicable local, state, and federal regulations.

B. If any one of these conditions cannot be met, then the Contractor shall store contaminated material/soil in water-tight containers at no additional cost to the Owner pending transportation and disposal. The containers must be removed off site within ninety (90) days of excavation.

3.06 POST-EXCAVATION CONFIRMATORY SAMPLING AND EXCAVATION OF ADDITIONAL CONTAMINATED MATERIAL:

A. Contractor and/or CT-Permitted Spill Cleanup Contractor shall assist Engineer with collection of post-excavation confirmatory samples from the completed excavation(s).

B. Additional material may be excavated, as determined by the Engineer, based on the analytical results of post-excavation confirmatory samples and/or physical indications of contamination, such as petroleum staining, odors, or elevated readings of volatile organic compounds as determined using a photoionization detector. This work shall be performed by a CT-Permitted Spill Cleanup Contractor at the lump sum/unit bid prices established for excavation of contaminated material.

C. The Engineer may stop work in a particular location at any time in order to collect samples for field screening or laboratory analysis. If necessary, the Contractor and/or CT-Permitted Spill Cleanup Contractor shall assist the Engineer in collecting samples. The work shall not resume in that area until approved by the Engineer. Stoppage of work for this reason, or until laboratory results are delivered to the Engineer, shall not be a cause for the Contractor to request additional compensation or an extension of time to the Contract or to other intermediate Contract deadlines.

D. The excavation shall not backfilled until the Engineer has given approval to do so. It is anticipated that the appropriate limits of excavation will be determined at least (3) days following sample collection.

END OF SECTION

SECTION 02 65 00

REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section specifies requirements for the removal and disposal of one (1) 20,000-gallon fuel oil underground storage tank (UST) at the Schaghticoke Middle School in New Milford, CT, as shown on the drawings and specified herein.

B. The Work also includes the removal and disposal of all associated piping and appurtenances from the UST and the contents of the UST, as well as backfilling of the completed excavation to original grade, unless specified otherwise.

C. The Owner will be considered the generator, and the Owner or a designated representative will sign all manifests and bills of lading.

1.02 RELATED WORK:

A. Section 01 33 23, SUBMITTALS

B. Section 01 35 29, HEALTH AND SAFETY PLAN

C. Section 02 61 00.16, TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL

D. Section 02 61 13, EXCAVATION AND STOCKPILING OF CONTAMINATED MATERIAL

E. Section 31 00 00, EARTHWORK

1.03 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. Submit to the Engineer, for review no more than 14 days after issuance of the Notice to Proceed, a disposal plan for the materials associated with this section, which includes the following information:

1. The name, address, and contact information of the company(ies) that will accept the remaining liquid phase contents of the UST, sludges, and decontamination liquids. (The Contractor is encouraged to recycle any materials where feasible.)

2. The name, address, and contact information of the UST disposal facility(ies) that will accept the UST and piping.

3. The name, address, and contact information of the disposal or recycling facility(ies) that will accept concrete, other subsurface debris, or petroleum-impacted soil.

4. Written confirmation from each of the disposal or recycling facilities indicating they will accept the UST, any remaining product or sludge, and any other materials to be removed as part of this Work.

B. Submit to the Engineer within 14 days after issuance of the Notice to Proceed all pertinent information relating to the transportation of material specified herein. The information submitted shall include at a minimum:

1. Name and address of all transporters; and

2. Name and address of any hazardous waste transporters (provide this information if any of the disposal or recycling facilities are out-of-state), plus:

a. United States Environmental Protection Agency (EPA) Identification Number and expiration date.

b. Proof of permit, license or authorization to transport hazardous waste in all affected states.

c. Proof of emergency service agreement with an emergency response contractor.

C. Submit to the Owner and Engineer for review within 14 days of issuance of the Notice to Proceed, a schedule detailing the proposed sequence of operations to perform the work specified herein.

D. Submit to the Owner and Engineer within 14 days after issuance of the Notice to Proceed a site-specific Health and Safety Plan (see Section 01 35 29).

E. Provide the Owner and Engineer a copy of all permits, completed shipping manifests, and destruction certificates. The Contractor shall provide to the Engineer a copy of all permits prior to commencement of any UST removal activity.

F. Contractor shall submit to the Owner and Engineer within two days of receipt of the laboratory report a copy of all sample results for waste characterization analysis. Analytical data shall be kept confidential.

G. Contractor shall provide to the Owner and Engineer copies of all weight slips, both tare and gross, for every load weighed and disposed of at the disposal or recycling facilities. The Engineer and/or Owner shall only allow progress payments after receipt of these weight slips.

1.04 REFERENCES:

A. Applicable Codes, Standards, and Specifications, including, but not limited to:

1. National Fire Prevention Association (NFPA), Volume 30, "Flammable and Combustible Liquids Code"

2. NFPA, Volume 326, "Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning or Repair", latest version

3. American Petroleum Institute (API), AP-1-2015, "Cleaning Petroleum Storage Tanks"

4. API, Recommended Practice 1604, "Removal and Disposal of Underground Petroleum Tanks"

5. API, AP-2015A, "A Guide for Controlling the Lead Hazard Associated with Tank Entry and Cleaning"

6. American National Standards Institute (ANSI), ANSI-A28.2, "Standard Practices for Respiratory Protection"

7. National Institute for Occupational Safety and Health (NIOSH), "Working in Confined Space"

8. Connecticut's UST Regulations – Section 22a-449(d)-101 through 113 of the Regulations of Connecticut State Agencies (RCSA)

9. Connecticut Department of Energy and Environmental Protection (CTDEEP) Remediation Standard Regulations (RSRs) – Section 22a-133(k)-1 through 22a-133(k)-3 of RCSA

10. Occupational Safety and Health Administration (OSHA) Hazard Communication Standard 29 Code of Federal Regulations (CFR) 1910

B. The work of this Section shall be performed in accordance with CT UST Regulations 22a-449(d)-101 through 113, and all applicable local, state, and federal, regulations, laws, codes, and ordinances governing the handling, transportation, and disposal of hazardous waste.

C. Obtain all local permits and make necessary arrangements with the local Fire Marshal prior to the removal of the UST. Upon receipt, provide a copy of obtained permits to the Owner and Engineer. Keep the Fire Marshal informed of all activities throughout the performance of the work.

D. Obtain or possess, or assure that subcontractors obtain or possess, as appropriate, all local, state, and federal permits required for the transport and disposal of all liquid and solid waste resulting from the performance of this Work.

PART 2 - PRODUCTS

2.01 CLEANUP MATERIALS:

A. Furnish all drums, storage containers, packing materials and any other products and materials required for collecting, storing and transporting fuel oil sludges, UST bottom materials, and UST decontamination materials and residues in compliance with all CTDEEP, EPA, United States Department of Transportation (DOT), and local requirements. All drums shall meet the requirements of DOT 49 CFR 173.

B. Provide all equipment necessary to fully and appropriately manage and handle all materials associated with the removal of the UST.

C. All personnel shall wear personal protective equipment and protective clothing consistent with the levels of protection for this work as indicated in the site-specific Health and Safety Plan.

2.02 FILL MATERIALS:

A. The backfill material shall meet the definition of natural soil as defined in RCSA Section 22a-133k-2(h)(4). At least 10 business days prior to initiation of backfill activities, the Contractor shall provide laboratory results for representative samples of the proposed backfill, which have been analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), extractable total petroleum hydrocarbons (ETPH), the CT 15 metals, pesticides, herbicides, and polychlorinated biphenyls (PCBs). The analyses should be conducted using the CTDEEP Reasonable Confidence Protocols (RCPs). In lieu of providing laboratory analyses for the proposed backfill, the Contractor may provide the Owner and Engineer with laboratory results obtained from the source of the fill, or certification from a qualified environmental professional (QEP) that the source material meets the natural soil definition.

B. Backfill material shall also conform to the requirements indicated on the drawings and Section 31 00 00, EARTHWORK.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS:

A. The Contractor shall provide suitable labor, materials, and equipment to clean and remove the existing fuel piping, UST and all associated appurtenances and all liquids and sludges that may be contained in the UST and piping prior to removal. All open excavations shall be adequately safeguarded by temporary barricades, fencing, caution signs, lights, and/or any other means necessary to prevent accidents to persons, or damage to property. The

length or size of the excavation will be controlled by the site-specific surrounding conditions. Contractor shall take all precautions to avoid creating a hazardous situation and shall implement special construction procedures, as necessary.

3.02 PERMITTING/NOTIFICATION:

A. Prior to initiating the UST removal, the Contractor shall apply for and obtain a Permit, as required, for the removal of the UST. A copy of the Permit shall be provided to the Owner and Engineer. The Contractor shall notify the local Fire Marshal of the planned UST removal activities.

3.03 DEMOLITION:

A. Prior to conducting excavation in paved or concrete areas, the Contractor shall prepare the area in accordance with Section 31 00 00, EARTHWORK.

3.04 REMOVAL OF UST CONTENTS AND CLEANING:

A. Existing structures and surfaces shall be inspected for signs of petroleum release and subsequently protected from potential contamination during cleaning of the UST. In the event structures or surfaces are impacted during cleaning, the Contractor shall be responsible for all costs associated with cleanup and/or replacement of the contaminated materials.

B. Prior to excavation and removal of the UST, ensure that any electrical power to the UST or ancillary equipment is deactivated and that wiring has been properly disconnected. Assure that any equipment used in the cleaning of the UST or used near the excavations, including hand tools and slings, are non-sparking type.

C. Remove and dispose of all residual petroleum contents from UST, piping, and associated appurtenances.

D. Evacuated fluids and sludges designated for disposal, if temporarily stored onsite in drums, may be stored for a period not to exceed 30 calendar days prior to shipping.

E. All sludges and fluids not recycled shall be containerized, stabilized, manifested, and transported to an approved incineration or disposal facility in accordance with the approved disposal plan.

F. Prior to excavation and removal of the UST, the interior shall be rinsed with water. The rinseate shall be collected and removed by the Contractor and disposed of in the same manner as specified for the fluids and sludges.

G. Prior to excavation and removal of the UST, gases shall be purged from the UST and the UST shall be tested for flammable vapors in accordance with applicable NFPA requirements and all other applicable regulations.

H. Only upon completion of the tasks described in Sections 3.04 F and G, shall the UST be removed from the ground.

3.05 EXCAVATION:

A. Prior to excavation, Contractor shall mark the work area and contact Call Before You Dig to request underground utility clearance at least 72 hours prior to beginning excavation or otherwise required by law.

B. Contractor shall be solely responsible for making all excavations in a safe manner, consistent with the requirements of OSHA excavation safety standards (29 CFR Part 1926, subpart P). This shall include providing any sheeting, temporary bracing, and temporary supports that may be required to ensure the integrity of the excavation and to protect any facilities or infrastructure outside the limits of the excavation that are to remain following the UST system removal. All sheeting, bracing, and temporary supports shall be in full compliance with all applicable regulatory requirements. All sheeting, bracing and associated items shall be carefully removed upon completion of the work so as to not disturb nearby structures, utilities, and roadways.

C. Once the UST has been cleaned and inert, excavate soil around the UST, including any concrete hold-down slabs, as required, to facilitate removal of the UST. Excavate the soil around the associated piping as required for removal of the piping extending between the UST and building as shown on plans.

D. Notify the Engineer and local Fire Marshal when the site is available for inspection and the UST is prepared for removal so that the local Fire Marshall may perform their inspections, if required. Following the inspections, and upon authorization by the Owner and/or Engineer, remove the existing UST, concrete, associated materials, etc.

E. Following UST removal, Contractor shall place the UST on a level surface, block or otherwise secure the UST to prevent movement and allow for visual inspection by the Engineer.

F. In the event there is visible petroleum product remaining in an excavation, the Contractor shall immediately remove it by vacuum truck, or by other approved method. Evacuate petroleum product until all visible product is removed to the satisfaction of the Engineer. Should petroleum product appear on the surface of any groundwater within the excavation, similar evacuation procedures shall be undertaken.

G. Engineer will monitor the excavations for visual and olfactory evidence of a petroleum release and volatile organic compounds with a photoionization detector, and collect samples as required by applicable regulations and standards of practice. The Contractor shall assist the Engineer in collecting appropriate samples from the excavations.

H. Soil suitable for reuse as backfill, as determined by the Engineer, shall be stockpiled apart from petroleum-impacted soil. All soil shall be staged in stockpiles on 10-mil thick polyethylene sheeting, preferably on pavement, and covered with 10-mil thick

polyethylene sheeting at the end of each workday. Stockpiles shall be surrounded by hay bales, compost filter tubes, or equivalent, in such a manner as to prevent migration of any sediment and/or possible contaminants contained therein and to prevent infiltration and migration of stormwater. Contractor shall be responsible for conducting all waste characterization sampling for laboratory analysis to fulfill all testing requirements of the selected disposal or recycling facilities. All excavated soil requiring off-site disposal shall be removed from the site within ninety (90) calendar days of excavation.

I. Any excavations left open overnight shall be thoroughly barricaded, illuminated, and/or otherwise protected at all times when work is not in progress. In the event precipitation occurs, and water accumulated within the excavation affects the work to be conducted, the Contractor shall be responsible for collection and disposal of all accumulated water at Contractor's expense.

3.06 CONFIRMATORY SAMPLING:

A. Contractor shall assist Engineer with collection of confirmatory samples from the UST and piping excavations for laboratory analysis. Confirmatory samples will be collected in accordance with CTDEEP guidance "Sampling and Analytical Methods for Underground Storage Tank Closure". Analysis of all confirmatory samples will be conducted on a 48-hour turnaround time, unless otherwise directed by the Owner. Contractor shall not backfill any excavations until approval is given by the Engineer.

3.07 ADDITIONAL EXCAVATION:

A. If analytical results for confirmatory samples collected from the excavations exceed allowable concentrations as determined by the Engineer, then additional excavation by Contractor may be requested by the Owner. Such excavation shall be conducted in accordance with Section 02 61 13, EXCAVATION AND STOCKPILING OF CONTAMINATED MATERIAL.

3.08 DISPOSAL OF USTS AND ASSOCIATED PIPING:

A. The exterior of the UST and piping shall be cleaned prior to offsite transportation. If materials adhered to exterior surfaces are contaminated, then cleaning wastes shall be contained for proper offsite disposal.

B. Prior to removal from the site for transport to the licensed tank disposal facility, the UST shall be rendered dysfunctional, including by punching holes in the UST sidewalls and end walls, or other method approved by the Engineer, if necessary.

C. The UST and piping should either be placed into a roll-off container and crushed, or properly secured onto a truck, vehicle, or trailer for transportation to approved Tank Disposal Facility. The Contractor must submit to the Owner and Engineer a Certificate of disposal from the disposal facility.

3.09 BACKFILL:

A. Excavations shall be backfilled with approved, clean fill materials only after approval by the Engineer. See Section 2.02 above.

B. Backfill all excavations with structural backfill to restore the area to the original grade, unless specified otherwise.

C. Backfill shall be placed in accordance with Section 31 00 00, EARTHWORK.

D. Any backfill placed beneath the water table shall consist of clean crushed stone to approximately six inches above the water level. Geotextile fabric shall be installed above backfilled stone prior to placement of additional backfill.

3.10 RESTORATION OF SURFACES:

A. All surfaces shall be restored to original grade unless otherwise specified. The quality of materials and the performance of work used in the restoration shall produce a surface or feature at least equal to the condition existing immediately before the work began.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 -GENERAL

1.01 GENERAL PROVISIONS:

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS, which are hereby made part of this Section of the Specifications.

1.02 DESCRIPTION OF WORK:

A. Work Included: This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes for the following:

1. Underground Storage Tank (UST) Cover Pad

B. Items To Be Installed Only: Not applicable.

C. Items To Be Furnished Only: Not applicable.

D. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 31 00 00, EARTHWORK; Excavation and establishment of subgrade elevations.

1.03 SUBMITTALS:

A. Refer to Section 01 33 23, SUBMITTALS for submittal provisions and procedures.

B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, water-stops, joint systems, curing compounds, dry-shake finish materials, and others if requested by the Engineer or SER.

C. Shop drawings for reinforcement detailing, fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 “Manual of Standard Practice for Detailing Reinforced Concrete Structures”. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing and supports for concrete.

D. Concrete mix design for each mix specified. Supporting test data shall be submitted if requested.

1. Submit alternate mix designs when the characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
2. Indicate the amounts of mixing water to be withheld for later addition at the Project site.

E. Proposed method of curing and associated products.

F. Proposed precautions for hot weather and cold weather concreting.

G. Laboratory test reports for concrete materials and mix design test.

H. Material test reports for the following, from a qualified testing agency, indicating compliance with specification requirements:

1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

I. Material certificates for each of the following, signed by the manufacturers:

1. Cementitious material.
2. Admixtures
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Petroleum Resistant Sealant
6. Curing compounds.

1.04 QUALITY ASSURANCE:

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mix concrete products that complies with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency for Mix Design Qualifications: An independent agency, registered in the State of Connecticut as an approved testing agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.

2. Personnel performing laboratory tests shall be ACI certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician – Grade 1. The Testing Agency Laboratory supervisor shall be an ACI certified Concrete Laboratory Testing Technician – Grade II.

C. Source Limitations: Obtain each type of class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

D. ACI Publications:

1. Comply with the following unless modified by requirements in the Contract Documents:
    a. ACI 117, "Standard Specifications for Tolerances for Concrete Construction and Materials."
    b. ACI 211.1, "Recommended Practice for Selecting Proportions for Normal and Heavyweight Concrete."
    c. ACI 214, "Evaluation of Strength Test Results of Concrete."
    d. ACI 301, "Specification for Structural Concrete."
    e. ACI 304, "Guide for Measuring, Mixing, Transporting and Placing Concrete."
    f. ACI 305, "Hot Weather Concreting."
    g. ACI 306, "Cold Weather Concreting."
    h. ACI 308, "Guide to Curing Concrete."
    i. ACI 309, "Guide for Consolidation of Concrete."
    j. ACI 311.1, "ACI Manual of Concrete Inspection."
    k. ACI 315, "Details and Detailing of Concrete Reinforcement."
    l. ACI 318, "Building Code Requirements for Structural Concrete and Commentary."
    m. ACI 347, "Guide for Formwork for Concrete."
2. Where the language in any of the documents referred to herein is in the form of a recommendation or suggestion, such recommendations or suggestions shall be deemed to be mandatory under this Contract.

E. American Society for Testing and Materials (ASTM):

1. ASTM C309 "Liquid Membrane-Forming Compounds for Curing Concrete."
2. ASTM C494 "Standard Specification for Chemical Admixtures for Concrete."
3. ASTM C979 "Standard Specification for Pigments for Integrally Colored Concrete."

F. American Association of State Highway and Transportation Officials (AASHTO):

1. AASHTO M194 "Chemical Admixtures."

1.05 DELIVERY, STORAGE, AND HANDLING:

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.01 STEEL REINFORCEMENT:

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

1. Provide reinforcing bars conforming to ASTM A706, Grade 60, deformed, if welding is required.

B. Plain Steel Wire: ASTM A 82, as drawn.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.02 CONCRETE MATERIALS:

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout the Project:

1. Portland Cement: ASTM C 150, Type I/II. Supplement with the following:

B. Fly Ash: ASTM C 618, Class C or F.

C. Ground Granulated Blast Furnace Slag: ASTM C 989, Grade 100 or 120.

D. Cementitious Materials: Percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash or Ground Granulated Blast Furnace Slag: 25 percent, minimum.
2. Combined Fly Ash and Pozzolan: 35 percent, maximum.
3. Ground Granulated Blast Furnace Slag: 50 percent, maximum.
4. Combined Fly Ash or Pozzolan and Ground Granulated Blast Furnace Slag: 50 percent Portland cement minimum, with fly ash or pozzolan not exceeding 35 percent.

E. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse Aggregate Size: ¾-inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

F. Water: ASTM C 94 and potable.

2.03 ADMIXTURES:

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494, Type A.
2. Retarding Admixture: ASTM C 494, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.

C. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor,; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494, Type C.

1. Products:
2. Euclid Chemical Company; Eucon CIA.
3. Grace Construction Products, W.R. Grace & Co.; DCI.
4. BASF Admixtures, Inc.; Rheocrete CNI.
5. Sika Corporation; Sika CNI.

D. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. Products:
    a. Grace Construction Products, W.R. Grace & Co.; DCI-S.

b. Sika Corporation: Sika FerroGard 903

c. Euclid Chemical: Eucon BCN

E. Integral Crystalline Waterproofing Admixture. Incorporate into concrete mix design per the manufacturer's recommendations.

1. Products:

a. Penetron Admix, Penetron International Ltd.

b. CWPA 800 by ISE Logik, Inc

c. Aquafin-IC Admix, Aquafin Inc.

2.04 UST COVER PAD CONCRETE TREATMENT:

A. Clear solvent free silane treatment that is UV stable and vapor permeable to reduce water and chloride ion intrusion.

1. Products:

a. Sikagard 740 W by Sika Corporation

b. MasterProtect H 1000 (formerly Hydrozo 100) by BASF

c. Intraguard by W.R. Meadows

d. Or approved equal

2.05 CURING MATERIALS:

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz. /sq. yd. when dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. Products:

a. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315 WB.

b. Euclid Chemical Company; Super Diamond Clear VOX.

c. Lambert Corporation; UV Safe Seal.

d. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.

e. Meadows, W.R., Inc.; Vocomp-30.

f. Symons Corporation, a Dayton Superior Company; Cure & Seal 31 Percent E.

2.06 REPAIR MATERIALS:

A. Repair Underlayment: Cement based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8-inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8-inch to ¼-inch or coarse sand as recommended by the underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested in accordance with ASTM C 109.

B. Repair Overlayment: Cement based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8-inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8-inch to ¼-inch or coarse sand as recommended by the topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested in accordance with ASTM C 109.

2.07 CONCRETE MIXTURES, GENERAL:

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.

3. Ground Granulated Blast-Furnace Slag: 50 percent.
4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water cementitious materials ratio below 0.50.
4. Use retarding admixture in combination with Set accelerating Corrosion Inhibitor. Retarder is not required for non-set accelerating corrosion inhibitor.
5. Use corrosion inhibiting admixture in concrete mixtures where indicated.
6. Use moisture vapor reduction admixture on all slabs to receive floor finishes. Refer to Specification Section 03 05 10.
7. Use integral crystalline waterproofing admixture in concrete mixtures where indicated.

2.08 CONCRETE MIXTURES FOR BUILDING ELEMENTS:

A. UST Cover Pad: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 5000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: 4-inches for concrete with verified slump of 2-inch to 4-inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1-inch.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.
5. Corrosion Inhibiting Admixture: Apply to all slabs at a rate of 4 gallons per cubic yard of concrete.

2.09 FABRICATING REINFORCEMENT:

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice".

2.10 CONCRETE MIXING:

A. Ready-Mix Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94, and furnish batch ticket information.

B. When air temperature is between 85 and 90 degrees F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 degrees F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 GENERAL:

A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing.

3.02 FORMWORK:

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8-inch for smooth-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Chamfer exterior corners and edges of permanently exposed concrete.

H. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.03 STEEL REINFORCEMENT:

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire ties.

3.04 JOINTS:

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or approved by the Engineer.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2-inches into concrete.

3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at the underside of floors, slabs, beams, and girders and at the top of footings and floor slabs.
5. Space vertical joints in walls at 60-feet on center maximum. Locate joints besides piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge joint to a radius of 1/8-inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

3.05 CONCRETE PLACEMENT:

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6-inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete in continuous operation, within limits of construction joints, until placement of panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 degrees F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 degrees F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, providing water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing of concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.06 FINISHING UST COVER CONCRETE PAD:

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straightening until surface is free of trowel marks and uniform in texture and appearance.

D. Broom Finish: Apply a broom finish to the UST cover pad.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

3.07 CONCRETE PROTECTING AND CURING:

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces.

C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Curing all slabs in the project with moisture curing. Keep surfaces continually moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.

c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in the widest practicable width, with sides and ends lapped at least 12-inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subject to heavy rainfall within three hours after initial applications. Maintain continuity of coating and repair damage during curing period.
4. Curing and Sealing Compound: Apply uniformly to concrete pad indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subject to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply second coat. Maintain continuity of coating and repair damage during curing period.

3.08 CONCRETE SURFACE REPAIRS:

A. Defective Concrete: repair and patch defective areas when approved by the Engineer. Remove and replace concrete that cannot be repaired and patched to the Engineer's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, pop outs, honeycombs, rock pockets, crazing and cracks in excess of 0.01-inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14-days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Repair defective areas, except random cracks and single holes 1-inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least ¾-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
6. Repair random cracks and single holes 1-inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72-hours.

D. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

E. Repair materials and installation not specified above may be used, subject to the Engineer's approval.

3.09 FIELD QUALITY CONTROL:

A. Testing and Inspecting: The contractor shall hire, at their own expense, a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Verification of use of required design mixture.
4. Concrete placement, including conveying and depositing.
5. Curing procedures and maintenance of curing temperature.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample of each day's pour of each concrete mixture exceeding 5 cubic yards, but less than 25 cubic yards, plus one set for each additional 50 cubic yards or fraction thereof.
2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 degrees F and below and when 80 degrees F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31.
6. Cast and laboratory cure five standard cylinder specimens for each composite sample.
7. Compressive Strength Tests: ASTM C 39; test one set of two-laboratory-cured specimens at 7 days and one set of two specimens at 28 days. Test remaining specimen at 28 days if previous results are satisfactory or retain this specimen for 56 day testing if results are not satisfactory.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive strength tests equals or exceeds specified compressive strength and no compressive strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to the Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7 and 28 day tests.

1. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as the sole basis for approval or rejection of concrete.
2. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as required by the Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as required by the Engineer.

3. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
4. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.

END OF SECTION

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SECTION 28 40 00

TANK GAUGING INSTRUMENTATION AND CONTROL

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. The Contractor shall furnish all labor, materials, tools, and equipment, to install all instrumentation and controls associated with the fuel oil UST and related work, as specified herein, and as required by the Contract Documents.

1.02 QUALITY ASSURANCE:

A. Installation of all systems shall be performed by a Contractor who possesses an Installer's License and is certified by the equipment manufacturer. The Contractor shall have a minimum of five years of experience.

B. The Contractor shall purchase the systems from a manufacturer approved by the Engineer. The manufacturer shall maintain a service depot within 75 miles of the facility. The service depot must be capable of timely delivery of parts and service personnel for servicing the system at any time. The manufacturer shall furnish required supervision, as required by the Engineer for the installation of the systems and shall furnish an experienced installation and maintenance worker for the supervision of personnel in the initial operation and maintenance of the systems.

C. The Contractor shall install compatible components and shall perform all modifications necessary for the proper operation and guarantee of the equipment. The Engineer reserves the right to require the Contractor to make such tests, during the installation and upon the completion thereof, as may be necessary to demonstrate that the work and equipment, as installed, complies with the Contract Specifications and requirements provided herein. The Contractor shall provide all labor, instruments, and apparatus required for such tests. If any of the work or equipment fails to meet the Contract Requirements or to function properly, the defects shall be rectified at the Contractor's own expense by readjusting, or by removing and replacing the faulty work or equipment until, under test, the requirements are met. The Engineer reserves the right to check the Contractor's instruments or to furnish its own instruments.

1.03 REFERENCES:

A. All instrumentation and control equipment shall comply with the following standards and all other applicable Federal, State, and local and most recent Building Code requirements, including revisions to the date of Contract:

NFPA	National Fire Protection Association
ANSI	American National Standards Institute
ASTM	American Society of Testing Materials (ASTM International)
ASME	American Society of Mechanical Engineers
NEC	National Electric Code
ISA	Instrumentation Society of America
NEMA	National Electrical Manufacturers Association
IEEE	Institute of Electrical and Electronic Engineers
API	American Petroleum Institute

1.04 SUBMITTALS: IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 01 33 23 SUBMITTALS, SUBMIT THE FOLLOWING:

A. Shop drawings:

1. Wiring and schematic diagrams certified by the manufacturer to meet NFPA/NEC explosion proof requirements and any other details required to demonstrate that the system has been coordinated and will function properly as a unit. Site specific, sealed electrical drawings shall be furnished by the manufacturer.

2. Equipment and instrument list, including size, input/output types, expected range of operation, utility requirements, and materials of construction. A Bill of Materials also shall be included and keyed to the drawings. The Bill of Materials shall provide sufficient information to determine compliance with the Contract Drawings and Specifications.

3. Drawings showing the proposed layout and anchorage of equipment and appurtenances, and equipment relationship to other parts of work, including clearances for maintenance and operation.

4. Manufacturers' descriptive and technical literature, including catalog cuts.

5. Legends for name plates.

6. Equipment certifications and test reports.

B. Operating and maintenance instructions shall be provided for each different type of control, instrument, and system.

1. Operating instructions outlining the procedures required for equipment and system start-up, operation, and shut-down. The instructions shall include the manufacturer's name, model number, service manual, parts list, and a brief description of all equipment and their basic operating features.

2. Maintenance instructions listing routine maintenance procedures, possible breakdown and repairs, and troubleshooting guide.

C. Performance Test Reports: Upon completion and testing of the installed system, test reports shall be submitted showing that all field tests are performed to adjust each component and that all field tests are performed to prove compliance with the specified performance criteria. Each test report shall indicate the final position of the controls.

1.05 MANUFACTURER'S SERVICES:

A. The Contractor shall provide the services of a manufacturer's engineering consultant who is experienced in the installation, adjustment, and operation of the instruments and controls to be provided, and who shall supervise the installation, adjustment, and testing of the equipment.

B. The leak detection/inventory control system shall include a minimum one-year warranty from the date of substantial completion.

1.06 FIELD TRAINING:

A. The Contractor shall provide a field training course for the Owner and its designated operating staff. Training shall be provided for a total of 4 hours of normal working time and shall be completed prior to the system's final acceptance by the Owner. Field training shall cover all of the items contained in the operating and maintenance manuals.

PART 2 - PRODUCTS

2.01 GENERAL SYSTEM SPECIFICATIONS:

A. Description

1. A continuous monitoring and leak detection system shall meet the performance specifications and functions of the Veeder-Root Company TLS4 AST Monitoring system or approved equal.

2. The storage tank monitoring system shall meet all applicable standards and regulatory agency requirements including, but not limited to, the standards and requirements of the following:

a. American National Standards Institute (ANSI)
b. American Petroleum Institute (API)
c. American Society for Testing and Materials (ASTM International a.k.a. ASTM)
d. Environmental Protection Agency (EPA)
e. National Bureau of Standards (NBS)
f. National Electrical Code (NEC)

g. National Fire Protection Agency (NFPA)
h. Underwriters Laboratories Inc. (UL)
i. Canadian Standards Association (CSA)
j. Canadian Underwriters Laboratories Inc. (cUL)
k. Federal Communications Commission (FCC)

3. The storage tank monitoring system shall meet all applicable standards to operate in a Class 1 Division 1 Group D hazardous location.

B. System Security

1. The system shall allow setup of users with different levels of security, limiting access to unauthorized personnel to areas such as Setup and Diagnostics. System Security will require login credentials for access to the GUI, Web- Enabled, and RS-232 communication. System Security will automatically log a user out after 15 minutes of inactivity.

2. The system shall have three predefined roles: Administrator, Operator, and Regulator with the following access permissions:

a. Administrator: Able to edit console configuration, perform software upgrades, generate reports, and start various diagnostics tests. Also, able to create new roles and users.

b. Operator: Able to view and generate reports and perform certain manual functions, like a manual delivery.

c. Regulator: Able to print and review console reports.

3. The system shall have the ability to create custom roles, allowing the administrator to select access to: Diagnostics, Reports, Setup, System Status, and System Administration.

2.02 ENVIRONMENTAL COMPLIANCE SPECIFICATIONS:

A. In-Tank Leak Detection

1. Static Leak Detection (SLD)

a. The system shall utilize Magnetostrictive probes with six thermistors for liquid level measurement, in-tank leak detection and temperature measurement.

b. The tank gauge shall be capable of performing a static tank tightness test to an accuracy of 0.1 GPH with at least a 98% probability of detection [P (D)] and no more than 1% probability of false alarm [P (FA)].

c. The system shall have the ability to automatically run a static leak test, by monitoring the activity of the submersible pump. Depending on the idle time between pumping cycles, the system will automatically run a 3.0 GPH test, a 0.2 GPH test or a 0.1 GPH test. Each successive test will start automatically upon completion of the previous test. If a dispensing transaction or a delivery takes place, the system will automatically disable the test until the next appropriate idle period.

d. The system shall be capable of performing a 0.2 GPH or 0.1 GPH test to start automatically or manually and have the ability to run a quick leak test. This quick static leak test will take one hour, and commence 30 minutes after the last dispensing cycle, or five hours from the last delivery, whichever is greater. The minimum time for a 0.2 GPH static test shall be two hours and three hours for a 0.1 GPH static leak test.

e. The system shall post a warning and or alarm after a specified number of days have passed (0-30) since the last leak test was run or successfully passed.

2. Continuous Statistical Leak Detection (CSLD)

a. The system shall have the ability to conduct automatic CSLD tests without the need to shut down tanks for scheduled test times.

b. The system, when operated in CSLD mode, shall be third-party certified for statistical leak detection in single tanks up to 45,000 gallons and 37,000 gallons on manifold tanks. The test shall meet or exceed U.S. EPA standards with a 99% probability of detecting a 0.2 GPH leak and less than a 0.1% probability of false alarm. It shall meet Federal, State and local compliance requirements for monthly monitoring.

c. The system shall be capable of dynamically qualifying the idle time data and selecting the best available data to perform a 0.2 GPH tank tightness evaluation. During each idle period an evaluation will be performed and the data will be added to the database. The system shall employ the use of dynamic feedback variables in the algorithm to evaluate the noise factor patterns associated with a tank, thus tailoring the algorithms to each individual tank.

B. Interstitial Leak Detection

1. Dry Monitoring

a. The system shall be able to perform automatic, continuous leak sensing in the dry interstitial space (annulus) of a double-wall tank, to detect a breach in the inner or outer shell. The system shall differentiate between hydrocarbons and water, and provide an indication of a fuel alarm or a liquid alarm.

b. The system shall have the ability to sense the presence of hydrocarbons and/or liquid and provide an alarm for worst-case condition (fuel). The system shall have the ability to continuously monitor the integrity of the sensor for an open condition, alarm condition, or normal operating condition.

c. Provide monitoring sensors to monitor tank's interstitial space.

2.03 REPORTING:

A. Generation

1. The system shall have the ability to generate reports from the GUI, Web-enabled, or via a RS-232 command (display/computer format). These reports will provide the same information independent of how the report request is generated. The system shall have the ability to store up to three years' worth of report data.

2. Reports can be scheduled to auto generate on date and time and have selectable date range for data review.

B. Output

1. All reports shall be available from a network printer, fax, modem, email or from a polling computer. A four-line, twenty-character customer location header to identify the site must be user-programmable. The header must appear automatically on inventory status reports, leak detection reports and automatic delivery reports each time they are printed.

C. Alarm

1. The system shall have the capability to generate an Active Alarm Report, Alarm History Report and Priority/Non-Priority Report. The console shall continuously monitor all probes and sensors, reporting not only normal operating conditions, but also system malfunctions or failures.

2. System shall accept input from an external acknowledge switch to acknowledge the alarm and silence the buzzer.

3. System shall have the ability to print out the alarm when the alarm is generated and E-mail alarm conditions to designated personnel.

D. Environmental

1. The system shall provide the following reports related to Environmental Compliance.

a. Combined Tank Test shall provide a report of both SLD and CSLD test results. This report will only show tests that have successfully passed.

b. Sensor History shall provide reports anytime a sensor has gone into an alarm and when the alarm cleared. The report shall also indicate the type of alarm. The report shall report "Normal" if the sensor has never been in alarm.

c. Sensor History provides proof of compliance to regulators. This report can be generated on a daily, weekly, or monthly basis or as programmed by the end-user.

d. Sensor Status shall report the current status of all enabled sensors.

E. Units of Measure

1. The system shall monitor inventory in U.S., Metric or Imperial units for up to four above ground and underground tanks; and produce a combination of automatic and manual inventory reports for each tank, which includes the following information:

a. Tank identification
b. Fuel volume / height
c. Temperature-compensated fuel volume
d. Ullage
e. Water height / volume
f. Fuel temperature
g. Time and date

F. Inventory

1. The system shall provide an inventory history of up to 720 records per tank.

2. The system shall be able to monitor underground and above ground storage tanks in single or manifold configurations.

3. The system shall be able to monitor (measure) API listed products including, but not limited to motor fuels, LPG, methanol and alcohol blends. The system shall be able to measure density for gasoline and diesel.

4. The system shall have the ability to generate a power outage inventory report. This report shall track inventory levels before and after power outage, any variation in volume shall indicate tank activity during the outage.

5. The system shall have the ability to set User Ullage from 90% to 100% of Maximum Volume.

G. Delivery

1. The system shall automatically generate an inventory increase report (Delivery) when a delivery of product to a tank has taken place. The report shall include the time and date of the delivery, the starting volume in the tank, the ending volume in the tank, the starting temperature of the fuel, the ending temperature of the fuel, and the inventory increase amount. The system shall have the ability to generate a power outage delivery report in the event power is lost during a delivery. This report will be automatically generated once the power is restored.

2. The system shall have the ability to generate a ticketed delivery reports using the BIR data and customer's Bill of Lading.

3. The information shall be available in U.S., Metric or Imperial units. The system shall have the ability to store up to three years of inventory increase reports. The system shall provide an automatic delivery report, programmed to print from 1 to 99 minutes after a bulk delivery to a tank is complete.

H. Timed Sudden Loss

1. The system shall be able to detect sudden losses in the tanks when not dispensing and generate alarms when the threshold has been exceeded. Timed Sudden Loss shall not require pump sense and is programmable for seven individual time periods or shall be able to be manually started and stopped. Timed Sudden Loss shall be able to be reset once an alarm is posted.

2.04 SYSTEM PROGRAMMING:

A. Interface

1. The system shall be able to be programmed via the 7-inch color touch screen or using Web-Enabled (Remote Access).

2. The system shall have an Acknowledge switch for consoles without the touch screen.

B. Online Context Help

1. The system will provide an online context help to assist with programming. The system shall also have Table of Context search capabilities.

C. Setup Wizard

1. The system shall be able to be programmed using a Setup Wizard from either the touch screen or Web-Enabled. The Setup Wizard will navigate through a comprehensive routine to ensure all fields are properly configured.

D. Languages

1. The system will support the following languages: Arabic, Chinese, English, Finnish, French, German, Hebrew, Hindi, Italian, Korean, Portuguese, Polish, Russian, and Spanish.

E. Security

1. The system shall provide the use of a security code to prohibit unauthorized entry to the systems set-up parameters. The system security code shall be entered through the user interface or through the external communications interface. The security code shall have the capability of containing alpha or numeric characters.

F. Set-Up

1. The system will maintain programming and reports in the event of a power loss. The system will be connected to the Owner's computer network/server so that anyone that has access to the network, and has authorization, may view the system status and receive alarm condition email alerts.

2. Set-up parameters shall include but not limited to the following:

   a. Automatic Events
   b. Communication
   c. Custom Alarms
   d. Date and Time
   e. Delivery
   f. Devices
   g. Display
   h. Headers
   i. Inventory
   j. Overview
   k. Printers
   l. System
   m. Tank
   n. Tank Chart

G. Email

1. The system shall have the ability to send emails using SMTP protocol in response to any console alarm or at a pre-programmed time.

2. The system shall store email contacts in a system address book.

3. The Contractor shall connect the tank monitoring system to the Owner's server so that it can be accessed by the Owner's employees at desktop computers and so email notifications of alarm conditions can be received.

H. Backup

1. The system shall have the ability to perform database backups and restore via a USB thumb drive.

I. Software Upgrades

1. Remote Software Download

a. The system shall have the ability to perform Remote Software Downloads, where new software is automatically downloaded to the system and stored until activated. Activation shall complete the Software Upgrade process.

2. Thumb Drive Download

a. The system shall have the ability to perform Software Upgrades, where new software is downloaded and activated via a thumb drive to the system. The Owner shall also be able to download the data from the system locally using a thumb drive.

J. Custom Alarms

1. The system shall allow all system alarms to be programmed with a custom message up to 19 characters long. Each Custom Alarm shall have the ability to activate or suppress the console alarm beeper, LED indicators, and be displayed on the GUI and in the Alarm Reports.

K. Favorites

1. The system shall allow commonly used GUI screens to be saved under the Favorite's icon for quick and easy navigation. The system shall allow for editing and deleting of saved locations in Favorites.

2.05 DIAGNOSTICS:

A. All diagnostic information shall be generated by the system itself. The system shall not allow the user to change or enter diagnostic information in any way, except for Density Offset Diagnostic. The system will provide an intuitive online help to assist with diagnostics. The following diagnostic information shall be included in the system:

1. Boot-up

a. The system shall include built-in Boot-up diagnostics, which will display where in the sequence the console is currently at.

2. System

a. System Diagnostics shall include: Module, RS-232, and power reset history.

b. Module Diagnostics shall display the hardware configuration to include board serial number and firmware revision.

c. RS-232 Communication monitoring to include bytes transmitted/ received, parity errors, overruns, and framing errors.

d. Power Reset history will monitor when the console was powered down and up.

3. Probe

a. Probe diagnostics shall include probe type, serial number, probe length, factory calibrations, probe options, and communication status.

4. Tank Test

a. Tank Test shall include test results for both SLD and CSLD.

1) <u>SLD</u>

I. SLD diagnostics shall include the following: In-Progress, Last Test, and History

i. In Progress shall display current test status, test type, test result, start time, start volume, leak rate, and threshold.

ii. Last Test shall display the start date and time, test results and reason if the test did not pass for the previous SLD test.

iii. History shall display all previous test results with start date and time, test results, duration, leak rate, tank volume, and %volume.

II. SLD diagnostics shall include the ability to perform a manual tank test.

2) <u>CSLD</u>

I. CSLD diagnostics shall include Test Status, Rate Test, Rate Table, and CSLD State Changes.

i. Test Status shall display the current status of the CSLD test and how long the test has been in the current status.

ii. The Rate Test shall display the overall status of the CSLD tank test based on an evaluation of all CSLD test results stored in the Rate Table. This diagnostic shall include compensated and uncompensated leak rate, total test time, average volume during tests, total count of test records and count of acceptable test records.

iii. Rate table shall store the previous 28 days or 80 test results. The rate table shall display the date and time of the test, leak rate, temperature readings of the fuel and ambient air in the tank, the evaporation rate in the tank, the volume of the last delivery and test interval.

iv. Monthly shall display any change of state of the status of CSLD. Change of state shall include a failed test, warning, passed test, no data, increase or no idle data.

5. Manual Calibration

a. The system shall have the ability to perform a manual tank calibration by either using a meter drop or meter dispense method, where fuel is either delivered or dispensed from the tank in a controlled measured amounts.

6. Sensor

a. Sensor diagnostics shall display the sensor type, category, and sensor status.

2.06 PRODUCT SPECIFICATIONS/CAPACITIES:

A. Console

1. The console shall be of a modular design that allows for the installation and expansion of console hardware and additional optional features in the future. The console shall support up to twelve intrinsically safe wiring ports, two high-power dry contacts, one low voltage external input and up to three communication devices (five ports).

2. The console shall be equipped with 7-inch Full WVGA LCD touch screen display with an aspect ratio of 16:9, for on-site viewing of information, programming, operating and reporting functions. The touch screen shall be self-calibrating.

3. The front panel shall have three indicators to provide a visual indication of power on, warning and alarm conditions along with an internal audible alarm.
4. The console shall be capable of printing to a USB or network printer. Reports shall be printed in rows/columns format.

5. The console shall be equipped with the ability to communicate directly with an external POS terminal, printing device or PC. The system shall also have the ability to communicate with a remote device via serial, telephone lines, satellite or Ethernet.

6. The system shall store console setup and compliance data in non-volatile memory and have a battery backup for data storage in volatile memory.

7. The console shall be wall mounted using internal mounting holes and be equipped with four 3/4-inch to 1-inch conduit knockouts on the top and the bottom of the monitor for conduit entry into the monitor. One conduit entry (top and bottom) shall be designed for access to the universal module.

8. The overall dimensions shall be 8-inch by 13-inch by 3.5-inch.

9. The console shall have an internal quick-disconnect connector for 120/240 VAC wiring to the console for ease of installation, service and troubleshooting.

10. The console shall have an operational temperature range of 32° F (0° C) to 109° F (40° C) and shall be mounted in an area protected from severe vibrations, humidity, rain, and other conditions that could harm computerized electronic equipment.

11. The overfill alarm with acknowledgment switch shall be the audible horn and flashing light type. The overfill alarm shall be supplied with an alarm acknowledgement switch, and shall be weather proof for outdoor use. Alarm electronics shall be capable of operating from -40 degrees F. The alarm and acknowledgement switch shall be as manufactured by Veeder-Root, of Simsbury, Connecticut, or approved equal.

12. Remote alarms shall also be provided as indicated on the drawings.

13. Two tank stick gauges shall be provided to manually monitor each tank (one per tank).

B. Modules

1. The tank monitoring system shall incorporate a modular design to allow the factory installation of system features to meet specific application requirements, as well as field installation/modification of features at a later date to meet changing business, environmental compliance or regulatory requirements.

2. Universal Sensor Input Output Module (USMIO)

    a. Shall support probes and sensors up to:

        1) Twelve (12) two-wire; six (6) three-wire inputs.

    b. Shall support two dry contact output relays
    c. Shall support one low voltage inputs (<=12Vdc)

3. The system shall have the ability to contain up to five modules. The modules shall consist of standard communication and optional communication modules.

4. Standard Communication Modules shall include:

    a. Ethernet interface module: provides connectivity to local and wide area networks

    b. Dual Ethernet interface module: provides connectivity to local and wide area networks (LAN/WAN). Each interface is a separate Ethernet connection providing two distinct networks.

    c. Dual USB interface module: supports USB thumb drive

    d. RS-232 dual interface module: provides two 9-pin D-connectors for data transmission to POS terminal or computer. Supports RS-232, satellite, Electronic Dispenser Interface Module (EDIM).

    e. Optional Communication Modules shall include (Each system can accept up to two optional modules.):

    f. Dual Ethernet interface module: provides connectivity to local and wide area networks (LAN/WAN). This interface is a separate Ethernet connection providing two distinct networks.

    g. Current Loop Dispenser Interface Module (CDIM)

C. Manufacturer's Support/Field Service

1. The manufacturer shall provide technical phone support available to customers from 8:00 a.m. to 7:00 p.m. EST, Monday thru Friday.

2. The manufacturer shall maintain a nationwide field service staff to provide on-site customer support and training, as well as overseeing installation of tank monitoring system by installation contractor. The distributor/contractor field service representative shall be available for on-site training of company maintenance

personnel on installation, programming and troubleshooting of tank monitoring system.

3. The manufacturer shall supply a formal list of all Authorized Distributors and Service Contractors for sales, installation, training and support.

4. The manufacturer shall require and provide mandatory certification training for all of its authorized distributors and service contractors/installers. The certification program shall consist of two certification levels covering installation, setup/operation and service/troubleshooting of the manufacturer's ATG monitoring systems. The manufacturer shall offer re-certification training to keep contractors/installers current with updated information.

D. Manuals

1. The manufacturer shall supply product documentation that addresses the following categories as additional support:

   a. Site preparation and installation instructions
   b. System setup instructions (via on-line help)
   c. System operating instructions (via on-line help)
   d. Individual sensor installation instructions
   e. Probe installation instructions
   f. Individual module installation instructions
   g. Product data sheets
   h. Troubleshooting and repair manuals
   i. Wiring diagrams which include the following:

      1) Identification of all devices and equipment terminals, and all external connection terminal blocks.
      2) All external wiring connections with approved wire colors and circuit designations.
      3) Serial communications manuals

E. System Warranty

1. The tank monitoring system shall be warrantied for a period of one year from date of Substantial Completion. The warranty is to include parts and labor, with all warranty work performed on site by an authorized manufacturer's representative.

F. Warranty Registration and Checkout Form (WRACO)

1. The manufacturer shall require that all ATG monitoring systems be started up by an authorized distributor. The startup shall consist of installation checkout, operation checkout and customer training on use of the equipment.

2. The manufacturer shall supply a WRACO to properly document the site information.

   a. Installation location
   b. Installer
   c. Equipment identification
   d. Tank information
   e. Leak detector information
   f. Start-up distributor information
   g. Customer approval

3. Upon receipt of the WRACO, the manufacturer will initiate the system warranty and input the data into a site database.

4. The manufacturer shall offer Authorized Distributors pre-selected parts kits to service AST monitoring systems.

5. Delivery: the manufacturer shall have the ability to ship tank monitoring systems in three (3) working days from the time that an order is entered into the computerized system to the ship date.

6. ISO-9000: the manufacturer shall maintain an ISO-9001 rating ensuring quality management of design, manufacturing, training and technical documentation.

2.07 LEAK DETECTION AND INVENTORY CONTROL SYSTEM:

A. The following is a summary of leak and inventory control for the fuel oil tank:

1. One (1) magnetostrictive technology type, stainless steel inventory control and in-tank leak testing probe assembly.

2. One (1) annular space liquid sensing probe for interstitial space.

3. The annular space liquid sensing probe shall be capable of detecting liquids in the interstitial space between tank walls. The probe shall meet NEC, NFPA, and UL requirements for hazardous locations. Probe electronics shall be capable of operating from -20 degrees Celsius to +70 degrees Celsius.

B. Third-Party Certification: the manufacturer shall supply third-party documentation for all products, certifying that performance meets or exceeds EPA requirements.

PART 3 - EXECUTION

3.01 GENERAL:

A. Installation of all equipment shall be in accordance with building codes, and the NFPA, NEC, and NEMA codes. The Contractor shall furnish and install all required conduit sealing fittings, explosion proof accessories, and NEMA Type 7 enclosures where indicated on the Contract Drawings, or where required by Code, or both.

B. The locations shown for instrumentation and control equipment on the Contract Drawings are approximate. The Contractor shall locate the new TLS-4 controller in the location of the existing tank monitoring system panel. All power and control wiring and connections not specifically indicated on the Contract Drawings, but required for the proper operation of equipment shall be made by the Contractor in accordance with these Specifications. All electrical control and instrumentation equipment installed in Class 1 hazardous locations shall be installed in NEMA Type 7 enclosures. Conduits and wire ways leading to and from these areas shall be provided with sealing fittings. All non-conducting metal parts of switches and controls shall be rust-proofed by galvanizing, cadmium plating, baked enamel or by the use of a non-corroding metal. Springs, wherever used, shall be a phosphor bronze.

C. Each leak detection inventory control system shall be installed, programmed and adjusted in accordance with the manufacturer's instructions so that all components function properly. Each overfill alarm and alarm acknowledgement switch shall be programmed and adjusted so that the alarm is activated at 90 percent of the tank capacity, unless noted otherwise.

D. All electrical work for tank gauging, instrumentation and controls shall be by a Connecticut Licensed Electrician.

3.02 TESTING:

A. General: All equipment (hardware and software) shall be factory and field tested to demonstrate that it provides the specified functions.

B. The factory and onsite test procedures shall be submitted to the Engineer for approval prior to starting the actual tests.

C. The onsite testing shall include checking of cables, testing of system subassemblies and checking of connections for each component and for the entire instrumentation and control system.

D. The Contractor shall notify the Engineer in writing that he is ready and desires to start the on-site system testing. The Engineer will authorize start of the testing at a mutually-agreed starting date.

E. Shop Testing: All activating devices, instruments and assemblies furnished under this item shall be set up in the shop of the manufacturer and tested over the full range of the equipment. The equipment shall satisfactorily perform all the functions within the requirements of the Specifications.

F. Field Testing: All instruments and systems shall be field tested to ensure conformance with the Specifications. Control systems shall receive dynamic loop tests which shall conform to the intent of ANSI: MC4.1 (ISA-S26). The control systems and equipment shall include provisions for such testing.

G. Input signals for equipment control shall be simulated for at least five signal values from 0 to 100 percent signal, with corresponding equipment response to be manually recorded, and adjustments made as required. Output signals from the equipment shall be read for at least five signal values from 0 to 100 percent of the meaningful process values, and adjustments shall be made as required.

H. All instruments used for control functions shall be tested with the final elements in the circuit in addition to simulated control methods. The Contractor shall adjust instruments and/or final elements to obtain the best working conditions for a dynamic system. The Specifications and Drawings show the general intent of the work only and not all system components are specified. The Contractor shall provide all materials, equipment, and labor needed to provide a complete and operable and code compliant permitted system, and in accordance with manufacturer recommendations. All components of the system shall be explosion proof as needed.

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.01 WORK INCLUDED:

The Contractor shall make excavations of normal depth in earth for trenches and structures, shall backfill and compact such excavations to the extent necessary, shall furnish the necessary material and construct embankments and fills, and shall make miscellaneous earth excavations and do miscellaneous grading.

1.02 RELATED WORK:

A. Section 01 11 00, CONTROL OF WORK AND MATERIALS

B. Section 01 57 19, ENVIRONMENTAL PROTECTION

C. Section 31 23 19, DEWATERING

D. Section 31 50 00, SUPPORT OF EXCAVATION

E. Section 32 12 00, PAVING

1.03 REFERENCES:

American Society for Testing and Materials (ASTM)

ASTM	C131	Test Method for Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
ASTM	C136	Method for Sieve Analysis of Fine and Coarse Aggregates.
ASTM	C330	Specification for Lightweight Aggregate for Structural Concrete.
ASTM	D1556	Test Method for Density of Soil in Place by the Sand Cone Method.
ASTM	D1557	Test Methods for Moisture-density Relations of Soils and Soil Aggregate Mixtures Using Ten-pound (10 Lb.) Hammer and Eighteen-inch (18") Drop.
ASTM	D2922	Test Methods for Density of Soil and Soil-aggregate in Place by Nuclear Methods (Shallow Depth).

Connecticut Department of Transportation Standard Specification for Highways and Bridges (Form 817).

1.04 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

Samples of all materials proposed for the project shall be submitted to the Engineer for review. Size of the samples shall be as approved by the Engineer.

1.05 PROTECTION OF EXISTING PROPERTY:

A. The work shall be executed in such manner as to prevent any damage to facilities at the site and adjacent property and existing improvements, such as but not limited to streets, curbs, paving, service utility lines, structures, monuments, bench marks, observation wells, and other public or private property. Protect existing improvements from damage caused by settlement, lateral movements, undermining, washout and other hazards created by earthwork operations.

B. In case of any damage or injury caused in the performance of the work, the Contractor shall, at its own expense, make good such damage or injury to the satisfaction of, and without cost to, the Owner. Existing roads, sidewalks, and curbs damaged during the project work shall be repaired or replaced to at least the condition that existed at the start of operations. The Contractor shall replace, at its own cost, existing benchmarks, observation wells, monuments, and other reference points which are disturbed or destroyed.

C. Buried drainage structures and pipes, observation wells and piezometers, including those which project less than eighteen inches (18") above grade, which are subject to damage from construction equipment shall be clearly marked to indicate the hazard. Markers shall indicate limits of danger areas, by means which will be clearly visible to operators of trucks and other construction equipment, and shall be maintained at all times until completion of project.

1.06 DRAINAGE:

A. The Contractor shall provide, at its own expense, adequate drainage facilities to complete all work items in an acceptable manner. Drainage shall be done in a manner so that runoff will not adversely affect construction procedures nor cause excessive disturbance of underlying natural ground or abutting properties.

1.07 FROST PROTECTION AND SNOW REMOVAL:

A. The Contractor shall, at its own expense, keep earthwork operations clear and free of accumulations of snow as required to carry out the work.

B. The Contractor shall protect the subgrade beneath new structures and pipes from frost penetration when freezing temperatures are expected.

PART 2 - PRODUCTS

2.01 MATERIAL:

A. GRANULAR FILL:

Granular Fill shall satisfy the requirements listed in CONN DOT Article M. 02.01-2, Grading A.

B. SAND BORROW:

Sand borrow shall satisfy the requirements listed for fine aggregate in CONN DOT Article M.03.01-2.

C. CRUSHED STONE:

Crushed stone shall satisfy the requirements listed in CONN DOT Article M.02.06, Grading "C".

D. CRUSHED GRAVEL:

Crushed gravel shall satisfy the requirements listed in CONN DOT Article M.02.03 Granular Base.

E. PEASTONE:

Peastone shall be smooth, hard, naturally occurring, rounded stone meeting the following gradation requirements:

Passing 5/8 inch square sieve opening	-	100%
Passing No. 8 sieve opening	-	0%

F. BACKFILL MATERIALS:

1. Class B Backfill:

Class B backfill shall be granular, well graded friable soil; free of rubbish, ice, snow, tree stumps, roots, clay and organic matter; with 30 percent or less passing the No. 200 sieve; no stone greater than two-third (2/3) loose lift thickness, or six inches, whichever is smaller.

2. Select Backfill:

   Select backfill shall be granular, well graded friable soil, free of rubbish, ice, snow, tree stumps, roots, clay and organic matter, and other deleterious or organic material; graded within the following limits:

Sieve Size	Percent Finer by Weight
3"	100
No. 10	30-95
No. 40	10-70
No. 200	0-10

PART 3 - EXECUTION

3.01 DISTURBANCE OF EXCAVATED AND FILLED AREAS DURING CONSTRUCTION:

A. Contractor shall take the necessary steps to avoid disturbance of subgrade during excavation and filling operations, including restricting the use of certain types of construction equipment and their movement over sensitive or unstable materials, dewatering and other acceptable control measures.

B. All excavated or filled areas disturbed during construction, all loose or saturated soil, and other areas that will not meet compaction requirements as specified herein shall be removed and replaced with a minimum 12-inch layer of compacted crushed stone wrapped all around in non-woven filter fabric. Costs of removal and replacement shall be borne by the Contractor.

C. The Contractor shall place a minimum of 12-inch layer of special bedding materials and crushed stone wrapped in filter fabric over the natural underlying soil to stabilize areas which may become disturbed as a result of rain, surface water runoff or groundwater seepage pressures, all at no additional cost to the Owner. The Contractor also has the option of drying materials in-place and compacting to specified densities.

3.02 EXCAVATION:

A. GENERAL:

1. The Contractor shall perform all work of any nature and description required to accomplish the work as shown on the Drawings and as specified.

2. Excavations, unless otherwise required by the Engineer, shall be carried only to the depths and limits shown on the Drawings. If unauthorized excavation is carried out below required subgrade and/or beyond minimum lateral limits shown on Drawings, it shall be backfilled with gravel borrow and compacted at the Contractor's expense as specified below, except as otherwise indicated.

Excavations shall be kept in dry and good conditions at all times, and all voids shall be filled to the satisfaction of the Engineer.

3. In all excavation areas, the Contractor shall strip the surficial topsoil layer and underlying subsoil layer separate from underlying soils. In paved areas, the Contractor shall first cut pavement as specified in paragraph 3.02 B.1 of this specification, strip pavement and pavement subbase separately from underlying soils. All excavated materials shall be stockpiled separately from each other within the limits of work.

4. The Contractor shall follow a construction procedure, which permits visual identification of stable natural ground. Where groundwater is encountered, the size of the open excavation shall be limited to that which can be handled by the Contractor's chosen method of dewatering and which will allow visual observation of the bottom and backfill in the dry.

5. The Contractor shall excavate unsuitable materials to stable natural ground where encountered at proposed excavation subgrade, as required by the Engineer. Unsuitable material includes topsoil, loam, peat, other organic materials, snow, ice, and trash. Unless specified elsewhere or otherwise required by the Engineer, areas where unsuitable materials have been excavated to stable ground shall be backfilled with compacted special bedding materials or crushed stone wrapped all around in non-woven filter fabric.

B. TRENCHES:

1. Prior to excavation, trenches in pavement shall have the traveled way surface cut in a straight line by a concrete saw or equivalent method, to the full depth of pavement. Excavation shall only be between these cuts. Excavation support shall be provided as required to avoid undermining of pavement. Cutting operations shall not be done by ripping equipment.

2. The Contractor shall satisfy all dewatering requirements specified in Section 31 23 19 DEWATERING, before performing trench excavations.

3. Trenches shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes, and depths of cover indicated on the Drawings. Trench widths shall be as shown on the Drawings or as specified.

4. Where pipe is to be laid in bedding material, the trench may be excavated by machinery to, or just below, the designated subgrade provided that the material remaining in the bottom of the trench is not disturbed.

5. If pipe is to be laid in embankments or other recently filled areas, the fill material shall first be placed to a height of at least 12-inches above the top of the pipe before excavation.

6. Pipe trenches shall be made as narrow as practicable and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed.

7. If, in the opinion of the Engineer, the subgrade, during trench excavation, has been disturbed as a result of rain, surface water runoff or groundwater seepage pressures, the Contractor shall remove such disturbed subgrade to a minimum of 12 inches and replace with crushed stone wrapped in filter fabric. Cost of removal and replacement shall be borne by the Contractor.

C. EXCAVATION NEAR EXISTING STRUCTURES:

1. Attention is directed to the fact that there are pipes, manholes, drains, and other utilities in certain locations. An attempt has been made to locate all utilities on the drawings, but the completeness or accuracy of the given information is not guaranteed.

2. As the excavation approaches pipes, conduits, or other underground structures, digging by machinery shall be discontinued and excavation shall be done by means of hand tools, as required. Such manual excavation, when incidental to normal excavation, shall be included in the work to be done under items involving normal excavation.

3. Where determination of the exact location of a pipe or other underground structure is necessary for properly performing the work, the Contractor shall excavate test pits to determine the locations.

3.03 BACKFILL PLACEMENT AND COMPACTION:

A. GENERAL:

1. Prior to backfilling, the Contractor shall compact the exposed natural subgrade to the densities as specified herein.

2. After approval of subgrade by the Engineer, the Contractor shall backfill areas to required contours and elevations with specified materials.

3. The Contractor shall place and compact materials to the specified density in continuous horizontal layers, not to exceed nine (9) inches in uncompacted lifts. The degree of compaction shall be based on maximum dry density as determined by ASTM Test D1557, Method C. The minimum degree of compaction for fill placed shall be as follows:

Location	Percent of Maximum Density
Below pipe centerline	95
Above pipe centerline	92
Below pavement (upper 3 ft.)	95
Embankments	95
Below pipe in embankments	95
Adjacent to structures	92
Below structures	95

4. Compaction testing shall be performed by the by an inspection laboratory designated by the Contractor, engaged and paid for by the Contractor. If test results indicate work does not conform to specification requirements, the Contractor shall remove or correct the defective Work by recompacting where appropriate or replacing as necessary and approved by the Engineer, to bring the work into compliance, at no additional cost to the Owner. All backfilled materials under structures and buildings shall be field tested for compliance with the requirements of this specification.

5. Where horizontal layers meet a rising slope, the Contractor shall key each layer by benching into the slope.

6. If the material removed from the excavation is suitable for backfill with the exception that it contains stones larger than permitted, the Contractor has the option to remove the oversized stones and use the material for backfill or to provide replacement backfill at no additional cost to the Owner.

B. TRENCHES:

1. Bedding as detailed and specified shall be furnished and installed beneath the pipeline prior to placement of the pipeline. A minimum bedding thickness shall be maintained between the pipe and undisturbed material, as shown on the Drawings.

2. As soon as practicable after pipes have been laid, backfilling shall be started.

3. Unless otherwise indicated on the Drawings, select backfill shall be placed by hand shovel in 6-inch thick lifts up to a minimum level of 12-inches above the top of pipe. This area of backfill is considered the zone around the pipe and shall be thoroughly compacted before the remainder of the trench is backfilled. Compaction of each lift in the zone around the pipe shall be done by use of power-driven tampers weighing at least 20 pounds or by vibratory compactors. Care shall be taken that material close to the bank, as well as in all other portions of the trench, is thoroughly compacted to densities required.

4. Class B backfill shall be placed from the top of the select backfill to the specified material at grade (loam, pavement subbase, etc.). Fill compaction shall meet the density requirements of this specification.

5. Water Jetting:

   a. Water jetting may be used when the backfill material contains less than 10 percent passing the number 200 sieve, but shall be used only if approved by the Engineer.

   b. Contractor shall submit a detailed plan describing the procedures it intends to use for water jetting to the Engineer for approval prior to any water jetting taking place.

   c. Compaction of backfill placed by water jetting shall conform to the requirements of this specification.

6. If the materials above the trench bottom are unsuitable for backfill, the Contractor shall furnish and place backfill materials meeting the requirements for trench backfill, as shown on the drawings or specified herein.

7. Should the Engineer order crushed stone for utility supports or for other purposes, the Contractor shall furnish and install the crushed stone as required.

8. In shoulders of streets and roads, the top 12-inch layer of trench backfill shall consist of crushed or uncrushed gravel, satisfying the requirements listed in CONN DOT standard specification M02.04.

9. Subbase shall consist of bank or crushed gravel meeting the requirements of CONN DOT standard specification M.02.02.

D. BACKFILLING ADJACENT TO STRUCTURES:

1. The Contractor shall not place backfill against or on structures until they have attained sufficient strength to support the loads to which they will be subjected. Excavated material approved by the Engineer may be used in backfilling around structures. Backfill material shall be thoroughly compacted to meet the requirements of this specification.

2. Contractor shall use extra care when compacting adjacent to pipes and drainage structures. Backfill and compaction shall proceed along sides of drainage structures so that the difference in top of fill level on any side of the structure shall not exceed two feet (2') at any stage of construction.

3. Where backfill is to be placed on only one side of a structural wall, only hand-operated roller or plate compactors shall be used within a lateral distance of five

feet (5') of the wall for walls less than fifteen feet (15') high and within ten feet (10') of the wall for walls more than fifteen feet (15') high.

3.04 DISPOSAL OF SURPLUS MATERIALS:

A. No excavated material shall be removed from the site of the work or disposed of by the Contractor unless approved by the Engineer.

B. Surplus excavated materials, which are acceptable to the Engineer, shall be used to backfill normal excavations in rock or to replace other materials unacceptable for use as backfill. Upon written approval of the Engineer, surplus excavated materials shall be neatly deposited and graded so as to make or widen fills, flatten side slopes, or fill depressions; or shall be neatly deposited for other purposes as indicated by the Owner, within its jurisdictional limits; all at no additional cost to the Owner.

C. Surplus excavated material not needed as specified above shall be hauled away and disposed of by the Contractor at no additional cost to the Owner, at appropriate locations, and in accordance with arrangements made by it. Disposal of all rubble shall be in accordance with all applicable local, state and federal regulations.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section specifies designing, furnishing, installing, maintaining, operating and removing temporary dewatering systems as required to lower and control water levels and hydrostatic pressures during construction; disposing of pumped water; constructing, maintaining, observing and, except where indicated or required to remain in place, removing of equipment and instrumentation for control of the system.

1.02 RELATED WORK:

A. Section 00 31 43, PERMITS

B. Section 01 57 19, ENVIRONMENTAL PROTECTION

C. Section 31 00 00, EARTHWORK

D. Section 31 50 00, SUPPORT OF EXCAVATION

1.03 SYSTEM DESCRIPTION:

A. Dewatering includes lowering the water table and intercepting seepage which would otherwise emerge from the slopes or bottom of the excavation; increasing the stability of excavated slopes; preventing loss of material from beneath the slopes or bottom of the excavation; reducing lateral loads on sheeting and bracing; improving the excavation and hauling characteristics of sandy soil; preventing rupture or heaving of the bottom of any excavation; and disposing of pumped water.

B. Normal dewatering is defined as using conventional pumps installed in open excavations, ditches, or sumps. Special dewatering is defined as using single or two stage wellpoints, deep wells, or eductor and ejector systems installed in drilled holes or jetted in place.

1.04 QUALITY ASSURANCE:

A. The Contractor is responsible for the adequacy of the dewatering systems. It shall retain the services of a Professional Engineer registered in the state where the project is located, experienced in dewatering systems, to independently evaluate the boring logs and any other soils information available to determine those areas that will require special dewatering techniques and to design the required system. The Contractor's Professional Engineer shall provide sufficient on-site inspection and supervision to assure that the dewatering is carried out in accordance with its design.

B. The dewatering systems shall be capable of effectively reducing the hydrostatic pressure and lowering the groundwater levels to a minimum of 2 feet below excavation bottom, unless otherwise required by the Engineer, so that all excavation bottoms are firm and dry.

C. The dewatering system shall be capable of maintaining a dry and stable subgrade until the structures, pipes and appurtenances to be built therein have been completed to the extent that they will not be floated or otherwise damaged.

D. The dewatering system and excavation support (see Section 31 50 00) shall be designed so that lowering of the groundwater level within the work area does not adversely affect structures, utilities or wells outside of the work area.

E. Where special dewatering is used, the Contractor shall obtain at its expense the services of a registered professional engineer to investigate, design and monitor the dewatering system. The Contractor shall also furnish materials and install at least two observation wells at each excavation area. The location of the wells shall be determined in the field by the Contractor's engineer.

F. Contractor shall pay for and obtain permits for dewatering where required by local, state, and federal regulations.

1.05 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. At least two weeks prior to installing its dewatering system, Contractor shall submit the attached Certificate of Design completed and signed by Contractor, identifying the engineer responsible for design of the dewatering system. It shall also submit a schedule showing the timing of installation and operation of the dewatering system.

B. The Contractor shall submit to the Engineer for record purposes only, the following items bearing the Contractor's Engineer's stamp and signature, and identifying the codes and specifications followed in the design.

1. Plans and description of the dewatering system, including the number, location and depth of wells, wellpoints or sumps; designs of filters to prevent pumping of fine soil; method and location for filtering and disposal of pumped water; and flow capacity of proposed system.

2. Locations of observation wells.

C. The Contractor shall submit records of pump operation and groundwater elevations as required by the Owner's Engineer.

PART 2 - PRODUCTS: NOT APPLICABLE

PART 3 - EXECUTION

3.01 DEWATERING OPERATIONS:

A. All water pumped or drained from the work shall be disposed of in a manner which will not result in undue interference with other work or damage to adjacent properties, pavements and other surfaces, buildings, structures and utilities. Suitable temporary pipes, flumes or channels shall be provided for water that may flow along or across the site of the work. All disposal of pumped water shall conform to the provisions of Section 01 57 19 ENVIRONMENTAL PROTECTION and Section 00 31 43 PERMITS.

B. Dewatering facilities shall be located where they will not interfere with utilities and construction work to be done by others.

C. Dewatering procedures to be used shall be as described below:

1. Crushed stone shall encapsulate the suction end of the pump to aid in minimizing the amount of silt discharged.

2. For dewatering operations with relatively minor flows, pump discharges shall be directed into straw bale sedimentation traps lined with filter fabric. Water is to be filtered through the straw bales and filter fabric prior to being allowed to seep out into its natural water course.

3. For dewatering operations with larger flows, pump discharges shall be into a steel dewatering basin. Steel baffle plates shall be used to slow water velocities to increase the contact time and allow adequate settlement of sediment prior to discharge into waterways.

4. Where indicated on the contract drawings or in conditions of excess silt suspended in the discharge water, silt control bags are to be utilized in catch basins.

D. The Contractor shall be responsible for repair of any damage caused by its dewatering operations, at no cost to the Owner.

3.02 SPECIAL DEWATERING:

A. If conventional dewatering methods are inadequate to ensure dry and stable conditions for structural foundations, the Contractor shall be required to use special dewatering as necessary.

B. Special dewatering techniques may consist of one or two stage wellpoint systems, deep wells, or eductor and ejector type systems. The Contractor shall utilize a system which provides proper construction conditions and prevents settlement at time of installation and upon backfilling.

C. In areas requiring special dewatering, the Contractor shall lower the groundwater level to a minimum of 2 feet below the bottom of the final excavation grade prior to any installation and maintain that groundwater level until the excavation has been backfilled. The Contractor's engineer shall monitor the groundwater levels to ensure conformance with the requirements of these specifications. Construction will not be allowed until the Owner's Engineer is satisfied that the above provisions are met.

3.03 NOISE LEVEL REQUIREMENTS:

A. All primary dewatering equipment shall be electrically operated and shall run on commercial power. Standby equipment shall be independent of commercial power and shall provide dewatering upon primary pump or power failure.

B. All equipment utilized by the Contractor shall conform to local and State noise level regulations.

The Contractor shall construct sound enclosures or utilize other noise reduction techniques if the equipment does not meet the noise level requirements.

END OF SECTION

(Certificate of Design follows this page)

P:\CT\New Milford\24-1730 - Schaghticoke MS - Fuel System Replacement\05-Specifications\Div 31 Earthwork\31 23 19 Dewatering (Long Form).docx

CERTIFICATE OF DESIGN

Re: Contract Between:

OWNER: _____
(Name)

and
CONTRACTOR: _____
(Name)

on
CONTRACT: _____
(Number)

Date: _____

Title: _____

Contractor hereby certifies that _____:
(Engineer)

1. Is licensed or registered to perform professional engineering work in the state of _____;
(Location of Project)

2. Is qualified to design the _____
(Item)
specified in Section _____ of subject contract;

3. Has designed _____ before;
(Item)

4. Has prepared the design in full compliance with the applications and requirements of Section _____ of subject contract including all applicable laws, regulations, rules, and codes; and

5. The work has been signed and sealed pursuant to applicable state law.

FOR: _____
(Contractor)

BY: _____
(Signature)

_____
(Name and Title)

Dated: _____

SECTION 31 50 00

SUPPORT OF EXCAVATION

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This section covers wood and steel sheeting or soldier piles and lagging with internal bracing for support of excavations. The requirements of this section shall also apply, as appropriate, to any methods of excavation support and underpinning which the Contractor elects to use to complete the work.

B. The Contractor shall furnish and place timber or steel sheeting or soldier piles and lagging of the kinds and dimensions required, complying with these specifications, where required by regulation, indicated on the drawings or required by the Engineer.

C. Vibration monitoring shall be provided during installation and extraction of sheeting whenever the braced excavation is adjacent to existing structures, in critical areas as noted in the contract documents, or as requested by the Engineer.

D. Routine monitoring of the in-place excavation support system shall be provided.

1.02 RELATED WORK:

A. Section 31 00 00, EARTHWORK

B. Section 31 23 19, DEWATERING

1.03 QUALITY ASSURANCE:

A. This project is subject to the Safety and Health regulations of the U.S. Department of Labor set forth in 29 CFR, Part 1926, and to the Connecticut Occupational Safety and Health Act (Chapter 571 of the Connecticut General Statutes). Contractors shall be familiar with the requirements of these regulations.

B. The Contractor is responsible for the adequacy of the excavation support system and shall retain the services of a Professional Engineer registered in the State of Connecticut, hereinafter referred to as the "Contractor's Engineer", shall design the required excavation support systems. The Contractor's Professional Engineer shall practice in a discipline applicable to excavation work, shall have experience in the design of excavation support systems and shall design in conformance with OSHA requirements. The Contractor's Professional Engineer shall provide sufficient on-site inspection and supervision to assure that the excavation support system is installed and functions in accordance with its design. Criteria listed herein defining the responsibilities of the Contractor's Professional Engineer are minimum requirements.

1.04 REFERENCES:

The following standards form a part of this specification as referenced herein.

American Society for Testing and Materials (ASTM)

ASTM	A6	General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use
ASTM	A328	Steel Sheet Piling

1.05 SUBMITTALS:

A. At least three weeks before starting installation of the excavation support system, the Contractor shall submit the attached Certificate of Design completed and signed by the Contractor and the Professional Engineer, identifying the Contractor's Professional Engineer who will be responsible for design of the excavation support system, and including, for record purposes only:

1. An overall time schedule for construction of the braced excavation system.

2. A description of the anticipated sequence of construction.

3. Three (3) copies each of:

a. Complete details of braced excavation methods, equipment and sizes and lengths of materials proposed to be used.

b. Details of vibration monitoring devices and reports.

c. Details of the means and methods that will be used in monitoring the integrity of the support system during its entire period of use to insure the safety of the excavation.

d. Complete computations for the design of the braced excavation system bearing the seal of the responsible Professional Engineer duly registered licensed to practice within a discipline applicable to excavation work, in the state where the project is located.

e. Any other pertinent data required for record purposes by the Engineer.

B. Receipt of the information by the Engineer will not relieve the Contractor of the sole responsibility for the adequacy of the braced excavation system, and for assuring that there will be no resulting damage to adjacent pavement, utilities or structures, and for providing safe conditions within the sheeted areas.

C. Further for the record, upon completion of the work of this section, the Contractor shall submit 3 copies of all records of survey, vibration monitoring and inspection of existing structures to the Owner's Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Timber sheeting shall be sound spruce, pine, or hemlock, and either tongue and grooved or splined. Timber sheeting shall not be less than nominal 2-inches thick.

B. Where steel sheet piling is indicated on the drawings or installation is ordered by the Engineer or required by OSHA standards, the material shall be of such size and strength as required by the excavation support design prepared and submitted by the Contractor's Professional Engineer. Steel sheet piling may be new or used material but shall not contain splices, cutouts, patches, or other alterations which would impair its integrity or strength. Steel sheeting shall be an approved standard section, weighing not less than 22 pounds per square foot of wall and conforming to ASTM A6 and A328.

C. Where soldier piles and lagging are used, the steel piles shall conform to ASTM A6, and the lagging shall meet the requirements for timber sheeting, as defined above.

D. Timber and steel used for bracing shall be of such size and strength as required in the excavation support design prepared and submitted by the Contractor's Professional Engineer. Timber or steel used for bracing shall be new or undamaged used material which does not contain splices, cutouts, patches, or other alterations which would impair its integrity or strength.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Work shall not be started until all materials and equipment necessary for construction are either on the site of the work or satisfactorily available for immediate use as required.

B. The sheeting/lagging shall be sufficiently tight to minimize any resulting lowering of the groundwater level outside the excavation, as required in Section 31 23 19, DEWATERING.

C. The sheeting/piling shall be driven by approved means to the design elevation. No ends or edges of sheeting/piling shall be left exposed in a manner which could create a possible hazard to safety of the public or a hindrance to traffic of any kind.

D. If boulders or very dense soils are encountered, making it impractical to drive a sheeting/piling section to the desired depth, the section shall be treated as directed by the Contractor's Engineer.

E. Within seven days of completing the initial installation of the earth support system, the Contractor shall submit a certification from its Professional Engineer, stating that the excavation support system as installed is in general compliance with the design or approved modifications thereto.

F. The sheeting/piling shall be left in place where indicated on the drawings or required by the Engineer in writing. At all other locations, the sheeting/piling may be left in place or salvaged at the option of the Contractor. Wood or steel sheeting/piling permanently left in place shall be cut off at a depth of not less than two feet below finish grade unless otherwise required.

G. All cut-off material are the property of the Contractor and shall be promptly removed by it from the site.

H. The satisfactory construction and maintenance of the excavation support system, complete in place, shall be the responsibility of the Contractor.

I. The Contractor shall be responsible for promptly repairing all damage to adjacent structures caused by the installation, performance, or removal of the excavation support system.

END OF SECTION

CERTIFICATE OF DESIGN

RE: Contract between
OWNER: _____
(Name)
and
CONTRACTOR: _____
(Name)
on
CONTRACT: _____
(Title)

_____
(Number) (Date)

The undersigned hereby certify that the engineer listed below:

1. Is a licensed or registered to perform professional engineering work in the State of Connecticut.

2. Is qualified by education and training to design the _____

   specified in Section _____ of subject contract;

3. Has previously designed comparable excavation support systems;

4. Has prepared the design in full compliance with the requirements of subject contract, including all applicable laws, regulations, rules, and codes; and

5. Will inspect and supervise installation of the excavation support system and will monitor the in-place system to confirm that the system is installed and functions in accordance with the design.

CONTRACTOR	ENGINEER
By:_____ (Signature)	By:_____ (Signature)
_____ (Name)	_____ (Name)
_____ (Title)	_____ (Engineering Discipline)
_____ (Date)	_____ (Date)

SECTION 32 12 00

PAVING

PART 1 - GENERAL

1.01 WORK INCLUDED:

The Contractor shall furnish all labor, materials and equipment and shall replace the pavements as indicated on the drawings and as herein specified.

1.02 RELATED WORK:

A. Section 01 14 19.16, DUST CONTROL

B. Section 31 00 00, EARTHWORK

D. Section 33 39 13, PRECAST MANHOLES AND CATCH BASINS

1.03 SYSTEM DESCRIPTION:

A. GENERAL

The types of pavement systems to be utilized on this project are as follows:

TYPE 1. TEMPORARY TRENCH PAVEMENT
TYPE 2. PERMANENT TRENCH PAVEMENT
TYPE 3. VEHICULAR BITUMINOUS CONCRETE PAVEMENT

PAVEMENT SCHEDULE

B. TYPE 1. TEMPORARY TRENCH PAVEMENT

Areas shall be paved with temporary trench binder course pavement, 2-inches thick, as soon as practicable after installation of individual pipeline segments. Temporary pavement shall be maintained a minimum of 90 days prior to installation of permanent pavement. This may require that the temporary pavement be maintained until the following year, at which time the permanent pavement shall be installed.

C. TYPE 2. PERMANENT TRENCH PAVEMENT

Areas shall be milled 12 inches horizontally beyond the limits of temporary trench pavement to a depth of 1 ½ inches and overlaid with top course pavement. Trench course thicknesses shall match existing pavement adjoining trenches. Minimum thicknesses are designated in the contract drawings. Top courses shall be HMA S0.5, a minimum of 1 ½ inches thick, and placed in one lift to the lines and grades shown on the plans, or as required by the Engineer. Binder courses shall be HMA S1.0 and a minimum of 3 ½

inches thick. Permanent pavement shall be installed only with the approval of the Engineer. Processed aggregate and subbase shall not include any recycled materials.

D. TYPE 3. VEHICULAR BITUMINOUS CONCRETE PAVEMENT

Areas of pavement shown on the plans shall match existing pavement in area to the maximum extent practicable. Minimum thicknesses are designated in the contract drawings. Top courses shall be HMA S0.5, a minimum of 1 ½ inches thick, and placed in one lift to the lines and grades shown on the plans, or as required by the Engineer. Binder courses shall be HMA S1.0 and a minimum of 3 ½ inches thick. Permanent pavement shall be installed only with the approval of the Engineer. Processed aggregate and subbase shall not include any recycled materials.

1.04 REFERENCES

The following standards form a part of these specifications and indicate the minimum standards required:

American Society for Testing and Materials (ASTM)

ASTM D1557 Test for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 Pound Rammer and 18-Inch Drop

State of Connecticut Department of Transportation (CT DOT)

Form 819 Standard Specifications for Roads, Bridges and Incidental Construction

1.05 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

Six sets of complete job mix formula shall be submitted to the Engineer at least two weeks before any of the work of this section is to begin.

PART 2 - PRODUCTS

2.01 GRAVEL SUBBASE:

A. Gravel subbase shall consist of inert material that is hard durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials.

B. Gradation requirements for gravel subbase shall be as specified in CONN DOT Article M.02.03 Granular Base.

2.02 BITUMINOUS CONCRETE PAVEMENT:

A. Bituminous concrete pavements shall consist of HMA S0.5 and HMA S1.0 for Traffic Level 2.

B. Bituminous concrete mixtures shall be within the composition limits of base courses, binder courses, wearing courses and surface treatment, in accordance with Article M.04.02 Mix Design and Job Mix Formula.

C. The joint sealant shall be a hot poured rubberized emulsified asphalt sealant, meeting the requirements of Article M.04.01 Joint Seal Material.

D. The tack coat shall be an asphalt emulsion, RS-1, conforming to Article M.04.01 Bituminous Concrete Materials.

2.03 PAVEMENT MARKINGS:

A. Pavement markings shall conform to the requirements of Section 12.09 Painted Pavement Markings.

B. The mixture of the marking material shall be within the composition limits for reflectorized pavement markings as described in the DOT Specifications as follows:

1. Epoxy Resin Pavement Marking – M.07.22

C. Application of the glass beads to be used as reflector material on the striping shall conform to Section 12.09 Painted Pavement Markings and Article M.07.30 Glass Beads.

PART 3 - EXECUTION

3.01 GENERAL:

Paving courses required for the project shall be as shown on the drawings and as specified herein. Pavement thicknesses specified are measured in compacted inches. If a pavement course thickness exceeds 2-1/2 compacted inches, the course shall be installed in multiple lifts with each lift not exceeding 2-1/2 compacted inches in thickness.

3.02 GRAVEL SUBBASE:

A. The gravel subbase to be placed under pavement shall consist of gravel evenly spread and thoroughly compacted. Depths of the subbase shall be as shown on the drawings.

B. The gravel shall be spread in layers not more than 4-inches thick, compacted measure. All layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by ASTM D1557 Method C at optimum moisture content.

3.03 TEMPORARY BITUMINOUS PAVEMENT:

A. Where specified and required by the Engineer and after placement of the gravel base, the Contractor shall place temporary bituminous pavement above the trench, between the edges of the existing pavement. It shall consist of HMA S0.5 Bituminous Concrete

Pavement, 2-inches thick, as shown on the drawings and described herein. Temporary trench pavement on State Road shall comply with CTDOT standards for thickness, material type, base, and construction.

B. The temporary pavement shall be repaired as necessary to maintain the surface of the pavement until replaced by permanent pavement. When so required by the Engineer, the Contractor shall remove the temporary pavement and install or regrade the subbase for installation of permanent pavement.

3.04 PERMANENT BITUMINOUS PAVEMENT:

A. The bituminous paving mixture, equipment, methods of mixing and placing, and the precautions to be observed as to weather, condition of base, etc., shall be in accordance with Section 4.06 Bituminous Concrete.

B. BINDER COURSE (HMA S1.0) PAVEMENT:

1. Immediately prior to installing the base and/or binder course, the trimmed edges shall be made stable and unyielding, free of loose or broken pieces and all edges shall be thoroughly broomed clean. Contact surfaces of trench sides, curbing, manholes, catch basins, or other appurtenant structures in the pavement shall be painted thoroughly with a uniform coating of asphalt emulsion (tack coat), just before any mixture is placed against them.

2. The base and/or binder course shall be repaired as necessary to maintain the surface of the pavement until placement of the permanent overlay. If required, the Contractor shall place a leveling course before placing the permanent overlay.

C. TOP COURSE (HMA S0.5) PAVEMENT:

1. The top course shall be placed over the trench or full width as shown on the drawings or as specified.

2. Prior to placement of the top course, the entire surface over which the top course is to be placed, including against curbs, gutters and castings, shall be broom cleaned and tack coated.

3. Top course pavement placed over trenches may be feathered to meet existing paved surfaces, if approved by the Engineer.

4. Prior to placing full width top course, keyways shall be cut in all intersecting streets.

3.05 PAVEMENT PLACEMENT:

A. Unless otherwise permitted by the Engineer for particular conditions, only machine methods of placing the pavement shall be used. The equipment for spreading and finishing shall be mechanical, self-powered pavers, capable of spreading and finishing

the mixture true to line, grade, width and crown. The mixtures shall be placed and compacted only at such times as to permit proper inspection and checking by the Engineer.

B. After the paving mixtures have been properly spread, initial and intermediate compaction shall be obtained by the use of steel wheel rollers having a weight of not less than 10 tons. Vibratory roller, if used, shall be of a self-propelled type specifically designed for the compaction of bituminous concrete. It shall be equipped with a spread control device and set to prevent the roller from traveling in excess of 2 1/2 mph (220 fpm) while operating in vibratory mode, and 5 mph (440 fpm) while operating in the static mode.

C. Final rolling of the top course or surface treatment pavement shall be performed by a steel wheel roller weighing not less than 10 tons at a mix temperature and time sufficient to allow for final smoothing of the surface and thorough compaction.

D. Immediately after placement of top course or surface treatment pavement, all joints between the existing and new top course or surface treatment pavements shall be sealed with joint sealant.

E. When required by the Engineer, the Contractor shall furnish and install additional paving to provide satisfactory transition for driveways and walkways impacted by a new curb-to-curb pavement installation. The transition installation will be considered incidental to the curb-to-curb pavement installation.

F. Transition sections are required between the existing surface course and a milled surface and any processed aggregate surface being utilized by vehicles.

3.08 ADDITIONAL PAVING:

A. The Contractor shall match existing bituminous concrete pavement thicknesses and sub-base depths. Approximate thicknesses are provided in the Contract Drawings. Contractor shall verify thicknesses in field prior to start of construction and notify engineer if existing pavement thicknesses differ from Contract Drawings. If the Engineer determines that the existing bituminous concrete pavement is thicker than the permanent pavement specified herein, the Contractor may be required to install additional HMA S0.5 bituminous concrete to obtain the depth of the existing pavement.

3.09 PARKING LOTS AND DRIVEWAYS:

A. The Contractor shall match existing pavement thickness and sub-base depth.

B. Adjacent concrete work, slate work, sidewalks, structures, etc., shall be protected from stain and damage during the entire operation. Damaged or stained areas shall be replaced or repaired to equal their original condition.

C. All joints between binder and top course shall be staggered a minimum of 6-inches.

D. Within parking lots and adjoining driveways only, after final rolling, no vehicular traffic of any kind shall be permitted on the pavement until it has cooled and hardened sufficiently to prevent distortion and loss of fines, and in no case in less than 6 hours.

E. Smoothness of all areas of the finished surface shall not vary more than 1/4-inch when tested with a 10 foot straight-edge, applied both parallel to and at right angles to the centerline of the paved area. At building entrances, curbs, and other locations where an essentially flush transition is required, pavement elevation tolerance shall not exceed plus or minus 1/8-inch. Irregularities exceeding these amounts, or which retain water on the surface, shall be corrected by removing the defective work and replacing or repairing it to the satisfaction of the Engineer.

F. Parking lot line painting:

1. Paint for parking lot lines shall conform to Federal Specification TT-P-115-E Type I. Paint shall be 11 3 PPG Industries, Pittsburgh, PA, Series 6 Tneme-Cryl, Tnemec, St. Louis, MO, or approved equal.
2. Contractor shall prepare the pavement surface according to the recommendations of the paint manufacturer.

3. Applied markings shall have clean cut edges, true and smooth alignment and uniform film thickness of 15 mils, + 1.0.

4. The Contractor shall be responsible for removing, to the satisfaction of the Engineer, tracing marks, and spilled paint applied in an authorized area.

3.10 RAISING AND ADJUSTING CASTINGS:

A. In areas of permanent top course paving, existing municipally-owned catch basin and manhole castings and valve boxes shall be raised to the proper grade where required by the Engineer.

B. Castings owned by private utilities shall be raised by their own forces. The Contractor shall be responsible for coordinating this work.

C. The method of adjusting these castings shall be as follows: Cut around catch basin or manhole castings a minimum of 24-inches from casting. Excavate and if required rebuild up to 12-inches of masonry below the bottom of the casting. Backfill with suitable material and compact to bottom of casting. Place high, early strength cement or bituminous concrete collar, as required by the Engineer, to approximately 1½-inches below the raised casting grade.

D. In some areas, raising of castings may not be required. Where required by the Engineer, castings not to be raised shall have at least 12-inches of bituminous concrete pavement chipped and removed around the casting. New bituminous concrete pavement shall be placed and compacted around such castings to approximately 1-1/2-inches below the top of the casting. The overlay course shall then be sloped down to the level of the casting.

E. The method of raising valve boxes shall be as follows: Cut around valve box a minimum of 8-inches from valve box. Excavate as required and raise the valve box. Pour high early strength cement or bituminous concrete collar, as required by the Engineer, to approximately 1-1/2-inches below the top of the valve box.

G. Castings, which need to be raised or adjusted to complete permanent curb to curb paving, shall be done immediately prior to paving.

H. Castings on any milled surface shall be painted for high visibility.

3.11 PAVEMENT MARKINGS:

A. The Contractor shall replace all pavement markings removed or covered-over in carrying out the work, and as required by the Engineer, no sooner than 48 hours after completion of permanent pavement. The markings shall be 4-inches wide, white or yellow, single or double lines as required.

B. When required by the Engineer, the Contractor shall provide painted or plastic temporary markings on temporary pavement at no additional cost to the Owner.

3.12 PAVEMENT REPAIR:

A. If required in the contract or if permanent pavement becomes rough or uneven, permanent pavement patches and trenches shall be repaired and brought to grade utilizing hot-mix asphalt patching methods following completion of the construction.

B. The Contractor performing the work shall use care to avoid overheating the pavement being repaired.

C. Pavement repair shall extend a minimum of 12-inches beyond all edges of the pavement patch to assure adequate bonding at the pavement joints.

END OF SECTION

SECTION 33 05 26.13

TRACER TAPE

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section covers the furnishing, handling and installation of tracer tape, as called for on the drawings.

1.02 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF SECTION 01 33 23 SUBMITTALS, SUBMIT THE FOLLOWING:

A. Manufacturer's literature on the materials, colors and printing specified herein, shall be submitted to the Engineer for review.

B. Tape samples shall also be submitted to the Engineer for review.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

Tracer tape shall be by Reef Industries, Houston, TX; Empire Level, Mukwonago, WI; Pro-Line Safety Products Co., W. Chicago, IL; or approved equal.

2.02 TRACER TAPE:

A. Tracer tape shall be at least 3-inches wide.

B. Tracer tape for non-ferrous pipe or conduit shall be constructed of a metallic core bonded to plastic layers. The metallic tracer tape shall be a minimum 5-mil thick and must be locatable at a depth of 18-inches with ordinary pipe locaters.

C. Tracer tape for ferrous pipe or conduit shall consist of multiple bonded plastic layers. The non-metallic tracer tape shall elongate at least 500% before breaking.

D. The tape shall bear the wording: "BURIED DRAIN LINE BELOW" (with "DRAIN" replaced by "WATER, "SEWER", "ELECTRICAL", "GAS", "TELEPHONE", or "CHEMICAL" as appropriate), continuously repeated every 30-inches to identify the pipe.

E. Tape colors shall be as follows, as recommended by the American Public Works Association (APWA):

Electric	Red
Gas & Oil	Yellow
Communications	Orange
Water	Blue
Sewer & Drain	Green
Chemical	Red (not APWA)

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Tracer tape shall be installed directly above the pipe or conduit it is to identify, approximately 12-inches below the proposed ground surface.

B. The Contractor shall follow the manufacturer's recommendations for installation of the tape, as approved by the Engineer.

END OF SECTION

SECTION 33 56 13

UNDERGROUND FUEL STORAGE TANK

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section covers furnishing and installation of one (1) 12,000-gallon fuel oil. double walled, reinforced fiberglass underground storage tank (UST), anchoring deadmans and hold down straps, water tight containment sumps, locking type grade manholes, fill piping with spill containment (capable of returning product to the UST), vent piping with vent caps, associated double wall fuel piping, and all materials and accessories necessary to make a complete installation ready for use as described herein and as indicated on the Drawings.

B. The Contractor shall furnish the labor, materials, equipment, appliances, services and hauling, and perform operations in connection with the construction and installation of the fuel oil tank installation. Work shall be as herein specified and as denoted on the accompanying Drawings.

1.02 RELATED WORK:

A. Section 00 31 43, PERMITS

B. Section 01 33 23, SUBMITTALS

C. Section 31 23 19, DEWATERING

E. Section 31 00 00, EARTHWORK

F. Section 03 30 00, CAST IN PLACE CONCRETE

1.03 QUALITY ASSURANCE:

A. Installation Contractor shall be certified in writing by the manufacturer. The Contractor shall, prior to any installation, submit copies of such certification to the Local Fire Chief and Building Inspector and to the Engineer.

B. All additional certificates and test reports specified herein shall be submitted to the Engineer.

C. Tank shall be double wall fiberglass, UL labeled, constructed to meet governing standards with certification plate (UL Label) affixed and manufactured in the USA.

D. Tank shall be designed and manufactured of reinforced fiberglass plastic (FRP) or its equivalent in accordance with approved engineering standards and in accordance with the Connecticut State Uniform Fire Prevention, Connecticut UST Regulations, and Building Codes.

E. The tank shall be equipped with an overfill prevention device in accordance with NFPA 30.

F. The Contractor shall notify Owner in advance of setting date of UST for Owner and Engineers to view pre-installation testing and back filling.

G. All underground piping shall be installed with secondary containment.

H. The UST, equipment, and piping materials shall be physically inspected and air tested before being installed. Any defects observed shall be immediately brought to the attention of the Engineer. It shall be the sole responsibility of the Contractor to correct any deficiencies with the manufacture, in strict accordance with manufacturer's' recommendations, at no additional cost to the Owner.

I. The Contractor shall have the responsibility of notifying and coordinating with all local and state officials, including the Local Fire Department and Building Department. The Contractor shall obtain all inspections and permits per Section 00 31 43, and as needed to perform the work. The Contractor shall provide a written site safety plan.

J. The system shall be explosion proof and grounded in accordance with state and manufacturer's requirements.

1.04 REFERENCES:

A. The following standards form a part of this specification and indicate the minimum standards required:

American National Standards Institute (ANSI)

ANSI B1.20.1 General Purpose Pipe Threads

American Society for Testing Materials (ASTM)

ASTM D1248 Polyethylene Plastic Molding and Extension Materials

ASTM D1785 Polyvinyl chloride (PVC) Plastic Pipes, Schedules 40, 80 and 120

ASTM D3299 Filament-wound Glass-Fiber-Reinforced Thermoset Resin Chemical-Resistant Tanks

ASTM D4021-86 Glass Fiber Reinforced Polyester Underground Petroleum Storage Tanks

ASTM A53 Pipe, steel, black and hot-dipped, zinc coated welded and seamless

ASTM D2996	Filament Wound Reinforced Thermosetting Resin in pipe

Underwriters Laboratories, Inc.

UL 1316	Glass fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products.
UL 971	Non metallic pipe and UL Standard 567-89 pipe connections for flammable and combustible LP gas

National Fire Protection Association (NFPA)

NFPA 30	Flammable and Combustible Liquids Code
NFPA 31	Standards for Installation of Oil Burning Equipment
NFPA 70	National Electrical Code

Connecticut

CSFSC	Connecticut State Fire Safety Code
CSFPC	Connecticut State Fire Prevention Code

B. The tank and piping shall be properly installed in accordance with the manufacturer's instructions and either "Petroleum Equipment Institute Publication RP100-90; Recommended Practices for Installation of Underground Liquid Storage Systems" or "American Petroleum Institute Publication 1615-87; Installation of Underground Petroleum Storage Systems." The contractor shall be certified by the tank/equipment manufacturer in writing to install the tank/equipment.

C. Where differences exist between standards, the Contractor shall use the most conservative. If in doubt, describe differences in writing to the Engineer for his approval before performing the work.

D. The codes and standards listed are the latest as of this publication. Codes and standards are continuously updated. The Contractor shall confirm the construction standard edition enforced by the authority having jurisdiction.

1.05 SUBMITTALS: IN ACCORDANCE WITH THE REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. Six (6) complete sets of shop drawings, details, data sheets, and other descriptive drawings and materials as may be required to fully describe the equipment proposed and verify conformance with the contract documents shall be submitted to the Engineer. Drawings shall include all critical dimensions, locations of fittings and accessories, i.e.: man-way, hold-

down straps, secondary containment collar, etc.

B. Shop drawings of the tank(s) by the tank manufacturer including product data sheets and descriptive material for major components to be provided, including proposed hold-down straps.

C. Assembly and installation drawings, including buoyancy calculations demonstrating that concrete deadman and hold-down straps will hold tank in place if tank is completely submerged, and cut sheets/calculations demonstrating that tank, manholes, and piping/appurtenances will be protected from HS-20 live wheel load, stamped by a Connecticut Professional Engineer.

D. Contractor shall submit six (6) copies of manufacturer's literature including six (6) copies of manufacturer's current installation instructions to the Engineer.

E. Contractor shall submit detailed tank top equipment layout sketch, demonstrating where all equipment will be placed. This equipment includes sumps, piping, tank gauging equipment, leak sensors, pumps, valves, fill ports, spill buckets, and piping, etc.

F. Submittals shall be delivered to the Engineer within 10 days of Notice to Proceed. The Engineer shall review the drawings and return them to the Contractor approved, or with appropriate comments, as described in Section 01 33 23 – Submittals Procedures.

G. Contractor shall submit a valid certification from the tank manufacturer showing that the Contractor is a qualified installer trained in accordance with the tank's manufacturer installation requirements and as required for a valid tank warranty.

H. After installation the contractor shall submit the manufacturer's tank installation checklist properly completed by the Contractor and the Owner's representative to the engineer to verify proper installation of the tank. Contractor shall submit to the manufacturer and ensure tank warranty is obtained.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. The 12,000-gallon underground storage tank shall be double-walled reinforced fiberglass, with 42-inch collars, as manufactured by Containment Solutions, Inc., Conroe, Texas; Xerxes Corporation, Minneapolis, Minnesota; or approved equal. Tank shall be UL 1316 listed.

B. Sumps shall be Fiberlite Model S15, 42" sump as manufactured by Fibrelite Corporation, Pawcatuck, CT, OPW or approved equal.

C. Overfill Prevention and Containment Box Assembly: Fibrelite Corporation, Pawcatuck, CT, or approved equal.

D. Primary Product Pipe: Franklin Electric XP Flexible Pipework, Smith Fibercast, Ameron,

or approved equal.

E. Secondary Product Pipe: Franklin Electric XP Flexible Pipework, Smith Fibercast, Ameron, or approved equal.

F. Grade Manholes: Fibrelite Corporation, Pawcatuck, CT, OPW, or approved equal.

G. Island Forms: Universal Valve, Burtco, Inc., or approved equal.

2.02 FUEL OIL STORAGE TANK:

A. Provide one (1) 12,000-gallon double wall fiberglass reinforced plastic underground storage tank (UST) with fittings and accessories as denoted on the Drawings. The UST shall have one 44" diameter manway per Drawings.

B. Loading Conditions: UST shall meet the following Design Criteria:

1. External Hydrostatic Pressure: Buried in ground with seven feet of overburden over the top of the tank. The tank excavation fully flooded and a safety factor of 5:1 against general buckling.

2. Surface Loads: When installed according to manufacturer's installation instructions, tank shall withstand surface HS-20 axle loads. (32,000 lbs./axle).

3. Internal Load: Tank shall withstand 5-PSI air pressure test with 5-to-1 safety factor. Test prior to installation.

4. Tank shall be designed to support accessory equipment as denoted on Drawings when installed according to manufacturer's recommendations and limitations.

C. Tank must be vented, as it is designed for operation at atmospheric pressure only, except for use with vapor recovery systems at a pressure or vacuum of approximately 1-PSI.

D. Tank shall be capable of storing liquids with specific gravity of up to 1.1.

E. Tank shall be capable of storing diesel fuel, gasoline, alcohol blended gasoline oxygenated fuels (up to 20% MTBE), with or without water bottom, at ambient underground temperatures not to exceed 150^{o} F at the tank's interior face.

F. Tank shall be chemically inert to petroleum products.

G. Tank shall be warrantied for 30 years against failure due to internal/external corrosion and, when properly installed, structural failure.

H. Provide glass fiber-reinforced plastic anchor straps for each tank shown. Number and locations of straps shall be as specified by manufacturer. Each strap shall be capable of withstanding the buoyancy load for tank diameter when tank is fully submerged and empty.

I. Threaded fittings on the UL labeled tank shall be of a material of construction consistent with the requirements of the UL label. Fittings to be supplied with cast iron plugs. Standard threaded fittings are 4" in diameter and shall be half couplings. Reducers are to be used for smaller sizes where specified and provided by Contractor. See Drawings for size and locations of fittings.

J. The tank laminate shall consist of granular inert material (silane treated silica) with less than 1 percent moisture content. Pure resin laminate is not acceptable.

K. Nominal capacity of the fuel oil tank shall be 12,000 gallons.
Nominal outside diameter of tank shall be 8 feet.

L. Tank shall have a space between the inner and outer shell walls to allow for the free flow and containment of all leaked fuel from the primary tank. The space will also allow for insertion of a monitoring device through a monitoring fitting.

M. Tank shall have two monitor test fittings, one near each end of the tank. Each test fitting shall consist of a 2-inch NPT fitting on the inner tank wall and a 6-inch NPT fitting directly above on the outer tank wall.

N. An overfill protection float valve shall be installed in the tank.

O. Tank shall be provided with welded reinforced threaded openings or integrally cast flanges for all pipe connections.

P. Tank shall be equipped with a non-metallic striker plate at least 24“ x 24” in area, and at least 1/4-inch thick, and attached to the bottom of the tank under each manway. A 12” x 12” non-metallic striker plate at least 1/4-inch thick shall be placed at the bottom of each opening (other than a manway).

2.03 CONTAINMENT COLLAR

A. Provide fiberglass reinforced plastic secondary containment collar (42”) with fittings and accessories as denoted on the Drawings.

B. Tank Containment Sump:

1. Containment sump assemblies shall be provided over tank manways. The Drawings show the type, number, size, and location of sump assemblies required for each tank. Each containment sump assembly shall be Fibrelite Standard Plus Model Access Chamber, as manufactured by Fibrelite Corporation of Pawcatuck, CT, OPW, Xerxes, or approved equal.

2. Each containment sump assembly shall be constructed of resin transfer molded composite FRP. Each containment sump assembly shall consist of a composite sump, a composite internal sump lid, and an integrated composite manhole cover, frame and skirt over the sump. Each manhole cover, frame, and skirt, shall be sealed to the sump but shall not transfer surface loads from the manhole cover and frame to the sump. Each sump base shall be constructed to facilitate entry of piping and conduit.

3. Each containment sump assembly shall be watertight, with a watertight sump and an integrated watertight manhole cover and frame. Each manhole shall be watertight with an integral seal in the manhole cover to prevent the entry of water when the manhole cover is in the frame. Each sump shall include a removable reservoir for collecting water entering when manhole cover is removed in wet conditions.

4. Each opening in the sump base, including openings for piping and electrical conduits, shall be provided with entry boots that secure the piping or conduit to the sump base. Each entry boot shall fasten entirely from the inside of the sump, and shall be replaceable entirely from the inside of the sump after the sump is installed in the ground. All entry boot kits shall be third party tested for prolonged exposure to petroleum products. All entry boot kits shall be provided by the sump manufacturer.

5. Each containment sump assembly shall include appropriate fittings, adapters, and bonding agents for watertight installation on the sump collar of the fiberglass tank as shown on the Drawings. The containment sump shall be designed for installation on the tank manway cover without compromising the integrity of the sump assembly.

6. Each containment sump assembly shall be tested at different stages of installation to verify the integrity of the sump assembly, including all piping and conduit entry boots, the tank manway, and the manhole cover and frame assembly. This testing method shall be designed for verifying sump integrity after placing of backfill, and when tank top slab is installed and installation is complete. The sump manufacturer shall provide a testing method that employs instruments and procedures that yield reproducible results that will ensure that sump assembly installation is watertight. The sump manufacturer shall provide a factory-trained technician to test the sump.

2.04 MANHOLE ASSEMBLY

A. Manhole cover, frame, and skirt assemblies shall be provided in the tank top slab over tank openings. The Drawings show number, size, and location of manhole assemblies required for each tank top slab. A locking device shall be provided for each manhole. Each manhole assembly shall be a Fibrelite Composite Manhole, as manufactured by Fibrelite Corporation, or approved equal by OPW or Fairfield Industries.

B. Cover: Each manhole cover and frame shall be suitable for use under HS-20 live loads. Frame and cover system shall be cast into the tank concrete cover pad to prevent transference of surface loads to the sump/UST. Where applicable, each cover shall be

provided with a FRP inscription and shall be color-coded to conform to the American Petroleum Institute Color and Symbol Code. The surface resistivity of each cover shall be less than $1x10^{-8}$ Ohms to prevent the buildup of static charge.

C. Frame: Each manhole frame shall be designed so that the manhole cover will fit securely and not spin in the frame. Each frame shall incorporate a physical water check system to prevent surface water from entering the manhole. The frame shall be of composite FRP, flush mounted to grade and water tight.

D. Skirt: Each manhole shall be constructed of fiberglass and colored to match the cover. The skirt shall extend to within two inches of the manhole cover. Each skirt will be supplied with a stabilizer rod kit for concrete installation. The rod kit shall be made of stainless steel.

E. Handle: Each manhole cover lifting handle shall be provided by the sump manufacturer and formed with 1-1/8-inch stainless steel tubing with alloy casting for the key and a plastic grip. Each handle shall include a foot lever tool and a locking tool. A handle shall be furnished for each individual manhole cover.

2.05 SPILL CONTAINMENT FILL BOX ASSEMBLY

A. Below Grade Spill Containment Fill Box Assembly:

1. Spill Containment Fill Box:

a. Below grade spill containment fill box shall be OPW 101BG-2100 series or approved equal, capable of withstanding a 150-psi line test.

b. Spill containment fill box shall have a capacity of no less than fifteen (15) gallons for containment of product spilled during the coupling and uncoupling of the fill hose and all related tank filling operations. Each spill containment fill box shall be provided with an automatic drain, test plug assembly, lockable fill cap, bronze fill adapter, and a No. 20-mesh brass screen.

c. An FRP product ID tag shall be provided with the spill containment fill box and inscribed as follows:

Fuel Oil
12,000-Gallons
Tank No. 1

2. Spill Containment Fill Box Manhole Covers and Frames:

a. Cover: Manhole cover and frame shall be suitable for use under HS-20 live loads. Frame and cover system shall be cast into the tank concrete cover pad to prevent transference of surface loads to the sump/UST. Cover shall be steel, provided with

inscription, and shall be color-coded to conform to the American Petroleum Institute Color and Symbol Code.

b. Frame: Manhole frame shall be designed so that the manhole cover will fit securely and not spin in the frame. The manhole frame shall incorporate a physical water check system to prevent surface water from entering the manhole.

c. Skirt: Manhole skirt shall be constructed of fiberglass and colored to match the cover with which it will be used. The skirt shall extend within two inches of the manhole cover. The skirt will be supplied with a stabilizer rod kit for concrete installation. Rod kit shall be made of stainless steel.

d. Handle: Manhole cover lifting handle shall be provided by the sump manufacturer and formed with 1-1/8-inch stainless steel tubing with alloy casting for the key and a plastic grip. The handle shall include a foot lever tool and a locking tool.

2.06 TANK OVERFILL PREVENTION VALVE

A. Overfill prevention valve shall be provided as shown on the Drawings, and shall be Universal Model 39 as manufactured by Universal Valve, or approved equal.

B. Shut off valves shall be provided to operate in two stages: when product level rises to 95% of tank capacity, the valve mechanism shall close to regulate flow to approximately 5 gpm through a bypass valve. When the tank level rise to 98% of tank capacity, the bypass valve shall close allowing no additional product to enter tank.

C. Shut off valve shall be manufactured with a groove that runs the length of the valve, to allow the gauging stick to enter and exit the tank with no resistance.

D. Shutoff valves shall be completely automatic in operation. There shall be no pre-checks to perform, no resets, and no overrides to be broken.

2.07 TANK FILL PORT DROP TUBE

A. Fill port drop tube shall be equipped with a metal top seal adapter, as manufactured by Universal Valve or approved equal.

B. Fill port drop tube shall extend to within 4” of the tank bottom and shall be equipped with a lockable metal top seal fill cap, as manufactured by Universal Valve or approved equal

2.08 VENT PROTECTOR

A. Vent protector shall have rain cap and insect screen.

B. Minimum free area to be equal to the cross-sectional area of the vent pipe.

C. Screen not to be finer than thirty mesh.

D. Construction: Stainless Steel, threaded

E. Manufacturer: Universal Valve, or approved equal

2.09 GAUGE AND SENSOR MANHOLE

A. Manufacturer: Morrison Bros model 418TM-1200AM as manufactured by Morrison Bros, or approved equal.

B. Manhole shall be equipped with bolt down gasketed seal for cover and stainless steel stabilizer kits.

C. Manhole cover and frame shall be suitable for HS-20 live loads. Frame and cover shall be cast into the concrete cover pad to prevent transference of surface loads to the sump/UST.

D. Manhole cover system shall meet same general requirements of the spill containment fill box assembly.

2.10 TANK FITTINGS AND ACCESSORIES

A. A 2-inch diameter pipe shall be provided in the secondary vessel to mount monitoring probe for tank leak detection.

B. Lifting lugs of adequate size and capacity shall be provided.

C. The tank shall be supplied with hold down straps and isolation pads with sizes and quantities per manufacturer's recommendation.

2.11 PIPING SYSTEM:

A. Buried 2 inch inside diameter suction/supply and return piping be double wall, UL 971A & 1369 listed for use both below ground and above ground, and conform to NFPA Standard No. 30. Supply and return piping shall be Brugg Flexwell, OmegaFlex DoubleTrac, or approved equal. A flexible connector shall be installed at locations where piping changes direction from horizontal to vertical, in accordance with regulations and manufacturers recommendations.

B. Pipe and fittings that are not buried or part of the double wall piping system described above shall be steel or malleable iron. Pipe joints shall be threaded pipe and fitting threads and shall conform to ANSI B1.20.1.

C. All fittings shall be Schedule 80, minimum.

D. Brass seated unions shall be installed where deemed necessary by the Engineer for future

maintenance and repairs.

E. Vent pipes shall be installed as shown on the drawings. Underground vent pipes shall be single walled FRP piping. They shall be not less than 1-1/4-inches or less than the fill pipe in diameter, and shall be carried up to a point not less than 12 feet above the ground level at the filling point of the tank, shall terminate not less than 5 feet from any door or window opening, and shall be fitted with an approved weather hood screened with noncorrosive wire not coarser than 30 mesh.

F. All metallic piping, fittings, and valves used in connection with approved nonmetallic piping, fittings, and valves shall be grounded in accordance with local and state regulations, and manufacturer's recommendations.

2.12 ACCESSORIES:

A. An electric level gauge and monitoring system shall be provided for each tank, with remote reading located as shown on the drawings, and in Section 28 40 00, Tank Gauging, Instrumentation and Control.

B. A 20-foot hardwood dipstick shall be provided for each tank/compartment for local level readings.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. The tank shall be installed in accordance with manufacturer's recommendations and in accordance with Federal, State, and local regulations. The contractor shall be certified by the tank/equipment manufacturer in writing, and shall have all appropriate licenses, qualifications necessary to perform the work. Tank systems shall be H-20 wheel load rated.

B. The double-walled fuel piping shall be laid on a constant minimum slope of 0.01 feet per foot toward the tank. The containment pipe shall be installed on firm, compacted sand or manufacturer approved backfill with a minimum depth of cover, as shown on the drawings. The Contractor shall exercise the necessary precautions to prevent accumulation of dirt or trash in the pipe during the course of construction. Pipe systems shall be H-20 wheel load rated.

C. Monitoring systems shall be installed as indicated in Section 28 40 00, Tank Gauging Instrumentation and Controls.

D. Contractor shall be responsible for paying for and obtaining all necessary permits and approvals necessary for a complete and operable system.

E. After initial installation of the tank, the tank installation checklist supplied by the manufacturer must be properly completed by the Contractor and the Owner's representative.

The contractor shall provide the Owner and Engineer with a copy of the completed checklist to verify proper installation of the tank. Contractor shall submit to the manufacturer and ensure tank warranty is obtained.

F. Contractor shall install and test underground storage tank, piping, sumps, equipment, and all applicable appurtenances in accordance with Connecticut UST Regulations and shall provide the Owner with all certifications, as built plans, and other documentation as necessary to meet record keeping and registration requirements outlined in the code.

3.02 TESTS:

A. Prior to backfilling, the tank and piping shall be inspected for damage, external defects, and tightness by the Contractor in accordance with the Connecticut State Fire Codes.

B. Tank and pipe testing shall be performed in accordance with the Connecticut State Fire Codes, which includes tank and piping testing following installation, backfilling and all surfacing to grade work. Testing shall be approved by the head of the local fire department.

C. In addition to the tank and pipe testing by the Contractor, the Contractor shall be responsible for hiring a third party inspector, approved for such inspections by the Connecticut, to inspect the UST and associated piping and submit the necessary documentation to the Fire Department, Building Department, and the DEEP in accordance with Connecticut State Codes.

D. The tank shall be tested by air pressure at not less than 3 pounds per square inch (psi) and not more than 5 psi before concealment.

E. The piping shall be tested hydrostatically or by air pressure to 150 percent of the maximum anticipated pressure of the system but not less than 50 psig at the highest point of the system.

F. All equipment necessary to perform the required tests shall be furnished by the Contractor. Contractor is responsible for coordinating the testing with the fire department and obtaining necessary approval to allow the system installation and operation.

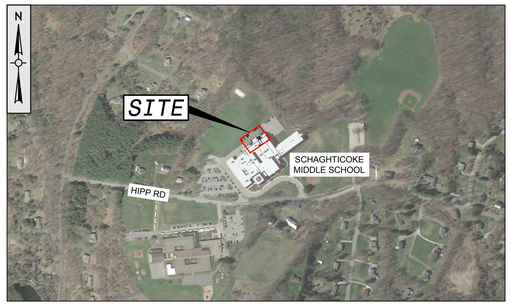
3.03 All manhole and gauge/sensor manhole covers shall be API color coded.

END OF SECTION

NEW MILFORD PUBLIC SCHOOLS
SCHAGHTICOKE MIDDLE SCHOOL
NEW MILFORD, CT

UNDERGROUND STORAGE TANK REPLACEMENT PROJECT

23 HIPP RD
NEW MILFORD, CT 06776



LOCUS MAP
SCALE: 1"=500'

DRAWING INDEX

SHEET NO.	DRAWING NO.	TITLE
1	C000	COVER SHEET
2	C101	UST REPLACEMENT PLAN
3	C201	UST DETAILS

Weston & Sampson SM
Weston & Sampson Engineers, Inc.
712 Brook St, Suite 103
Rocky Hill, CT 06067

Project:
UNDERGROUND STORAGE TANK REPLACEMENT PROJECT

SCHAGHTICOKE MIDDLE SCHOOL
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NEW MILFORD, CT 06776

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Consultants:

Seal:
STATE OF CONNECTICUT ROBERT J. CLARK No. 18567 PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

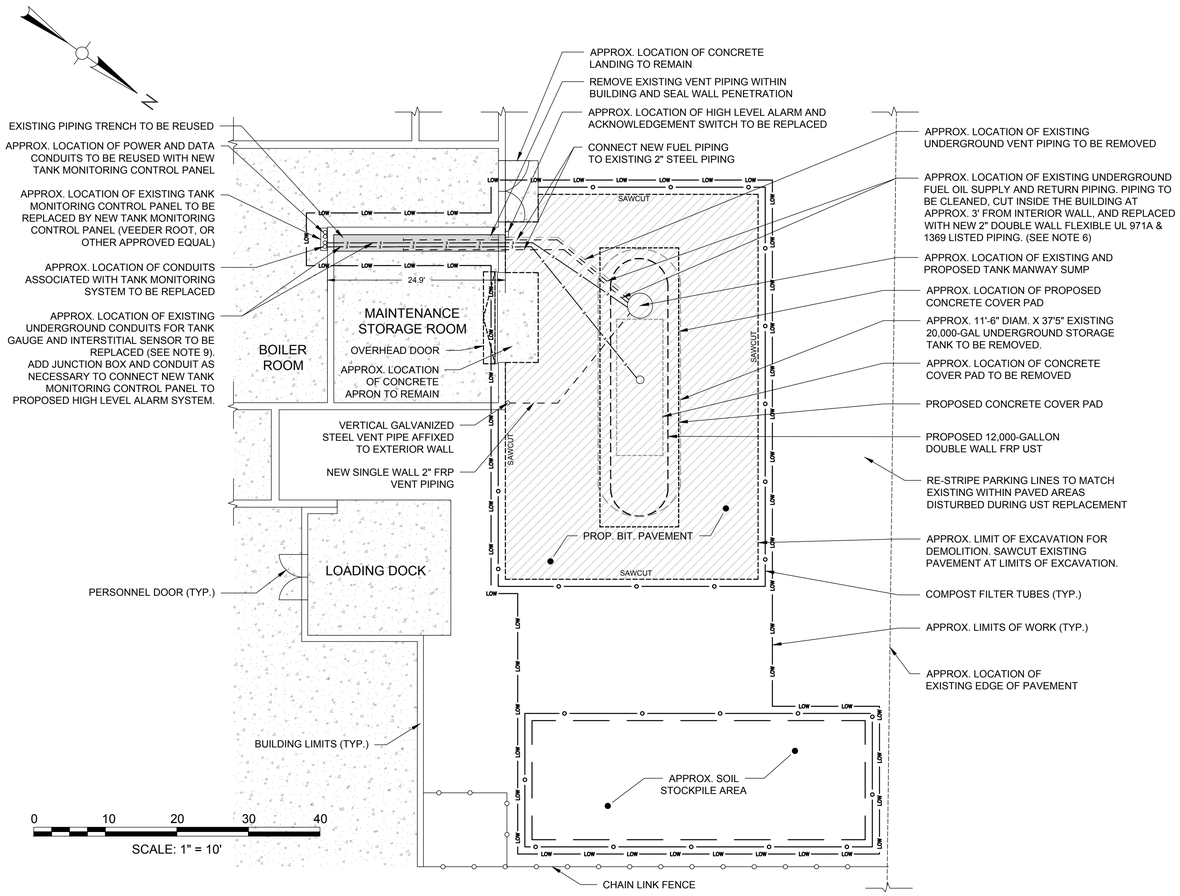
Issued For:

SCALE: AS NOTED

Date:	APRIL 18, 2025
Drawn By:	NCH
Reviewed By:	ZDW
Approved By:	RJC
W&S Project No:	ENG24-1730

Drawing Title:
COVER SHEET

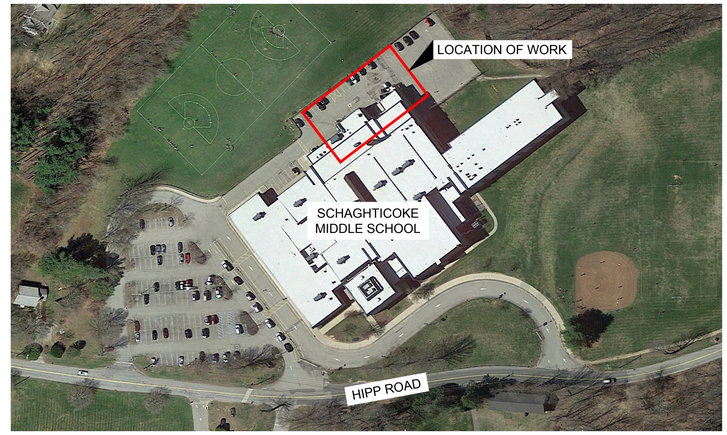
Sheet Number:
C000



1 UST REPLACEMENT PLAN LAYOUT
SCALE: 1"=10'

UST REPLACEMENT NOTES:

1. THIS SITE PLAN HAS BEEN PREPARED IN ACCORDANCE WITH FIELD MEASUREMENTS TAKEN BY WESTON & SAMPSON ON JANUARY 10, 2025.
2. UNDERGROUND STORAGE TANK (UST) REMOVAL TO INCLUDE (1) 20,000-GALLON UST, TANK CONCRETE COVER PAD, SUMPS, PIPING AND ASSOCIATED CONDUITS.
3. THE LOCATION OF EXISTING PIPES, CONDUITS, UTILITY SERVICES OR OTHER UNDERGROUND STRUCTURES IS NOT WARRANTED TO BE CORRECT, NOR IS IT WARRANTED THAT ALL UNDERGROUND PIPES OR STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL HAVE NO CLAIM ON THAT ACCOUNT SHOULD THEY BE OTHER THAN THAT SHOWN, AND SHALL PERFORM TEST PITTING AS NECESSARY TO LOCATE THESE ITEMS.
4. THE CONTRACTOR SHALL SUBMIT ONLINE AT WWW.CBYD.COM OR CALL "CALL BEFORE YOU DIG" (CBYD) AT 1-800-922-4455 OR 811 AT LEAST 72 HOURS, SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO GROUND DISTURBANCE AT ANY LOCATION. A COPY OF THE (CBYD) PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE OWNER AND ENGINEER PRIOR TO EXCAVATION.
5. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING AND MONITORING DAMAGES TO ADJACENT VEGETATION, STRUCTURES, PAVED AREAS, CURBING AND SIDEWALKS. ANY DAMAGE OR DISTURBANCE SHALL BE RESTORED TO ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
6. CONTRACTOR SHALL HAVE A LICENSED ELECTRICIAN MAKE SYSTEM SAFE FOR DISCONNECT AND REMOVAL OF ASSOCIATED WIRING AND CONDUITS PRIOR TO REMOVAL.
7. CONTRACTOR SHALL PLACE ADDITIONAL EROSION/SEDIMENTATION CONTROL MEASURES BEYOND WHAT IS SHOWN (COMPOST FILTER TUBES) IF NECESSARY TO CONTROL SEDIMENTATION WITHIN THE LIMIT OF WORK.
8. CONTRACTOR SHALL REMOVE AND DISPOSE OF THE UST SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 02 65 00 - REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING UST COVER PAD.
9. CONTRACTOR SHALL REMOVE AND DISPOSE OF TANK MONITORING SYSTEM COMPONENTS, INCLUDING PROBES, CABLING, AND ALL CONDUIT THAT ARE NOT BEING REUSED FOR POWER, AND SHALL PATCH ANY HOLES IN MASONRY WITH MORTAR.
10. CONTRACTOR'S CT LICENSED ELECTRICIAN SHALL IDENTIFY EXISTING DATA CONDUITS BETWEEN EXISTING UST AND TANK MONITORING SYSTEM. ALL BELOW GROUND PORTIONS, ABOVEGROUND PORTIONS, AND WIRING WITHIN THESE CONDUITS SHALL BE REMOVED AND REPLACED. NEW CONDUITS SHALL BE 1" GALVANIZED RIGID METAL STEEL CONDUIT FOR ABOVEGROUND AND 1" SCH 80 PVC FOR UNDERGROUND. WIRING SHALL BE SELECTED AND INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH CT ELECTRICAL AND BUILDING CODES, AND LOCAL AUTHORITY HAVING JURISDICTION.
11. CONTRACTOR SHALL ASSIST ENGINEER WITH COLLECTION OF CONFIRMATORY SAMPLES FROM THE UST AND FUEL PIPE EXCAVATIONS. BACKFILL OR ANY OTHER WORK WITHIN THESE EXCAVATIONS SHALL NOT PROCEED UNTIL APPROVED BY THE ENGINEER.
12. ENGINEER AND OWNER MAY DETERMINE EXCAVATION OF PETROLEUM-IMPACTED SOIL IS REQUIRED. AS NECESSARY, A CT-PERMITTED SPILL CLEANUP CONTRACTOR SHALL EXCAVATE AND STOCKPILE CONTAMINATED SOIL PER ENGINEER DIRECTION AND IN ACCORDANCE WITH SECTION 02 61 13 - EXCAVATION AND STOCKPILING OF CONTAMINATED MATERIALS. CONTRACTOR SHALL TRANSPORT AND DISPOSE OF CONTAMINATED SOIL IN ACCORDANCE WITH SECTION 02 61 00 - TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATION AND BACKFILL FOR THE REMOVAL AND DISPOSAL OF UST, EXISTING FUEL PIPES, AND CONDUITS ASSOCIATED WITH THE UST REMOVAL.
14. CONTRACTOR SHALL DRAIN FUEL LINES OR OTHERWISE IMPLEMENT SPILL CONTROL MEASURES TO PREVENT FUEL SPILLING FROM PIPING DURING REMOVAL AND INSTALLATION OF FUEL PIPING.
15. NEW PAVEMENT AND CONCRETE UST COVER PAD SHALL MATCH EXISTING GRADES AND SHALL NOT DISRUPT STORMWATER FLOW OR RESULT IN PONDING IN THE RESTORED AREA.
16. UST, PIPING, CONDUIT, AND ALL APPURTENANCES SHALL BE INSTALLED TO MEET H20 WHEEL LOAD RATING AND MANUFACTURER'S REQUIREMENTS.
17. CONTRACTOR SHALL COORDINATE WITH NEW MILFORD PUBLIC SCHOOLS TO LIMIT DISRUPTION TO SCHOOL OPERATIONS AND SHALL PROVIDE A SCHEDULE OF ALL ANTICIPATED WORK.
18. ANY DISCREPANCIES OR CONFLICTS BETWEEN THE DRAWINGS AND EXISTING CONDITIONS, EXISTING CONDITIONS TO REMAIN, TEMPORARY CONSTRUCTION AND PERMANENT CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE PROCEEDING. ITEMS ENCOUNTERED IN AREAS OF EXCAVATION THAT ARE NOT INDICATED ON THE DRAWINGS, BUT ARE VISIBLE ON SURFACE, SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE REMOVED AT NO ADDITIONAL COST TO THE OWNER AFTER APPROVAL.
19. ALL BIDDERS ARE REQUIRED TO INSPECT THE PROJECT SITE IN ITS ENTIRETY PRIOR TO SUBMITTING THEIR BID, AND BECOME FAMILIAR WITH ALL CONDITIONS THAT MAY AFFECT THEIR BID. CONTRACTOR AND SUB-CONTRACTOR SHALL BE FAMILIAR WITH ALL DRAWINGS AND SPECIFICATIONS PRIOR TO COMMENCING THE CONSTRUCTION.



2 AERIAL - SITE LOCATION
SCALE: N.T.S.

PHOTO 1
EXISTING 20,000-GAL. UST

PHOTO 2
EXISTING TANK MANWAY SUMP

REPLACE EXISTING VALVES IN KIND. CONTRACTOR SHALL SUBMIT PRODUCT AND LAYOUT SKETCH TO ENGINEER PRIOR TO INSTALLATION.

PHOTO 3
EXISTING TANK MANWAY SUMP AND UST SYSTEM PIPING

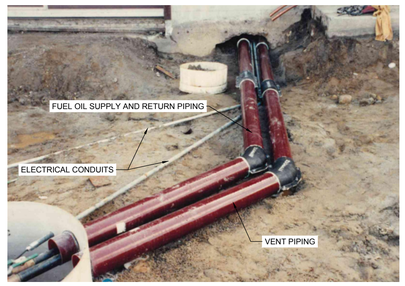
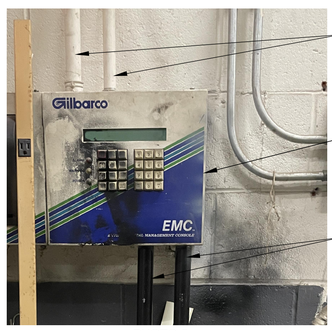


PHOTO 4
EXISTING UST SYSTEM PIPING AND CONDUIT



REUSE EXISTING ELECTRICAL CONDUITS FOR POWER AND DATA LINES TO NEW TANK MONITORING CONTROL PANEL

EXISTING TANK MONITORING CONTROL PANEL TO BE REPLACED

REPLACE EXISTING CONDUITS TO TANK AREA FOR TANK GAUGE, INTERSTITIAL/SUMP SENSORS, AND HIGH LEVEL ALARM.

PHOTO 5
EXISTING TANK MONITORING SYSTEM

3 EXISTING CONDITIONS PHOTOS
SCALE: N.T.S.

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STATE OF CONNECTICUT ROBERT J. DARR No. 18556 LICENSED PROFESSIONAL ENGINEER

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UST REPLACEMENT PLAN

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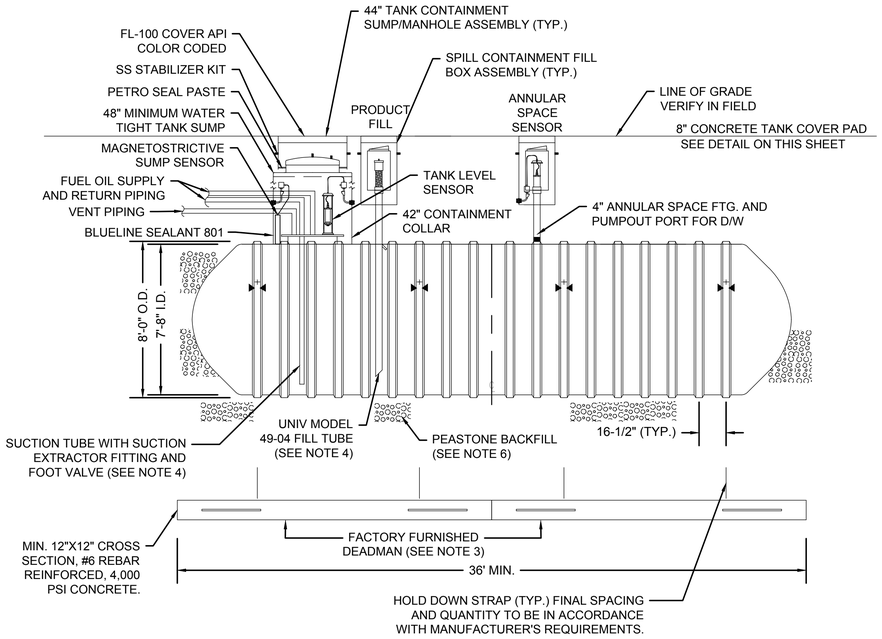
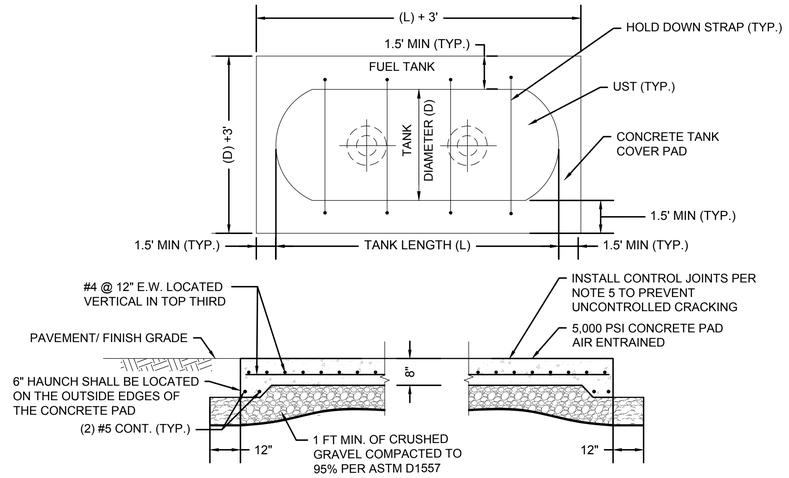
C101



NOTES:

1. TANK SHALL HAVE 3'-6" MIN. COVER IN RELATION TO THE LOWEST SURFACE ELEVATION ABOVE THE TANK.
2. CONTRACTOR SHALL PROVIDE UNDERGROUND STORAGE TANK IN A WORKMAN LIKE MANNER AND SHALL PROVIDE A COMPLETE AND OPERABLE SYSTEM.
3. CONTRACTOR SHALL PROVIDE DEADMAN(S) AND STRAPS TO HOLD DOWN TANK IN ACCORDANCE WITH SECTION 33 56 13 AND THE MANUFACTURER'S RECOMMENDATIONS.
4. FILL AND SUCTION TUBES SHALL EXTEND TO WITHIN 4" OF THE TANK BOTTOM.
5. TANK VENT SHALL BE ROUTED TO BUILDING AS SHOWN ON C101.
6. TANK SHALL BE BEDDED IN AND WRAPPED ALL AROUND WITH 1 FOOT MINIMUM OF PEA STONE BACK FILL, OR OTHER MANUFACTURER-APPROVED BACK FILL, PER MANUFACTURER'S REQUIREMENTS, ALL THE WAY UP TO DENSE GRADED CRUSHED STONE LAYER BELOW UST COVER PAD. DEPTH OF BEDDING BELOW TANK SHALL BE ADJUSTED TO 18" MINIMUM FOR WET HOLE INSTALLATION, AS APPLICABLE, AND PER MANUFACTURER'S REQUIREMENTS. BOTTOM AND SIDES OF EXCAVATION SHALL BE WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC MEETING TANK MANUFACTURER'S INSTALLATION REQUIREMENTS.
7. CONTRACTOR SHALL DE-WATER THE EXCAVATION AS SPECIFIED.
8. CONTRACTOR TO PROVIDE EXCAVATION SUPPORT FOR CONSTRUCTION OF UST IN ACCORDANCE WITH SECTION 31 50 00 - SUPPORT OF EXCAVATION.
9. SPILL CONTAINMENT FILL AND ANNULAR SPACE SENSOR MANHOLE, SHALL BE SUPPLIED WITH H-20 RATED STEEL OR CAST IRON COVERS.
10. TANK CONTAINMENT SUMP/MANHOLE ASSEMBLY FRAME INSIDE DIAMETER SHALL BE WIDER THAN CONTAINMENT COLLAR TO ENSURE THAT NO VEHICLE LOADS ARE DISTRIBUTED ONTO THE COLLAR/TANK.

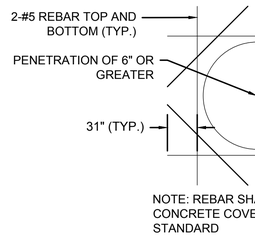
1 PROPOSED 12,000-GALLON FIBERGLASS FUEL OIL TANK
SCALE: N.T.S.



NOTES:

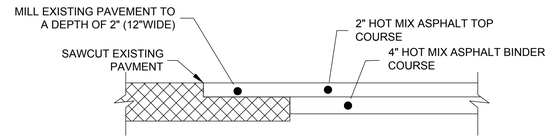
1. MINIMUM PAD DIMENSIONS/SPACING ARE SHOWN IN THE ABOVE DETAIL. DIMENSIONS SHALL BE CONFIRMED IN THE FIELD AS REQUIRED BY THE CONTRACTOR.
2. SEE TANK COVER PAD MANHOLE OPENING DETAIL FOR ADDITIONAL REINFORCEMENT AT MANHOLE OPENING IN PAD.
3. CONCRETE PAD SHALL BE CROWNED LOCALLY SURROUNDING COVER PAD PENETRATIONS TO PREVENT WATER FROM ENTERING SUMPS. CROWNS SHALL BE IN ACCORDANCE WITH COVER MANUFACTURER REQUIREMENTS.
4. CONCRETE PAD SHALL BE 5,000 PSI AND COATED WITH CHLORIDE RESISTANT SEALANT. SEE SECTION 03 30 00 - CAST IN PLACE CONCRETE FOR ADDITIONAL REQUIREMENTS.
5. CONTRACTOR SHALL PROVIDE CONTROL JOINTS AT HALF THE WIDTH OF THE PAD IN BOTH DIRECTIONS.
6. CONTRACTOR SHALL REVIEW FINAL APPROVED TANK MANUFACTURER'S BACKFILL REQUIREMENTS ABOVE TANK AND CONFIRM NO CONFLICTS WITH DETAIL.

2 CONCRETE TANK COVER PAD DETAIL
SCALE: N.T.S.



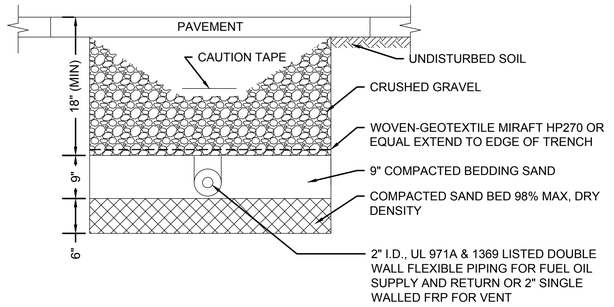
NOTE: REBAR SHALL HAVE 3" OF CONCRETE COVER PER INDUSTRY STANDARD

3 TANK COVER PAD MANHOLE OPENING DETAIL
SCALE: N.T.S.



NOTES:
1. CUT KEYWAY AT ENDS OF ALL PAVING WHERE NEW PAVING MEETS EXISTING PAVING.
2. TACK COAT BETWEEN EXISTING AND PROPOSED PAVEMENT.

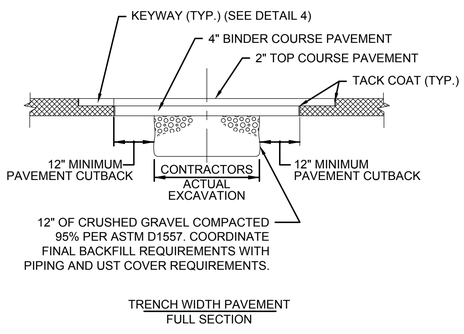
4 KEYWAY DETAIL
SCALE: N.T.S.



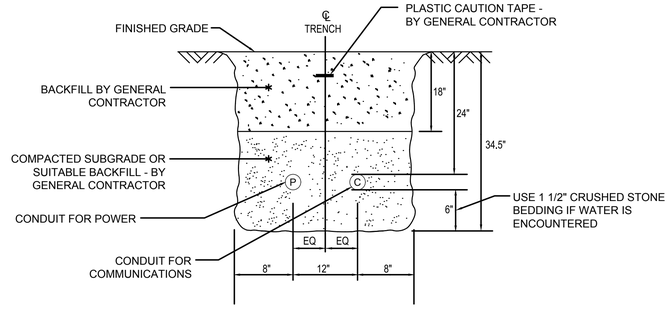
NOTES:

1. PITCH FUEL AND VENT PIPING BACK TOWARDS TANK AT A 1% SLOPE.
2. GENERAL TRENCH BEDDING AND BACKFILL REQUIREMENTS SHOWN SHALL BE ADJUSTED AS NECESSARY TO MEET MANUFACTURER INSTALLATION REQUIREMENTS. CONTRACTOR SHALL SUBMIT FINAL BEDDING/BACKFILL PLAN TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
3. 24" MINIMUM COVER TO BE PROVIDED FROM TOP OF PIPE TO SURFACE ELEVATION.
4. CONTRACTOR SHALL CONTACT ENGINEER AT LEAST 1 WEEK IN ADVANCE OF BACKFILLING OVER PIPES FOR ENGINEER TO OBSERVE INSTALLATION.

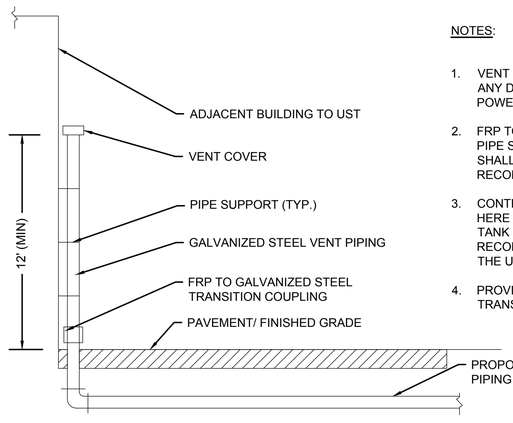
7 PIPING TRENCH DETAIL
SCALE: N.T.S.



5 PAVEMENT REPLACEMENT DETAIL
SCALE: N.T.S.



6 DIRECT BURIED CONDUIT DETAIL
SCALE: N.T.S.



NOTES:

1. VENT PIPE SHALL NOT TERMINATE LESS THAN 5 FEET FROM ANY DOOR OR WINDOW OPENING AND AT LEAST 15 FEET FROM POWERED VENTILATION AIR INTAKE DEVICES.
2. FRP TO GALVANIZED STEEL PIPE TRANSITION COUPLING AND PIPE SUPPORT BRACKETS FOR ATTACHMENT TO BUILDING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. CONTRACTOR SHALL INSTALL NEW VENT PIPES AS SHOWN HERE AND ON C101. NEW VENT PIPE SHALL ATTACH TO NEW TANK IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. VENT PIPE SHALL PITCH BACK TOWARD THE USTs AT A 1% SLOPE.
4. PROVIDE FLEXIBILITY WHERE HORIZONTAL PIPING TRANSITIONS TO VERTICAL WITH A 4' MIN DOGLEG.

8 VENT PIPING DETAIL
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UST DETAILS

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