

# DEPT OF MENTAL HEALTH & ADDICTION SERVICES

## INVITATION TO BID

**PROJECT TITLE** Project 1047-B NP:CVH:Replace Fuel Tanks

**PRE-BID MEETING DATE AND TIME** **MANDATORY**

**Date:** August 22, 2013

**Time:** 10:00 AM Sharp (No late attendees admitted)

### PRE-BID MEETING HELD AT

**Facility Name:** Connecticut Valley Hospital, 1000 Silver Street

**Facility Address:** Cotter Maintenance Building, 2<sup>nd</sup> Floor Conference Room  
Middletown, CT. 06457

### **DIRECTIONS: From ROUTE SOUTH**

Take Exit 12, then left at the end of the exit ramp onto Silver Street.

### **From ROUTE NORTH**

Take Exit 12, At the end of the exit there is a stop sign; go straight onto Eastern Drive. Continue on Eastern Drive to a stop sign at the intersection of Eastern Drive and Silver Street. Turn right onto Silver Street.

### **From I-9 SOUTH**

Take Exit 22S (Route 9 South). Follow above directions.

### **From I-9 NORTH**

Take Exit 22S (Route 9 South). Follow above directions

**Construction Bid** Once on Silver St and CVH Campus go to 2<sup>nd</sup> light on top of hill Take a Right on to Holmes Dr, Continue until stop sign and barrier take a Left on to Obrien DR. Cotter Bldg is on Right. Go to door next to FIRE Dept up to 2<sup>nd</sup> FL Conf Room

## SEALED BID PUBLIC OPENING DATE AND TIME:

Sealed bids will be received by the date, time, and location specified and thereafter immediately publicly opened, and tabulated. Bid results are posted as a formal addendum on the DAS Bid Portal.

**PUBLIC SEALED BID OPENING DATE: September 5, 2013 TIME: 10:30 AM SHARP**

**(Late attendees not admitted)**

**Location:**

**DMHAS FSB Conference Room**

**Haviland Hall, Top Floor,**

**1000 Holmes Drive,**

Project 1047-B CVH Replace Fuel Tanks.doc

This project consists of: **Replace Fuel Tanks at Battell/Hr Building**

The Department of Mental Health & Addiction Services is an EEO Organization and will not knowingly do business with any contractor that does or has been found to discriminate.

Minimum Wage rates are applicable to this bid as required by law.

The said State of Connecticut, Department of Mental Health and Addiction Services reserves the right to waive informalities and to accept or reject any and all parts of any and all bids.

No bids may be withdrawn for at least 60 days after the scheduled closing times for receipt of bids.

# **TABLE OF CONTENTS**

## **INSTRUCTIONS TO BIDDERS AND CONDITIONS OF BID**

- 1.01 General**
- 1.02 DMHAS Authorized BID Form and Acceptance**
- 1.03 BID Schedule**
- 1.04 Scope of Work**
- 1.05 Pre bid Meeting Location and Examination of Site**
- 1.06 Contractor Qualification Requirement**
- 1.07 Form of Guarantee-Warranty**
- 1.08 Codes, Rules, Ordinances & Approvals**
- 1.09 Protection of Work and Property**
- 1.10 Security Regulations, Tools/Equipment control & Vendor Conduct**
- 1.11 Notice to Proceed**
- 1.12 Time of Completion- Contract time**
- 1.13 Liquidated Damages**
- 1.14 Payment**
- 1.15 Salvage and Disposal**
- 1.16 Wage Rates**
- 1.17 Bonds**
- 1.18 Insurance**
- 1.19 Advertising**
- 1.20 Health Insurance Portability and Accountability Act (HIPPA)**

## **BIDDER REQUIREMENTS**

## **BIDDER CERTIFICATION STATEMENT**

### **QUESTIONNAIRE**

- Q 1.01 Information**
- Q 1.02 Materials**
- Q 1.03 Experience**
- Q 1.04 SubContractors**

## **CHRO CONTRACT COMPLIANCE REGULATIONS NOTIFICATION TO BIDDERS**

## **CHRO NOTICE CONTRACT COMPLIANCE RESPONSIBILITIES**

## **EEO-1 DMHAS EMPLOYMENT INFORMATION FORM**

# **INSTRUCTIONS TO BIDDERS AND CONDITIONS OF BID**

## **1.01 General**

### **SEALED BIDS**

**BIDS MUST BE SUBMITTED IN A SEALED ENVELOPE CLEARLY MARKED:  
“SEALED BID”**

**Project Number and Name  
Date and Time of bid opening,  
Name and Address of bidder.  
Att: Barbara Young FAO**

### **SUBMISSION OF BIDS**

Bids may be mailed, or delivered in person to the following address to arrive by the bid closing date and time. E-Mailed or Faxed Bids will not be accepted under any circumstances. Late bids will not be accepted and may be picked up by bidder upon written request only. Extensions will not be granted.

<p><b>DMHAS FSB Havilland Hall Top Floor 1000 Holmes Drive Middletown, CT 06457-1240 Att: Barbara Young FAO</b></p>
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### **PRE BID MEETING**

To be held on-site on : August 22, 2013 Time 10:00AM  
Location: Connecticut Valley Hospital, Cotter Maintenance Building, 2<sup>nd</sup> Floor Conference Room  
Time: 10:00 AM sharp (No late arrivals)  
(Walkthrough sign in sheet is posted as a Formal addendum on the DAS Bid Portal.)

### **BID CLOSING DATE**

Bids must be received and stamped in at the DMHAS FSB not later than 10:30 AM  
On : September 5, 2013.  
(Bid results are posted as a formal addendum at time of award on the DAS Bid Portal.)

## **STATES RIGHTS**

The State reserves the right to reject any and all bids, and to waive any informality in bids. No bids may be withdrawn for at least 60 days after the scheduled closing times for receipt of bids.

The project will be submitted in strict accordance with the specifications as prepared by the Connecticut Department of Mental Health and Addiction Services and procedures set forth by the Department of Public Works. The amount of each BID shall be deemed to include the entire cost and expense of every item of labor and material necessary to complete the work proposed upon, as specified, in full detail, ready for use. The successful bidder shall assume the risk of all such costs and expenses.

It is the intent of the specifications to call for finished work, tested, and ready for operation. Any incidental accessory necessary to make the work complete in all respects and ready for operation even if not particularly specified, shall be provided without extra compensation. Minor products or items of work, which by custom are not usually shown or specified, but are necessary for proper installation and operation of the completed work, shall be provided in the same manner as if actually shown or specified.

During construction in a Mental Health facility, there may be delays due to various security issues. This needs to be taken into consideration in your submitted bid. The Department of Mental Health and Addiction Services will not authorize extra compensation for these delays. The department will assign a representative to work with the selected contractor as liaison.

### **BID LANGUAGE :**

The awarded contractor must file an approved Affirmative Action Plan with the State of Connecticut's Commission on Human Rights and Opportunities.

This project is therefore subject to the State of Connecticut's set-aside goals of 25% SBE AND 6.25% MBE on the entire project amount. The awarded contractor is encouraged to solicit bids from set-aside subcontractors and/or vendors (Small Businesses, Minority, Disabled and Women owned businesses) that are currently certified with the State of Connecticut under the Department of Administrative Services' Supplier Diversity Program.

**Facility Representative(s):**

**Steve Hecimovich**

**FSB Purchasing Representative(s):**

**Barbara Young**

**Title: Fiscal Administrative Officer (FAO)**

**Tel. # 860-262-6923**

**Fax # 860-262-6951**

**E-mail: [barbara.young@po.state.ct.us](mailto:barbara.young@po.state.ct.us)**

**1.02 BID Form and Acceptance**

1. All BIDs must be **received** by the date and time specified at:

DMHAS FSB  
PO Box 1240  
1000 Holmes Drive  
CVH- Haviland Hall  
Middletown, CT 06457-1240

2. BID envelopes must be clearly marked. Indicate the Project number and name and the BID opening date and time.

The name and address of the bidder should appear in the upper left hand corner of the envelope. Any correspondence shall include the project number and project name.

3. The project shall be Bid on DMHAS Authorized BID form **ONLY( 2 Pgs)**

(Additional detail may be attached if necessary)

**No exceptions**      **See Form at end of this section:**

- a. **All BIDs must be signed** by a person duly authorized to sign BIDs on behalf of the bidder and/or company. **Bidders must affix Corporate or Notary Public Seal.**
- b. **Incomplete BID forms WILL result in the rejection of the BID.**
- c. **LATE BIDS received @ DMHAS FSB after the specified Bid opening date and time will not be considered or opened** . They will remain unopened in the project file.  
Unopened bids may be picked up by vendor upon written request only.
4. **The vendor is ultimately responsible for insuring that the BID is received before the due date/time at the FSB PO Box 1240, CVH- Haviland Hall, Middletown CT. There have been instances where independent commercial couriers have either delivered to the wrong location or have been late.** It is recommended that you **call prior to the BID opening** to verify that your BID has been received. All BIDS will be opened and read publicly and upon award are subject to public inspection.
5. The Department of Mental Health and Addiction Services shall have the right to accept or reject any BID within **(60)** calendar days of the BID opening date. All BID prices must be firm for a **(60)** day period unless otherwise specified. The State reserves the right to award this Contract by item or in its entirety, whichever is in
- Project 1047-B CVH Replace Fuel Tanks.doc

the best interest of the State.

**DMHAS Authorized Bid Form Pg 1 of 2**

**Vendor Name** \_\_\_\_\_

**Contact Name** \_\_\_\_\_

**Address** \_\_\_\_\_

**Phone** \_\_\_\_\_ **Fax** \_\_\_\_\_ **Email** \_\_\_\_\_

**Fein #** \_\_\_\_\_

**Project No.** \_\_\_\_\_ **Bid Opening Date:** \_\_\_\_\_

**Material Costs (Including Shipping):** \_\_\_\_\_

**Labor:** \_\_\_\_\_

**Total Base Bid** \_\_\_\_\_

**ADD ALTERNATE #1 (If applicable)**

**Material Costs (Including Shipping):** \_\_\_\_\_

**Labor:** \_\_\_\_\_

**Total ADD ALT. #1** \_\_\_\_\_

**Grand total of Base and Add Alternate #1** \_\_\_\_\_

**ADD ALTERNATE #2 (if applicable)**

**Material Costs (Including Shipping):** \_\_\_\_\_

**Labor:** \_\_\_\_\_

**Total ADD ALT. #2** \_\_\_\_\_

**Grand total of base bid, Add Alt. #1 and Add Alt. #2** \_\_\_\_\_

**DMHAS Authorized Bid Form Pg 2 of 2**

The General Contractor on this project will be required to perform not less than (50%)  
Of the completed dollar value of the work with its own forces

I (we), the undersigned, hereby declare that I am (we are) the only person(s) interested in this proposal: That it is made without any connection with any other person making any bid for the same work: that no person acting for, or employed by, The State of Connecticut is directly or indirectly interested in this proposal, or in any contact which made be made under it, or in expected profits to rise there from: that this proposal is made without directly or indirectly influencing or attempting to influence any other person or corporation to bid or to refrain from bidding or to influence the amount of the bid of any other person or corporation: that this proposal is made in good faith without collusion or connection with any other person bidding for the same work: and that this proposal is made with distinct reference and relation to the plans and specifications prepared for this contract

I (we) further declare that in regard to the conditions affecting the work to be done and the labor and materials needed, this proposal is based solely on my (our) own investigation and research and not in reliance upon any representations of any employee, officer or agent of the state.

**Contractor Owner/Officer** \_\_\_\_\_  
**Date:** \_\_\_\_\_

**Title** \_\_\_\_\_  
**Address** \_\_\_\_\_  
**City, State, Zip** \_\_\_\_\_

**(AFFIX CORPORATE OR NOTARY PUBLIC SEAL)**

### 1.03 BID Schedule

The project shall be bid as per specifications for the complete project.

- A. Labor shall be separated from materials and the dollar amount totaled separately and submitted on **Section 1.02 DMHAS Authorized Bid Form only.**( 2 Pgs)  
(Additional details may be attached if necessary)
- B. Prices should be extended in decimal, not fraction, to be net, and shall include transportation and delivery charges fully prepaid by the Contractor to the destination specified in the BID, and subject only to cash discount.
- C. Add/Alternates should be priced out separate from Base BID and submitted on **Section 1.02 DMHAS Authorized Bid Form only.**  
(Additional details may be attached if necessary)

## 1.04 Scope of Work

### **MHA-1047 NP:CVH:Replace Fuel Tanks - Battell Hall/HR Services Building**

This project involves the procurement, installation, and connection of one 1,000-gallon concrete encased above ground storage tank (AST) to an existing emergency generator at Battell Hall and the procurement, installation, and connection of one 6,000-gallon concrete encased AST to an existing comfort heat boiler at the HR Services Building at the Connecticut Valley Hospital in Middletown Connecticut. Upon the successful installation of the ASTs, the selected contractor shall remove the existing single 1,000-gallon diesel underground storage tank (UST) at Battell Hall and the single 6,000-gallon fuel oil UST at the HR Services Building. The project includes the procurement and installation of the ASTs with all required plumbing and electrical connections to existing utilities. The UST removal includes the excavation and removal of the existing USTs, laboratory analysis of confirmation soil samples, backfill of the tank grave excavations and restoration of the work areas.

**11" x 17" DRAWINGS (NOT TO SCALE) WILL BE PROVIDED FOR REFERENCE AT THE PRE-BID WALK-THROUGH.**

**NOTE: FULL PROJECT SPECIFICATIONS AND DRAWINGS ARE INCLUDED WITH THESE BID DOCUMENTS. FULL SCALE COPIES OF DRAWINGS AND SPECIFICATIONS ARE AVAILABLE ON THE BID PORTAL AND FOR PURCHASE AT ANY JOSEPH MERRITT & COMPANY LOCATION.**

**CONTRACTORS MAY ORDER COPIES (AND REQUEST PRICING INFORMATION) BY CALLING THE HARTFORD LOCATION AT: 860.296.2500. PLEASE SPECIFY WHICH MERRITT LOCATION YOU WOULD LIKE THE COPIES SENT TO FOR PICK-UP (DANBURY, HARTFORD, NEW HAVEN, WATERBURY, OR WATERFORD).**



## 1.05 Pre Bid Meeting Location and Examination of Site

1. The work will be performed at: **Battell/HR Building**
2. **Mandatory Pre-BID Meeting** :All contractors proposing for this project **must attend** the mandatory Pre-BID Meeting to visit and examine the site before proposing, and to verify job conditions and dimensions. This meeting is intended to review the BID requirements, documents and answer any questions pertaining to the bid.
3. Time, date, location and point of contact of Mandatory Pre-BID Meeting are as noted on BID package cover sheet.
4. **Pre-BID Meeting Late arrivals will not be permitted. The Pre bid meeting will start promptly @ 10:00AM. No one will be admitted past 10:00 AM** and vendors will not be given credit for attendance nor allowed to participate in the BID process. **Failure to attend this meeting will result in the rejection of your bid.**
5. The FSB will monitor any questions addressed during this mandatory Pre-BID Meeting (walkthrough.). Any questions that cannot be answered will be documented and answered as a formal addendum on the DAS Bid Portal. Vendors are responsible to check portal before bid submission to insure they are aware of latest addendums etc.
6. **Questions:** Any vendor questions AFTER this walkthrough must be addressed via **E-mail only** to designated **FSB Purchasing Representative** and will be answered as a formal addendum on the portal to ensure all vendors have equal information regarding this bid. **All e-mailed questions must be received 7 working days prior to the bid opening date.**
7. **The vendors must not have any contact with the facility prior to the contract award**, otherwise the bid becomes tainted and violates the Governor's Executive Order # 3. (Open and Equitable Bidding).
8. A contract award is not final until all bids have been thoroughly reviewed for completeness and compliance and a State Purchase Order issued.
9. **BIDS received from non-attending contractors will not be honored and disqualified.**

## 1.06 Contractor Qualification Requirement

The contractor shall demonstrate capability to execute this contract by submitting evidence of the following:

1. Ability to perform the contractual services as reflected by technical training and education; general experience, and specific experience in providing the required supplies, materials, equipment or contractual services; and the qualifications and abilities of personnel proposed to be assigned to perform the contractual services; the personnel, equipment, and facilities to perform the contractual services currently available or demonstrated to be made available at the time of contracting; and, a record of past performance of similar work in regard to supplies, materials, equipment or contractual services.
2. It is the responsibility of the contractor to secure all licenses, permits, approvals, or other documents necessary to complete this project.
3. Listing of at least three projects of similar scope and size that were performed within the last twelve months. Include the name, address and telephone number of a contact at each job that can be contacted and who is familiar with the project.
4. The Contractor shall use only skilled workmen who are trained and experienced in the necessary crafts and familiar with the specifications and methods needed to properly perform the work required by this project.

## 1.07 Form of Guarantee—Warranty

- A) All work shall be covered by the standard one (1) year guarantee from the date of substantial completion, and the material per the manufacturer's warranty.

The Contractor shall furnish to the Facility's Director of Plant Operations the foregoing documents in the following manner: Name and number of project.

I (We) hereby guarantee (or warranty) the \_\_\_\_\_ work on the referenced project for a period of \_\_\_\_\_ years from \_\_\_\_\_ to \_\_\_\_\_, against failures of workmanship and/or materials in accordance with IB 1.07 of the specification.

All guarantees supplied by subcontractors, suppliers or manufacturers will be counter signed by the General Contractor.

The contractor must remove any and all defective work and replace with material that meets specification requirements.

## 1.08 Codes, Rules, Ordinances & Approvals

1. All materials furnished and all work installed shall comply with all the latest, at the time of construction, applicable State and Local codes, laws and ordinances, rules and regulations. **Vendors MUST be licensed with the State of CT and provide a copy of license with submission of bid.** If the project scope of work does not require vendors to have a contractor's license, then the vendor must provide proof that they are a registered business entity with the Secretary of the State of Connecticut on the CONCORD Website.
2. It is the intention that the specifications not violate any of the above. Where violations occur, such codes, laws, rules, ordinances, regulations and recommendations shall be complied with. The Contractor must call any and all such violations to the attention of the designated Facility contact before making any changes to the specifications or proceeding with work.
3. The Contractor shall at his expense give all notices, obtain all permits, licenses and approvals; pay all government taxes, fees and other costs in connection with the work; and obtain all required certificates of inspection for the work and deliver same to the designated Facility contact before requesting acceptance and final payment.

All apparatus, equipment and construction shall comply with the recommendations of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America and OSHA of 1970 and approved revisions.

## 1.09 Protection of Work and Property

### Use of Premises

1. Nothing contained in the specifications shall be interpreted as giving the contractor exclusive use of the premises where the work is to be performed.
2. The contractor shall be held solely responsible for any and all damage to the existing structures; systems, equipment and site caused by him or his employees and shall repair or replace same to their original condition as directed at no additional cost to the Facility.
3. The work in this contract shall not interfere with the normal conditions and safe operation of the Facility and if such interference appears possible because of new connections to existing work or other reasons, the work involved must be done at a time and in a manner directed by the Facility as a part of the contract.
4. All building equipment, furnishings, grounds landscaping, etc., shall be protected from damage of every description and any such damage thereto shall be repaired or otherwise made good at no expense to the State and to the satisfaction of the Facility Representative.
5. The contractor shall supply and install any and all protective coverings and barricades necessary to protect at all times the patients, public and building personnel and the building from injury. The contractor shall provide and install all plastic sheeting, batten cleats and other materials, which he may require to protect all open, unfinished work at the end of each and every day.
6. The contractor shall be held responsible for, and must make good at his own expense, any water damage or any other cause of damage due to improper protection.
7. Due to the nature of this institution, it is mandatory that all rules and regulations are strictly adhered to and the necessary precautions taken.
8. The contractor is responsible to assure that all work is performed in accordance with all current State regulations including, but not limited to, OSHA, State Fire Codes, and the Basic Building Code of the State of Connecticut.
9. The contractor will at all times keep the premises free from the accumulation of waste materials or rubbish caused by his employees or work. All accumulated material shall be removed from the site daily at the contractor's expense.
10. It is the policy of DMHAS Facilities to prevent construction related infections and to identify and institute any and all precautions necessary during construction.

**Internal Construction Activities.** Depending on the scope of the project, and as determined in the Infection Control Risk Assessment performed by the Facility's multi-disciplinary team (which may consist of a member of the Plant Operations Department, an Infection Control Practitioner, Director of Patient Safety and Safety Officer) the contractor may take any or all of the following measures:

- a. Construct barriers to prevent dust from construction areas from entering patient-care areas. Barriers must be impermeable to fungal spores and in compliance with local fire codes.
- b. Seal off and block return air vents if rigid barriers are used for containment.
- c. Implement dust control measures on surfaces and divert pedestrian traffic away from work zones.
- d. If necessary, create negative air pressure in work zones adjacent to patient care areas and insure that required engineering controls are maintained. Monitor negative airflow.
- e. Monitor barriers and insure integrity of same. Repair gaps or breaks in barrier joints.
- f. If practical, seal windows in work zones, e.g. plastic sheeting.
- g. Direct pedestrian traffic away from construction zones.
- h. Provide construction crews with: Designated entrances, corridors and elevators if possible, essential services (e.g., bathroom facilities) and a space or ante room for changing clothing and storing equipment. If it is necessary to travel to patient areas from the construction zone, construction crew will don coveralls, footwear and headgear.
- i. Contractor shall clean work zones and their entrances daily.
- j. Contractor shall cover and secure debris prior to removal from the construction area.
- k. In patient care areas, for major repairs that include removal of walls and disruption of the space within, the contractor may be asked to use plastic sheets or prefabricated plastic units to contain dust and a HEPA (High Efficiency Particulate Air) filter machine to clean the air.
- l. Upon completion of the project, contractor shall clean the work zone according to facility procedures, prior to removing the construction barriers.

Due to the nature of these institutions, it is required that all rules and regulations be strictly adhered to and the Facility's schedule must be maintained. The contractor shall keep the Designated Facility contact informed as to location and hours of operations so that necessary precautions can be taken if needed.

## **Fire Protection:**

The contractor shall, during the progress of construction, assume all responsibilities for loss or damage by fire to the work included in his contract until completion of the contract. No flammable material shall be stored in the structure in excess of amounts allowed by the authorities. No gasoline shall be stored in or close to any building at any time.

- A) The contractor shall not, at any time, for any reason, or by any means, block, impede or inhibit the free flow of egress, for example at hallway and exit doors.
- ~~B)~~ The Contractor shall ensure free and unobstructed access to emergency services and for fire, police, and other emergency forces.
- C) The contractor shall ensure that additional fire-fighting equipment and trained personnel are on site as required by OSHA and other regulatory authorities.
- D) The Contractor shall prohibit his employees from smoking in the buildings, or in the areas adjacent to construction areas.
- E) The Contractor shall develop and enforce storage, housekeeping, and debris removal practices that reduce the building's flammable and combustible fire load to the lowest feasible level.
- F) The Contractor shall provide and maintain his own independent portable toilet accommodations (unless approved otherwise).
- G) The contractor shall supply to the agency a copy of all Material Safety Data Sheets (MSDS) for all products used in the process of construction, construction materials and products brought onto the premises.

The Contractor shall secure his unfinished work areas at the close of business each day to preclude passage by any and all unauthorized persons.

## **1.10 Security Regulations, Tools/Equipment Control & Vendor Conduct**

The following regulations and guidelines are “general” in nature and vendor(s) may be subject to more restrictive regulations and guidelines while performing work in any one of the DMHAS facilities.

### **TOOLS:**

- All tools are to be accounted for at all times.
- At NO time shall tools or equipment be left unattended.
- At the end of the day, tools left behind MUST be secured with a padlock.
- Missing tools or equipment must be immediately reported.

## **PATIENT & EMPLOYEE CONTACT:**

- Contractors shall NOT have any contact with employees or patients. Exception to be employees that are involved with the work to be performed.
- Providing personal favors, errands, money, cigarettes, etc. to patients is STRICTLY prohibited.

## **WEAPONS & ILLEGAL SUBSTANCES:**

- NO Weapons, Alcohol, or Drugs shall be brought onto facility grounds.
- Smoking is NOT permitted in the building or within 30 feet of the building.

## **CONFIDENTIALITY:**

- NO Pictures shall be taken of patients. Any pictures required to document project progress SHALL NOT contain patients. Advanced approval to take pictures shall be requested.
- DO NOT acknowledge patients that you may know from the outside.
- DO NOT disclose any information that you may learn (while working inside a facility) to other people.

## **SAFETY**

- All injuries shall be immediately reported to the work crew supervisor and facility coordinator.
- All workers shall remove ignition keys and lock their vehicles. No parking in fire lanes.
- Egresses cannot be blocked.
- No disruption to fire alarm/fire suppression systems without prior notification/approval.
- The integrity of the building cannot be tampered with.

### 1.11 Notice to Proceed

**The contractor shall not start work until he has a fully executed approved purchase order.** Within five (5) working days after receipt of the purchase order and prior to the start of construction, the contractor shall schedule a pre-construction meeting with the facility representative and at that time a start date will be established.

## 1.12 Time of Completion –Contract Time

The contractor shall complete the project within **120** calendar days of contract award or notice to proceed (receipt of Purchase Order). Once on site, the contractor's work force shall remain mobilized until work is completed unless otherwise is specifically approved by the facility representative. Working days for this project shall be Monday through Friday, exclusive of State or national Holidays. No Saturday or Sunday work shall be allowed without special written permission by the facility representative.

Upon completion of the contract, the contractor shall make a request in writing to the Facility Physical Plant Department for an inspection of the work.

The Contractor shall provide safe access to the work for use by the Designated Facility contact for an inspection of the work with the contractor's representative.

## 1.13 Liquidated Damages

It is hereby declared and agreed by and between the contractor and the State of CT/DMHAS that the date of commencement, rate of progress, and time of completion of the work are essential provisions, conditions and that it would be impracticable and impossible to determine and ascertain the actual damages the State of CT/DMHAS would incur by reason of a delay in the completion of the work. It is, therefore, agreed by and between the contractor and State of CT/DMHAS that, at the discretion of the State of CT/DMHAS, the contractor shall and does hereby agree to pay the State of CT/DMHAS as liquidated damages (and not as a penalty) the sum of two hundred dollars (\$200.00) for each and every working day that the contractor shall be in default, hereunder for failing to complete the project on the date specified above except as such date shall be extended, in writing upon request of the contractor, for the period of an excusable delay. Any such payments due to the State of CT/DMHAS by the contractor may be deducted by the State of CT/DMHAS from any sums due to the contractor.

## 1.14 Payment

Payment will be processed as follows:

1. Projects under \$25,000 - A single invoice submitted by the prime contractor following the acceptance of the completed project.
2. Projects \$25,000 or greater - Three invoices submitted by the prime contractor; one when all material or equipment is on site or the project is 50% completed (which ever is greater), two when the project is substantially complete, and three when the project is totally complete and accepted. It is the agency's prerogative to retain 10% of the final payment for a period up to 90 days to insure the final completion and functionality of installed components and systems.
3. Payment terms: 45 days after completion of the work. Special payment incentive discounts may be offered.
4. The invoice shall contain the State Purchase Order number. Invoices received without reference to a valid State Purchase Order number will result in delay of payment

## 1.15 Salvage and Disposal

1. All removed materials that are salvageable (copper or lead) are the property of the Facility and shall be delivered to and accepted by Facility personnel at a time mutually agreeable to the contractor and the Facility, unless otherwise directed by the Facility.
2. All debris resulting from the performance of this contract will be the property of the contractor and shall be completely picked-up and containerized at the building site not less frequently than at the close of business daily.
3. The Contractor for this project shall provide the dumpster to receive all debris generated as a by-product of the work called for herein. The Contractor shall cover the dumpster at the close of business each and every day.

## 1.16 Wage Rates

Prevailing wage rates are applicable **if the submitted BID exceeds the sum of \$400,000.00 (for new construction) or \$100,000.00 (if renovation/alteration)**. The contractor is responsible for assuring that the payment of wages are as published by the Connecticut State Labor Department for the area where the job is being performed.

In accordance with the provisions of Section 31-53 of the General Statutes of Connecticut, the following applies "The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund, as defined in subsection (h) of this section (31-53 of the General Statutes), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such employees to any such employee welfare fund shall pay to each employee as part of his wages the amount of payment or contribution for his classification on each pay day."

All contractors must submit weekly to Department of Mental Health and Addiction Services Facility Representative, a certified payroll and compliance statement. A copy of this statement will be kept on file at the facility and a copy will be forwarded to the Department of Labor. The certified payroll shall be considered a public record, and every person shall have the right to inspect and copy such records in accordance with the provisions of section 1-15, Connecticut General Statutes. A *Payroll Certification for Public Works Projects* form has been attached following the Wage Rate section of this contract if applicable.

### **Prevailing Wage Annual Adjustment**

Any contract awarded on or after October 2, 2002 requires all contractors and subcontractors to pay the annual prevailing wage rate increases posted on or before July 1st each year, after the issuing of the initial rate schedule by DOL for the project. The rates can be found at [www.ct.gov/dol](http://www.ct.gov/dol) go to Wage and Workplace Standards Division, Prevailing Wage Information, Annual Prevailing Wage Rates by Town or at <http://www.ctdol.state.ct.us/wgwkstnd/prevailing-rates/rates.htm>.

THE LAST PAGE OF THE INITIAL RATE SCHEDULE ADDRESSES THE ISSUE OF ANNUAL RATES. THAT THE CONTRACTOR HAS ALREADY BEEN NOTIFIED THAT HIS BID SHOULD TAKE INTO CONSIDERATION WHATEVER THE ANNUAL INCREASE MAY BE - THEIR BEST ESTIMATE.....AND THEY HAVE NO LEGAL STANDING TO COME BACK TO THE AGENCY FOR ANY CHANGE ORDER INCREASE SOLEY BECAUSE THE ANNUAL RATES GO UP.

## 1.17 STANDARD CONDITIONS

### Bonds

1. **If submitted BASE BID exceeds \$50,000.** A **BID surety** of not less than 10% of BID amount is required to accompany BID in the form of a bond or certified check made out to the Treasurer State of Connecticut. Unawarded vendor bonds returned upon written request. If any Add/ alternate (Priced separately) is chosen after the bid opening that brings total amount of bid over 50,000.00 then vendor is required to provide Bid Bond within 24 hrs of e-mail or fax notification.
2. **A performance, and labor and material payment, surety** of not less than 100% of BID amount is required of low bidder in the form of a bond made out to the Comptroller of the State of Connecticut **if submitted BID exceeds \$50,000.** It is to be submitted to the Department of Mental Health and Addiction Services prior to award of contract and issuance of purchase order.

## 1.18 Insurance

1. The Contractor shall not start work under this contract until he has obtained the following insurance and until the insurance has been approved by the State of CT/DMHAS nor shall the contractor allow any subcontractor to start his work until insurance required by the subcontractor has been obtained and approved. **The contractor shall submit insurance certificate with sealed bid documents made out to DMHAS FSB Purchasing, PO Box 1240, CVH - Haviland Hall, Middletown, CT 06457**
  
3. The Contractor shall take out and maintain during the life of the contract, workers' compensation insurance for all employees working at the site and, in case any work is sublet, the Contractor shall require the subcontractor to provide workers' compensation insurance for all of the latter's employees. In case any class of employees engaged in hazardous work under this Contract is not protected under the workers' compensation statute, the Contractor shall provide, and shall cause each subcontractor to provide, insurance for those employees.
  
4. The Contractor shall take out and maintain during the life of a contract, public liability and property damage insurance to protect him and the State of CT/DMHAS's interest as their interests may appear. Each subcontractor shall take out and maintain insurance to protect him from claims for damage for injury, including accidental death and from claims for property damage, which may arise from operations under this contract, whether such operations are by himself or by any subcontractor or by any employee unless such employees are covered by the protection afforded by the Contractor. Types and amounts of insurance required shall be as follows:

DESCRIPTION	SINGLE COVERAGE	LIMIT	EACH ACCIDENT	AGGREGATE
Protective Liability	BI	\$1,000,000		
Protective Liability	PD	\$100,000	\$500,000	(for and in the name of the State of Connecticut)
Contractor's Liability	BI	\$1,000,000		
Contractor's Liability	PD	\$100,000	\$500,000	
Contractor's Protective Liability	BI	\$1,000,000		
Contractor's Protective Liability	PD	\$100,000	\$500,000	

5. Coverage for damage or loss resulting from Type C - Collapse or Structural Injury, Type U - Underground Damage, Type X - explosion or blasting, ordinarily excluded from coverage, shall be provided in the amounts and manner specified in this article if required in the bid for the specified project. Builders Risk insurance, not ordinarily required, shall be provided in accordance with the amount and manner specified in the bid for the specified project if such insurance is required in the bid.

## **1.19 Advertising**

Contractors may not reference sales to the State for advertising and promotional purposes without the prior approval of Procurement Services.

## **1.20 Health Insurance Portability and Accountability Act (HIPAA)**

Under the Health Insurance Portability and Accountability Act (HIPAA) of 1996, Bidders are expected to adhere to the same standards as the state agency/covered entity as to Protected Health Information (PHI), to maintain compliance with Title 45 CFR Part 164.504, Uses and Disclosures: Organizational Requirements, Bidder Contracts. Protected Health Information (PHI) includes information related to claims, health services, federal and state tax information, financials, criminal/court related information and other personally identifiable records. Bidder agrees that it shall be prohibited from using or disclosing the PHI provided or made available by the state agency/covered entity or viewed while on the premises for any purpose other than as expressly permitted or required by this Contract. These uses and disclosures must be within the scope of the Bidders services provided to the state agency/covered entity. Bidders shall establish and maintain reasonable safeguards to prevent any use or disclosure of the PHI, other than as specified in this Contract or required by law. Bidder agrees that anytime PHI is provided or made available to any subcontractors or agents, Bidder must enter into a subcontract, which contains the same terms, conditions and restrictions on the use and disclosure of PHI as contained in this Contract. Bidder agrees to make available and provide a right of access to PHI by the individual for whom the information was created and disclosed. Bidder agrees to make information available as required to provide an accounting of disclosures. Bidder agrees to make its internal practices, books, and records relating to the use or disclosure of PHI received from, or created or received by Bidder on behalf of the state agency/covered entity, available to the Secretary of Health and Human Services (HHS) for purposes of determining compliance with the HHS Privacy Regulations. At termination of this Contract, Bidder agrees to return or destroy all PHI received from, or created by the state agency/covered entity. If not feasible, extend the protections of this agreement to the PHI and limit further uses and disclosures. Bidder will have procedures in place for mitigating any harmful effects from the use or disclosure of PHI in a manner contrary to this Contract or the HHS Privacy Regulations. Bidder must develop and implement a system of sanctions for any employee, subcontractor or agent who violates this Contract or the HHS Privacy Regulations. The PHI shall be and remain the resources of the state agency/covered entity. Bidder agrees that it acquires no title or rights to the information, including any de-identified information, as a result of this Contract. Bidder agrees that the state agency/covered entity has the right to immediately terminate this Contract if the state agency/covered entity determines that Bidder has violated a material term of this HIPAA Compliance Agreement above.

BIDDERS REQUIREMENTS :

**T** **must** **d** **r** **d** **r** **d**

**DMHAS AUTHORIZED BID FORM**

Vendors **must** submit their bid on: **DMHAS Authorized BID form ( Section 1.02) (2Pgs)**

**Bid form must be signed and affix Corporate or Notary Public Seal.**

(Additional details may be attached if necessary)

**SIGNED BIDDER CERTIFICATION STATEMENT** ( See bottom of page)

**EEO-EMPLOYMENT INFORMATION FORM** (last page of this bid document)

**SBE MBE CERTIFICATE DAS SUPPLIER DIVERSITY PROGRAM.**

For more Info go to DAS Supplier Diversity website.....: <http://www.das.state.ct.us/cr1.aspx?page=34>

(N/A if this is a Non Set Aside bid or specialty trade bid with no subs allowed)

**BID BOND OR CHEC** (BIDS GREATER THAN OR EQUAL TO \$50,000)

**T** **d** **d** **r** **d** **d** **d**

**CERTIFICATE OF INSURANCE COVERAGE** (Worker's Compensation, BI, and PD)

**QUESTIONNAIRE SEC**

**CONTRACTOR STATE OF CT LICENSE**

**A** **rd** **A**

**PERFORMANCE, LABOR, MATERIAL BOND**

(BIDS GREATER THAN OR EQUAL TO \$50,000)

**PREVAILING WAGE REQUIREMENTS**

**Contractor Work Certificate Form**

(ALTERATIONS & RENOVATIONS: BIDS EQUAL TO OR GREATER THAN \$100,000).

(NEW CONSTRUCTION: BIDS EQUAL TO OR GREATER THAN \$400,000)

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**\*\* At the bid opening, if any of these items are missing from the apparent lowest bid package, a 24-hour grace period shall be granted. The contractor will be notified of any omissions by FSB via fax or e-mail . Vendor will be given 24 hours from the time of FSB notification to provide the missing document(s). Failure to supply the proper documentation within the 24-hour period will disqualify the bid, and the contract will be awarded to the next lowest bidder.**  
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**BIDDER CERTIFICATION STATEMENT:**

I, **Pr** **T** **C** **S**  
**R** **BID S** **R** **I** **r** **d** **BID Add**  
**DAS W** **P** **r** **d** **BID**

**Vendor Name (Printed & Signed)** \_\_\_\_\_ **Date:** \_\_\_\_\_





# COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES

## CONTRACT COMPLIANCE REGULATIONS NOTIFICATION TO BIDDERS

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes. According to Section 46a-68j-30(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to “aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials.” “Minority business enterprise” is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: “(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Section 32-9n.” “Minority” groups are defined in Section 32-9n of the Connecticut General Statutes as “(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4) Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . .” An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations. The awarding agency will consider the following factors when reviewing the bidders qualifications under the contract compliance requirements: (a) the bidders success in implementing an affirmative action plan; (b) the bidders success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive; (c) the bidders promise to develop and implement a successful affirmative action plan; (d) the bidders submission of employment statistics contained in the “Employment Information Form”, indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and (e) the bidders promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

STATE OF CONNECTICUT  
**COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES**  
**NOTICE CONCERNING CONTRACT COMPLIANCE RESPONSIBILITIES**  
**TO ALL LABOR UNIONS, WORKERS REPRESENTATIVES AND VENDORS**

Any contract this contractor has with the State of Connecticut or political subdivisions of the state other than municipalities shall be performed in accordance with CONN. GEN. STAT. Section 4a-60 and Section 4a-60a. This means that this contractor:

1. Agrees to provide the Commission on Human Rights and Opportunities (CHRO) with any information concerning this contractor's employment practices and procedures which relates to our responsibilities under CONN. GEN. STAT. Sections 4a-60 or 46a-56 or Section 4a-60a.; and

2. Agrees to include the provisions of CONN. GEN. STAT. Section 46a-60(a) and Section 4a-60a in each and every subcontract and purchase order and to take whatever action the CHRO deems necessary to enforce these provisions. WITH REGARD TO RACE, COLOR, RELIGIOUS CREED, AGE, MARITAL STATUS, NATIONAL ORIGIN, ANCESTRY, SEX, MENTAL RETARDATION OR PHYSICAL DISABILITY, this means that this contractor:

1. Shall not discriminate or permit discrimination against anyone;

2. Shall take affirmative action so that persons applying for employment are hired on the basis of job-related qualifications and that employees once hired are treated without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation or physical disability, unless the contractor can show that the disability prevents performance of the work involved;

3. Shall state in all advertisements for employees that it is an Affirmative action-equal opportunity employer@;

4. Shall comply with CONN. GEN. STAT. Sections 4a-60, 46a-68e and 46a-68f and with each regulation or relevant order issued by the CHRO under CONN. GEN. STAT. Sections 46a-56, 46a-68e and 46a-68f; and

5. Shall make, if the contract is a public works contract, good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials.

WITH REGARD TO SEXUAL ORIENTATION, WHICH INCLUDES HOMOSEXUALITY, BISEXUALITY AND HETEROSEXUALITY:

1. The contractor will not discriminate or permit discrimination against anyone, and employees will be treated without regard to their sexual orientation once employed; and

2. The contractor agrees to fully comply with Section 4a-60a and each regulation or relevant order issued by the CHRO under CONN. GEN. STAT. Section 46a-56.

Persons having questions about this notice or their rights under the law are urged to contact the:

COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES  
DIVISION OF AFFIRMATIVE ACTION, MONITORING & CONTRACT COMPLIANCE  
21 Grand Street  
Hartford, Connecticut 06106  
(860) 541-3400

COPIES OF THIS NOTICE SHALL BE POSTED IN CONSPICUOUS PLACES  
AVAILABLE TO ALL EMPLOYEES AND APPLICANTS FOR EMPLOYMENT

EE 00

**STATE OF CONNECTICUT**  
**DEPARTMENT OF MENTAL HEALTH & ADDICTION SERVICES**  
**EMPLOYMENT INFORMATION FORM**

Bidder/Contractor: \_\_\_\_\_ Company/Project: \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_ Phone Number: \_\_\_\_\_ Contractor's Address Number: \_\_\_\_\_

Requestor's Name: \_\_\_\_\_, Title: \_\_\_\_\_, Organization: \_\_\_\_\_, Address: \_\_\_\_\_, Phone: \_\_\_\_\_, Fax: \_\_\_\_\_, E-mail: \_\_\_\_\_

JOB CATEGORIES	OVERALL TOTALS S, C, M, F	A W, N, H, Or	B B, N, H, Or	C H	D A, P, I	E A, N	F P, D
Occupational and Managerial							
Professional							
Technical							
Skilled Worker							
On-site Contractor							
Contract Worker (on-site)							
On-site Support Staff							
Lease Worker							
Seasonal Worker							
<b>TOTALS ABOVE</b>							

Do you have CT DECD Contractor and Managerial Support Staff or Services? YES NO E-mail:

Are you a contractor, subcontractor, or other person or organization providing services to the State of Connecticut? YES NO E-mail:

Do you have any other contracts with the State of Connecticut? YES NO E-mail:

Discussions with Requestor, Hiring, Training and Project Management A-D Contractor's Project:

**TABLE OF CONTENTS**  
**TECHNICAL SPECIFICATIONS**  
**REPLACEMENT OF FUEL STORAGE SYSTEMS AT BATTELL HALL AND THE HR**  
**SERVICES BUILDING**

DIVISION 01 00 00	GENERAL REQUIREMENTS
Section 01 00 00	GENERAL REQUIREMENTS
DIVISION 32 30 00	SITE IMPROVEMENTS
Section 32 31 00	FENCING
DIVISION 02 00 00	EXISTING CONDITIONS
Section 02 40 00	DEMOLITION & STRUCTURE MOVING
Section 02 60 00	CONTAMINATED SITE MATERIAL REMOVAL
DIVISION 03 00 00	CONCRETE
Section 03 30 00	CAST-IN-PLACE CONCRETE
DIVISION 23 10 00	FACILITY FUELING SYSTEMS
Section 23 13 23	FACILITY ABOVEGROUND FUEL STORAGE TANKS
DIVISION 26 00 00	ELECTRICAL
Section 26 00 00	ELECTRICAL
Section 26 05 00	COMMON WORK RESULTS FOR ELECTRICAL
DIVISION 28 00 00	ELECTRONIC DETECTION AND ALARM
Section 28 34 00	TANK LEVEL; MONITORING, OVERFILL ALARM AND LEAK DETECTION MONITORING SYSTEMS
Section 28 40 00	ELECTRONIC MONITORING AND CONTROL
DIVISION 31 00 00	EARTHWORK
Section 31 00 00	EARTHWORK

SECTION 01 00 00  
GENERAL REQUIREMENTS

01001 DESCRIPTION

- A. These General Requirements are hereby made a part of each and every Division and Section of the Specifications. The Contractor shall ensure that each and every subcontractor and material supplier is so informed and complies with the requirements of this Section. Additional provisions of the Specifications are supplementary, and in any case where general conditions are modified, remaining portions of the general article shall remain in effect. In addition, where there are differences in these Specifications and the general conditions, the most stringent requirement, as determined by the Engineer, shall apply and remain in effect.

01010 SUMMARY OF WORK

- A. The project is titled "MHA-1047 NP:CVH:Replace Fuel Tanks, Replacement of Fuel Storage Systems at Battell Hall and the HR Services Building" at the Connecticut Valley Hospital. All work is located on the State run facility in Middletown, Connecticut. The Hospital is located at 1000 Silver Street. The location of the two tank replacement projects is shown on the Drawings.
- B. The work to be performed under this project consists of, but is not limited to, providing all equipment, labor, power, water, supplies and materials required to:
1. Furnish and install one 1,000-gallon diesel fuel double walled protected aboveground storage tank system at Battelle Hall and one 6,000-gallon fuel oil double walled protected aboveground storage tank system at the HR Services Building with all associated utility connections. The Battell Hall tank shall be connected to the existing emergency generator and the HR Services tank shall be connected to the existing HR Services building boiler. Both the Battell Hall tank and HR Services Building tank

shall be installed and connected, tested and ready for use in accordance with all applicable codes, standards, laws and regulations.

2. Furnish and install all required tank system and installation appurtenances and components (e.g., concrete foundation pad, fuel and vent piping, valves, adapters, caps, level, overflow and leak sensing devices, connections, electrical panels, conduit, wiring, controls, signs, etc.). The Contractor is responsible for supplying all components and providing complete working systems, whether shown and specified herein or not.
  3. Furnish and install automated high level alarm and fuel control system.
  4. Furnish and install fence and gates.
  5. Furnish and install stone material inside fence.
- C. All work shall be performed and completed in accordance with the requirements of the Regulations of Connecticut State Agencies (RCSA) including, but not limited to, the requirements of 22a-174-20 and 22a-174-30; National Fire Protection Association (NFPA) 30 and 30A; National Electrical Code; American Petroleum Institutes (API); and all other applicable City, state and federal regulations.
- D. All materials and equipment supplied shall be new and furnished directly from the original product manufacturer in original product packaging.
- E. The Contractor shall furnish all labor, materials, equipment and tools necessary to perform the work as indicated in the Contract Documents.
- F. The Contractor shall prepare and issue all notifications, and apply for and obtain all permits and approvals required to complete the Work. All fees for licenses, permits, tolls, approvals, taxes, tariffs, surcharges, etc. shall be the responsibility of the Contractor.
- G. Prior to ordering materials or starting construction on the project, the Contractor shall submit all

appropriate shop drawings and material approval requests (e.g., asphalt pavement and backfill sources and samples) for Engineer's review. Engineer's approval shall be required.

- H. Locate, mark out and protect all underground utilities that are to remain. Protect all existing lighting and trees as marked on the project drawings.
- I. Complete site restoration and cleanup to restore area to condition acceptable to the Engineer and Owner.
- J. In the event that bituminous concrete is unavailable due to cold weather conditions, the Contractor shall pave all unpaved and damaged surfaces with temporary pavement as specified in Section 9.23 of the Connecticut Department of Transportation Standard Specifications Form 816. The temporary pavement shall be maintained by the Contractor until such time as permanent pavement material becomes available at which time final restoration shall be completed by the Contractor.
- K. Furnish and place approved environmentally clean soil as needed and in accordance with the specifications. Restore surfaces as shown on the Drawings and as specified. Existing material may not be used as backfill. Contaminated, hazardous or otherwise regulated material may not be used as backfill.
- L. The Contractor should note that this summary is not a complete description of work required by the Contract Documents.
- M. The Contractor will be held to have examined the work site and to have satisfied himself/herself as to the conditions surrounding the premises as no allowance will be made for failure on his/her part to do so. The submission of a bid/proposal by the Contractor will be construed as acceptance, by the Contractor, of the specifications as sufficient to enable his/her supplying the detail of all work contemplated hereunder, all to the approval of the Engineer, and without extra charge. Insofar as possible, the Contractor, in carrying out the Work, must employ such methods and means as will not cause the interruption of or interference with the work of any other Contractor,

nor with the normal routine activities at the facility except as otherwise specified herein.

- N. State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction Form 816 is referenced for technical requirements for materials and installation. All Form 816 work shall be included in the Contract at no extra cost to the Owner. Form 816 basis of payment are excluded from this Contract.
- O. The Connecticut Valley Hospital is an active facility. The Contractor will be required to coordinate the Work with operations of, and abide by security requirements, of the Connecticut Valley Hospital.
- P. All equipment furnished and located outside shall be designed and manufactured for outdoor service and shall be weatherproof. If a particular item specified is not weather-proof, and an alternate item is available which is weatherproof, and the alternate item satisfies the specified requirements and will provide the intended service, the Contractor shall furnish the weatherproof item as if it were specified, pending Engineer's approval. All manufacturer provided options for complete weatherproofing shall be furnished whether explicitly specified herein or not.
- Q. Comply with all requirements of and provide all equipment required by the State of Connecticut Office of the State Fire Marshal and the City of Middletown Fire Marshal, consistent with the intent of the Drawings and Specifications for complete fuel supply systems, ready for use.

01011 EXAMINATION OF SITE

- A. The Specifications have been prepared to provide guidance to the Contractor on the work required. Prior to bidding, all contractors are advised to examine the site. Failure to visit the site and note all conditions will in no way relieve the Contractor from completing the Work.
- B. Subsequent to the award of the Contract, the successful Contractor will be granted access to the site to make detailed measurements, plan access to the work site and

other considerations of the Work. Arrangements for such site visits will be made with the Owner.

01012 PROJECT DOCUMENTS

- A. The Specifications and the Drawings describe and illustrate the materials and labor necessary for the work of this Project.

01013 DRAWINGS FURNISHED

- A. The Contractor will be furnished one set of the Specifications and Drawings on or about the time of execution of the Contract.
- B. The Contractor is provided a copy of available tank system design drawings and submittals in the Drawings for review and consideration in preparing a bid and completing the Work.

01015 CONTRACTOR'S USE OF PREMISES

- A. The Contractor shall confine his/her operations, including storage of supplies, equipment and materials to the Work Area limits shown on the Drawing or as otherwise approved by the Engineer and Owner.
- B. The areas and/or spaces, including their access, shall be maintained free and clear throughout the Contract term.
- C. Parking for Contractor's employees will be limited to an area (or areas) designated by the Engineer or Owner. The Contractor may be required to provide identification stickers or other form of identification for employees' vehicles.
- D. Contractor shall be responsible for the security of equipment and materials on the site.

01016 OCCUPANCY

- A. Owner will occupy premises during entire construction period for conduct of normal operations. The Contractor shall cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner use.

01035 OVERTIME

- A. Normal working hours are 7:00 A.M. to 4:00 P.M., Monday through Friday. If the Contractor desires to work at a time other than normal work hours, on weekends, or on holidays, the Contractor must request permission from the Engineer at least 48 hours in advance of such work. Approval must be received prior to the requested work time.

01040 COORDINATION

- A. Coordinate the work of the several trades to assure the efficient and orderly sequence of construction elements.
- B. Verify that characteristics of interrelated equipment are compatible; coordinate work of various Sections having interdependent responsibilities for installing, connecting and placing equipment in service.
- C. Coordinate space requirements. Follow logical routing for pipes, ducts, and conduits as closely as practicable. Use spaces efficiently to maximize accessibility for other installations.
- D. In finished areas (except as otherwise shown), conceal pipes, duct and conduits in the construction.
- E. See also General Conditions.

01045 CUTTING AND PATCHING

- A. Openings and chases may not be shown on the Drawings. It is the responsibility of the Contractor to provide chases, channels or openings where needed.
- B. The Contractor shall install sleeves, inserts and hangers where appropriate.

- C. After completion of openings, channels and/or chases, the Contractor shall close and finish same.
- D. Permission shall be obtained from the Engineer before cutting beams, arches, lintels or other structural members. Asphalt and concrete ground covers shall be neatly saw cut through their entire thicknesses.
- E. Seal penetrations watertight through floors and walls; restore and preserve fire-rated construction.
- F. The Contractor shall verify dimensions for built-in work and/or work adjoining that of other trades before ordering any materials or doing any work. Discrepancies shall be submitted to the Engineer before proceeding with the work.
- G. Hot Work, Fire & Smoke penetration and Confined Space permits are required from Owner prior to starting work. Permits are available from Owner at no charge.
- H. See also General Conditions.

01090 STANDARDS, CODES AND SPECIFICATIONS

- A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes, laws or regulations.
- B. References to standard specifications and codes refer to the editions current at the bid due date. References include their addenda and errata, if any, and shall be considered a part of these Specifications as if they were printed herein in full.

01100 SPECIAL PROJECT PROCEDURES

- A. At least seventy two (72) hours prior to the start of construction, the Contractor shall notify the following agencies and contacts:
  - 1. Office of the State Fire Marshal at (860) 685-8350.
  - 2. Office of the City of Middletown Fire Marshal at (860) 343-8012.

3. State of Connecticut Call Before You Dig at (800) 922-4455.

- B. At least 48-hours prior to the start of construction, the Contractor shall provide the Engineer written assurance that the above contacts have been appropriately notified. The Contractor shall transmit to the Engineer at the time of issuance copies of all communications with government agencies related to the Work.
- C. The Contractor shall be responsible for the protection of all existing structures.
- D. The Contractor shall provide documentation to the Owner showing that all materials disposed off-site for the Contract were disposed of in accordance with applicable local and State regulations. The Contractor shall obtain written authorization from the Engineer or Owner prior to removing excavated soil from the site.
- E. The Contractor shall install a warning tape located a minimum of twelve (12) inches above all buried conduits, wires, cables, utility pipes, drainage pipes, under drains or other underground utilities installed and exposed by the Contractor. The warning tape shall be of durable impervious material, designed to withstand extended underground exposure without material deterioration or color fade. It shall be of the color assigned to the type of utility for surface markings and shall be durably imprinted with an appropriate warning message. The tape shall also comply with the specific requirements of the utility company that owns the facility. All tapes, unless otherwise directed by the specific utility, shall be detectable to a depth of at least three feet with the least expensive commercial radio type metal locator. Assigned colors are:
  - 1. Green - Storm and sanitary sewers and drainage systems including force mains and other non-hazardous materials.
  - 2. Blue - Water.
  - 3. Orange - Communication lines or cables, including but not limited to telephone, telegraph, fire signals,

cable television, civil defense, data systems, electronic controls and other instrumentation.

4. Red - Electric power lines, electric power conduits and other electric power facilities.
5. Yellow - Gas, oil petroleum products, steam, compressed air, compressed gases and all other hazardous materials except water.
6. Brown - Other.
7. Purple - Radioactive materials.

01121 SALVAGEABLE MATERIALS

- A. See Demolition and Structure Moving Specification Section 02 40 00.

01210 PRECONSTRUCTION CONFERENCE

- A. The Engineer will organize a Preconstruction Conference and notify the parties concerned. The Contractor shall be required to attend and shall have in attendance at the conference the Contractor construction superintendent and an appropriate representative of each subcontractor.

01220 PROJECT MEETINGS

- A. A schedule of regular project meetings will be established at the Preconstruction Conference. The Contractor shall be required to attend weekly project meetings at the project site.

01310 CONSTRUCTION SCHEDULE

- A. Within 7 calendar days after receiving the Notice to Proceed or at the Preconstruction Meeting, whichever comes first, the Contractor shall submit to the Engineer for review and approval a Construction Progress Schedule listing anticipated dates for the occurrence of major project milestones including but not limited to: submit documentation (e.g., clean soil source information, new product information), Engineer review time, mobilization, installation of buried conduit, concrete foundation pad installation, new tank

delivery, tank system installation, interior work, energize electrical equipment, tank systems testing, automated fuel control and accounting system installation and testing, clean soil backfill import, excavation backfill, fence installation, pavement installation and striping, training, submittal of final project documentation and cleanup.

- B. Fencing and pavement shall not be installed until after the new tanks have been installed and approval has been issued by the Engineer for installation of fencing and pavement. The final locations and dimensions of fencing, gates and pavement may be adjusted prior to installation at no additional cost to the Owner.

01340 SHOP DRAWINGS

- A. The Contractor shall submit four (4) copies of all required shop drawings to the Engineer.
- B. Details shall be large scale or full size.
- C. The Contractor shall review the shop drawings, stamp with his/her approval and submit them with reasonable promptness and in orderly sequence so as to cause no delay in his/her work or in the work of any subcontractor. Shop drawings shall be identified for item and material. The Contractor shall inform the Engineer, in writing, of any deviation in the shop drawings from the requirements of the Contract Documents.
- D. The Engineer will review and comment on shop drawings with reasonable promptness, but only for conformance with the design concept of the project and with the information in the Contract Documents.

01341 SAMPLES

- A. Submit samples of items where specifically required. Furnish information and data for items or materials offered as equals to those specified to establish their equality.
- B. Mark samples to show:
  - 1. Name of project.

2. Name or trade, type, quality or grade and any further designation necessary to identify the items or materials.
3. Manufacturer's or supplier's name.
4. Name of Contractor, and subcontractor, if any.
- C. Submit samples of size and/or number sufficient to show quality, type, range of color, finish and texture.
- D. Furnished materials shall be equal to approved samples.

01400 QUALITY CONTROL

- A. Comply with manufacturers' instructions and specifications for storage and use of their products.
- B. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from the Engineer before proceeding.
- C. When specified, require manufacturer to provide qualified personnel to observe field conditions; installation; quality of workmanship; to test, adjust and balance equipment, as applicable.
- D. Where required by the Specifications, submit certificates to the Engineer, executed by a responsible officer of the manufacturer, warranting that product meets or exceeds specified requirements.
- E. When required by the Specifications, submit manufacturer's data sheets, including instructions and recommendations.

01511 TEMPORARY ELECTRICITY AND LIGHTING

- A. At the approval of the Owner, connect to existing available electrical service at tank locations to provide power and lighting using construction-grade extension cords. Contractor shall inspect existing service prior to start of work. Owner will pay cost of energy used from existing outlets if approved by Owner. Contractor shall take appropriate measures to conserve energy including but not limited to turning power off when not in use. The Contractor shall provide electrical and lighting for construction operations as needed to complete work and as required by the Engineer to properly inspect the Work. Some permanent lighting is present from area lights. The Contractor shall provide, at his/her own expense, all connections, extensions and other apparatus required for use of temporary electrical services approved by the Owner or for providing their own electricity and lighting. At the termination of construction, return Owner electrical services to original condition.

01513 TEMPORARY FUEL, HEATING, COOLING AND VENTILATING

- A. The contractor shall supply temporary fuel to the Battell Hall emergency generator during the period between disconnection of the existing underground fuel supply and connection of the new above ground storage tank fuel supply. Fuel shall be provided in a double-walled 275-gallon above ground storage tank with connection to the emergency generator.
- B. Provide any required heat and ventilation to maintain specified conditions for construction operations and to protect materials and finishes from damage by temperature or humidity. Costs for such services shall be paid by the Contractor.
- C. Temporary heating and ventilation shall comply with OSHA regulations and other applicable codes, statutes, rules and regulations.

01514 TEMPORARY TELEPHONE

- A. The Contractor shall provide his/her own telephone.

01515 TEMPORARY WATER

- A. At the approval of the Owner, Contractor may connect to existing Owner facilities near tank locations with garden hoses. Owner will pay for water used for this work if approved by Owner. The Contractor shall not waste water or use faulty equipment. The Contractor shall provide, at his/her own expense, all connections, extensions and other apparatus required for use of such temporary water services approved by the Owner or for providing their own water. Upon completion of the Contract, the Contractor shall disconnect temporary extensions and return any Owner used water service to original condition.

01516 TEMPORARY SANITARY FACILITIES

- A. The Contractor shall be allowed access to the Owner's sanitary facilities for his/her own use.

01518 FIRE PROTECTION

- A. During construction, the Contractor shall be responsible for loss or damage by fire to the work of the Contract until completion. Any fire used by the Contractor for working purposes shall be extinguished when not in use. Bitumen or tar shall be melted on the ground only. No flammable material shall be stored in any building in excess of amounts allowed by the authorities. No gasoline shall be stored in or close to any building including any temporary construction trailer at any time. The Contractor shall assign a responsible onsite employee to be in charge of fire protection measures during construction.
- B. Furnish, at a minimum, two fire extinguishers in accordance with requirements of NFPA 10 and 30A. Provide according to extra (high) hazard requirements.

01520 CONSTRUCTION EQUIPMENT

- A. The Contractor shall furnish tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and similar work or material necessary to ensure convenience and safety in the execution of the Contract. The responsibility for design, strength and

safety of all such items shall remain with the Contractor. All such items shall comply with OSHA regulations and applicable local and state codes, statutes, rules and regulations.

01530 BARRIERS AND ENCLOSURES

- A. Provide barriers to prevent public entry into construction areas and to protect existing facilities from damage by operations.
- B. Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, materials dumping, chemically injurious materials, puddling or running water.
- C. Barriers and enclosures shall be in conformance with code requirements. Do not block egress from occupied buildings unless approved by Owner and necessary to further the work of the Contract. In this case, secure the Owner's approval of an alternate egress plan prior to such work.

01535 PROTECTION

- A. Protect buildings, equipment, furnishings, grounds and plantings from damage. Any damage shall be repaired or otherwise made good at cost of the Contractor.
- B. Provide protective coverings and barricades to prevent damage or physical injury. The Contractor shall be held responsible for, and must make good at his/her own expense, any damage due to improper coverings. Protect the public and facility personnel from injury.
- C. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.

01540 SECURITY

- A. Provide security program and facilities to protect work equipment and area from unauthorized entry, vandalism and theft. Coordinate with Owner's security program.
- B. The Contractor shall be solely responsible for damage, loss or liability due to theft or vandalism of the Contractor's equipment and materials.

- C. All employees of the Contractor and any subcontractors shall be prohibited from carrying such items as weapons, drugs, or alcohol to the site.

01550 TRAFFIC WAYS

- A. The Contractor may use on-site paved roads and parking areas but shall not encumber same or their access unless otherwise approved by the Engineer and Owner. Roadways shall not be blocked by standing trucks, parked cars, material storage, construction operations, or in any other manner.
- B. Public roads and existing paved roads, drives and parking areas on Owner's property shall be kept free from scrap, waste, or debris due to construction operations and any damage to their surface caused by the Contractor shall be repaired by Contractor at its own expense.

01560 TEMPORARY CONTROLS

- A. The Contractor shall confine his/her construction activities only to areas required for the execution of the Work. Land resources within the project areas and outside limits of the Work as may be affected by the work of this Contract shall be preserved in their present condition, or be restored to a condition after completion of construction that will appear to be natural.
- B. The Contractor shall not deface, injure or destroy trees or shrubs, nor remove or cut them without Owner's permission. Ropes or cables shall not be fastened to or attached to trees for anchorages unless approved by the Engineer for emergency use. Where such special emergency use is permitted, wrap the trunk with burlap or rags, and tie softwood cleats over wrapping. Where trees may possibly be defaced, bruised, injured, or damaged by equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected at all times.

- C. Trees or landscaped features scarred or damaged by Contractor's equipment or operations shall be restored as nearly as possible to original condition by the Contractor. Scars made on trees by equipment, or by the removal of limbs larger than one inch in diameter, shall be coated with an approved tree wound dressing. Trimming or pruning shall be performed in an approved manner. Trimming with axes will not be permitted.
- D. The Contractor shall eliminate all signs of temporary construction facilities such as roads, work areas, structures, foundations, stockpiles of excess or waste materials, or any other vestiges of construction caused by the Contractor.
- E. The Contractor shall not pollute waterways. Refuse, contaminated soil or groundwater, fuels, oils, bitumen, calcium chloride, acids, or toxic materials shall be stored and disposed of in a manner to prevent their entry into any waterways. The Contractor shall comply with applicable federal, state, and municipal laws concerning pollution of waterways and storm water management. Work under this Contract shall be performed in such a manner that objectionable conditions will not be created on or adjacent to project site areas.
- F. The Contractor shall install catch basin inserts in the nearest downgradient catch basins and surround the catch basins with hay bales to ensure proper sedimentation erosion control measures in the execution of all earthwork and this project. Erosion control structures shall be maintained until soil conditions have been stabilized. No construction shall proceed until the erosion and sedimentation control measures have been installed as the sequence of construction necessitates. Prepare applications, obtain approvals and comply with all applicable soil erosion and sediment control requirements of local, state and federal government agencies.

- G. The Contractor shall maintain excavations, embankments, stockpiles, waste areas, borrow areas, and other work areas within or beyond the project site boundaries free from dust which would cause a hazard or nuisance to others. Approved methods of stabilization consisting of temporary covers, sprinkling, approved light bituminous treatment or similar methods will be permitted to control dust. Sprinkling shall be repeated at such intervals as to keep the disturbed area damp at all times. Dust control shall be performed by the Contractor as the work proceeds and whenever a nuisance or hazard occurs as determined by the Engineer.
- H. The Contractor shall maintain facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out, or until the material concerned has become stabilized to the extent that pollution is no longer created.
- I. If the Contractor locates material that is believed to be contaminated or hazardous on the project, which has not been previously located, the Contractor shall immediately cease work in the area and notify the Engineer. The Engineer will notify the Owner and, if appropriate, the Owner will notify the Oil and Chemical Spill Response Division of the Bureau of Waste Management, State of Connecticut Department of Energy and Environmental Protection. No work shall be done in an area identified as having contaminated or hazardous material without prior permission of the Engineer.
- J. The Contractor shall take all appropriate safety and health measures in performing work under this Contract. The Contractor is subject to applicable federal and state laws, regulations, ordinances, codes and orders relating to safety and health in effect on the date of this Contract. Due to the nature of the Work, all fire codes shall be strictly followed.
- K. During the performance of work under this Contract, the Contractor shall comply with procedures prescribed for the control and safety of persons visiting the project site. The Contractor is responsible for insuring that his/her personnel and those of his/her subcontractors are familiar with and in compliance with safety

requirements. The Contractor shall advise the Engineer of any special safety restrictions he/she has established so that Owner and Engineer personnel can be notified of these restrictions.

01569 CLEANING

- A. The Contractor shall maintain areas under Contractor's control free of waste materials, debris and rubbish. Maintain in a clean and orderly condition.
- B. The Contractor shall control cleaning operations so that dust and other particulars will not adhere to wet or newly-coated surfaces.
- C. The Contractor shall remove waste materials, debris and rubbish from site at a preapproved frequency (no less than weekly) and dispose of off-site. No scrap, debris, or waste materials from the Contractor's work shall remain anywhere on site upon final acceptance of the project.

01590 FIELD OFFICES AND SHEDS

- A. The Contractor may provide, for his/her own use and at his/her expense, a suitable office. The on-site locations for such facilities must be preapproved by the Engineer or Owner.
- B. No field office is required for Engineer's or Owner's personnel.
- C. The Contractor shall remove temporary materials, equipment services and construction before Substantial Completion.
- D. The Contractor shall clean and repair damage caused by installation or use of temporary facilities. Restore existing facilities used during construction to specified or original condition.

01610 TRANSPORTING AND HANDLING

- A. Materials and equipment shall be delivered, stored and handled to prevent intrusion of foreign matter and damage by weather or breakage. Packaged materials

shall be delivered and stored in original, unbroken packages.

- B. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct and products are undamaged.
- C. Packages, materials and equipment showing evidence of damage will be rejected and replaced at no additional cost to the Owner.

01620 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturers' instructions with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity range required by manufacturer.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Contractor shall place and store loose granular material on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to ensure products are undamaged and are maintained under required conditions. Keep log showing date, time and problems, if any.
- E. Stone, masonry units and similar materials shall be stored on platforms or dry skids and shall be adequately covered and protected against damage.

01710 FINAL CLEANING

- A. The Contractor, preparatory to final inspection, shall provide final cleaning of all work in readiness for use and occupancy of the project by the Owner.
- B. This final cleaning shall be complete in every manner.

- C. If the Contractor fails to clean up, the Owner may do so and the cost thereof shall be charged to the Contractor and may be deducted from any payment made to the Contractor by the Owner.

01720 PROJECT RECORD DOCUMENTS

- A. The Contractor shall keep one copy of the Specifications, Drawings, Addenda, approved Shop Drawings, Change Orders, Schedules and Instructions in good order at the site and marked to record all changes made during construction. The documents shall be available to the Engineer, Owner, or their authorized representatives at all times.
- B. Record Drawings During Construction:
  - 1. The Contractor shall keep two sets of black (or blue) and white prints of the Contract Drawings at the site on which he/she shall record changes as they occur on the job. Maintain the record sets separate from documents used for construction.
  - 2. Keep documents current; do not permanently conceal any work until required information has been recorded.
  - 3. At the conclusion of construction, the Contractor shall turn one set of the marked-up drawings with recorded changes over to the Engineer.

01730 OPERATION AND MAINTENANCE DATA

- A. The Contractor shall instruct the Owner's designated personnel at the site in the operation of new equipment and shall provide manuals for the equipment. Provide qualified personnel for as long as necessary to instruct the Owner's personnel.
- B. Submit for each tank system, four (4) copies of the manuals in 3-ring, loose-leaf notebooks to the Engineer for approval. Manuals may consist of plain paper copies of approved shop drawings and catalog cuts. Upon completion and approval, 3 copies will be forwarded to the Owner.

C. Manuals shall include:

1. Operating Procedures:

- a. Typewritten procedures for each mode of operation of each piece of equipment. Procedures shall indicate the status of each component of a system in each operating mode.
- b. Procedures shall include names, symbols, valve tags, circuit numbers, schematic wiring diagrams, locations of probes, gauges, manual starters, control cabinets and other controls of each system.
- c. Emergency shut-down procedures for each piece of equipment of systems, both automatic and manual, as appropriate.

2. Maintenance Schedule:

- a. Typewritten schedule describing manufacturer's recommended schedule of maintenance and maintenance procedures.

3. Catalog Cuts:

- a. To illustrate each piece of installed equipment, including options.
- b. Include equipment descriptions including physical, electrical and mechanical; performance characteristics; installation or erection diagrams.
- c. Include spare parts numbers and names, address and phone number of manufacturer; name, address and phone number of local representative or service department.

4. Typewritten list of all subcontractors on the project, including name, address and phone number of local representative or service department.

5. Manuals shall be indexed with dividers indicating each system or piece of equipment.

01740 WARRANTIES

A. The Contractor shall guarantee all equipment, materials and workmanship for a period of at least one year from the date of acceptance of the Work. In addition, the Contractor shall furnish the warranties listed below for the new tank system. Warranties shall include all necessary supporting documentation. Submit four copies of each to the Engineer.

1. Protected Aboveground Tanks: 30 year manufacturer's warranty against failure due to corrosion, and manufacturer's 30-year warranty against structural failure.
2. Completed manufacturer's final installation checklist for each tank system installed.

B. Form for Guarantees:

1. Address to:

Mr. Steve Hecimovich, RA  
Director of DMHAS Engineering  
Connecticut Valley Hospital  
1000 Silver Street, P.O. Box 351  
Middletown, CT 06457

2. Project Title:

MHA-1047 NP:CVH:Replace Fuel Tanks  
Replacement of Fuel Storage Systems at Battell Hall and  
the HR Services Building

3. I (We) hereby guarantee the Replacement of Fuel Storage Systems at Battell Hall and the HR Services Building including all work, components, equipment and systems at the Connecticut Valley Hospital, 1000 Silver Street, Middleton, CT for a period of at least one year from [insert date of acceptance] against failures of workmanship and materials.

Signature: \_\_\_\_\_  
Signed By: [Contractor or Authorized Agent]

C. Form for Warranties:

1. Address to:

Mr. Steve Hecimovich, RA  
Director of DMHAS Engineering  
Connecticut Valley Hospital  
1000 Silver Street, P.O. Box 351  
Middletown, CT 06457

2. Project Title:

MHA-1047 NP:CVH:Replace Fuel Tanks  
Replacement of Fuel Storage Systems at Battell Hall and  
the HR Services Building

3. I (We) hereby warranty, subject to limitations included in the attached form, the AST installation project furnished at the Connecticut Valley Hospital, 1000 Silver Street, Middletown, CT for a period of at least 30 years from [insert date of acceptance] against failures of materials in accordance with the requirements of the Specifications.

Signature: \_\_\_\_\_  
Signed By: \_\_\_\_\_  
[Manufacturer or Authorized Agent]

4. I (We) hereby certify that the product for which this warranty has been prepared by the manufacturer is the product that was installed for the project noted.

Signature:  
\_\_\_\_\_  
Signed By:  
[General Contractor or Authorized Agent]

5. All warranties shall be signed by the manufacturer and the Contractor.

01750 SCHEDULES

- A. A Schedule of Work shall be submitted by the Contractor and shall include the items identified below. Approval by the Engineer and Owner of the Schedule of Work shall be required prior to mobilization to the project site.

1. Within 7 calendar days after receiving the Notice to Proceed or at the Preconstruction Meeting, whichever comes first, the Contractor shall submit to the Engineer for review and approval a Health and Safety Plan and a Construction Progress Schedule listing anticipated dates for the occurrence of major project milestones, including, but not limited to, those listed in 01310 (CONSTRUCTION SCHEDULE)-A above.
2. Notification to the appropriate agencies and contacts, including Call Before You Dig, must be completed at least seventy two (72) hours prior to the start of construction.
3. Provide written proof of notification to the agencies and contacts specified above at least forty eight (48) hours prior to the start of construction.
4. Specific Site Construction Time:
  - a. In addition to the requirements of the General Conditions, the Contractor shall complete all work within the site construction time limit stated in the Contractor's proposal unless otherwise mutually agreed to conditions or discovered findings necessitate a schedule change.
  - b. The site construction time shall begin on the date of Notice to Proceed issued by the Owner to the Contractor.
  - c. The Contractor shall make every effort possible to complete this project as soon as possible. Time is of the essence once Notice to Proceed has been issued by the Owner.

01760  
ENGINEERING

FIELD

- A. The Contractor shall perform an initial site survey to verify existing site conditions and to establish benchmarks for the completion of Work as specified, as shown on the Drawings and as described in the Contract Documents. The survey work shall be performed by a Land Surveyor licensed to practice in the State of Connecticut.

B. Contractor shall:

1. Provide civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.
2. Develop and make all detail surveys and measurements needed for construction including slope, stakes, batter boards, piling and pier layouts and all other working lines, elevations and cut sheets. Arrange for record utility mark outs.
3. Keep a transit and leveling instrument on the site at all times and a skilled instrument man employed or obtained whenever necessary for layout of the Work.
4. Provide all material required for bench marks, control points, batter boards, grade stakes, and other items.
5. Be solely responsible for all locations, dimensions and levels. No data other than written order of the Engineer shall justify departure from the dimensions and levels required by the Drawings.

C. The Contractor shall carefully preserve all existing benchmarks, and in the case of disturbance or destruction thereof caused by its Work, Contractor shall be charged with the expense and damage resulting therefrom, and shall be responsible to correct any mistakes that may be caused by the loss or disturbance of such benchmarks at no additional cost to the Owner.

D. The Contractor shall establish two (2) permanent survey benchmarks of known elevation measured from a benchmark(s) approved by the Engineer. The benchmarks shall be the reference point for establishing vertical elevations.

E. The Contractor shall employ and retain at the location of the Work a field engineer and/or superintendent capable of performing all engineering tasks required of the Contractor. Tasks included are:

1. A projection of work to be completed the following week must be submitted to the Engineer by 4:00 p.m. of the preceding work day. This projection must include:

- a. Location of all areas in which construction will be done, including Contractor and his/her Subcontractor.
  - b. Major construction equipment utilized.
  - c. Equipment and materials to be installed.
2. Provide all surveying equipment required including transit, level, stakes and required surveying accessories.
  3. Furnish all required lines and grades for construction operations. Check all form work, reinforcing, inserts, structural steel, bolts, sleeves, piping, other materials and equipment.
  4. Maintain field office files and drawings, Record Drawings, and coordinate engineering services with Subcontractors. Prepare Layout and Coordination Drawings for construction operations.
  5. Check and coordinate Work for conflicts and interferences and immediately advise the Engineer of all discrepancies noted.
  6. Cooperate with Engineer in field inspections as required.
- F. Qualified engineer or State of Connecticut registered land surveyor, acceptable to the engineer shall prepare all required drawing and survey submittals.
- G. Maintain a complete, accurate log of all control and survey work as it progresses.
- H. On completion of foundation and major site improvements, prepare a certified survey showing all dimensions, locations, angles and elevations of construction.
- I. When requested by engineer, submit certified drawings signed by registered engineer or surveyor certifying that elevations and locations of work are in conformance with Contract Documents. Explain all deviations.
- J. The initial site survey, weekly control information and as-built drawings shall show the exact surveyed location and

elevation of all work in relation to the accepted benchmarks and reference points, including, but not limited to:

1. All utilities identified or uncovered during performance of the Work.
  2. All new piping, conduit and utility lines and connections installed by the Contractor.
  3. Existing and installed fence and gates.
  4. Site structures, roads and pavement.
  5. Storm water catch basins, top of manhole rings, access hatches, grating, etc., depth of excavations and location.
  6. Property boundaries and established reference points.
- K. Vertical coordinates shall be surveyed to the nearest 0.1-foot, unless specified otherwise.

END OF SECTION

**PART 1 GENERAL**

1.1 SUMMARY

A. This specification describes the minimum health, safety, emergency response requirements for the Replacement of Fuel Storage Systems at Battell Hall and the HR Services Building at the Connecticut Valley Hospital in Middletown, Connecticut.

1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926	SUBPART P Excavations
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
49 CFR 171-179	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials, Tables, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specification

CONNECTICUT COUNCIL ON SOIL AND WATER CONSERVATION (CCSWC)

CCSWC GSESC            Connecticut Guidelines for Soil Erosion  
and Sediment Control, May 2002, latest  
edition

REGULATIONS OF CONNECTICUT STATE AGENCIES (RCSA)

RCSA 22a-449(c)        Connecticut Department of Energy and  
Environmental Protection (CTDEEP)  
Hazardous Waste Management

RCSA 22a-209           Connecticut Department of Energy and  
Environmental Protection (CTDEEP) Solid  
Waste Management

RCSA 22a-430           Connecticut Department of Energy and  
Environmental Protection (CTDEEP) Water  
Pollution Control

RCSA 22a-6k            Connecticut Department of Energy and  
Environmental Protection (CTDEEP) Water  
Pollution Control

STATE OF CONNECTICUT

CTDPH 20-441           Refresher Training

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION (CTDOT)

CTDOT OEMCA           On-Site Environmental Mitigation for  
Construction Activities, CTDOT Office of  
Environmental Planning, January 1986,  
latest edition

FORM 814                State of Connecticut, Department of  
Transportation, Standard Specifications  
for Roads, Bridges and Incidental  
Construction, Form 814, 1988 and  
amendments to date.

### 1.3 DEFINITIONS

The following terms are defined for use under this contract. Additional definitions of terms used in conduct of hazardous waste and hazardous substances operations are as contained in 29 CFR 1910.120.

#### **Area Monitoring**

Monitoring shall be performed by TRC where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

Air monitoring shall be used to identify and quantify airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of employee protection needed on site.

#### **Contaminated Waste**

A material or substance that contains chemicals or has physical properties that may result in human health effects from short-term or prolonged exposure.

#### **Contract Administrator**

TRC Environmental Corporation, 21 Griffin Road North,  
Windsor, CT. 06095

#### **CTDEEP**

The Connecticut Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106

#### **CTDPH**

The Connecticut Department of Public Health, 410 Capitol Avenue, Hartford, CT 06106.

### **Decontamination**

The removal of hazardous substances from employees, their equipment, and vehicles to the extent necessary to preclude the spread of the contaminant(s) to undesired locations.

### **EPA**

The U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

### **Hazardous Substance**

Any substance that results or may result in adverse effects to the health or safety of employees.

### **Hazardous Waste**

A waste or combination of wastes defined in 40 CFR 261.3, or (2) those substances defined in 49 CFR 171.

### **Health Hazard**

A chemical, biological, or physical agent, or mixture of agents, which may cause acute or chronic health effects in exposed persons.

### **Hot Work**

Hot work is any operation producing flame, sparks or heat including, but is not limited to welding, brazing, open-flame soldering, oxygen cutting, grinding, arc welding, cutting, thawing, oxy-fuel gas welding, hot taps, and torch applied roofing.

### **Immediately Dangerous to Life or Health (IDLH)**

An atmospheric condition that would pose an immediate threat to life, would cause irreversible or delayed adverse health effects, or would interfere with an individual's ability to escape from a dangerous atmosphere.

### **Permissible Exposure Limits (PELs)**

PEL means levels published by Occupational Safety and Health Act (OSHA) that establish limits of inhalation exposure.

There are three basic PEL classifications: time-weighted average (TWA), short-term exposure limit (STEL), and ceiling limit. The TWA and STEL limits are an "averaged" concentration over two different time periods. The TWA is generally calculated by averaging measured concentrations of a contaminant over an 8-hour time period; whereas, the STEL is calculated by averaging measured concentrations of a contaminant over a 15-minute time period. The third type of PEL is a ceiling limit, which is an absolute threshold. No averaging occurs with the measured concentration. It is an "instantaneous" limit that is not to be exceeded for any period of time.

#### **Physical Boundary**

Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel.

#### **Project Monitor/Inspector**

An employee of TRC who functions as the on-site representative of TRC overseeing the activities of the contractor.

#### **Uncontrolled Waste Site**

An area where an accumulation of hazardous waste or contaminated waste creates a threat to the health and safety of individuals and/or the environment.

### 1.4 REQUIREMENTS

A. The Contractor shall perform work in compliance with all Federal, State, and local regulations and requirements and be responsible for obtaining and payment of fees for all permits and approvals required to perform the work. Applicable regulations and requirements may include, but are not limited to:

#### 1. Federal Regulations

Environmental Protection Agency (EPA) requirements for the management of hazardous waste including 40 CFR 261, 40 CFR 262, and 40 CFR 263, 40 CFR 268, and 40 CFR 761.

Department of Transportation (DOT) requirements for the transportation of waste including 49 *CFR* 171, 49 *CFR* 172, and 49 *CPR* 173.

OSHA requirements for Safety and Health Protection including 29 *CFR* 1910 and 29 *CFR* 1926.

## 2. State of Connecticut Regulations

Connecticut Department of Environmental Protection (CTDEP)

- a. Waste Management Bureau - requirements for Hazardous, Connecticut-regulated and Solid Waste management, transport and disposal including *RCSA* 22a-449(c) and *RCSA* 22a-209.
- b. Water Management Bureau - requirements for control of wastewater discharges and use of Best Management Practices (BMPs) to protect surface and ground waters including *RCSA* 22a-430 and 22a-6k.
- c. Air Management Bureau - requirements for control of fugitive dust and visible emissions and permitting of sources exceeding state limits.

Connecticut Department of Transportation (CTDOT)

- a. Requirements for environmental mitigation for construction activities (CTDOT OEMCA).

Connecticut Council on Soil and Water Conservation (CCSWC)

- a. Requirements for soil erosion and sediment control (CCSWC GSESC).

## 3. City of Middletown Regulations

- a. Health Department - requirements to comply with health standards prior to start of work.
- b. Fire Department - requirements for fire protection during work.

4. Connecticut Valley Hospital

a. Hot Work Permit (FM Global)

1.5 SUBMITTALS

Submit the following a minimum of fifteen (15) days prior to the start of work:

A. Statements

1. Site Safety and Health Plan (SSHP)

Submit an SSHP prepared by a Certified Industrial Hygenist for review and approval. Conform to the requirements of Federal, State and local laws, rules, and regulations. Work cannot proceed until the Safety Plan has been approved. The SSHP shall include:

- a. Identification and evaluation of the hazards and risks associated with the tank excavation and tank placement activities, including excavation hazards and precautionary measures to be followed by workers for all hazards including the potential for hot work.
- b. Identification and evaluation of the hazards and risks associated with trenching activities, including utility hazards and precautionary measures to be followed by workers for all hazards.
- c. Identification of supervisory personnel and alternates responsible for site safety/response operations. Name and title of person responsible for administering plan.
- d. Determination of levels of personal protection to be worn for various site operations.
- e. List of equipment with adequate nomenclature by item, that will be used at the job site and the date and location where this equipment can be inspected by TRC.

- f. Establishment of work zones (exclusion area, contamination reduction area, and support area).
- g. Establishment of decontamination methods and procedures.
- h. Establishment of emergency procedures, such as: escape routes, fire protection, signals for withdrawing work parties from site, emergency communications, wind indicators, and procedures for evacuation of injured workers.
- i. Identification and arrangements with nearest medical facility for emergency medical care for both routine-type injuries and toxicological problems. Submit name, location, and telephone number of this medical facility.
- j. Establishment of air and personnel monitoring procedures.
- k. Establishment of procedures for obtaining and handling potentially contaminated materials.
- l. Identification of medical monitoring program, including respirator medical qualification examination for each individual at the work site.
- m. Certification for each person entering the reduction or exclusion zones that the person is fit for duty at hazardous waste sites, and adequate medical screening tests have been obtained which address the contaminants associated with the specific hazardous waste site.
- n. Identification of training plan to be instituted, including contents of 29 CFR 1910.1200 and 29 CFR 1910.134; its training contents; and instructor with appropriate training certification. Training plan shall also include counseling to each employee on exposure hazards.

- o. Establishment of a hazard communication program (29 CFR 1910.1200).
- p. 29 CFR 1910.
- q. 29 CFR 1926.
- r. 29 CFR 1926-SUBPART P, excavation measures.
- s. Hazardous Noise

Provide a written hearing protection program which will include: hazardous noise signs, as directed, wherever equipment and work procedures produce sound levels greater than 84 dBA or 140 db peak sound level.

- 4. Certification that all Contractor employees are trained in accordance with Paragraph 3.1, as required.
- 5. Provide a copy of the Contractor's Heat or Cold Stress Monitoring Program.
- 6. List of all Contractor and Subcontractor personnel proposed to enter the site.

**PART 2 PRODUCTS (Not Applicable)**

**PART 3 EXECUTION**

**3.1 EMPLOYEE TRAINING**

- A. The Contractor shall certify that all employees, including subcontractor employees, engaged in decontamination activities: 1) are currently monitored under a medical surveillance program for respirator use in compliance with 29 CFR 1910.134; and 2) are fit tested for respirator use as necessary.
- B. Employees that may come in contact with hazardous materials as part of this project shall receive an appropriate level of health and safety training in accordance with 29 CFR 1910.120, including classroom instruction, first aid and CPR training, and refresher training.

- C. Employees who have not received the required training prior to the start of site operations are not to engage in site operations until such training has been completed.

#### 3.1.1 Program Certification

- A. The Contractor shall provide written certification of completed training and/or acquired experience for all employees designated to engage in on-site activities and shall be supplied prior to the start of site operations.

Such certification shall be endorsed by a member of top level management, a corporate officer, or the health and safety program manager.

#### 3.2 PERSONNEL PROTECTION

The Contractor shall assume that initially Level D personal protective equipment (PPE) will be required.

- A. The Contractor shall apply engineering and/or work practice controls as a means of protecting personnel in performance of site-specific tasks. Engineering controls shall be implemented to reduce and maintain employee exposure at or below safe levels for those tasks demonstrating known or suspected hazards. Work practice controls shall be applied when engineering controls are impractical.

##### 1. Personal Protective Equipment and Levels of Protection

- a. The Contractor shall use personal protective equipment (PPE) only when engineering and/or work practice controls have been deemed impractical or insufficient to protect employees during site operations.
- b. The Contractor shall be directed to wear PPE based on an evaluation of performance-characteristics, site specific tasks, and known or suspected hazards. The Contractor shall assemble the PPE into levels of protection (LOP) or ensembles appropriate for the site (Level D and C).

c. The Contractor shall include a description of their respiratory protection program and the method of respirator fit testing employed.

d. The Contractor shall only make use of NIOSH/MSHA approved respiratory protective equipment.

### 3.3 MEDICAL SURVEILLANCE

#### A. Medical, Surveillance Program

1. The Contractor shall establish and implement a medical surveillance program (MSP) for employees engaged in on-site operation in accordance with 29 CFR 1910.

2. The MSP program shall include physical examinations administered by a board certified physician familiar with internal or occupational medicine.

#### B. Retention of Medical Records

1. The Contractor shall retain all medical records and personnel exposure monitoring data for an appropriate period as described in Subpart C of 29 CFR 1910.20 of the Occupational Safety and Health Administration.

#### C. Personnel Certification

1. The Contractor shall provide written certification of medical fitness for work of all employees designated to engage in on-site operations prior to the start of those operations.

2. Such certification shall be endorsed by a member of top level management, a corporate officer, or the health and safety program manager.

D. Employee Heat and Cold Stress Monitoring

1. As dictated by seasonal conditions, the Contractor shall implement an employee heat or cold stress monitoring program during site operations and shall provide TRC with a copy of the program.
2. The program shall include employee awareness of the signs and symptoms of heat or cold stress, preventive measures, and employee parameters to be monitored.

3.4 SITE SAFETY BRIEFINGS

- A. Contractor shall attend safety briefings prior to initiating any new site activity and a safety meeting held prior to each shift to ensure that employees are appraised of the requirements of the safety and health plan and that they are being followed.

3.5 INSPECTION

3.5.1 Inspection of Equipment

3.5.1.1 Respirators

Respirator users shall inspect their respirators in strict accordance with the instructions provided by the manufacturer. Respirators shall be in compliance with the Respiratory Protection Program as required by ANSI Z88.2 and 29 CFR 1910.134. Each respirator filter shall be in compliance with UL 586.

3.5.2 Personnel Inspection

3.5.2.1 Clothing

Personnel for Proper Attire Commensurate with Hazards Involved: Check for:

- a. Clean clothing in good condition (wear freshly laundered clothing at the beginning of the job and at the start of each workday thereafter).
- b. Boots and gloves of approved type and in good condition.

3.5.2.2 Gum or Tobacco Chewing

Gum or tobacco chewing is prohibited.

#### 3.5.2.3 Physical Defects or Injuries

Ensure that people have no physical defects or injuries which may prevent their wearing respirators or which may cause rescue to be difficult. No beards, sideburns, or large mustaches shall be allowed on people who must wear respirators.

#### 3.5.2.4 Alcoholic Beverages and Drugs

Ensure that people entering the site are not under influence of alcoholic beverages and drugs.

#### 3.5.2.5 Counseling on Reproductive Hazards

Ensure that all employees have been counseled on and fully understand the reproductive hazards related to work in contaminated areas since chemical contaminants may seriously affect them.

### 3.6 SITE CONTROL

- A. The Contractor shall be responsible for conducting operations at the site in a manner as to reduce the possibility of contact with any contaminants present and to prevent the removal of contaminants by personnel or equipment leaving the site.
- B. The Contractor shall keep a daily log of site activities, including: personnel visiting site, affiliation, date, arrival time, departure time and purpose of visit.
- C. The Contractor shall provide TRC with a list of all Contractor and subcontractor personnel proposed to enter the site prior to start of operations, updating the list as necessary.
- D. In no case shall visitors (i.e., personnel not regularly assigned to work on the site who have legitimate business at the site) be allowed entrance to Excavation Areas. Contractor shall fence, barricade, and/or mark to prevent unauthorized personnel into Excavation Areas.

- E. Transfer of contaminated wastes from the excavation areas to the designated waste storage area shall be performed in a manner to prevent spillage, leakage, contamination to unimpacted areas and shall prevent exposure to facility and other site personnel.

### 3.7 SANITATION

- A. The Contractor shall provide toilet facilities, potable water, and washing facilities. These facilities shall be in near proximity to the Excavation Areas.

### 3.8 DEFECIENCIES

- A. TRC will stop any operation that the Contractor has been directed to correct and has not corrected. TRC will stop any Contractor operations that pose an imminent or immediate health or safety hazard to Contractor employees, facility personnel, other on-site personnel, or the environment. If the Contractor does not comply with the stoppage and immediately correct a health or safety deficiency, then TRC may at its discretion retain the services of another contractor to correct the deficiency. All liability and expenses resulting from such work stoppages and deficiency correction shall be the responsibility of the Contractor.

END OF SECTION

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. The work of this section shall consist of the demolition and alteration of existing facilities as shown on the Drawings and as ordered in accordance with the Contract Documents.
- A. The locations, dimensions, and orientations of the tank systems, piping and appurtenances shown on the Drawings are approximate. The Contractor shall identify the locations, dimensions and orientation of the tank systems, piping and appurtenances. The Contractor is responsible for the location of buried utility lines and subsurface structures.
- B. The Contractor is responsible for all waste characterization sampling and analysis required by disposal facilities and applicable laws and regulations.
- C. The health and safety of the Contractor's employees shall be the sole responsibility of the Contractor during performance of the Work. All work must be completed in accordance with applicable Federal, State, and Local requirements and regulations.
- D. Refer to Section 28 00 00 for requirements for electrical and communications wire, cable, conduit.

1.02 RELATED WORK

- A. Section 31 00 00 Earthwork
- B. Section 02 60 00 Contaminated Site Material Removal
- C. Section 28 00 00 Electronic Detection and Alarm

1.03 SUBMITTALS

- A. The Contractor shall submit written documentation in the form of bills of lading to the Owner indicating the final disposal facilities of the removed tanks, piping, pumps, and appurtenances as well as all other materials taken off the sites. All disposal locations must be approved by the Owner prior to mobilization.

- B. The Contractor shall submit written documentation in the form of completed hazardous and/or non-hazardous waste manifests or bills of lading, as appropriate, to the Engineer, indicating the final disposal location of petroleum product, petroleum impacted soil, oil containing water, and tank residue/sludge. All disposal locations must be approved by the Owner and Engineer prior to mobilization.
- C. The Contractor shall submit for Engineer's approval, prior to start of Work, written documentation (e.g., permits, approvals) confirming that all proposed transporters and disposal/treatment locations for tanks, pumps, petroleum product, impacted soils, concrete, asphalt, pumps, piping and appurtenances, residue/sludge and other materials and debris are licensed and permitted in accordance with all applicable codes, laws and standards.
- D. As this work will disrupt Owner operations and use of facilities, provide a detailed demolition plan and schedule to the Engineer for approval prior to the start of work.
- E. Prior to mobilization the Contractor shall submit a description of methods for identifying and locating buried utilities and structures in all areas of work. The submittal shall include manufacturers and model numbers for utility locating equipment to be used, and a description of manpower and proposed methods for locating buried structures and utilities.
- F. The Contractor shall submit sketches of the proposed cleaning areas showing sufficient detail to demonstrate to the Owner how the cleaning operation will be contained, and the materials used in its construction, and obtain the Owner's approval prior to implementing the cleaning process.
- G. The Contractor shall measure contents (oil, water and sludge) in the tanks separately with a gauging stick (and oil/water indicating paste). Results shall be reported to the Owner and included with the submittals. This information will be used by the Owner to document the condition of the USTs prior to tank cleaning.

Submit a site-specific health and safety plan which includes confined space entry procedures, and documentation showing that all individuals proposed for tank system removal related work have 40-hour training and participate in a medical monitoring program in accordance 29 CFR 1910.120. The Owner and Engineer will not approve or reject the Contractor's HASP and related documentation. However, the HASP and documentation must be submitted prior to mobilization for the work of this section. The health & safety plan shall address cutting (e.g., protection from inhalable fiberglass), limitations on potential sources of ignition, control of static electricity, prevention of accumulation of vapors, confined space entry, work zone air quality monitoring, personal protective equipment, equipment decontamination, lockout/tagout, spill containment, exposure to hazardous materials, emergency response, excavation safety, protection against falls, and potential hazards of underground and overhead utilities and stored energy

- H. Submit material safety data sheets for any product proposed for use at the sites. The Contractor shall obtain the Engineer's approval of MSDS prior to use of any product at the sites. Use of products containing regulated volatile organic compounds shall be prohibited.
- I. Tank inspection shall be documented in writing and by photographs, with particular emphasis on any evidence of corrosion, cracks, structural damage, or leaks. Submit photographs and documentation to the Owner.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

**3.01 GENERAL**

- A. The Contractor shall have available at all times on site a site-specific Health and Safety Plan (HASP), prepared in accordance with the referenced OSHA standards. A "Safety Officer" shall be identified in the HASP and shall be present at all times during the Work. The Safety Officer shall test excavations for the presence of explosive, oxygen rich, oxygen deficient, and/or asphyxiating (i.e., confined space entry) conditions using portable combustible gas indicators (CGIs), photoionization detectors (PIDs) and percent oxygen

indicators in accordance with the HASP. The Safety Officer shall continuously monitor the atmosphere of the work site for the presence of dust and organic vapors. Flammable or combustible vapors are likely to be present in the work areas. The concentration of vapors in the tanks, the excavations, or the work areas may reach flammable (explosive) range before venting is completed and a safe atmosphere is reached. Therefore, precautions must be taken to: (a) eliminate all potential sources of ignition from the areas (for example, smoking materials, open flame and spark-producing equipment, non-explosion-proof electrical and internal combustion equipment), (b) prevent the discharge of static electricity during venting of flammable vapors, (c) prevent the accumulation of vapors at ground level, and (d) use only intrinsically safe communication equipment in the construction zone. Refer to API Publication 2015 and Recommended Practice 2003 for general precautionary measures to follow during the vapor-freeing procedure. The Contractor shall implement preventive measures, if dust or organic vapors are produced during the performance of the Work. The Contractor shall properly calibrate, thoroughly check and maintain all instrumentation (CGIs, PIDs, and percent oxygen indicators) according to the manufacturers' instructions. Persons responsible for testing shall be completely familiar with the use of the instrument and the interpretation of the instrument readings. The above description is not a comprehensive description of potential hazards and required precautions.

- B. The Contractor shall verify each utility is disconnected, locked out, and tagged prior to starting work on or near that utility.
- C. Contractor shall provide surface impoundment areas for on-site storage of petroleum-contaminated material as follows:
  - 1. Construct a nominal curb of wood (12" high) or hay bales around the perimeter of the impoundment area.

2. Place 10-mil polyethylene sheet barrier membrane of the largest practical size to cover the impoundment area and extend over the perimeter curb with a minimum of joints. Overlap sheet joints at least 8" and seal with a double layer of duct tape. Secure polyethylene sheet to the perimeter curb.
  3. Completely cover impounded soils and materials with 10-mil polyethylene sheeting or a heavy-duty tarp manufactured specifically for the intended purpose and secure tarp with sand bags.
  4. When stored within the same impoundment area, soils and drums shall be separated from each other by an impervious barrier.
- D. Dust and organic vapor shall be continuously monitored by the Contractor and remedial measures shall be implemented by the Contractor.
- E. Contractor shall accomplish demolition and removal of existing construction, utilities, equipment, and appurtenances without damaging existing structures, equipment, and appurtenances to remain.
- F. Contractor shall store equipment to be salvaged for relocation on-site where directed by the Engineer, and if necessary, protect from damage during work. Unless specifically approved by the Owner for salvage, all items to be removed shall be disposed off site.
- G. Contractor shall repair or remove and replace items that are damaged by Contractor. Replace and repair damaged items at no additional compensation and to condition at least equal to that which existed prior to start of work.
- H. Contractor shall exercise all necessary precautions for fire prevention. Acceptable fire extinguisher shall be made available at all times. Burning of demolition debris is not permitted on or near the site. Use of burning torches will not be permitted without site-specific written authorization from Owner.
- I. Contractor shall provide protection of persons and property throughout progress of work. Proceed in such a manner as to minimize spread of dust and flying particles and to provide safe working conditions for personnel.

- J. Contractor shall be allowed to block off traffic flow within designated work area only with the explicit approval of the Owner.
- K. Contractor shall obtain permission from the Engineer before abandoning or removing any existing structures, materials, equipment and appurtenances not specified in the specifications.
- L. Contractor shall retain a licensed Connecticut land surveyor to record locations and designations of survey markers and monuments prior to mobilization, and Contractor shall retain the licensed land surveyor to replace monuments if damaged.

### 3.02 DEMOLITION

- A. Confine apparatus, storage of material, demolition work, new construction, and operations of workmen to the designated work area and other areas that will not interfere with continued use and operation of the entire facility. Provide and maintain lights, barriers, and temporary passageways for free and safe access.
- B. Wet down work during demolition operations to prevent airborne dust. All curbing, asphalt and concrete ground covers shall be neatly saw cut through their entire thicknesses.
- C. Perform over-excavation, or provide shoring or bracing to prevent collapse of excavation sidewalls and prevent damage to new and existing structures.
- D. Plug with non-shrinking water plug or mortar any holes resulting from removal of vent pipe brackets, return and supply pipes, other conduits, etc. that are removed or abandoned due to demolition and/or removal. Match surfaces to existing or specified.
- E. Contractor shall excavate and remove the existing tanks, piping, pumps, top slabs, bottom slabs (if required), and appurtenances, as indicated on the Contract Drawings. The Contractor shall notify and shall be required to receive approval to start from the Owner at least seven (7) calendar days prior to the start of the tank systems emptying and excavations. The tanks, pumps, piping and appurtenances and their contents shall be removed and

disposed of in accordance with the requirements of RCSA 22a-449(d), NFPA 30, NFPA 327, API 1604, and API 2015. Removal shall include pumping out of all product and removal of all residue, purging, vapor-freeing, etc. The tank systems, piping, pumps, sniff tubes, appurtenances, debris, excavated materials, etc. and all product removed shall become the responsibility of the Contractor and shall be removed from the sites and disposed of in accordance with all applicable local, state, and federal laws and regulations. Excavation and sheeting/shoring (if required) shall be performed in accordance with Sections 02 40 00, 02 60 00 and 31 00 00 of the specifications.

- F. The contents shall be removed and tank systems piping and conduits exterior to the buildings shall be removed by excavation by the Contractor unless otherwise indicated in the Contract Documents or directed in writing by the Engineer prior to removal.
- G. The Contractor shall use an approved biodegradable cleaning solution suitable for removal of petroleum (Contractor to submit descriptive manufacturer's literature, and Material Safety Data Sheets (MSDS) sheets to the Engineer and obtain approval for the cleaning solution in advance - note that solutions containing chlorinated solvents or volatile organic compounds are not acceptable) and clean the interior and exterior surfaces of tank system(s), piping, pumps and appurtenances to remove all residual material and soil from the surfaces.
- H. Cleaning shall be done in areas specifically set up by the Contractor for that purpose, curbed, and lined with an impermeable membrane, to contain the used cleaning solution, including any overspray, and any contaminated debris removed during the cleaning process. The Contractor shall submit sketches of the proposed cleaning areas showing sufficient detail to demonstrate to the Engineer how the cleaning operation will be contained, and the materials used in its construction, and obtain the Engineer's approval prior to implementing the cleaning process. Used cleaning solution and contaminated materials removed during the cleaning process shall be collected and containerized by the Contractor in drums that meet USDOT requirements for transportation of hazardous materials, and disposed by the Contractor at an approved disposal facility. Prior to transportation for

disposal, drums shall be labeled and stored as described below. All cleaning related materials and operations, and disposal of used cleaning solution and associated contaminated debris, shall be provided and performed at no additional cost to the Owner.

- I. In order to allow for the demarcation line of the tank grave, the contractor will line the tank grave area with a permeable geotextile prior to backfilling the excavation following the collection of confirmation soil samples by the engineer. The Contractor shall provide, install and maintain temporary fencing and other appropriate approved barricades to prevent individuals and vehicles from falling into excavations while completing the project. Temporary fencing gates shall be locked at all times except when work is being performed.
- J. In order to allow for the collection and analysis of soil samples for verification of the presence or absence of fuel contamination, the Contractor shall keep the tank excavation open for a period of ten (10) consecutive calendar days. The Contractor shall provide, install and maintain fencing and other appropriate approved barricades to prevent individuals and vehicles from falling into excavations. If existing area lighting does not sufficiently illuminate the work area at night, the Contractor shall also provide orange flashing hazard lighting along (inside) the fence line. The Contractor shall prevent water (ground and surface water) from entering the tank excavations during excavation. The Contractor shall not be entitled to additional compensation for compliance with these requirements.
- K. During removal of the tanks and/or appurtenances, if the Contractor encounters material that is believed to be contaminated or hazardous, the Contractor shall notify the Engineer and proceed as directed.
- L. The Engineer will notify the Owner of any discovered petroleum contaminated soils. The Owner, or authorized designee, will notify the Oil and Chemical Spill Response Division of the Bureau of Waste Management, State of Connecticut Department of Energy and Environmental Protection (CTDEEP). There shall be no work in any area identified as having contaminated or hazardous material or suspected of having contaminated or hazardous material without prior approval of the Engineer.

- M. The Contractor shall remove tank appurtenances as indicated on the Drawings and in the specifications.
- N. The tank systems shall be completely and entirely removed in accordance with all applicable local, state, and federal laws and regulations. Completely remove top slab, and all exposed and underground fill, supply, vent, gauge, suction, return, etc. lines and appurtenances (e.g., pumps, sumps, manhole covers, manhole lids, manhole stacks, sniff tubes, valves, monitoring devices, probes, conduit, wire, etc.), anchoring devices, and (if required) bottom slabs.
- O. The Contractor shall remove cover (e.g., landscaping, concrete, pavement, etc.) materials to perform cleaning and removal in accordance with Section 31 00 00 and the requirements of the Contract Documents.

### 3.03 VAPOR PURGING

- A. The vapors in the tank systems may be displaced by adding solid carbon dioxide (dry ice) in the amount required to attain a non-flammable and/or non-combustible atmosphere within the tank. The dry ice should be crushed and distributed evenly over the greatest possible area inside the tank systems to promote rapid evaporation. As the dry ice vaporizes, flammable vapors will flow out of the tanks and may surround the areas. Therefore, where practical, the Contractor shall plug all tank openings except the vent after introducing the solid carbon dioxide and continue to observe all safety precautions regarding flammable or combustible vapors. Make sure that all of the dry ice has evaporated before proceeding. Alternate vapor purging methods (e.g., diffused air blowers) are not permitted without prior approval from the Engineer.
- B. Testing
  - 1. The tank atmosphere and the excavation area must be continuously monitored by the Contractor for flammable and combustible vapor concentrations. Monitoring shall be performed with a combustible gas indicator provided by the Contractor which is properly calibrated according to the manufacturer's instructions, and which is thoroughly checked and

maintained in accordance with the manufacturer's instructions. Persons responsible for monitoring must be completely familiar with the use of the instrument and the interpretation of the instrument's readings.

2. The tank vapor space is to be tested by placing the combustible gas indicator probe into the fill opening with the drop tube removed or other tank opening. Readings should be taken at the bottom, middle and upper portions of the tank, and the instrument should be cleared after each reading. If the tank is equipped with a non-removable fill tube, readings should be taken through another opening. Liquid product must not enter the probe. Readings of 10 percent or less of the lower explosive limit (LEL) must be obtained before the tank is considered safe for removal from the ground unless otherwise approved by the Engineer.
3. Combustible gas indicator readings may be misleading if the tank atmosphere contains less than 5 percent by volume oxygen, as in a tank vapor-freed with CO<sub>2</sub>, N<sub>2</sub>, or another inert gas. In general, readings in oxygen-deficient atmospheres will be on the high, or safe, side. Therefore, the Contractor shall also use an oxygen indicator to assess the oxygen concentration in the tanks.

#### 3.04 DISPOSAL AND SALVAGE

- A. Tank, piping, pumps, materials, equipment, debris, and associated appurtenances removed, that are not designated for reuse or relocation, become the property of Contractor and shall be transported from the sites and disposed of at no additional compensation than already provided for in the bid items.
- B. Removal and disposal of petroleum contaminated concrete is included in the work of this section, and is not optional or additional work.
- C. The Contractor shall clean the inside of the tank systems and associated piping and appurtenances in accordance with API 2015 using high-pressure water rinse. Use as little water as possible for proper cleaning. Remove and containerize wash water and solids and liquids and

debris. After filling containers, seal the containers closed, mark and placard contents on the containers and place the containers in the impoundment areas. The USTs, piping, pumps and appurtenances will be considered clean when all petroleum has been removed.

- D. The Contractor shall clean and remove all piping and appurtenances associated with the tank systems, including, but not limited to, supply piping, return piping, gauges, pumps, dispensers, heat piping, remote fill piping, vent piping and the vent riser, sumps, monitoring systems, probes, and conduit and wiring.
- E. Tanks, piping, and appurtenances shall be inspected for signs of corrosion, cracks, structural damage, or leakage. Tank inspection shall be documented in writing and by photographs, with particular emphasis on any evidence of corrosion, cracks, structural damage, or leaks. Submit photographs and documentation to the Owner.
- F. All piping and conduit shall be cut neatly flush with finished surfaces. Holes shall be patched to match existing finished surfaces.
- G. Fuel product and liquids in the tank systems, pumps, piping and appurtenances, and liquids, sludges and other wastes generated from tank systems cleaning shall be properly containerized, removed and disposed of off site by the Contractor.
- H. A pre-determined amount of petroleum impacted soils may be removed and disposed of offsite by the Contractor at the direction of the Engineer and at a cost specified in the Contractor's bid.
- I. Items designated for salvage and/or reuse by the State of Connecticut will be identified during the tank removal activities by the engineer or the owner. Connecticut RCSA Section 22a-449(d)-1(e)(3) specifies "No underground component of a facility shall be moved from one location to another without prior written approval of the commissioner." Mr. Steven Hecimovich, Director of DMHAS Engineering can give written approval on behalf of the Commissioner.

- J. The owner shall provide one Pneumercator TMS2000 Tank Monitoring Console NEMA 12 with leak sensor float type #LDS600LDBN Piping Sump and Interstitial Leak sensor as salvage from the HR Building and one Pneumercator TMS2000 Tank Monitoring Console NEMA 12 as salvage from Battell Hall. Use of this equipment to meet requirements of Division 28 00 00 Electronic Detection and Alarm shall be allowed. If the salvage equipment cannot meet Division 28 00 00 specifications new equipment shall be provided by the contractor in place of the salvaged equipment.
- K. The Contractor shall assist the Engineer with the collection of post-excavation soil samples. Post-excavation sampling and analysis will be required in accordance with CTDEEP protocols from the bottom and sidewalls of the tank, pipe, dispenser, sump and fitting excavation(s) at several locations to be determined in the field by the Engineer. Post-excavation samples shall be analyzed by the in a 5-day laboratory turnaround time, or quicker. The Engineer shall approve the backfilling of all excavations prior to the start of such activities by the Contractor.
- L. The Contractor shall analyze confirmatory soil samples collected by the Engineer for quantitative laboratory analysis in accordance CTDEEP's "Sampling and Analytical Methods for Underground Storage Tank Closure Environmental Program Fact Sheet" using procedures specified in the CT RSRs. The Engineer shall collect samples from the locations indicated on the project drawings. Soil samples shall be submitted to a pre-approved, qualified analytical laboratory for analysis of the following constituents:
- Extractable Total Petroleum Hydrocarbons (ETPH),
  - Volatile Organic Compounds (VOCs) using approved methods (i.e., EPA Method 524.2/3 or low-level RCP Method 8260 as both buildings are located in a Class "GA" groundwater area), and
  - Polycyclic aromatic hydrocarbons (PAHs) using approved methods (i.e., EPA Method 8270).

### 3.05 DISPOSAL OF CONTAMINATED MATERIALS

- A. Characterize, remove, transport and dispose of all tanks, aboveground and underground piping, pumps, sumps, clean and petroleum contaminated concrete, asphalt, soil and

other appurtenances (e.g., anchoring straps, level monitoring and control equipment, transmitters, indicators, conduit, wiring, pump and equipment pads and supports) associated with the tank system(s) and bottom slab(s). The Contractor shall provide the Engineer with certification that all items removed were properly disposed at an approved and permitted disposal facility.

- B. The waste generated as a result of the work shall be sampled, analyzed and classified by the Contractor in accordance with the approved disposal facilities' requirements. Whenever possible, material for disposal shall be characterized prior to loading so that staging trucks and containers at the sites is not required. The Contractor shall provide the Engineer with two (2) copies of the analytical results prior to transporting to the approved disposal facility. Once classified and accepted by the approved facility in accordance with all Federal, State and local laws and regulations, the Contractor shall provide the Engineer with two (2) copies of all waste manifests. The Contractor shall obtain all permits and approvals necessary to conform to laws and regulations. The Contractor shall identify, in writing, the facilities at which all material will be disposed. After disposal the Contractor shall provide a certificate of disposal to the Engineer.

### 3.06 DECONTAMINATION OF EQUIPMENT AND MATERIALS

- A. All decontamination procedures of equipment and materials shall conform to the requirements of applicable USEPA and CTDEEP regulations.
- B. All recoverable equipment and materials, which have been in contact with petroleum product(s), shall be decontaminated prior to removal from the sites. As used herein "recoverable" shall mean all items which are non-absorptive in nature and which can successfully be decontaminated. All items for which decontamination is difficult or uncertain shall be considered non-recoverable, as determined by the Owner.
- C. Provide 10-mil polyethylene sheeting of appropriate size and material under items being decontaminated to catch and hold rinse fluids and protect adjacent grade area. This barrier membrane and the rinse fluids shall be considered non-recoverable.

- D. Decontaminate recoverable Contractor owned equipment and materials with pressurized steam. Do not utilize any detergent agents.
- E. Deposit non-liquid non-recoverable materials into USDOT containers as directed by the Engineer.
- F. Mark and placard containerized materials and place in the impoundment area. The waste shall be sampled, analyzed and classified by the Contractor in accordance with the approved disposal facilities' requirements. Once classified and accepted by the approved facility(ies) in accordance with all Federal, State, and local laws and regulations, the Contractor shall provide the Engineer with two (2) copies of all manifests.

### 3.07 CLOSE OUT

- A. After acceptance by the Engineer of the work, the Contractor shall fill the excavations to specified grades. The Contractor shall restore any improvements (e.g., sidewalks, streetlights, landscaping, etc.) damaged or removed during tank systems excavation activities, as specified and directed by the Engineer.
- B. After the tank systems, piping and appurtenances have been cleaned and removed, the Contractor shall pressure wash all remaining exposed surfaces which exhibit petroleum staining (if any) to the satisfaction of the Owner. All wastewater and sludge shall be collected, containers must be sealed, closed, marked (placarded), staged, and disposed in accordance with applicable laws and regulations and the requirements of this Section and the Contract Documents. The Engineer will inspect the areas of the work after power washing to determine if additional cleaning is required. Temporarily seal all storm drains, etc. prior to power washing. Power washing shall not be considered complete until staining and residual oil has been removed to the satisfaction of the Owner.
- C. Upon completion of the work of this Section, the Contractor shall submit to the Engineer documentation that is required to be incorporated into the UST Closure Report. This documentation shall include, but not be limited to, the following: daily field logs, photographs, waste characterization and laboratory analysis reports,

manifests/bills of lading, transportation and disposal facility permits, waste disposal documentation, copies of all regulatory agency permits and approvals, and other correspondence and receipts. The Engineer will use this documentation to prepare a UST Closure Report based on information provided by the Contractor.

END OF SECTION

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. This section includes requirements for excavation, staging, loading, transportation, and disposal of contaminated materials generated during excavation and construction activities, and contaminated liquid, fuel oil product, gasoline, and solid waste, such as concrete debris generated during construction/demolition, decontamination activities and other work.
- B. The Contractor shall be responsible for all sampling and analyses required for disposal. The Contractor shall be responsible for properly characterizing for disposal all material prior to removing material from the sites. The results of all waste characterization analyses shall be submitted to the Engineer prior to removal from the sites.
- C. All waste generated by the Work, including all excavated material, shall be removed from the sites after approval by the Engineer and within 10 business days of the time the waste is generated and transported directly to an approved disposal facility as specified. Storage of any waste on-site overnight shall not be permitted without the explicit prior approval of the Engineer and Owner.
- D. The Contractor shall load contaminated material into trucks for transportation to a disposal/treatment facility licensed to accept such waste. For contaminated soil removal and disposal, "contaminated" soils are defined based on Connecticut Department of Energy and Environmental Protection's (CTDEEP's) Remediation Standard Regulations (RSRs) as specified in the Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies (RCSA). The Contractor shall load and transport contaminated liquid and solid waste to approved and permitted waste disposal/treatment facility(ies).
- E. Materials removed from the sites shall only be transported directly to facilities which have received prior approval of the Engineer and Owner. No materials shall be added to or removed from transport vehicles between their time of departure from the sites and their time of arrival at the approved facility(ies) for disposal.

- F. The Contractor shall use only properly permitted Owner-approved waste transporters. All vehicles and drivers shall be permitted and licensed in accordance with all applicable federal, state and local laws and regulations including the laws and regulations of governing agencies which have jurisdiction over areas through which the waste will be transported.
- G. The Contractor shall be responsible for screening drivers of waste transportation vehicles prior to use and prior to departure from the sites. Vehicle drivers with a history or record of unsafe vehicle operation shall be banned by the Contractor from the project.
- H. Vehicles used to transport waste materials shall be designed, equipped, operated and maintained to prevent leakage, spillage or airborne emissions of waste during transport. Appropriate controls shall be used to contain odors during loading and shipping of waste. Only safe, suitable and well-maintained vehicles, which are properly labeled/placarded, manned, permitted and registered to perform the required transportation services shall be used. All vehicles shall be decontaminated, including truck tires and undercarriages, prior to leaving the sites. The Contractor shall be responsible for supplying all labor, materials, equipment and supplies for decontaminating the vehicles used and shall be responsible for off-site disposal of wastes resulting from decontamination.
- I. Certified weight scale tickets showing the weight of the vehicle at the time of arrival and departure from the disposal facility(ies) shall be provided as a prerequisite to payment for all waste material transported off-site. The weight tickets shall be signed and dated by a representative of the Contractor certifying to the accuracy of all measurements, the date and time of arrival and departure of each vehicle, the disposal location and the vehicle identification number.
- J. The Contractor shall continuously monitor the regulatory compliance status of all waste transporters and disposal facilities used and proposed for use. If, at any time, the Contractor becomes aware of a potential or actual change in the regulatory compliance status of any waste transporters or disposal facilities used or proposed for use, the Contractor shall immediately notify the Engineer of such potential or actual change and, in consultation with the Engineer and Owner, make arrangements to divert

waste to alternate approved transporters and disposal facilities.

- K. The Contractor shall complete all required manifest forms and bills of lading as required by applicable laws and regulations for transportation and disposal of materials off-site. The Contractor shall provide copies of all required manifests and bills of lading to the Engineer along with all requested backup documentation. The Owner or its designated representative will sign manifests and bills of lading. The Contractor shall be responsible for assuring that all notifications, labeling, documentation, sampling, analysis, transportation and disposal requirements of the disposal facility(ies), and federal, state and local governments are complied with and properly documented.
- L. Contractor's bid price shall include restoration of excavated and disturbed surfaces including (where applicable): (1) environmentally clean backfill, topsoil, fertilizer, seeding, and mulch; and (2) sweeping paved areas. Damage to existing paved surfaces and curbing by the Contractor shall be repaired and/or restored by the Contractor at no cost to the owner.

#### 1.02 RELATED WORK

- A. Section 02 40 00: Demolition & Structure Moving.
- B. Section 31 00 00: Earthwork.

#### 1.03 QUALITY ASSURANCE

- A. Where "Form 816" is used, it shall mean "State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816."
- B. Scales used for determination of weight for contaminated soil and debris disposal and imported clean backfill soil shall be certified by the State of Connecticut.
- C. Soil encountered which is contaminated shall be managed by the Contractor at the Engineer's direction. Soil management shall also include tank grave, pipe, sump and dispenser excavation sampling and testing of soils by the Contractor to determine if soil is contaminated.

1.04 SUBMITTALS

- A. The Contractor or approved subcontractors shall prepare and submit to the Engineer, prior to the initiation of the tank system removals and any excavation, a Health and Safety Plan (HASP) for work associated with any potential contaminated material at the sites. This plan shall address all of the activities which the Contractor will perform in fulfillment of the Contract, and shall comply in all aspects with OSHA regulations for hazardous waste operations (29 CFR 1910.120). The Contractor shall make the HASP available to authorized personnel who require access to any contaminated area or exclusion zone. The health and safety of the Contractor's employees remains solely the responsibility of the Contractor.
- B. The Contractor or his approved subcontractor shall prepare and submit to the Engineer, prior to the initiation of the contaminated or hazardous material handling work, a list of personnel expected to be engaged in site activities and certify that said personnel have completed the training requirements stipulated in 29 CFR 1910.120, are currently monitored under a medical surveillance program in compliance with laws and regulations, and that each individual is fit for work under the expected conditions. The Contractor or his approved subcontractor shall provide documentation of appropriate OSHA training and medical surveillance for all site personnel.
- C. The Contractor shall prepare and maintain all material shipment records required by applicable Federal, State, and local laws and regulations. These records shall include but not be limited to: scale tickets, bills of lading, and manifests. The Contractor shall provide copies of all documentation to the Engineer.
- D. The Contractor shall submit written documentation to the Engineer prior to any removals from the sites identifying the final proposed disposal/treatment location of contaminated liquid, soils, and solid wastes for approval by the Engineer. At that time, the Contractor shall also submit copies of all permits granting approval of the proposed facilities for all wastes to be generated.
- E. Following all waste removals, the Contractor shall provide Certificates of Treatment/Destruction/Recycling from the facilities to the Engineer for all wastes removed from the sites. The documentation shall include, but not be limited to, daily activity logs, photographs

showing work completed each day, waste characterization sampling and laboratory analysis reports, copies of waste bills of lading or shipping manifests, quantities of excavated material transported to each disposal facility, descriptions of waste transported to each disposal facility, truck scale tickets and disposal facility receipts, copies of waste transporter and disposal facility permits, and copies of all other regulatory agency permits, approvals and correspondence.

- F. Submit results of all laboratory analyses.

## **PART 2 - PRODUCTS**

### 2.01 GENERAL

- A. Plastic Sheet: Provide polyethylene plastic cover sheeting with a minimum thickness of 10 millimeters (mils) and minimum width of twenty (20) feet. Provide polyethylene plastic bottom sheeting with a minimum thickness of 10 mils and a width greater than the width of the soil stockpile.
- B. Straw Bales: Provide bales made of straw with forty pounds minimum weight and one hundred and twenty pounds maximum weight. Wood stakes shall be a minimum of 1 inch by 1 inch nominal size by a minimum of 3 feet long.
- C. Silt Fence: Silt fence shall meet the requirement in Section 7.55 and conform to Article M.08.01-26 of Form 816. Silt fence shall be installed as recommended by the manufacturer for the specific use or purpose intended.
- D. DOT Approved Shipping Drums: Any shipping drums used shall be new U.S. DOT approved shipping drums compatible with liquid and semi-liquid contaminated materials present at the sites. Drums shall comply with requirements of 49 CFR Part 173 and shall be labeled in accordance with 49 CFR Part 172.
- E. All vehicles used by Contractor or subcontractor to transport contaminated regulated liquid and solid waste, shall be registered with the CTDEEP. Transport vehicles and loading and unloading procedures shall be in compliance with all appropriate State and Federal DOT standards.

**PART 3 - EXECUTION**

3.01 HEALTH AND SAFETY

- A. Requirements of 29 CFR 1910.120 and 29 CFR 1926 shall be followed by the Contractor and all subcontractors.

3.02 DRAINAGE AND DEWATERING

- A. Dewatering shall not be performed unless approved by the Engineer.
- B. Precautions shall be taken to protect uncompleted work from flooding during storms or from other causes. All pipe lines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected.
- C. Prevent surface water from flowing into excavations and from flooding the project areas, as well as surrounding areas. Do not allow water to accumulate in excavations. Provide suitable temporary pipes, flumes or channels for water that may flow along or across the sites.
- D. The potential exists for contaminated groundwater to be present in trenches and tank excavations. The Contractor shall not dispose of any contaminated water into stormwater drains. Dewatering and discharge shall only be performed with the approval of and under the direction of the Engineer.

3.03 REMOVAL AND STAGING OF CONTAMINATED MATERIAL

- A. Area Preparation: Prior to beginning excavation, all liquids and tank bottom sediments and sludge shall be removed from the tanks, piping, and appurtenances as described in Section 02 40 00, Demolition and Structure Moving.
- B. Excavation: CTDEEP Regulations 22a-133K-1 through Sec 22a-133K-3 shall be used by the Engineer as the standard in determining the limits for contaminated material excavation. The excavation of contaminated material shall not extend into groundwater; below areas which may compromise structural integrity of buildings or utilities; or below barriers to contaminant movement such as clay, silt lenses, or termination of soil at the bedrock surface unless indicated on the Drawings or ordered by the Engineer. The Contractor shall safely

maintain the open excavations associated with the tank, piping, sump, dispenser, etc. to allow the Engineer to collect post-excavation soil samples (each sidewall, bottom, pipe trench, dispenser sump, fitting, and stockpile) in accordance with all applicable CTDEEP guidance and regulations. The Contractor shall utilize proper equipment (e.g., excavator bucket) to collect post-excavation samples at the direction of the Engineer. The Contractor shall begin backfilling only after receiving authorization from the Engineer.

- C. Staging: If temporary staging is required, excavated material that has been preliminarily classified as "contaminated" material shall be staged on-site in the following manner as directed by the Engineer. Note that requirements for staging of demolition materials are contained in Specification Section 02050.
1. All excavated material shall be underlain by a 10-mil plastic sheet of sufficient size to ensure that seepage of soil or water is prevented.
  2. All excavated material shall be covered with a minimum 10-mil thick plastic sheet of sufficient size to ensure that infiltration of precipitation or generation of dust is prevented. The cover shall be held in place with two (2) rows of hay bales around the perimeter as shown on the Drawings. Wrap minimum 10-mil thick poly sheeting over and under hay bales as shown on the Drawings.
  3. The staging area shall be inspected regularly by the Contractor to ensure that the cover or other containment structure has not been damaged, and that there is no apparent leak from the pile. If the plastic cover has been damaged, or there is evidence of seepage from a pile, the Contractor shall replace the plastic sheet cover material to prevent the release of materials to the environment. It is the Contractor's responsibility to prevent the pile from releasing contaminants to the environment throughout the duration of the project. The staging area is restricted to within the work area limits shown on the Drawings unless approved otherwise by the Engineer or Owner.
  4. All labor, tools, materials, and equipment necessary for containment of excavated material shall be provided by the Contractor.

5. Proper off-site disposal of all plastic sheeting, hay bales, etc. shall be provided by the Contractor as part of the work of the Contract in accordance with all applicable federal, state and local laws and regulations.
- D. Decontamination of personnel and equipment shall be conducted in accordance with Decontamination Procedures as described in the Contractor's HASP and specified in Section 02 40 00. At a minimum, all equipment contacting contaminated materials shall be steam cleaned with hot water prior to departing the work sites.

### 3.04 TRANSPORTATION

#### A. Drums

1. If drums are utilized, the Contractor shall load and transport the drums of contaminated liquid and solid waste, to the appropriate permitted waste disposal/treatment facilities, as arranged by the Contractor and approved by the Engineer and Owner. Waste transport vehicles shall be permitted/registered in accordance with all applicable laws and regulations.
2. Leaking or deteriorated drums shall be overpacked prior to shipping.
3. Drums containing waste shall not be double stacked at any time on site or during transportation.
4. Truck beds and walls must be clean and smooth to prevent damage to the drums.
5. Drums shall be secured to prevent shifting during transport.

#### B. Bulk Material:

1. All vehicles used by the Contractor to transport hazardous waste, "contaminated" and regulated liquid, solid waste, and soil shall be registered with the CTDEEP as required by laws and regulations. The materials shall be covered during transport to ensure that seepage of waste material, water or dust into or out of the vehicle is prevented. The disposal containers shall be ISO type, dump trailers, or approved equal,

constructed of steel, have watertight bodies and sealed tailgates equipped with positive locking devices and provisions for controlled drainage of free liquids. No liquid shall leak from any part of the loaded container or trailer. Transport vehicles, gross vehicle weight and loading and unloading procedures shall meet all appropriate state and federal DOT standards.

2. The Contractor shall load and transport bulk waste material to a permitted solid waste disposal/recycling facility, as arranged by the Contractor and preapproved by the Engineer and Owner.
3. Bulk solids shall be kept several inches below the top of the truck container.
4. The load shall be secured to prevent shifting or release during transport.
5. Use only approved truck routes to transport material from the sites to the expressways. En route, the Contractor shall use only interstate or officially approved truck routes. All truck routes from the Interstate or officially approved truck routes to the disposal facility(ies) shall be subject to approval by the Engineer. To the maximum extent possible, no vehicles shall travel on any local streets or through any residential areas. To the extent possible and in conformance with all applicable regulations, all vehicles shall be routed away from environmentally sensitive areas such as parks, schools, historic sites, wetlands, etc. For long distance hauling, all vehicles shall remain on primary highways.
6. The Contractor shall be solely responsible for any and all actions necessary to remedy situations involving material spilled in transit.

### 3.05 DISPOSAL

- A. Based on the results of waste characterization sampling and analyses performed at the approved laboratory and reviewed by the Engineer, contaminated materials shall be loaded by the Contractor onto vehicles for transport to a permitted disposal/treatment facility(ies) in the following manner:

1. Contaminated materials will be loaded for transportation by the Contractor and transported to the disposal/treatment facility. Contaminated material loading and transportation arrangements will be coordinated between the Contractor and the Engineer. The Contractor shall coordinate his/her work schedule with the schedules of waste transport vehicles to minimize loading time for vehicles.
  2. No contaminated material shall be loaded onto vehicles until the Engineer has completed review of the laboratory analytical results and approval from the Engineer is received by the Contractor.
  3. During loading operations and final clean-up of the staging area, the Contractor shall prevent the mixing of contaminated material with non-contaminated material. The Contractor shall pay for disposal of all additional material that the Engineer deems to be contaminated as a result of the Contractor's failure to comply with this requirement.
- B. The Contractor shall coordinate the disposal of work generated materials which may be contaminated including reasonable amounts of materials generated by the Engineer and the City and at no cost to the City. These waste materials include decontamination rinse water, disposable personal protective equipment (PPE), and miscellaneous disposable support equipment.
- C. Concentrations of contaminated soil, liquid, and solid waste that exceed the federal and state hazardous waste characteristic limits or state solid waste disposal facility limits shall be evaluated on an individual basis in conjunction with standard USEPA and state requirements. These waste materials shall be sampled and properly classified by the Contractor. Based on the Contractor's waste determination, characterized hazardous waste shall be manifested and managed by the Contractor according to all applicable USEPA and state hazardous waste regulations 40 CFR Parts 260 through 268 and RCSA 22a-449(c)-101 through 109.

3.06 DECONTAMINATION PROCEDURES

- A. The Contractor shall furnish labor, materials, water, power, tools, incidentals, and equipment for decontamination of all personnel, equipment and supplies that enter the contaminated work area or are exposed to contaminated material.
- B. Methods - The decontamination procedure shall follow the requirements of 29 CFR 1910.120, as described in the Contractor's HASP and specified herein.
- C. Personnel Decontamination: The Contractor shall provide and maintain a decontamination area which is to be located in the decontamination zone. The Contractor shall coordinate the location of the decontamination zone with the Engineer. Decontamination of personnel and equipment is required after performance of activities in the exclusion zone (Hot Zone). The personnel decontamination area may be in the form of a mobile trailer or field station. Personnel decontamination shall, at a minimum, consist of: safe work practice, use of disposable protective clothing, personal hygiene, personal decontamination before breaks and each time workers exit the exclusion zone, and at the completion of each work day to prevent worker exposure and the spread of contaminants offsite. The Contractor shall use Chapter 10 of NIOSH Publication No. 85-115 when designing a decontamination plan. This plan shall be in conformance with the requirements of 29 CFR 1910.120 and include those requirements specified herein.
1. Routine Decontamination:
    - a. Routine decontamination shall follow the guidelines of 29 CFR 1910.120.
  2. Emergency Decontamination: Should a worker be splashed with contaminants, the worker shall be immediately escorted to the field decontamination station and be decontaminated in accordance with Contractor's HASP.
- D. Equipment:
1. All equipment shall be provided to the work sites free of contamination. The Engineer retains express authority to prohibit from the sites any equipment which in the opinion of the Engineer has not been thoroughly decontaminated prior to arriving at the project location. Any

decontamination of the Contractor's equipment prior to arrival at the sites shall be at the expense of the Contractor. The Contractor is prohibited from decontaminating equipment on the project site which is not thoroughly decontaminated upon arrival.

2. All equipment involved in Exclusion Zone (Hot Zone) activities shall be decontaminated each time it is removed from the Exclusion Zone. Equipment decontamination shall be performed in conformance with the requirements of 29 CFR 1910.120 and as specified in Section 02050 and approved.
  3. The Contractor shall decontaminate all equipment which comes in contact with contaminated material, either directly or indirectly, (i.e., excavation, sampling and testing equipment), after completion of work at one location (e.g., tank excavation) and prior to beginning work at another location.
- E. All waste generated from decontamination shall be collected by the Contractor in drums or removed in bulk for proper offsite disposal by the Contractor.
- F. Properly dispose of off-site all waste generated at disposal facility(ies) approved by the Engineer and in accordance with all applicable laws and regulations.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish, place, protect and cure all cast-in-place concrete with reinforcement, including, but not limited to:

1. Concrete tank foundation pad, as shown on the Drawings. Concrete foundation pad surface shall be "dead level". Entire length of each component of tank anchoring system shall be in direct contact with surface of concrete foundation pad.
2. Foundations for fence posts and bollards and concrete fill for bollards.
3. Conduit banks.

1.02 RELATED WORK

- A. Section 23 13 23: Facility Above-Ground Fuel Storage Tanks
- B. Section 26 05 00: Common Work Results for Electrical
- C. Section 32 31 00: Fencing

1.03 QUALITY ASSURANCE

- A. Where Form 816 is used, it shall mean "State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, 2004" and supplements thereto.
- B. The Contractor shall retain the services of a qualified independent concrete testing firm to document compliance with these requirements. The testing firm shall be licensed and certified in accordance with the requirements of the CTDOT and the Contractor shall be required to obtain the Engineer's approval of the independent testing firm(s).

#### 1.04 SUBMITTALS

- A. Submit manufacturer's certification that materials used in the concrete, reinforcement, curing compounds, joint seals, joint filler and concrete sealer comply with appropriate specifications. Job mix formula not required.
- B. A minimum of one week prior to the work of this section Contractor shall submit to the Engineer for review name, address, telephone number and statement of qualifications for the independent concrete testing firm proposed for use. Required licenses and certifications shall be included with the submittal. The Contractor shall be required to obtain the Engineer's approval of the independent testing firm.

#### PART 2 - PRODUCTS

##### 2.01 GENERAL

- A. Portland Cement shall conform to ASTM C150, Type I or Type II.
- B. Coarse Aggregates:
  - 1. Regular Weight Concrete Aggregate: Hard, durable, uncoated, crushed stone or gravel conforming to ASTM-C33 requirements for coarse aggregate. Gradation shall conform to the requirements of Article M.01.01 of Form 816 and the grading shall be obtained by combining 65 percent of 1-1/4 inch and 35 percent of 1/2 inch size coarse aggregate.
- C. Fine aggregate shall be clean, hard, natural or manufactured sand, meeting Article M.03.01-2 requirements for fine aggregate and the gradation requirements of Article M.03.01-2 Form 816.
- D. Mixing water shall be potable and shall be free from oil, acid and injurious amounts of vegetable matter, alkalies and other impurities.
- E. Concrete Admixtures:
  - 1. Air-entraining admixtures shall conform to ASTM C260 and shall be used in strict conformance with manufacturer's recommendations.
  - 2. Water-reducing, set-controlling admixtures shall

conform to ASTM C494 and shall be approved by the Engineer.

3. Chlorides or admixtures containing chlorides shall not be used.

F. Curing Compounds:

1. Apply guardian or Master Seal for curing compound as recommended by the manufacturer.
2. Curing paper shall be waterproof and conform to ASTM C-171 or opaque polyethylene film.

G. Reinforcing steel:

1. Bar reinforcement shall conform to ASTM A615-Grade 60 and welded wire reinforcement shall conform to ASTM A185 as shown on the Drawings.

H. Preformed joint filler shall be cork conforming to the requirements of ASTM D1752, Type II.

I. Joint seal shall be urethane joint sealant conforming to the requirements of Federal Specification TT-S-00227E, Type I, Class A.

J. Forms: Forms may be plywood or metal except where stated otherwise.

## 2.02 CONCRETE MIX

A. The concrete shall be 4,000 psi Class A concrete unless otherwise specified herein or shown on the Drawings.

B. Concrete shall be air entrained with an air content of 4 to 6 percent.

C. The maximum water-cement ratio of the concrete shall be 0.45.

## PART 3 - EXECUTION

### 3.01 MIXING AND PLACING CONCRETE

A. The concrete shall be proportioned, mixed and placed in accordance with the provisions of Section 6.01 Form 816 for Class A Concrete.

### 3.02 CURING CONCRETE

A. Curing: Curing shall be accomplished by preventing the loss of moisture and rapid temperature change for a period of not less than 7 days. Concrete exposed to conditions causing premature drying shall be protected by covering within 2 hours of placing. Curing shall be started as soon after placing and finishing as free water has disappeared from the surface. During the period from October 15 to April 15, cold-weather concreting procedures shall be employed in accordance with Section 6.01 of Form 816, unless otherwise approved by the Engineer. Stripping procedures must be coordinated with this requirement.

1. Curing Formed Surfaces: Shall be accomplished by leaving the forms in place for the minimum 7-day curing period. Where the form of construction, such as wood and plywood, permits loss of moisture, the forms shall be kept moist by spraying or other approved methods. As an alternate, vertical formwork may be removed prior to 7 days if the concrete surfaces receive a sprayed application of approved curing compound.
2. Curing Non-Formed Surfaces: Shall be accomplished by application of an approved curing compound. The use of a membrane curing compound is based on the following stipulations:
  - a. The material shall be applied to surfaces with a lamb's wool roller applicator at 200 sq. ft. maximum to the gallon or with power spray equipment. In hot weather, it may be necessary to provide 24 hours of water curing before applying the membrane curing.

### 3.03 FLATWORK FINISHES

A. Monolithic Troweled Finish: Shall be given to exposed concrete. Finish shall be accomplished by screening the slab at the proper level, rolling or tamping the surface to force large aggregate away and then floating the surface with wood or metal floats. Bring surface to a true grade during the floating operation by cutting down high spots and filling low spots. When concrete has hardened sufficiently, finish with a steel trowel. No dry cement and sand mixture shall be permitted on the surface during the finishing operation. No finishing operations other than initial screening shall be allowed with free water on the surface.

3.04 REINFORCING STEEL

- A. The fabrication, storage, placing, fastening and splicing of reinforcing steel shall be in accordance with the provisions of Section 6.02, Form 816.

END OF SECTION

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. This item shall consist of furnishing, installing and testing the protected aboveground fuel oil tank system at the HR Building and the diesel fuel tank system at Battell Hall with associated piping and appurtenances, as shown on the Drawings and as ordered in accordance with these Specifications. All applicable work shall be completed by a qualified licensed plumber or electrician, as applicable.
- B. The Contractor shall arrange and pay for all permits, inspections and tests.
- C. Any sizes and capacities not specified herein are indicated on the Drawings.
- D. The protected and insulated AST systems shall be of concrete exterior and a continuous and visually verifiable monolithic (seamless) pour on top, bottom, ends, and sides and contain no cold joints or heat sinks (heat transfer points). The AST must be shop fabricated and tested in accordance with the UL listings.

1.02 RELATED WORK

- A. Section 31 00 00: Earthwork
- B. Section 03 3 00: Cast-In-Place Concrete
- C. Section 28 34 00: Tank Level; Monitoring, Overfill Alarm and Leak detection Monitoring Systems
- D. Section 26 00 00: Electrical
- E. Section 26 05 00: Common Work Results for Electrical

### 1.03 REFERENCES

Equipment and installation necessary to accomplish the Work specified herein shall comply with the latest revisions of the applicable federal, state, and local codes and regulations and requirements of standards issuing organizations concerning gasoline storage and dispensing systems including, but not limited to, the following:

- A. NFPA 30: Flammable and Combustible Liquids Code.
- B. NFPA 30A: Automotive and Marine Service Station Code.
- C. NFPA 31: Standard for Installation of Oil Burning Equipment of the National Fire Protection Association.
- D. NFPA 780: Standard for the Installation of Lightning Protection Systems.
- E. National Electrical Code.
- F. RCSA Sections 22a-174-20: Control of Organic Compound Emissions.
- G. RCSA Sections 22a-174-30: Dispensing of Gasoline/Stage I and Stage II Vapor Recovery.
- H. State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, and Incidental Construction - Form 816 and addenda.
- I. State of Connecticut, Flammable and Combustible Liquids Code.
- J. UL 142: Steel Aboveground Tanks for Flammable and Combustible Liquids.
- K. UL 2244: Aboveground Flammable Liquid Tank Systems.
- L. UL 2085: Protected Aboveground Tanks for Flammable and Combustible Liquids (primary and secondary containment tanks shall be UL listed).
- M. California Air Resources Board (CARB) Certifications for specified equipment.
- N. Regulations of the Connecticut Department of Consumer Protection.

All Work specified herein shall conform to or exceed the requirements of the above referenced codes, regulations and standards; provided, that whenever the provisions of said publications are in conflict with the requirements specified herein, the more stringent requirement, as determined by the Engineer, shall apply.

#### 1.04 SUBMITTALS

- A. Provide documentation demonstrating compliance with qualification requirements specified herein.
- B. All requested items shall be submitted in accordance with the applicable requirements of Section 01 00 00.
- C. Contractor shall submit copy of State of Connecticut P-1 and/or P-9 plumbing license for licensed plumber that will perform tank system installation work.
- D. Certified shop drawings and erection drawings. Contractor shall submit four (4) copies of shop drawings for the tank system. Drawings shall include all critical dimensions and show locations of all fittings and accessories (i.e., manways, anchoring tie downs, etc.). Tank manufacture shall not begin until drawings are approved by Engineer.
- E. Provide product data on tank, manways, pipe materials, pipe fittings, connections, valves and accessories. Provide manufacturers' catalog information for all equipment.
- F. Provide copies of all permit applications and permits.
- G. Provide an installation schedule.
- H. Contractor shall submit three copies of manufacturer's latest installation instructions.
- I. The Contractor shall submit written verification that the tank installer is certified by the tank manufacturer to install the specified protected aboveground storage tank system.
- J. Tank fabricator's Underwriters Laboratories certificates upon tank delivery.
- K. Tank fabricator's certified statement of factory testing upon tank delivery.
- L. Operating and maintenance instructions and parts lists.

- M. Provide manufacturer's 30-year warranty against failure due to corrosion, and manufacturer's 30-year warranty against structural failure. Warranties shall include all necessary supporting documentation (i.e., copies of the completed tank installation checklist required by the tank manufacturer).
- N. Within ten (10) days after the completion of installation, the Contractor shall submit to the Engineer a statement signed by the installation contractor certifying that the installation has been carried out in accordance with the standards and regulations listed above.
- O. Submit UL certifications for aboveground storage tank, tank system, piping and completed piping installation checklist signed by Contractor. UL labels shall be affixed to tank.
- P. Submit certified copies of results of all required tests.
- Q. Submit sketches to scale showing proposed materials of construction, routing and support system for tank vent pipes to comply with requirements of NFPA 30 and 30A.

#### 1.05 QUALIFICATIONS

- A. **Manufacturer:** Company specializing in manufacturing the products specified in this section with minimum five years documented operation and experience. The protected and insulated AST systems design shall have been in use for a minimum of twenty (20) years. The manufacturer must stipulate no reportable AST containment system failure in 30,000 units produced.
- B. **Contractor:** Company specializing in performing the work of these Specifications with minimum five years documented experience with similar gasoline storage and dispensing systems.
- C. **Labor:** Only tradespeople who have a minimum of two years experience installing the specified type of equipment.
- D. The Contractor shall have the appropriate state registrations and licenses required for the performance of this Work.

#### 1.06 QUALITY ASSURANCE

- A. Installation shall be in compliance with all manufacturers' current installation instructions.
- B. The protected aboveground fueling system shall be listed, designed, manufactured and installed in accordance with UL 2244. The UL 2244 certification plate shall be permanently affixed to the tank and all proper documentation shall be provided.
- C. All components of the vehicle fueling system shall be UL listed or certified by Underwriters Laboratories for the intended use.
- D. Comply with NFPA 30 "Flammable and Combustible Liquids Code", NFPA 30A "Code for Motor Fuel Dispensing Facilities and Repair Garages", State of Connecticut Flammable and Combustible Liquids Code, and the requirements of the City of Middletown Fire Marshal for design, construction, installation, inspection, and testing of fuel storage and dispensing system components and accessories.
- E. Provide listing/approval stamps, labels, or other marking on equipment made to specified standards.
- F. Each connection to aboveground tank through which liquid can normally flow shall be provided with an internal or external valve located as close as practical to the shell of the tank. Fill pipe shall terminate within 6 inches of the bottom of the tank per State 1 requirements. Fill pipes shall be installed so that vibration is minimized.
- G. Welding: Welding type and methods shall be in accordance with UL requirements. All joints, seams, fittings, and connections shall be continuously welded with full fillet welds.
- H. Tank manufacturer's standard features, not specified herein, that are a normal supply to the base design and those items that will better facilitate (user friendly) maintenance and operation shall be supplied and identified on the shop drawings.

1.07 HANDLING AND STORAGE

- A. Do not drop or drag the tank or otherwise allow impact to tank. Tank shall be off-loaded on-site from shipping vehicle with a crane.
- B. Secure the tank until ready for installation and tie it down in accordance with the manufacturer's instructions.
- C. Tank shall be carefully handled to prevent damage. Use nylon straps or other manufacturer approved methods to prevent damage to tank. Notify Engineer and manufacturer immediately if any part of tank becomes damaged. Repair damage to satisfaction of the Owner.
- D. Provide temporary end caps and closures on connections, piping and fittings. Maintain in place until installation.
- E. Equipment for handling the tank shall be of adequate size to lift and set the tank. If the tank has to be moved, set it on smooth ground free of rocks and foreign objects and properly secure to prevent movement.
- F. Store tank and associated products only at on-site location approved by the Owner. On-site tank storage shall not occur more than 7 days prior to scheduled installation, unless otherwise approved by the Owner. Contractor shall be responsible for security of and any damage to materials stored on site.

**PART 2 - PRODUCTS**

2.01 PROTECTED ABOVEGROUND GASOLINE STORAGE TANK(S)

- A. Provide one 6,000-gallon protected aboveground fuel oil storage tank system and one 1,000-gallon protected aboveground diesel fuel storage tank system as specified and shown on the Drawings. The tank system shall be designed, manufactured and installed in accordance with all applicable NFPA requirements for protected aboveground tanks.
- B. Tank shall be compatible with and designed and manufactured for storing diesel fuel or fuel oil.
- C. The tank system shall be a shop fabricated, horizontal, rectangular in shape and have continuous welds on all exterior seams, manufactured in accordance with UL listing requirements and UL Standard 142. The secondary containment shall consist of a 30 Mil thick (0.76 mm) High-Density Polyethylene membrane enclosing the steel tank and insulation material. The primary steel tank and the secondary containment shall be encased in six inches of monolithic reinforced concrete, with minimum design strength of 4,000 and 5,000 psi at 28 days depending on the tank size. The concrete design shall include the following for long-term durability: air entrainment, water reducing admixture, and steel reinforcement. Acceptable tank manufacturers and products include United Concrete Products "ConVault" aboveground vehicle fueling system with factory installed equipment or approved equal.
- D. Provide tank anchoring tie downs in accordance with the manufacturer's recommendations. The anchoring tie downs shall be welded to the bottom of the outer tank and shall satisfy applicable seismic code requirements.
- E. Tank system shall be resistant to bullet penetration according to the requirements of the Uniform Fire Code. The tank system shall be manufactured to enable repairs in the field by a factory representative, if impacted by a bullet. The tank system shall be manufactured such that if impacted by a bullet, repair on-site can be performed by a factory representative; and such repair shall completely restore the tank to conditions which comply with the requirements of Underwriters Laboratories and NFPA specified herein.
- F. In accordance with UL 2085, the tank shall be manufactured with lightweight concrete, poured at the

factory, surrounding the primary storage tank. The tank and fire protective material shall be UL listed and shall readily allow detection of leaks from the primary tank. The outer secondary containment tank shall be designed and manufactured to provide reinforcement for the lightweight concrete between the inner and outer tanks.

- G. The tank system shall be certified by CARB for Stage I (and Stage II Vapor Recovery if specifically requested). All tank components and accessories for which certification from CARB is available shall be CARB-certified. In instances where a specified product is not a CARB-certified product, and a CARB-certified product is available which is equal or superior, as determined by the Engineer, the CARB-certified product shall be furnished at no additional cost.
- H. Provide all required connections, including, but not limited to, connections for items listed below. All connections shall be on top of tank and shall be of the sizes required to comply with applicable standards, codes, regulations and laws. Connections to openings on tanks shall be weather proof, water proof and vapor-tight. All connections not used shall be provided with weather proof, water proof, vapor-tight caps matching the materials of construction of the tank.
1. Primary Tank: normal vent.
  2. Primary Tank: emergency vent.
  3. Primary Tank: liquid level gauge and overfill detection.
  4. Primary Tank: fuel supply fill.
  5. Primary Tank: pump supply with suction pipe, vapor return and pump housing vent. Tank system shall be manufactured for use with one (1) pump.
  6. Primary Tank: Stage II vapor recovery connection (if specifically requested).
  7. Primary Tank: Stage I vapor recovery connection.
  8. Primary Tank: 24-inch diameter manway.
  9. Secondary Tank: normal vent.
  10. Secondary Tank: emergency vent.
  11. Secondary Tank: Connections for all connections from primary tank, as necessary.
  12. Interstitial Space (between tanks): 2-inch diameter leak detection probe connection. A tube which provides a means to detect product leakage from the primary tank shall be provided and shall be a UL 2085 listed product. Provide connection to permit removal of liquid from interstitial space.

13. Provide spare and additional connections as recommended by manufacturer and required for use and compliance with codes, standards, laws and regulations.
- I. The openings in the top of the secondary tank and all connections shall be constructed with full welds and as required to prevent moisture from entering.
- J. The tank shall be supplied from the factory with manufacture installed ground clips for tanks and appurtenance and tank and appurtenances shall be grounded in accordance with applicable codes and regulations.
- K. The tank shall be furnished by the manufacturer with all mounting brackets required for properly securing the specified and required piping and appurtenances. If adjustments to locations of appurtenances, registers and pumps shown on Drawings are recommended by manufacturers (for ease of use, to coordinate products of different manufacturers, etc.), proposed adjustments shall be submitted to the Engineer for review. Final approval of locations of all appurtenances, registers and pumps shall be required prior to manufacture of tank system. Adjustments to locations of appurtenances, registers and pumps prior to manufacture of tank shall be at no additional cost to Owner.

## 2.02 APPURTENANCES

- A. Supply all appurtenances for the aboveground protected diesel and fuel oil storage tank systems. Include an access manhole with a 24-inch diameter opening and weather proof, water proof, vapor-tight bolted down lid.
- B. Overfill Prevention Valve and Drop Pipe: Provide 2-inch diameter OPW 61fSTOP-2000 Overfill Prevention Valve with integral anti-siphon valve or approved equal. Overfill prevention valve shall be CARB-approved, appropriate for two-port Stage I fill and vapor recovery arrangement, and meet requirements of all applicable codes and regulations. The drop pipe shall terminate 6 inches above the bottom of the tank and shall have the end cut off at a 45-degree angle. The drop tube shall be OPW 61FT Drop Tube or equal.

- C. Emergency Vents: Manufacturer installed emergency vents on primary and secondary tanks shall be 6-inch diameter OPW 202 Emergency Vents or approved equal. The emergency vents shall be UL listed vapor-tight spring-loaded emergency vents.
- D. A 2-inch diameter CARB-certified, NFPA compliant pressure vacuum vent with 100-mesh stainless steel wire screen shall be provided. The vent shall be constructed of corrosion resistant material and shall be approved for flame arrestor applications. The valve shall have a relief setting of three (3), plus or minus one-half (0.5) inch of water column pressure and eight (8), plus or minus two (2.0) inches of water column vacuum. The primary tank pressure vacuum vent shall be 2-inch diameter OPW 623V Pressure Vacuum Vent or approved equal.
- G. Provide a tank gauge chart calibrated to show tank capacity in gallons per inch of depth. The gauge chart shall read in feet and inches by eighths of an inch versus gallons and shall be mounted in an acceptable glass frame on a nearby building interior wall where directed by the Owner. Provide three additional laminated copies of tank gauge chart to Owner.
- H. Vent piping: galvanized steel risers shall terminate a minimum of 12 feet above finished grade in accordance with requirements of NFPA 30A. Coordinate with tank and vent manufacturer. Vent risers shall be installed straight, plumb and true and shall be arranged and supported to minimize visibility. Engineer's approval of all details associated with vent piping shall be required prior to installation.
- I. The tank system and all appurtenances shall be grounded in accordance with all federal, state and local codes, laws, regulations and requirements of authorities having jurisdiction.
- J. Lightning protection shall be furnished and installed in accordance with all federal, state and local codes, laws, regulations and requirements of authorities having jurisdiction.
- K. Provide on a stairway/platform for access to and inspection of top of tank. Stairway/platform shall be installed as shown on the project drawings.
- L. Provide all required valves (e.g., emergency shut-off valves, check valves, etc.), adapters, caps, fittings,

pipng, coupling and appurtenances required for a complete fuel storage system and in accordance with all federal, state and local codes, laws, regulations and requirements of authorities having jurisdiction.

- M. Deliver tank with manufacturer installed labeling immediately adjacent to all connections on top of tank. Labeling shall be weather-proof decals with upper case letters, minimum two inches in height. Provide black lettering on bright yellow background. Obtain Engineer's approval for all text prior to installation.

#### 2.03 SHOP

- A. Fabricate the tank as shown on the Drawings or as ordered in accordance with these Specifications.
- B. Provide manhole as specified herein.
- C. Provide UL label on tank as specified.
- D. Perform leak Stage II Vapor Recovery Test (if specifically required).

### **PART 3 - EXECUTION**

#### 3.01 INSTALLATION

- A. Install the aboveground protected storage tank on the concrete foundation pad and firmly secure with anchoring tie downs in accordance with manufacturer's instructions and as shown on the Drawings. Install anchoring as instructed by the tank manufacturer, to secure the tank to the foundation pad and conform to requirements of National Fire Protection Association and all State and local codes. All installations shall be in accordance with manufacturer's recommendations.
- B. All installation work shall be performed by licensed tradespersons. Plumbing work shall be performed by Connecticut P-1 or P-9 licensed plumber. All wiring and electrical work, including grounding, shall be performed by a licensed electrician.
- C. Do not weld on the tank, modify, or penetrate the tank structure in any way without the express written permission of the tank manufacturer.

- D. Piping:
1. Vent piping shall extend a minimum of 5 feet above the highest projection of the tank. Locate the vent outlets at least 5 feet from building openings.
  2. Use only compatible thread sealant materials for all connections.
- E. Install weather-proof permanent labeling and symbols on tank in accordance with requirements of applicable codes, regulations, and standards. Provide on both sides, where directed by the Owner, 6-inch square four color NFPA 704 Fire Hazard Material Identification Signal decals with 2-inch high black numbers. Additionally, tank exterior shall be labeled by manufacturer on side near fill connections with the following: "1,000-GALLON DIESEL TANK" AND "6,000-GALLON FUEL OIL TANK". Letters shall be in contrasting color selected by the Owner and shall be minimum 5 inches in height.
- F. Overfill prevention valve shall be set to shut off fill at 90% of tank capacity. Contractor shall demonstrate to Engineer proper setting of overfill prevention valve shut off point.

### 3.02 TESTING

- A. Both the entire tank system as a completely assembled unit and the inner and outer tanks shall be tested for leakage before shipment from the factory in accordance with the requirements of NFPA 30, NFPA 30A, UL 2085, UL 2244 and in accordance with the manufacturer's recommendations. Submit test results to Engineer.
- B. On-site testing of both the entire tank system as a completely assembled unit and the inner and outer tanks shall be performed in accordance with the manufacturer's recommendations and the requirements of NFPA 30 and NFPA 30A. All on-site testing shall be performed in the presence of the Engineer.
- C. Test separately in the field in accordance with the manufacturer's field testing procedures the inner and outer tanks with air at the maximum pressure recommended by the manufacturer. After setting the tank in place, test the tank (both primary and secondary). Plug and check all tank openings with soap solution during the test. Insofar as practical, use bushings and

plugs installed during the test in the final installed unit. Maintain test pressure for at least one hour or longer, as required, to determine that the tank is not leaking. The tank manufacturer's testing criteria shall be followed.

- D. Repair, replace and re-test as necessary to achieve results satisfactory to the Engineer with respect to all required tests.
- E. After testing and confirmation of acceptable results, return tank system and all accessories to fully functional condition. Perform inspection in the presence of the Engineer to confirm all connections are in accordance with manufacturers' recommendations.

### 3.03 WARRANTIES AND ADDITIONAL FIELD SERVICES

- A. The Contractor shall warrant all work, equipment and materials for a minimum of one year following date of substantial completion of Work and as additionally required in accordance with Section 01 00 00, General Requirements.
- B. Prior to acceptance of the tank system by the Owner an inspection by the manufacturer's factory-trained technician shall be required. The inspection shall be performed in the presence of the Engineer. The Contractor shall be required to provide to the Owner documentation that the tank system manufacturer's factory-trained technician found the tank system to be in compliance with the manufacturer's requirements.
- C. Contractor shall also be required to demonstrate to the satisfaction of the Engineer prior to acceptance by the Owner that proper drainage of surface water away from tank system is effective during storm events. If evidence of stagnant surface water against the tank is discovered the Contractor shall be required to make appropriate repairs to the satisfaction of the Owner.
- D. Tank manufacturer's trained technician shall provide minimum 8 consecutive hours on-site training to the Owner prior to Owner's acceptance of tank system. Training shall be scheduled at a time and date selected by the Owner.

END OF SECTION

SECTION 26 00 00

ELECTRICAL

PART 1 - GENERAL

1.01 REFERENCES

- A. Applicable provisions of the General Requirements shall govern under this Section.
- B. Refer to this Section for General Conditions and General Information on work performed in this Division.

1.02 WORK INCLUDED

- A. This work includes the furnishing of all labor, materials, equipment and services necessary for and incidental to the installation and completion of all electrical work shown on the Drawings, specified and required for a complete vehicle fueling system with lighting ready for use. All applicable work shall be completed by a qualified licensed electrician, as applicable.
- B. RELATED WORK
  - 1. Section 23 13 23: Facility Above-Ground Fuel Storage Tanks
  - 2. Section 28 34 00: Tank Level Monitoring, Overfill Alarm, and Leak Detection Monitoring Systems
  - 3. Section 26 05 00: Electrical

1.03 EXAMINATION OF PRINTS AND SITE

- A. Examine Drawings related to the work of all Sections and become fully informed as to the extent and character of the work required and its relation to all other sections in the project.

- B. Prior to bidding and also prior to submittal of shop drawings, the Contractor shall examine the site and become fully informed as to the extent and character of both the existing configuration and also the extent and character of the work required. Any additional work resulting from the Contractor's failure to do this shall not be compensated.

#### 1.04 APPROVALS

- A. The materials, design and arrangements of all work installed shall be subject to approval of the Engineer.
- B. Within 15 days after Award of Contract, submit to the Engineer for approval, a list of manufacturers of equipment proposed for the electrical work. The intent to use the exact equipment makes specified does not void this requirement.
- C. Where any specific material, process or method of construction or manufactured article is specified by name of or reference to the catalog number of a manufacturer, the specifications are to be used as a guide and are not intended to take precedence over the basic duty and performance specified or noted on the drawings. In all cases, the specific characteristics of the equipment offered for approval shall be indicated on the shop drawings.
- D. All component parts of each item of equipment or device shall bear the manufacturer's nameplate, giving name of manufacturer, description, size, type, serial or model number, electrical characteristics, etc., in order to facilitate maintenance or replacement. The nameplate of a subcontractor or distributor will not be acceptable.
- E. If material or equipment is installed before it is approved, it shall be removed and replaced at no extra charge to the Owner, if, in the opinion of the Owner and the Engineer, the material or equipment does not meet the intent of the Drawings and Specifications.

#### 1.05 PROTECTION

- A. Contractor shall be responsible for work and equipment until finally inspected, tested and accepted; protect work against theft, weather, injury or damage; and carefully store material and equipment received on site that is not immediately installed. Close open ends of

work with temporary covers or plugs during construction to prevent entry of obstructing material.

#### 1.06 SCAFFOLDING, RIGGING, HOISTING

- A. Unless otherwise specified, the Work under each section shall include all scaffolding, rigging, hoisting and services necessary for erection and delivery onto the premises of any equipment and apparatus furnished. Remove same from the premises when no longer required.

#### 1.07 MATERIALS AND WORKMANSHIP

- A. All materials and apparatus required for the work shall be new, of first class quality and shall be furnished, delivered, erected, connected and finished in every detail and shall be so selected and arranged to fit properly into the building space. All materials and apparatus shall be supplied by firms still in business and listed in the firm's most recent catalogs.

#### 1.08 EQUIPMENT VARIATIONS

- A. To substitute other makes of materials, apparatus or appliances than those specified, a request in writing to be allowed to make the substitution shall be made. This request shall be accompanied by complete plans and specifications of the substitute offered. If so requested by the Engineer, also submit copy samples of both the specified material or appliance and the substitute.
- B. When an item of equipment other than specified or detailed on the Drawings is proposed that requires redesign of the structure, partitions, foundations, piping, wiring or any other part of the electrical layout, all such redesign and all new Drawings and detailing required shall, with the approval of the Engineer, be prepared under Work of the respective Section at no additional cost to the Owner.
- C. Where such approved variation required a different quantity and arrangement of wiring, conduit and equipment from that specified or indicated on the Drawings, with the approval of the Engineer, furnish and install such electrical wiring and conduit and any other additional equipment required by the system at no additional cost to the Owner.

#### 1.09 MANUFACTURER'S IDENTIFICATION

- A. Manufacturer's nameplate, name, or trademark and address shall be permanently affixed to all equipment and material furnished under this specification. The nameplate of a subcontractor or distributor will not be acceptable.

#### 1.10 DRAWINGS

- A. Drawings (when provided) are diagrammatic and indicate the general arrangement of system and work included in the contract. All questions regarding the location of equipment should be addressed to the Engineer and Owner.
- B. Work under each section shall closely follow drawings in layout of work. Maintain maximum headroom and clearances where space conditions appear inadequate. The Engineer shall be notified before proceeding with installations.
- C. Where variances occur between the Drawings and Specifications or within either document, the item or arrangement of better quality, greater quantity or highest cost shall be included in the Contract Price. The Engineer shall decide on the item and the manner in which the work shall be installed.

#### 1.11 SHOP DRAWINGS

- A. The Contractor shall submit shop drawings and catalogue cuts of all electrical equipment and materials to the Engineer for approval (Refer to Subsection 01340, Section 01000).
- B. The Engineer shall check for conformance with the design concept of the project and compliance with the contract specifications and drawings only. Materials and work required by the contract specifications and drawings, which may not be indicated on the shop drawings, is included under the work of this Section.
- C. No material shall be ordered or shop work started until approval of shop drawings by the Engineer

#### 1.12 RECORD DRAWINGS

- A. The Contractor shall keep, concurrently with the progress of the installation, a set of "As Built" Record Drawings, consisting of a reproducible marked set of Engineer's drawings with additional sketches, as required, denoting the dimensioning accurately all changes in elevation, location and size of material. In addition, all offsets shall be recorded. Upon completion of work, deliver to the Engineer and Owner an up-to-date set of these "As Built" Record Drawings.

#### 1.13 CUTTING, PATCHING AND REMOVAL OF WORK

- A. Perform all cutting, patching and removals unless specifically described under applicable sections.
- B. Temporarily relocate and subsequently reset all interferences.
- C. Where the installation of electrical conduit, panels and equipment requires removal of obstructions, the Contractor shall provide openings to permit such installations and/or removal. When completed, Contractor shall reinstall all phases of affected work to original status properly framed and adequately supported, subject to approval of the Engineer. Damaged materials shall be replaced at no cost to the Owner.
- D. Where indicated, abandon existing electrical service as follows:
  - 1. Disconnect appropriate wiring at electrical service panel board. Remove associated circuit breaker(s) or fuse(s) and any reference to abandoned circuit. Disconnect wiring at equipment receiving service.
  - 2. Remove all exposed portions of electrical service including wiring, conduit, etc.
  - 3. Abandon any direct burial underground wire in place. For underground wiring within a conduit, remove the wire. Cap all conduit ends at protrusions from ground.
- E. Removal of any material and equipment shall include all associated items such as supports, fastenings, concrete equipment pads, conduits, flashing, adhesive, etc.

- F. Patch all surfaces disturbed as a result of this alteration, including work affected by temporary protection.
- G. Replace all materials damaged under this alteration.
- H. Provide proper support at all new openings in existing walls and partitions, subject to the approval of the Engineer.
- I. Include total cost of all material and labor for all cutting patching and removal work. Additional compensation will not be considered unless specifically stated in writing, at the time of bidding.
- J. Reinstall all weather protection work in water proof manner.
- K. Paint all disturbed, altered surfaces with sealer, prime and finish coat. Paint all undisturbed surfaces adjacent to altered work to nearest intersection with prime and finish coat. Color and finish shall match existing.

#### 1.14 WATERPROOFING

- A. Where any work penetrates exterior surfaces, such as exterior walls, such penetrations shall be waterproofed in a manner subject to the approval of the Engineer. All necessary sleeves, caulking and flashing required to make openings absolutely watertight shall be furnished by the Section requiring openings.

#### 1.15 TESTS

- A. All equipment shall be tested as specified under the various sections of the Work. Labor, materials, instruments and power required for testing shall be furnished by the Contractor.
- B. Tests shall be performed in the presence and to the satisfaction of the Engineer and such other parties as may have legal jurisdiction.
- C. All defective work shall be promptly repaired and replaced and the tests shall be repeated until the particular system and component parts thereof receive the approval of the Engineer. Any repair, replacement or retesting shall be performed at no cost to the Owner.

- D. The duration of tests shall be as determined by all authorities having jurisdiction, but in no case less than the time prescribed in each Section of the Specifications.
- E. Professional Engineering fees involved in required testing of equipment shall be included in the Section requiring such services.

#### 1.16 CLEANING CONDUIT AND EQUIPMENT

- A. Thoroughly clean all equipment of all foreign substances inside and out, before being placed in operation. If existing conduit is used, it shall be thoroughly cleaned prior to the placement of new materials within.
- B. If any part of a system should be stopped by any foreign matter after being placed in operation, the system shall be disconnected, cleaned and reconnected wherever necessary to locate and remove obstructions. Any work damaged in the course of removing obstructions shall be repaired or replaced when the system is reconnected at no additional cost to the Owner.
- C. During the course of construction, all electrical conduits shall be capped in an approved manner to ensure adequate protection against the entrance of foreign matter.

#### 1.17 GUARANTEES

- A. All parts of the Work shall be guaranteed for a period of at least one (1) year from date of acceptance of the job by the Owner. If, during that period of general guarantee, any part of the work installed fails, becomes unsatisfactory or does not function properly due to any fault in material or workmanship, whether or not manufactured or job built, the Contractor shall, upon notice from the Owner, promptly proceed to repair or replace such faulty material or workmanship at no expense to the Owner, including cutting, patching and painting, or other work involved and including repair or restoration of any damaged sections of the premises resulting from such faults.
- B. In the event that a repetition of any one defect occurs indicating the probability of further failure and can be traced to faulty design, material or workmanship, then

repairs or replacement shall not continue to be made, but the fault shall be remedied by a complete replacement of the entire defective unit at no cost to the Owner.

- C. In addition to the general guarantee, obtain and transmit to the Owner any guarantees or warranties from manufacturers of parts or equipment as a supplement to the general guarantee, which will not be invalidated by same.

#### 1.18 SYSTEM INTERRUPTIONS

- A. The Contractor shall not, under any circumstances, interrupt any of the present service connections, mechanical or electrical, without first obtaining permission from the Engineer and Owner.
- B. Particular care must be taken that all work is done at such time and in such a manner as not to interfere with the continued operation of others present on the property and the Owner's processes. Additional charges for premium time, for work that must be performed outside regular working hours, will not be allowed. Such charges must be included in the Contractor's proposal.

#### 1.19 FINAL INSPECTION AND TESTS

- A. An initial test of the completed system shall be made prior to substantial completion. All system defects shall be corrected prior to the final test.
- B. Final test shall be made prior to substantial completion and witnessed by the Engineer. Notice of at least ten (10) working days shall be given to the Engineer and Owner prior to final testing.
- C. Tests shall be as required by the Engineer or Owner.
- D. Furnish all necessary test equipment and labor for testing.

END OF SECTION

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 DESCRIPTION

This item shall consist of furnishing and installing power, signal and grounding systems as shown on the Drawings, as directed by the Engineer, and as required for a complete fuel oil and diesel fuel system ready for use.

1.02 RELATED WORK

- A. Section 23 13 23: Facility Above-Ground Fuel Storage Tanks
- B. Section 28 34 00: Tank Level Monitoring, Overfill Alarm, and Leak Detection Monitoring Systems
- C. Section 26 05 00: Common Work Results for Electrical

1.03 REFERENCES

- A. The material for this work shall conform to the latest rules and requirements of the National Fire Protection Association Standard No. 70 (National Electrical Code) including Articles 501, 514, and 515.
- B. All electrical equipment including conduit and fittings related to fuel pumps and storage tanks shall comply with the latest requirements of the National Electrical Code for Hazardous Locations, Class 1, Division 1 or 2 (as applicable), Group D.
- C. Applicable provisions of the General Provisions and Supplementary General Conditions shall govern work under this Section.
- D. See "Electrical" Section 26 00 00, for General Conditions and General Information on work performed in this Division.

#### 1.04 GENERAL REQUIREMENTS

- A. All material and equipment required for the work shall be new, of first class quality and shall be furnished, delivered, erected, connected and finished in every detail and shall be so selected and arranged as to fit properly into the exterior and building spaces. Where no specific kind or quality of material is specified, a first class standard article as approved by the Engineer shall be furnished.
- B. The Contractor shall furnish the services of one or more experienced superintendents who shall be constantly on site and in charge of the installation of the work, together with all skilled workmen, electricians, helpers and Contractor shall adjust, start, operate and test each system.
- C. All component parts of each item of equipment or device shall bear the manufacturer's nameplate, giving name of manufacturer, description, size, type, serial number, electrical characteristics, etc., in order to facilitate maintenance or replacement. The nameplate of a subcontractor or distributor will not be acceptable.
- D. All electrical equipment shall bear the UL label.
- E. All conduit and equipment shall be installed and grounded in accordance with the latest rules and regulations of the National Electrical Code and applicable local codes.
- F. Not all required conduit runs are shown on the Drawings. Conduit runs that are shown are diagrammatic only and shall be installed in a manner to prevent conflicts with existing equipment and structural conditions. Exposed conduits shall be installed parallel to beams and other equipment.
- G. Where shown quantity and sizes of wires and conduit represent a suggested arrangement based upon selected standard components of electrical equipment. Modifications acceptable to the Engineer may be made by the Contractor to accommodate equipment actually purchased. The basic sequence and method of control must be maintained as indicated on the drawings and/or specifications unless otherwise approved by Engineer.

- H. Underground conduit shall be rigid galvanized steel conduit except for the last two feet which shall be flex-tight conduit with explosion-proof fittings.
- I. All electrical equipment located in classified areas shall comply with the latest requirements of the National Electrical Code for Hazardous Locations, Class 1, Division 1 or 2 (as applicable), Group D.
- J. Conduit is to penetrate building wall 24" above grade via an LB seal tight fitting. Prior to LB fitting, an EY seal-off fitting shall be installed on the conduit.

#### 1.05 CODES AND STANDARDS

- A. The codes and standards of the following organizations shall apply to all material and methods described within this Section:
  - 1. UL - Underwriter Laboratories
  - 2. NEMA - National Electrical Manufacturers Association
  - 3. NEC - National Electrical Code
  - 4. ANSI - American National Standards Institution
  - 5. IEEE - Institute of Electrical and Electronic Engineering

### PART 2 - PRODUCTS

#### 2.01 CONDUITS AND RACEWAYS

##### A. Materials

- 1. Galvanized rigid steel conduit: UL labeled with suitable factory applied interior coating or lining for ease in pulling wires. Use standard radius bends on concealed conduit and either standard bends or threaded "L" fittings equal to Crouse-Hinds on exposed work.
- 2. All conduits and conduit fittings installed outdoor and underground shall be watertight.

##### B. Minimum Sizes:

- 1. Conduit:  $\frac{3}{4}$ -inch diameter above grade, 1-inch diameter below grade
- 2. Liquid-tight flexible metallic conduit: 1-inch diameter

## 2.02 WIRES AND CABLES

- A. All wiring shall be 600 volt class UL approved, code gauge, stranded copper of sizes shown, with THHN/THWN insulation.
- B. All wiring shall have insulation color coded as follows: Phase A - Black; Phase B - Red; Phase C - Blue; Neutral - White; Equipment Ground - Green.
- C. Wire sizes shall be as shown on the Drawings or as required, but where sizes are not shown, shall be no smaller than the following minimum sizes:
  - 1. Power wiring #12 AWG Stranded
- D. Wire sizes for control/signal circuitry will be as recommended by the manufacturer of the equipment being installed.

## 2.03 SPLICES

- A. Splices for #10 or smaller wires shall be made with UL approved solderless connectors equal to Minnesota Mining and Manufacturing Company Scotchlok spring type or pre-insulated type, Buchanan or T & B Sta-Kon.
- B. Splices, cable taps and terminals for #8 and larger shall be made with UL approved compression connectors equal to T & B Color Keyed compression recommendations or bolted pressure connectors, bronze or equal as approved by the Engineer.

## 2.04 PULL BOXES, OUTLET AND JUNCTION BOXES

- A. Cast type boxes with stainless steel screws shall be used. Boxes installed outdoor in unclassified locations shall be weatherproof NEMA-4, NEMA-4X. Boxes installed in classified locations shall be of type approved for the location (Class 1, Division 1 or 2 as applicable) in accordance with NEC requirements.

## 2.05 HANGERS AND SUPPORTS

- A. Individual small conduits may be held in place by one-hold malleable clips.
- B. Supports for conduits or raceways on concrete or masonry walls may be attached to wall with all metal expansion shields. Explosive type inserts will not be allowed.

C. All hangers, clips and accessories for supporting conduit shall be UL approved.

#### 2.06 POWER FOR FUEL PUMPS AND OTHER EQUIPMENT

A. Contractor shall furnish and install new electrical panel with circuit breakers to supply new fuel storage. Provide wiring from the new electrical panel, as shown on Drawings. The Contractor shall provide all required conduits, wires, and other electrical materials for wiring the fuel pumps, overflow detection devices and alarms and lighting. The Contractor is responsible for supplying all required equipment and conduit for complete electrical service.

B. New electrical panel shall be Main Breaker type with solid neutral and ground bars. Electrical panel shall be NEMA-1 type and shall conform to UL50, UL67, and NEMA PB-1. Panel voltage and number of phases shall correspond to the existing electrical system at the Equipment Maintenance Building.

1. Main circuit breaker shall have shunt-trip provisions for emergency power shut-off to all loads.

2. Branch circuit breakers serving fuel pumps, or other circuits to classified locations which are not intrinsically safe, shall be of switch-neutral type (SNCB) and shall have padlocking provisions.

#### 2.07 WIRING DEVICES

A. Provide alternating current, general use, snap switches, in outlet box, totally enclosed in composition case, with insulated mounting yoke and side-wired, binding screw-type terminals. Single-pole (General Electric No. GE5951, Leviton No. 54521, Hubbell No. 1221-1, or approved equal), 2-pole (General Electric No. GE5952, Leviton No. 54522, Hubbell No 1222-1, or approved equal) switches shall be rated to 20 amperes at 120/277 volts a.c.

#### 2.08 LIGHTNING PROTECTION EQUIPMENT

A. Furnish and install all necessary equipment and wiring for lightning protection including air terminals, wires, and ground rods. Lightning protection system shall be in accordance with the Lightning Protection Code NFPA-780 and UL96A Standard. All materials (air terminals, wires, cable fasteners, bonding devices, etc.) shall meet the NFPA-780 requirements for Class I installation.

## 2.09 POLE MOUNTED LIGHTING

### A. LIGHTING FIXTURES

Furnish and install totally enclosed luminaire designed for installation at existing light pole using a mounting bracket. The newly installed luminaire shall be oriented to provide illumination to the tank and tank filling port. Luminaire shall have a weatherproof housing with sealing gasket, clear flat tempered glass lens with hinged lens frame, horizontally mounted 250W metal halide lamp, symmetrical reflector providing Type V, full cut-off light distribution, high power factor multi-tap ballast rated for -20 degree F operation, and photo-electric control receptacle. Luminaire shall be furnished together with bolt-on mounting bracket and all necessary hardware for a complete installation.

Manufacturer: LSI Industries, Model Citation, Catalogue No. CT2H-5-250-MH-F-MT-XXX-PCR, or equal.

### B. PHOTO-ELECTRIC CONTROLS

Furnish and install turn-lock type photo-electric controls to be mounted onto luminaire's photo-electric control receptacle. Photo-control device shall comply with ANSI C136.10 and EEI NEMA Standards. Enclosure shall be of high impact and flammability resistant, non-metallic, UV-stabilized, permanent color material. Relay shall be bi-metal type to provide delayed response and to prevent false switching due to light from vehicle or lightning. Surge arrestor shall be MOV type for maximum surge protection. Window shall be UV resistant clear acrylic. Base shall be heat resistant phenolic, with moisture resistant gasket. Temperature range -40 to +140 degrees F. Manufacturer: Tork, 5000M series, or equal.

## PART 3 - EXECUTION

### 3.01 LAYOUT OF WORK

- A. The Contractor shall lay out and perform his/her Work in a workmanlike manner to cause no delay in the construction.
- B. The Contractor shall verify all measurements and shall be responsible for the correctness of same. No allowance will be made for differences between actual measurements and those shown on the Drawings.

- C. All work shall be installed in such a manner as to be readily accessible for maintenance, repair and operation. Deviations from the plans must be approved by the Engineer.
- D. Locations of the panel shown on the Drawings shall be considered as approximate and all pertinent field conditions and Drawings shall be studied prior to installation.
- E. The locations of apparatus and equipment are approximate only and the runs of feeders, risers and branches are not necessarily to be made exactly as shown on the plans. The exact locations of such work shall be determined. The entire installation shall conform to the latest edition of the National Electrical Code and State and local inspection authorities.
- F. Electrical equipment, such as junction and pull boxes and apparatus, shall be made accessible.
- G. The Engineer may make minor changes in the location of electrical work without additional cost to the Owner.

### 3.02 WIRING AND TERMINATIONS

- A. All cables and wires exterior to the apparatus to which they are connected shall be installed in conduit for their entire length. Conduit shall be run exposed. All conduits shall be grouped neatly together as directed by the Engineer and in no case shall openings or working areas be blocked by conduits.
- B. No splices shall be made in any wire or cable, except at splice boxes, conduit fittings and panel boards.
- C. Wiring terminations and splices in cabinets, panels, or equipment shall have sufficient length to make up circuit connections for extending circuits or connecting to wiring devices with terminations. Minimum wire length shall be six (6) inches.
- D. Pull or connection boxes shall be installed for each third 90 degree bend or equivalent.
- E. Wires in conduit shall be pulled with moderate tension and any lubricant used shall not have a deleterious effect on the insulation. No splice shall be pulled into the conduit.
- F. Conduits shall be terminated so as to permit neat connections to motors and other equipment.

- G. Provide number and size of the lighting circuits as necessary to supply new lighting at the canopy or light poles.

### 3.03 GENERAL WIRING TESTS

- A. At the time of the final inspection and test, all wiring and connections must be completed, devices and equipment properly operating, and power and control wiring clearly identified with approved tags ready for acceptance. Each system must test free from short circuits and from grounds and have an insulation resistance of not less than 50 megohms when tested with a 1000 volt DC meter at 70 degrees Fahrenheit ambient temperature with a reasonably dry atmosphere between conductors and between conductors and ground as required by the NEC.

### 3.04 CONDUITS

- A. Existing electrical conduit may be reused as directed by the Engineer. All conduits shall be fished and cleaned and dry before pulling wires and shall be suitably protected against entrance of dirt and moisture during construction.
- B. Ends of all conduits shall be reamed; connections to junction boxes shall be double locknut and bushing, using insulated bushings on conduit 1/4" or larger. Grounding bushings shall be provided at all panel connections.

### 3.05 GROUNDING

- A. It is the intent of this section of these Specifications to require that all grounding and grounding circuitry equal or exceed the requirements of the latest edition of NEC Article 250 and, in the event of a conflict or discrepancy between these Specifications and the Contract Drawings and NEC Article 250, the more stringent requirements shall apply.
- B. Raceway systems, which include all metal conduit, wireway, surface raceways, pull boxes, junction boxes, built-up enclosures, etc., shall be made to form a continuous conducting permanent ground circuit to the lowest practical impedance to enhance the safe conduction of ground fault currents and to prevent objectionable differences in voltage between metal non-load current carrying parts of the electrical system. All power feeds shall include an equipment grounding conductor.

- C. The Contractor shall furnish and install all materials required for the grounding and/or bonding of all equipment.
- D. The Contractor shall make tight and proper all metallic components and equipment to one another and to ground, using a positive foolproof system of connections. Provide and install bonding and grounding conductors with approved termination where required, conforming with the latest edition of the National Electric Code and other applicable specification standards.
- E. After the work is complete, the entire system shall be tested for continuity and for grounds in accordance with the requirements of the NEC.

### 3.06 JUNCTION BOXES

- A. Junction boxes, if in wet locations, shall be of the threaded hub type and provided with watertight screw-on cover and gasket.
- B. Pull boxes shall be adequate size to accommodate the conductors installed therein without excessive bending of the conductors, which would damage the conductor insulation.

### 3.07 NAMEPLATES

- A. The Contractor shall furnish and install nameplates on all panel boards and controls wired by him, designating the service controlled.
- B. Nameplates shall consist of laminated black and white plastic with 5/16-inch engraved white letter on black background Lamacoid or approved equal.
- C. Nameplates shall be securely attached in place by sheet metal screws.

### 3.08 CIRCUIT OR CONDUCTOR IDENTIFICATION

- A. Phase rotation shall be indicated through the use of red, blue and black colored insulation.
- B. Neutral conductors shall be identified with white insulation.
- C. Grounding conductors shall be identified with green insulation.

END OF SECTION

SECTION 28 34 00

TANK LEVEL, MONITORING, OVERFILL ALARM AND LEAK DETECTION SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This item shall consist of furnishing and installing instruments, appurtenant equipment and accessories as an integrated instrumentation system for monitoring double wall aboveground storage tanks as shown on the Drawings and as ordered in accordance with these specifications.
- B. The Owner shall provide one Pneumercator TMS2000 Tank Monitoring Console NEMA 12 with leak sensor float type #LS600LDBN Piping Sump and Interstitial leak Sensor as salvage from the HR Building. Use of this equipment to meet the requirements of this specification shall be allowed.
- C. Furnish and install complete and ready for use in accordance with applicable standards, codes, regulations, and laws the following for each tank system: mechanical tank level gauge, high liquid level sensor and alarm, and leak detection interstitial monitor and alarm.
- D. Perform all work in accordance with manufacturers' recommendations. Provide only parts, equipment and materials designed and manufactured for the intended use. All wetted materials shall be compatible with liquids which they will be in contact with.
- E. Electrical equipment, wiring and devices shall be in accordance with NEC requirements for hazardous locations.
- F. All components shall be designed, manufactured, installed and safe for intended outdoor use and shall be fully-functional down to -40 degrees Fahrenheit.

1.02 RELATED WORK

- A. Section 31 00 00: Earthwork
- B. Section 03 30 00: Cast-In-Place Concrete
- C. Section 23 13 23: Facility Above-Ground Fuel Storage Tanks

G. Section 26 00 00: Electrical

H. Section 26 05 00: Common Work Results for Electrical

### 1.03 REFERENCES

- A. Institute of Electrical and Electronic Engineering (IEEE) Specification 472, Guide for Surge Withstand Capability Test
- B. Instrument Society of America (ISA) S5.1. Instrument Symbols and Identification
- C. ISA S5.4. Instrument Loop Diagrams
- D. IEEE Specification 4888, Digital Interface for Programmable Instrumentation
- E. NFPA 30: Flammable and Combustible Liquids Code
- F. NFPA 30A: Automotive and Marine Service Station Code
- G. UL: Underwriters Laboratories, Inc.
- H. FCC: Federal Communications Commission
- I. NEMA: National Electrical Manufacturer's Association
- J. NEC: National Electrical Code
- K. FM: Factory Mutual
- L. NBS: National Bureau of Standards
- M. Connecticut Flammable and Combustible Liquids Code
- N. RCSA Section 22a-174-30: Dispensing of Gasoline/Stage I and Stage II Vapor Recovery

### 1.04 SUBMITTALS

- A. Sales bulletins and other general publications are not acceptable as submittals except where necessary to provide supplemental technical data.
- B. Contain all material in not more than one submittal.
- C. Submit the following:
  - 1. Component manufacturing data sheets indicating pertinent data and identifying each component.

2. System wiring schematic on a single drawing with full description of operation.
  3. Component drawing showing dimensions, mounting and external connection details.
  4. Individual loop diagrams, including every instrument, junction box, cable numbers and termination numbers for each loop, each on a single sheet.
- D. Submit operation and maintenance instructions and separate parts lists (4 sets). Operating instructions shall incorporate functional description of the entire system.
  - E. Submit "as-built" drawings for review within 30 days after completion of system installation as part of operation and maintenance instructions. Clearly define special maintenance requirements particular to the system along with special calibration and test procedures.
  - F. Include, as part of shop drawing submittal, a brief description of calibration procedures using actual calibration and test equipment, including a typical calibration sheet, and a brief description of loop check procedures, including a typical loop check sheet.
  - G. Submit a list of at least two instrumentation service companies in the vicinity of the tank site where qualified service personnel approved by the monitoring system manufacturer are available for emergency and preventive maintenance services.
  - H. Provide drawings and specifications indicating energy sources. Furnish other devices necessary to obtain proper operation from energy resources with instrumentation.
  - I. Provide the manufacturer's certified statement of installation approval containing authorization to energize system.
  - J. Provide UL instrumentation certificates upon delivery.
  - K. Provide a certified statement of factory testing.
  - L. Identify any exceptions to specifications, in proposal and in documentation submittals.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Ship equipment, material and spare parts complete, except where partial disassembly is required by transportation regulations or for protection of components.
- B. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended.
- C. Deliver spare parts at same time as pertaining equipment. Deliver to the Owner after completion of work.

1.06 MANUFACTURER'S REPRESENTATIVE

- A. Upon completion of installation, provide a factory-trained service technician for a period of not less than one 8-hour day on site for field checkout in presence of the Engineer, calibration and startup of equipment and instructing Owner operating personnel.

PART 2 - PRODUCTS

2.01 TANK GAUGE, OVERFILL ALARM AND LEAKAGE DETECTION MONITORING SYSTEM

- A. Provide for each aboveground storage tank: liquid level gauge, high level (overflow) sensor and alarm and leak detection monitoring system and alarm capable of tank inventory management and sensing high level and leak in interstitial space (between primary and secondary tank). System shall indicate the following for the aboveground tanks: one visual alarm at high level, one audible alarm at high level, one visual alarm at leak in interstitial space, one audible alarm at leak in interstitial space. Mechanical tank gauge on each tank shall provide an accurate display at ground level of tank volume in feet and inches and shall be clearly readable with high contrast and high visibility 30 feet from tank.
- B. All equipment and instrumentation shall be capable of continuous monitoring without shutdown of any tank system components.
- B. Each tank level gauge shall be UL listed, and provided with stainless steel float, vapor tight connection, angled face, swivel adaptor base for 360 degrees rotation, corrosion-resistant construction, and drop tube to prevent float entanglement. The mechanical tank gauge shall be OPW 200TG Mechanical Gauge or approved equal.

- D. The tank level/leakage detection monitoring system shall consist of a tank level monitoring panel complete with tank level probe(s) and leakage detection probe(s). The system shall be the TLS-350R as manufactured by Veeder-Root, Simsbury, CT or equal or salvage as approved by the Engineer. Other accepted manufacturers are EECO System and EMCO. The tank level/leakage detection monitoring system shall have an internal modem, automatic inventory reconciliation capabilities, continuous 24-hour leak detection without tank shutdown capabilities, and automatic tank calibration capabilities.
- E. Tank Level/Leakage Detection Monitoring Panel and Printer
1. The wall-mounted monitor panel shall be capable of monitoring one (1) tank for inventory control, in-tank leak detection, tank piping sump leak detection, dispenser sump leak detection, pressurized line leak detection, and tank interstitial leak detection.
  2. The monitor panel shall include microprocessor-based electronics, a two line, 24-character LCD display, a 24-button keypad, an internal audible warning and alarm indicator, and at least three front panel LEDs for indication of power, warning and alarm conditions, and shall be UL listed.
  3. The monitor panel shall include an integral report printer with built-in take up spool for hard copy documentation of inventory, leak detection and alarm information.
  4. The following modules shall be installed and functioning within the monitoring panel.
    - a. A standard RS-232 communications interface module providing data transmission to a computer.
    - b. A Ethernet TCL/IP communication module.
    - c. A combination input/output module, programmable to accept solid state inputs from external devices and also to activate external alarm devices. Output relays shall be capable of switching a load of 120 VAC, 2A (max.).

- d. An internal modem module for direct data transmission over phone lines. The Contractor will also install the associated phone line as necessary.
  - e. A 1-input, in-tank probe module compatible with standard capacitance level sensing probes.
  - f. A 4-input sensor module compatible with tank piping sump, dispenser sump, pressurized line leak and tank interstitial leakage detection probes.
5. The monitor panel shall have a backup battery to maintain setup and operating information in the event of an AC power interruption.
  6. The monitor panel shall have a programmable security code feature to prohibit access to the setup functions without entering the proper code.
  7. The monitoring panel shall be capable of producing automatic and manual reports including the following information.
    - a. Fuel volume
    - b. Fuel height
    - c. Water height
    - d. Fuel temperature
    - e. Ullage
    - f. Temperature compensated fuel volume
    - g. Last inventory increase amount
    - h. Last in-tank leak test result
    - i. Time and date
    - j. Tank identification
    - k. Fuel identification
  8. The monitor system shall be capable of the following performance specifications:
    - a. Relative height of fuel  $\pm$  0.1 inch;
    - b. Relative volume of fuel  $\pm$  15 gallons;
    - c. Height of water to 5 inches;
    - d. Fuel temperature  $\pm$  1.5 Degrees F;
    - e. Time  $\pm$  1 minute/month;
    - f. Leak detection rate of 0.1 gallons per hour or greater.

F. Tank Level Probe

1. Continuous tank product and water level measurement from a single capacitance type probe. Probe shall be intrinsically safe and UL approved or equal.
2. Level measurement accuracy  $\pm 0.1$  inch or better. Temperature measurement accuracy  $\pm 1.5$  Degrees F or better.
3. The probe shall provide in-tank leak detection with accuracy of at least 0.1 gallons per hour.
4. Probe measurement shall provide high product and overfill alarms, without requiring a separate probe when interfaced to tank level monitor panel.
5. Probe measurement shall provide alarms for high water and low product level.
6. The probe shall top mount from a 4-inch NPT opening.

7. The probe shall have third party certification according to US EPA's "Standard Test Procedure for Evaluating Leak Detection Methods: Automatic Tank Gauging Systems."
8. The probe shall have third party certification according to US EPA's "Standard Test Procedures for Evaluating Leak Detection Methods: Volumetric Tank Tightness Testing Methods."

G. Interstitial Leakage Probe

1. Probe sensor shall fit and secure to the provided manufactured interstitial port of the tank.
2. Sensor shall be intrinsically safe and approved by UL.
3. The probe shall be able to operate of a temperature range of -4 Degrees F to 158 Degrees F.

H. Electrical Control System

1. All wiring shall be designed and installed in strict accordance with NFPA 70.
2. Tank system shall be factory pre-wired and supplied with remote mounted NEMA 4X emergency stop control panel. Panel to be equipped with means of disconnecting all fueling system circuits per NFPA 70 -514.
3. System shall include emergency disconnect with mushroom head push button.
4. System shall require only one 230V Single Phase 20 amp feeder from existing main distribution panel.
5. Enclosure: NEMA 4X Fiberglass.
6. System shall connect to tank with a single explosion proof UL Listed and CSA Approved for Class I, Groups B, C, D, Divisions 1 and 2 direct burial multiple conductor cable. Conductors shall be color coordinated with control panel and tank connections.
7. Tank Monitoring and Leak Detection System communications shall be field installed in

dedicated low voltage communication conduit with shielded cable per manufacturer's instruction. Existing conduits shall be used to the maximum extent practicable.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION

- A. The instrumentation is to be installed in accordance with manufacturer's instructions and/or as indicated on the drawings. The monitoring panel shall be wall-mounted, as indicated on the Drawings and by the Engineer and Owner. Instrument wire shall be run in separate conduits. For example, do not run instrument wire in the same conduit as the power supply wiring.
- B. Conduit and wiring between monitor panels and tank mounted devices shall be furnished and installed under applicable electrical sections and in accordance with NFPA 70.
- C. The Contractor shall provide and install all materials necessary for a complete and operating system including, but not limited to, conduit, wiring, junction boxes, riser pipes, supports and adapters.
- D. Install in strict accordance with the manufacturer's recommendations, National Electrical Code, NFPA 70, and NFPA 30A.
- E. Electrical work shall be rated for hazardous area as required.
- F. Install the tank level probe and the interstitial leak probe in the proper locations in the fuel tank and the piping sump sensor in the piping sump and the dispenser sump sensor in the dispenser sump in accordance with these Specifications, Drawings, and manufacturer's instructions.
- G. The leak monitoring system installation shall be inspected and approved by the equipment supplier or its certified contractor. The leak monitoring system supplier shall submit a comprehensive checklist of quality and safety items critical to the system and verify that the installation has been in accordance with these standards and applicable fire codes.

#### 3.02 FIELD CALIBRATION

- A. Perform complete setup and calibration of the Level Sensing and Leakage Detection System in presence of the Engineer.
- B. Calibrate monitor with sufficient height/volume values to ensure accurate fuel volume interpolation for fuel heights along the entire length of the probes.
- C. Adjust secondary functions, such as alarm actuations during initial calibration and demonstrate after system is placed in service. Document for records and submit to the Engineer.
- D. Conduct process calibration. Document for records and submit to the Engineer.
- E. After calibration, check instrument loops in presence of service engineer, document for records and submit to the Engineer.

### 3.03 SYSTEM ENERGIZING

- A. Do not energize system until receipt of certified statement of installation by service engineer.

### 3.04 MAINTENANCE

- A. Provide preventative maintenance and warranty services of the manufacturer for the complete system for a period of two full years, following final system acceptance. As a minimum, preventative maintenance visits during that period, of not less than one man-day per year per site shall be provided. Emergency repair services are to be available within a 24-hour response time.

### 3.05 SPARE PARTS AND TEST EQUIPMENT

- A. Furnish the following spare parts, in addition to manufacturer's standard spare parts kit:
  - 1. Twenty-four rolls of printer paper.
  - 2. Test equipment and schedules as recommended by instrument manufacturer for proper maintenance and calibration of instrumentation.

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included under this section consists of trench excavation, mass excavation, backfill, drainage, topsoil and seeding and all other earthwork and related work required to complete the work of this Contract as specified, as shown on the Drawings and as directed by the Owner.

1.02 RELATED WORK

- A. Section 03 30 00: Cast-In-Place Concrete
- B. Section 02 40 00: Demolition & Structure Moving
- C. Section 02 60 00: Contaminated Site Material Removal

1.03 QUALITY ASSURANCE

- A. The Standard Specifications referenced herein shall be State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges and Incidental Construction - Form 816, and/or addenda hereinafter referred to as "Form 816."
- B. Wherever a percentage of compaction is indicated or specified, use percent of maximum dry density as determined by Method D of AASHTO T-180.
- D. The Contractor shall retain the services of qualified independent field and laboratory testing services to document compliance with these requirements. The testing firm shall be licensed and certified in accordance with the requirements of the CTDOT and the Contractor shall be required to obtain the Engineer's approval of the independent testing firm(s).
- E. The Contractor shall retain a qualified utility location service to identify the location and orientation of subsurface utilities within the work area.

1.04 SUBMITTALS

- A. Submit certifications that free draining material and clean soil used for excavation backfill are in accordance with this specification.
- B. Certified weight scale tickets shall be provided showing the weight of the vehicle at the time of arrival and departure from the backfill source facility as a prerequisite to payment for all backfill material delivered to the site. The weight tickets shall be signed and dated by a representative of the Contractor certifying to the accuracy of all measurements, the date and time of arrival and departure of each vehicle, the location of the source of the backfill material and the vehicle identification number.
- C. The Contractor shall be required to obtain the Engineer's approval of the sources for all material to be imported onto the site, prior to delivery, including all soil, stone, gravel, topsoil, asphalt, etc.
- D. A minimum of one week prior to the work of this section Contractor shall submit to the Engineer for review name, address, telephone number and statement of qualifications for the independent field and laboratory testing firm(s) proposed for use. Required licenses and certifications shall be included with the submittal. The Contractor shall be required to obtain the Engineer's approval of the independent testing firm(s).
- A. Submit results of analyses of all imported soil proposed for use at the Site. Results must demonstrate soil proposed meets all of the residential direct exposure criteria and pollutant mobility criteria (GA standard) defined in CTDEP's Remediation Standard Regulations (RSRs) as specified in Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies (RCSA). Analyses must be performed by an environmental laboratory approval program (ELAP)-certified laboratory on soil representative of the proposed source and the results shall be submitted directly to the Engineer for review. Analytical testing shall be completed with one sample per every 500 tons of imported clean backfill material.

- E. Submit to the Engineer for review results of all laboratory and field testing required to demonstrate compliance with the specifications.

## PART 2 - PRODUCTS

### 2.01 GENERAL

- A. Pipe Bedding: All backfill material for buried piping shall conform to ASTM C-33 paragraph 9.1 for quality and soundness. This material shall consist of washed pea gravel ranging from 1/8-in. to 3/4-in. in diameter, or washed stone crushings between 1/8-in. and 1/2-in. in diameter or a material which has been approved by the pipe manufacturer. Not more than 3 percent of the aggregate shall pass a No. 8 sieve.
- B. Gravel Backfill: Well-graded gravel conforming to M.02.06 Grade C, Form 816. Use bank-run gravel backfill for all excavations where indicated on the plans or wherever specified.
- C. Trench Backfill: Selected on-site material may be used for backfill above piping as approved by the Engineer.
- D. Subbase: The subbase shall consist of a clean soil-aggregate mixture of bank or crushed gravel, crusher run stone or any combination thereof, placed where shown on the plans or where directed by the Engineer and constructed in accordance with these specifications. All materials for this work shall conform to the requirements of Articles M.02.02 and M.02.06, Form 816. Grading C shall be used.
- E. Free Draining Material: This material shall be furnished and placed in accordance with these specifications and as indicated on the Drawings, or as ordered by the Engineer, or wherever specified. Material for this work shall meet the requirements of Article M.02.07 of Form 816.
- F. Top Soil: The material shall conform to the requirements of subarticle M.13.01-1 of Form 816. The top soil shall also be certified clean and meet the soil requirements specified herein.

- G. Soil: Imported soil must be dry and free of debris such as ice, rocks, surplus concrete, sticks, roots and litter. Soil imported from offsite for backfill shall meet the residential direct exposure criteria and pollutant mobility criteria (GA standard) defined in CTDEP's Remediation Standard Regulations (RSRs) as specified in Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies (RCSA).
- H. Turf Establishment: The materials and construction methods for this work shall conform to the requirements of Section 9.50 of Form 816.

### PART 3 - EXECUTION

#### 3.01 DESCRIPTION

- A. The Contractor is responsible for the location of buried utility lines and subsurface structures. Carry out program of excavation, dewatering, sheeting, and bracing in such manner as to eliminate all possibility of undermining or disturbing foundations of existing structures or of work previously completed under this contract.
- B. Excavate to widths that give suitable room for building structures; furnish and place all sheeting, bracing, and supports; do all cofferdamming, pumping, and draining; and render bottom of excavations firm and dry and acceptable in all respects and as necessary to complete the specified work as directed and approved by the Engineer.
- C. Do not plow, scrape or dig by machinery, earth near to finished subgrade so as to result in disturbance of material below subgrade, unless indicated or specified, and remove with pick and shovel, material to be excavated, just before placing pipe, masonry or other structure.
- D. Make all excavations in open, except as otherwise specified or permitted.
- E. Excavation, trenching and shoring requirements for the protection of employees in accordance with OSHA Regulations, 29 CFR Part 1926 Subpart P shall be employed and enforced.

- F. Length of trench open at any one time will be controlled by conditions and subject to any limits that may be prescribed by the Engineer.
- G. The Engineer may direct that sheeting and bracing be cut off at specified elevation and left in place.
- H. The Engineer may direct in writing to leave in place at any time during the progress of work all sheeting, bracing, etc., that are not indicated to be left in place.
- I. There are pipes, drains, and other utilities in certain locations not indicated on Drawings. No attempt has been made to show all services and completeness and accuracy of information given is not guaranteed. In the case of damages to unmarked underground utilities they are not the responsibility of a "Call-Before-You-Dig" utility.
  - 1. The Contractor shall retain the services of a private utility locator service to identify the location and orientation of subsurface utilities in the work area.
  - 2. Contractor shall contact "Call-Before-You-Dig" for underground utilities information a minimum of 72 hours prior to start of construction. Contractor shall obtain all available underground utility information from the Owner prior to excavation. Contractor shall locate all known utilities prior to excavation and shall repair/replace all damage, by the Contractor at no extra cost to the Owner. Utilities damaged by the Contractor shall be repaired with equal materials in an acceptable schedule and to the specifications of the Owner.
- J. All existing pipes, poles, wires, utilities, fences, curbs, catch basins, storm sewers, 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 items be damaged, they shall be restored by the Contractor, without compensation, to at least as good condition as that in which they were found immediately before the Work was begun. The existing catch basins and storm sewers shall be

carefully protected, and integrated into the finished grading and paving work.

- K. Whenever the Contractor encounters or damages previously unknown or undocumented existing structures as described below he/she shall perform all or a portion of the work described as directed in writing by the Engineer to change the location of, remove and restore, or replace such structures, or to assist the Owner thereof in so doing. For all such work outside the written scope of work, the Contractor shall be paid as Extra Work.
- L. In removing existing pipes or other structures, the Engineer shall include for payment only those new materials and labor which, in his/her judgment, are necessary to replace those unavoidably damaged.
- M. The structures to which the provisions of the preceding two paragraphs shall apply include pipes, wires, and other structures which meet all of the following: (a) are not indicated on the drawings or otherwise provided for, (b) encroach upon or are encountered near and substantially parallel to the edge of the excavation, and (c) in the opinion of the Engineer will impede progress to such an extent that satisfactory construction cannot proceed until they have been changed in location, removed (to be later restored), or replaced.
- N. Branches, limbs and roots shall not be cut except by permission of the Engineer.
- O. Restoration of existing property or structures should be done as promptly as practicable and not left until the end of the construction period.
- P. If material unsuitable for foundation (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried out in accordance with the drawings and/or specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted, material of a type as directed. For all such work the Contractor shall be paid as Extra Work.

- Q. Unless otherwise directed by the Engineer or Owner, surplus excavated materials not needed and uncontaminated shall be hauled away and disposed of by the Contractor, at his/her expense, to appropriate locations, and in accordance with arrangements made by him/her and in accordance with all federal, state and local laws and regulations. Excavated soil may not be removed from the site prior to sampling and chemical analysis and written approval from the Engineer or Owner. The Contractor is responsible for all sampling and analysis for waste characterization and disposal. Contractor must provide certified letter or signed certificate of disposal/treatment indicating disposal of surplus excavated material at an Owner preapproved location.
- R. During progress of work, the Contractor shall conduct his/her operations and maintain area of his/her activities, including sweeping and water sprinkling of paved surfaces and covering of soil stockpiles as necessary, so as to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use additional water for more effective dust control, the Contractor shall furnish and apply additional water at no additional cost, as directed.
- S. In general, and unless other material is indicated on drawings or specified, material used for backfilling trenches and excavations around structures shall be suitable material which was removed in the course of making the construction excavations. Suitable material can be used provided it is free of contaminants, organic materials and debris. Contaminated or hazardous material is unsuitable for use as backfill. The Engineer's approval shall be required for reuse of existing materials for backfill. If sufficient suitable material is not available from the excavations, the backfill material shall be free draining clean material. Backfill must be dry and free of debris such as ice, rocks, surplus concrete, sticks, roots and litter. Soil imported from offsite for backfill shall meet the residential direct exposure criteria and pollutant mobility criteria (GA standard) defined in CTDEP's Remediation Standard Regulations (RSRs) as specified in the Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies (RCSA). Backfill shall be mechanically compacted to 95% optimum density (AASHTO-T-180 Method D) in 8-inch lifts maximum. The Contractor shall

retain the services of qualified field and laboratory testing services to document compliance with these requirements. Material may not be used as backfill until excavation from which fill was removed has been sampled and analyzed, and written authorization to backfill the excavation has been obtained from the Engineer.

- T. The nature of materials will govern both their acceptability for backfill and methods best suited for their placement and compaction in backfill.
  
- U. Restoration and establishment of landscaping shall consist of furnishing, placing and shaping topsoil in all landscaped areas to a minimum in-place thickness of 6 inches and in accordance with Standard Specifications Form 816. Underlying imported backfill soils shall meet the requirements specified. Turf establishment in these areas shall consist of providing an accepted uniform stand of established perennial turf grasses by furnishing and placing fertilizer, seed and mulch on all areas to be treated as shown on the Drawings and where designated by the Engineer.

### 3.02 SEPARATION OF SURFACE MATERIALS

- A. Carefully remove loam and topsoil from excavated areas and store separately for further use or furnish equivalent loam and topsoil as directed by the Engineer. Material not required for further use shall be removed as specified.

### 3.03 SHEETING AND BRACING

- A. Install temporary shoring and bracing as required to create a safe working environment and prevent settlement or other damage to adjacent grounds and structures resulting from excavation operations. Shore and brace in a manner which will not interfere with progress of other Work or related contracts (if any) on this project. Check shoring and bracing for settlement, and adjust for settlement. Promptly remove temporary shoring, and bracing when no longer required.
  
- B. Furnish, put in place, and maintain such sheeting, bracing, etc., as may be necessary to support sides of excavation and to prevent any movement of earth that could diminish width of excavation to less than that

necessary for proper construction; to prevent undermining of adjacent structures, paving and roadways; and to prevent injury or delay of work.

- C. Drive sheeting ahead of excavation, whenever possible, to avoid loss of material from behind sheeting. Avoid trimming behind face where sheeting will be driven, if excavating below sheeting. Prevent voids, where possible, outside of sheeting and immediately fill any remaining voids with sand, and compact.
- D. Leave in place, as indicated, all sheeting, bracing, etc., that is to be embedded in backfill, or concrete.
- E. Cut off sheeting and bracing at specified elevations when directed by the Engineer.
- F. Carefully remove all sheeting and bracing not to be left in place as not to endanger construction or other structures. Immediately backfill all voids left or caused by withdrawal of sheeting. Use suitable materials and compacting methods.

#### 3.04 DRAINAGE AND DEWATERING

- A. The Contractor shall remove all water from the excavation promptly and continuously throughout the progress of the Work and shall keep the excavation dry at all times until the structures to be built therein are completed and are backfilled or have sufficient weight to resist uplift pressures or the soil samples are collected and approval is provided by the Engineer to backfill the excavation. No pipe or masonry is to be laid in water and water shall not be allowed to rise on or flow over any pipe or masonry until such time as approved by the engineer.
- B. All necessary precautions shall be taken to prevent disturbances of and to properly drain the subgrades upon which concrete is to be placed and upon which pipe is to be laid.
- C. Precautions shall be taken to protect uncompleted work from flooding during storms or from other causes. All pipe lines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected.

- D. Prevent surface, subsurface or groundwater from flowing into excavations and from flooding the project area, as well as surrounding areas. Do not allow water to accumulate in excavations. Remove water to prevent soil changes detrimental to the stability of subgrades. Provide suitable temporary pipes, flumes or channels for water that may flow along or across the site of work.
  - E. The Contractor shall be prepared to install a sump(s) for dewatering the excavation and shall supply all sump materials, pump(s), hoses and flow meters, and a weir-type tank for temporary water storage and particulate settlement. Under the direction of the Engineer, the Contractor shall be prepared to dispose of recovered water. The Contractor shall dispose of liquid products in accordance with approved procedures, meeting local, state and federal laws and regulations. The potential exists for contaminated groundwater to be present in trenches. The Contractor shall not dispose of any contaminated water into sanitary sewers or stormwater drains. Alternatively, recovered water may be discharged with the approval of and under the direction of the Engineer.
  - F. All pumped or drained water shall be disposed of or discharged, as directed by the Engineer, without undue interference to other work, damage to pavements, other surfaces, or property.
- 3.05 EXCAVATION NEAR EXISTING STRUCTURES
- A. Discontinue digging, by machinery, when excavation approaches pipes, conduits, or other underground structures. Continue excavation by use of hand tools. Include such manual excavation, in work to be done, when incidental to normal excavation and under items involving normal excavation.
  - B. Excavate test pits, when determination of exact location of pipe or other underground structure is necessary for doing work properly.
  - C. Contractor shall contact "Call Before You Dig" (CBYD) for underground utilities information a minimum of 72 hours prior to start of construction. Written confirmation regarding such contact shall be provided to the Engineer prior to the start of construction. Contractor shall obtain all available underground

utility information from CBYD prior to excavation. Contractor shall locate all known utilities prior to excavation and shall repair/replace all damage, by the Contractor, to known utilities at no extra cost to the Owner. Utilities damaged by the Contractor shall be repaired in a schedule and to the specifications of the Owner.

### 3.06 CARE AND RESTORATION OF PROPERTY

- A. Enclose uncut tree trunks adjacent to work in wooden boxes of such height as may be necessary for protection from injury from piled material, equipment, operations, or otherwise due to work. Excavating machinery and cranes shall be operated with care to prevent injury to trees not to be cut and particularly to overhanging branches and limbs.
- B. All branch, limb, and root cuttings shall be smoothly and neatly done without splitting or crushing. Cut or injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed, when unavoidable injury or cutting to branches.
- C. Protect by suitable means or dig up and temporarily replant and maintain cultivated hedges, shrubs, and plants that might be injured by the Contractor's operations. After construction operations have been substantially completed, replant in original positions and care for until growth is reestablished. If cultivated hedges, shrubs, and plants are injured to such a degree as to effect their growth or diminish in their beauty or usefulness, replace by items equal of the kind and quality existing at the start of the Work.
- D. Do not use or operate tractors, bulldozers, or other power-operated equipment on paved surfaces when treads or wheels of which are so shaped as to cut or otherwise injure such surfaces.
- E. Restore all surfaces that have been injured by the Contractor's operations, to a condition at least equal to that in which they were found immediately before work commenced. Suitable materials and methods should be used for such restoration.

3.07 UNAUTHORIZED EXCAVATION

- A. Backfill, with material as directed by the Engineer, when bottom of any excavation is taken out beyond limits indicated or prescribed. This work shall be performed by the Contractor without additional compensation.

3.08 PIPING BEDDING

- A. Care shall be taken to work backfill material completely under and around piping in order to provide good support. Piping shall be completely backfilled with material as specified in accordance with the manufacturer's printed instruction. Piping shall run at a minimum depth of 24-in. with a six-inch bed under the pipe and a six-inch bed over the pipe of a pea gravel compacted to support the pipe installation.
- B. The Contractor shall submit for the Engineer's review sieve tests for all piping bedding. Sieve tests shall be provided for each and every source. Submittals shall be in accordance with the General Conditions.

3.09 GRAVEL BACKFILL

- A. Gravel backfill placed in accordance with Section 2.13 of Form 816.

3.10 TRENCH EXCAVATION FOR NEW PIPING AND PIPING REPLACEMENT

- A. Trench excavation for new piping and piping replacement shall be in conformance with Section 2.05 of Form 816. Backfill shall be mechanically compacted to 95% dry density (AASHTO-T-180 Method D) in maximum 8 inch thick lifts.

3.11 SUBBASE

- A. Subbase shall be placed in accordance with Section 2.12 of Form 816. The dry density after compaction shall not be less than 95 percent of the dry density for that sub base material when tested in accordance with AASHTO T-180, Method D using a six (6) inch high mold.

### 3.12 FREE DRAINING MATERIAL

- A. Backfill excavations with free draining material. Free draining material shall be placed in accordance with Section 2.08 of Form 816. Backfill soil source information shall be provided to the Engineer for preapproval to document that the soil is free of contamination and clean in accordance with these specifications.
- B. Open cuts shall be reconstructed by depositing successive layers of backfill for the full width of the excavation, unless a partial width is permitted by the Engineer. No backfill shall be placed on surfaces of snow or ice, nor shall it be placed on frozen or unstable surfaces.
- C. The depths of each layer of backfill, before compaction, shall not exceed 8 inches, unless permitted otherwise by the Engineer.
- D. No stone over 5 inches in its greatest dimension shall be placed within 12 inches of the elevation of the top of the prepared subgrade unless permitted otherwise by the Engineer.
- E. The entire area of each layer shall be uniformly compacted to at least the required minimum density by use of compaction equipment consisting of rollers, compactors, or a combination thereof. Earth-moving and other equipment not specifically manufactured for compaction purposes will not be considered as compaction equipment.
- F. In areas supporting structures, pavement or equipment, the dry density after compaction shall be not less than 95 percent of the dry density for that soil when tested by an independent laboratory retained by the Contractor in accordance with AASHTO T180, Method D.
- G. In landscaped areas, the compaction shall be not less than 90 percent of the dry density for that soil when tested by an independent laboratory retained by the Contractor in accordance with AASHTO T180, Method D.
- H. If necessary to obtain the required compaction, water shall be added to acquire optimum moisture content.

- I. The Contractor shall coordinate and assist with any testing and inspection being performed by the Engineer. This work may include, but is not limited to, providing material, samples, digging test pits, and revising work as required assuring that the construction complies with the specifications.

### 3.13 TOPSOIL

- A. Topsoil shall be placed and shaped in accordance with Section 9.44 of Form 816. Topsoil source information, chemical test data, and samples shall be provided to the Engineer for pre-approval to document that the soil is free of contamination and clean in accordance with these specifications.

### 3.14 TURF ESTABLISHMENT

- A. Turf establishment shall be completed in accordance with Section 9.50 of Form 816, except that mowing and a second application of fertilizer will not be required. It is expected that a reasonable stand of grass will be achieved by the Contractor, or re-application of seed, fertilizer and mulch will be required at no cost to the Owner.

### 3.15 ROCK EXCAVATION

- A. The Contractor shall assume that all excavation will be earth; if rock is encountered, the Contractor shall be compensated extra as per State's Document "Earth and Rock Excavation" of Form 816 and included separately in the Contractor's bid.

### 3.16 CONCRETE SIDEWALKS

- A. The contractor shall replace any disturbed concrete walkways to their original condition.

### 3.17 SEDIMENT EROSION CONTROLS

- A. The Contractor shall incorporate sedimentation and erosion control measures in the execution of all earthwork and surface restoration activities. The Contractor shall apply for and obtain all required permits and approvals for the sedimentation and erosion controls. At a minimum, erosion control measures shall include soil pile covers and catch basin filter fabric inserts and hay bales at downgradient catch basins and

filter fabric fence barriers to intercept and retain sediment runoff from disturbed or unprotected construction areas. All such measures shall be installed in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control. The Contractor shall maintain erosion control structures until surface restoration is completed. After approved by the Engineer, such controls shall then be removed and disposed of by the Contractor at no additional compensation. No construction shall proceed until the Contractor has installed the erosion and sedimentation controls as the sequence of construction necessitates.

END OF SECTION

SECTION 02447

FENCING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall furnish all labor, materials, equipment and incidentals required to provide temporary and permanent fencing as shown and specified.
2. Temporary fencing gates shall be maintained locked at all times except when required for access.
3. The types of fencing and appurtenances include the following:
  - a. Swing gates
  - b. Accessories and fittings.
  - c. Galvanized 6' height steel chain link with green PVC coating for fencing systems.
  - d. Green PVC privacy slats.

B. Related Work Specified Elsewhere:

1. Section 03 30 00: Cast-In-Place Concrete

C. All fence and gate component and accessories shall be green.

1.2 QUALITY ASSURANCE

A. Erector Qualifications: Erector must be a firm experienced in the erection of fencing of the type specified and approved by the manufacturer.

B. Design Criteria: Comply with the standards of the Chain Link Fence Manufacturer's Institute "Product

Manual" and Federal Specification RR-F-191/IA/1C, unless otherwise shown or specified.

C. Source Quality Control: Provide each type of fence and gate as a complete unit produced by a single manufacturer, including necessary erection accessories, fittings and fastenings.

D. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:

1. ASTM A 120, Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe of Ordinary Uses.
2. ASTM A 153, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
3. ASTM A 392, Specification for Zinc-Coated Steel Chain-Link Fence Fabric
4. ASTM D 412, Tension Testing of Vulcanized Rubber.
5. ASTM D 746, Test for Brittleness Temperature of Plastics and Elastomers by Impact.
6. ASTM D 792, Tests for Specific Gravity and Density of Plastics by Displacement.
7. ASTM D 2240, Test for Indentation Hardness, of Rubber and Plastic by Means of Durometer.
8. ASTM G 23, Light and Water-Exposure Apparatus (Carbon-Arc Type) for Exposure of Nonmetallic Materials.
9. Chain Link Fence Manufacturer's Institute, Galvanized Steel Chain-Link Fence Fabric.
10. Federal Specification, RR-F-191/1A, Fencing, Wire and Post, Metal (Chain-Link Fence Fabric).
11. ASTM B-221, Specification for Aluminum Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.

12. ASTM F-668, Specification for Polyvinyl Chloride (PVC)-coated Steel Chain Link Fence Fabric.

### 1.3 SUBMITTALS

#### A. Samples:

Submit for approval samples approximately 6 inches long, or 6 inches square of PVC slat material, framework members, and typical accessories, in a full range of manufacturer's standard and custom colors. Engineer's review will be for color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

#### B. Shop Drawings:

1. Submit for approval Shop Drawings for temporary and permanent fences and gates, including plan layout and details illustrating fence height, location and sizes of posts, rails, braces, gates, and footings, hardware list and erection procedures.

2. Submit for approval copies of manufacturer's technical data, test reports on physical properties, and installation instructions for steel fences and gates.

### 1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of materials: Deliver material in manufacturer's original packaging with all tags and labels intact and legible.

B. Handling of Materials: Handle and store material in such manner as to avoid damage.

### 1.5 GUARANTEE

A. Furnish manufacturer's written 10-year guarantee against cracking and peeling of the PVC coating, and rusting of the metal.

PART 2 - PRODUCTS

3.1 GENERAL

A. All permanent fencing and gates shall be 6-foot high chain link.

B. Pipe sizes specified are commercial pipe sizes.

C. Tube sizes specified are nominal outside dimension.

D. Roll-formed section sizes are the nominal outside dimensions.

E. Finish for Framework and Appurtenances: Furnish the following finishes for steel framework and appurtenances: Green polyvinyl chloride (PVC) epoxy modified plastic resin finish, fusion bonded to heated metal, minimum 10-mil thickness.

F. Unless otherwise indicated, type of temporary chain link fencing shall be Contractor's option. Following types are acceptable:

1. New materials or previously used chain link fencing in good condition.
2. Posts: Galvanized steel pipe of diameter to provide rigidity. Post shall be suitable for setting in concrete footings, driving into ground, anchoring with base plates, or inserting in precast concrete blocks.
3. Fabric: Woven galvanized steel wire mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.
4. Gates: Provide personnel and vehicle gates of the quantity and size indicated on the Drawings or required for functional access to site.
  - a. Fabricate of same material as used for fencing.
  - b. Vehicle gates: shall be a minimum width of 20 feet to allow access for emergency vehicles and capable of manual operation by one person.

2.2 POSTS, RAILS AND BRACES

A. End, Corner, and Pull Posts: Furnish end, corner, and pull posts of the minimum sizes and weights as follows:

1. 2.875-inch O.D. green PVC-coated pipe weighing 5.79 pounds per linear foot.

2. Post depth, concrete footing depth and concrete footing diameter as recommended by fence manufacturer, but no less than: 42-inch post depth, 48-inch footing depth and 12-inch footing diameter.

A. Line Posts: Furnish line posts of the minimum sizes and weights as follows. Space posts 10 feet on centers maximum, unless otherwise shown.

1. 2.375-inch O.D. green PVC-coated pipe weighing 3.65 pounds per linear foot.

2. Post depth, concrete footing depth and concrete footing diameter as recommended by fence manufacturer, but no less than: 42-inch post depth, 48-inch footing depth and 12-inch footing diameter.

B. Gate Posts: Furnish gate posts for supporting single gate leaf as follows:

1. 8.625-inch O.D. green PVC-coated schedule 40 galvanized posts weighing 24.70 pounds per foot.

2. Post depth, concrete footing depth and concrete footing diameter as recommended by fence manufacturer, but no less than: 42-inch post depth, 48-inch footing depth and 18-inch footing diameter.

C. Top Rail and Bottom Rail: Furnish top rails and bottom rails, unless otherwise shown, of the following:

1. 1.660-inch O.D. green PVC-coated pipe weighing 2.27 pounds per linear foot.

2. Furnish in manufacturer's longest lengths, with expansion type couplings, approximately 6 inches long, for each joint. Provide means for attaching the top rail securely to each gate, corner, pull and end post.

D. Center Rails Between Line Posts: Furnish center rails between line posts where directed, consisting of 1.660 inch O.D. green PVC-coated pipe weighing 2.27 pounds per linear foot.

E. Post Brace Assembly: Furnish bracing assemblies at end and gate posts at both sides of corner and pull posts, with the horizontal brace located at mid-height of the fabric.

1. Use 1.660-inch O.D. green PVC-coated pipe weighing 1.80 pounds per linear foot for horizontal brace and 3/8-inch diameter rod with turnbuckle for diagonal truss.

F. Tension Wire: Furnish green tension wire consisting of aluminized 7 gage coiled spring wire.

1. Locate at bottom and top of fabric.

G. Post tops (all green in color): Pressed steel, wrought iron, or malleable iron, designed as a weather-tight closure cap, for tubular posts. Furnish one cap for each post.

1. Furnish caps with openings to permit through passage of the top rail.

H. Stretcher Bars (all green in color): One piece lengths equal to full height of fabric, with a minimum cross-section of 3/16 inch by 3/4 inch. Provide one stretcher bar for each gate and end post, and 2 for each corner and pull post, except where fabric is integrally woven into the post.

I. Stretcher Bar Bands (green): Steel, wrought iron or malleable iron, spaced not over 15 inches on center to secure stretcher bars to end, corner, pull, and gate posts.

1. Bands may also be used with special fittings for securing rails to end, corner, pull and gate posts.

#### 2.4 GATES

A. Manufacturer: The gates shall be the aluminum swing gate type (unless otherwise noted) as shown on the Drawings, and as manufactured by one of the following:

1. Eagle Fence, Inc.
2. Or approved equal.

B. Frame: Gate frames shall be made of 2-inch square aluminum tubing alloy 6063-T6, weighing 0.94 pounds per lineal foot and shall be welded at all corners so as to form a rigid one-piece unit. Fabric shall be securely stretched and held on all four sides in the 2-inch square tubing by use of hook bolts and tension rods. Fabric filler shall match fence.

C. Size/Type: The size and type of the gates shall be as shown on Drawings and as directed by the Owner.

D. Bracing: Install diagonal cross-bracing consisting of 3/8-inch diameter galvanized steel adjustable length truss rods on gates to ensure frame rigidity without sag or twist. Install mid-distance vertical bracing of the same size and width as frame members.

E. Gate Hardware: All gate hangers, latches, brackets, guide assemblies and stops shall be galvanized after fabrication malleable iron or steel. A positive latch shall be provided with provisions for padlocking. Provide hold backs for gates. Holdbacks shall automatically engage the gate leaf and hold it open position until manually released.

F. All gate components and accessories shall be black.

2.5 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Concrete: Provide concrete as specified in Section 03300, Cast-In-Place Concrete.

PART 3 - EXECUTION

3.1 INSPECTION

A. Contractor shall examine the conditions under which the fence and gates are to be installed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the Engineer.

3.2 PREPARATION

A. Do not begin fence installation and erection before the final grading is completed, with finish elevations established, and approval of Owner is issued.

B. Clear and grub along fence line as required to eliminate growth interfering with alignment. Remove debris from Owner's property.

3.3 INSTALLATION

A. Excavation: Drill holes of diameters and spacings shown, for post footings in firm, undisturbed or compacted soil.

1. Unless otherwise indicated, excavate hole depths approximately 6 inches lower than the post bottom, with bottom of posts set not less than 42 inches below the surface when in firm, undisturbed soil.

a. Remove or spread soil from excavations uniformly adjacent to the fence line, or on adjacent areas of the site, as directed.

2. When solid rock is encountered near the surface, drill into rock at least 12 inches for line posts and at least 18 inches for end, pull, corner, and gate posts. Drill hole at least 1-inch greater diameter than the largest dimension of the post to be placed.

- a. If solid rock is below soil overburden, drill to full depth required, except penetration into rock need not exceed the minimum depths specified above.
- B. Setting Posts: Remove loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.
1. Center and align posts in holes 6 inches above bottom of excavation.
  2. Place concrete around posts in a continuous pour, and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.
  3. Trowel finish tops of footings, and slope or dome to direct water away from posts. Extend footings for gate posts to the underside of bottom hinge. Set keeps, stops, sleeves and other accessories into concrete.
  4. Keep exposed concrete surfaces moist for at least 7 days after placement, or cure with membrane curing materials, or other acceptable curing method.
  5. Grout posts set in sleeved holes, concrete constructions, or rock with grout, as specified in Section 03300, Cast-In-Place Concrete.
- C. Concrete Strength: Concrete must attain at least 75 percent of its minimum 28-day compressive strength, but in no case sooner than 7 days after placement, before rails or tension wires are installed. Do not stretch tension wires and do not hang gates until the concrete has attained its full design strength.
1. Take samples and test concrete to determine strength as specified in Section 03300, Cast-In-Place concrete.
- D. Top Rails: Run rail continuously through post caps or extension arms, bending to radius for curved runs. Provide expansion couplings as recommended by fencing manufacturer.
- E. Center Rails: Provide center rails only where shown. Install in one piece between posts and flush with post on fabric side, using special offset fittings where necessary.

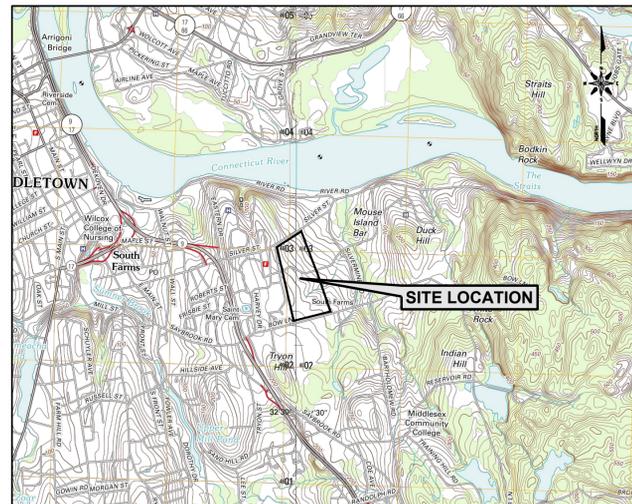
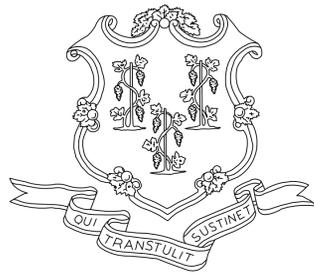
- F. Brace assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.
- G. Tension Wire: Install tension wires by weaving through the fabric and tying each post with not less than 6 gage galvanized wire, or by securing the wire to the fabric.
- H. Repair coatings damaged in the shop or during field erection by recoating with manufacturer's recommended repair compound, applied per manufacturer's direction.
- I. Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage, as recommended by the fence manufacturer. Adjust hardware for smooth operation and lubricate where necessary.
- J. Tie wires: Use U-shaped wires conforming to diameter of pipe. Clasp pipe and fabric firmly with ends twisted at least two full turns. Bend ends of wire to minimize hazard to persons or clothing.
- K. Fasteners: Install nuts for tension band and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

#### 3.4 ADJUSTMENT AND CLEANING

- A. Adjust all fencing and gates and leave in good working condition.
- B. Repair or replace any broken or bent components as directed by the Engineer.
- C. Protect gates and fencing from construction traffic until acceptance of the Work.

END OF SECTION

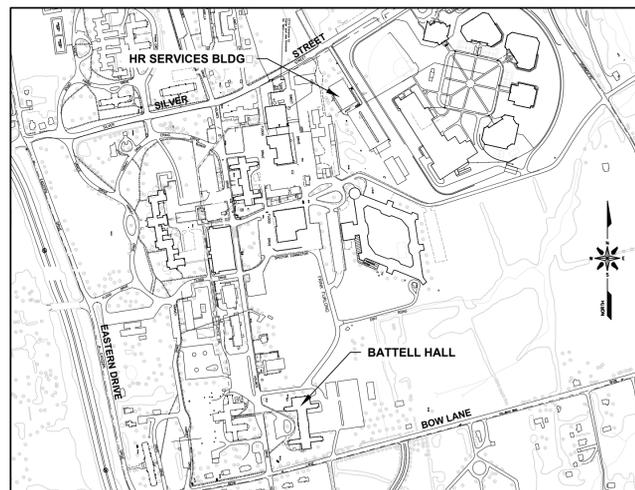
# CONNECTICUT VALLEY HOSPITAL REPLACEMENT OF FUEL STORAGE SYSTEMS AT BATTELL HALL AND THE HR SERVICES BUILDING MIDDLETOWN, CONNECTICUT



**SITE LOCATION MAP**  
SCALE 1" = 2,000'

DEPARTMENT OF CONSTRUCTION SERVICES  
PROJECT NO. BI-MH-000

DEPARTMENT OF MENTAL HEALTH AND ADDICTION SERVICES  
PROJECT NO. MHA-0000, NP-CVH-REPLACE FUEL TANKS



**SITE PLAN**  
SCALE 1" = 100'

DRAWING INDEX	
DWG	DESCRIPTION
T-0	TITLE SHEET
C-0	SITE PLAN - EXISTING CONDITIONS - BATTELL HALL
C-2	SITE PLAN - EXISTING CONDITIONS - HR SERVICES BUILDING
C-0	SITE PLAN - WORK AREA PREPARATIONS - BATTELL HALL
C-0	SITE PLAN - WORK AREA PREPARATIONS - HR SERVICES BUILDING
C-0	AST SYSTEM INSTALLATION PLAN - BATTELL HALL
C-0	AST SYSTEM INSTALLATION PLAN - HR SERVICES BUILDING
C-0	UST SYSTEM REMOVAL PLAN - BATTELL HALL
C-0	UST SYSTEM REMOVAL PLAN - HR SERVICES BUILDING
C-0	SOIL EROSION, SEDIMENT CONTROL AND RESTORATION DETAILS
C-00	GENERAL CONSTRUCTION DETAILS
M-0	AST SYSTEM DETAILS - BATTELL HALL
M-2	AST SYSTEM DETAILS - HR SERVICES BUILDING

MAP REFERENCE:  
USGS 7.5 MINUTE SERIES QUADRANGLES FOR  
MIDDLETOWN, MIDDLE HADDAM CONN., DATED 2012.

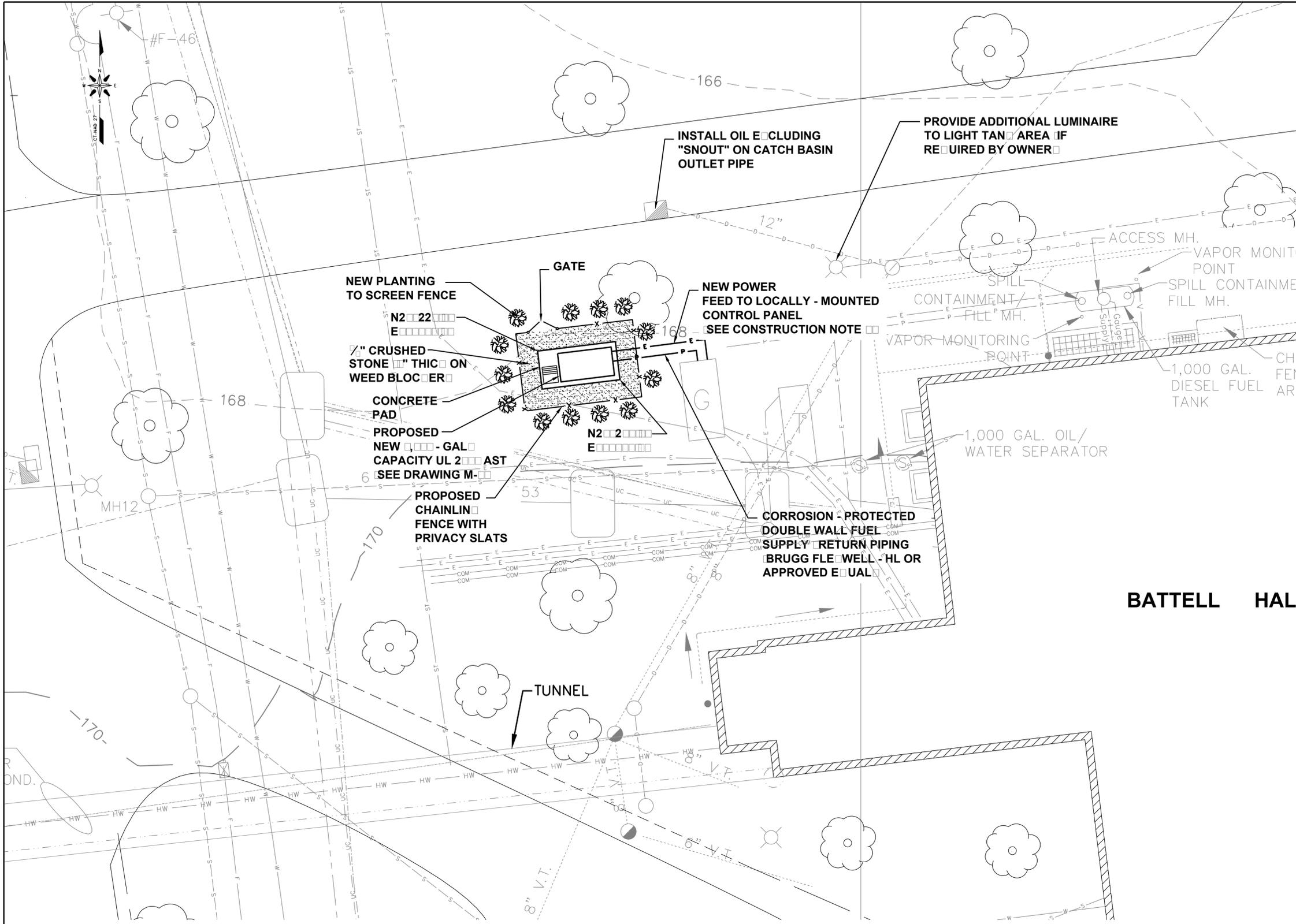
### BID DOCUMENTS

NO.	REVISIONS	DATE	APPROVAL
CONNECTICUT VALLEY HOSPITAL MIDDLETOWN, CONNECTICUT			 21 Griffin Road North Windsor, CT 06095 (860) 298-9692
REPLACEMENT OF FUEL STORAGE SYSTEMS AT BATTELL HALL AND THE HR SERVICES BUILDING TITLE SHEET			
DESIGN:	BAK	05/31/13	
DRAWN:	REA	05/31/13	
CHECKED:	CNS	05/31/13	
SCALE:	1"=20'		
PROJECT:	195531.00001.000003		
DRAWING:			T-0









- CONSTRUCTION NOTES**  
(FOR GENERAL REFERENCE; ACTUAL SEQUENCE MAY VARY)
- OBTAIN NECESSARY PERMITS/APPROVALS.
  - CONTACT CALL-BEFORE-YOU-DIG AND PROVIDE CONFIRMATION NUMBER FOR OWNER'S RECORDS.
  - INDEPENDENTLY CONFIRM LOCATIONS AND STATUS OF UNDERGROUND UTILITIES AND STRUCTURES IN THE VICINITY OF THE WORK AREA PRIOR TO PERFORMING ANY WORK.
  - SECURE WORK ZONES, STAGING AREAS, VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL MEASURES, SEDIMENT AND EROSION CONTROLS, STORMWATER MANAGEMENT MEASURES, AND MEASURES TO PROTECT EXISTING STRUCTURES AND SITE FEATURES (SEE DRAWING C-3). ESTABLISH MEASURES TO PREVENT DISCHARGE OF TANK SYSTEMS LIQUIDS AND/OR CLEANING LIQUIDS INTO STORMWATER SYSTEMS AND THE ENVIRONMENT.
  - INSTALL REINFORCED CONCRETE STRUCTURES (CONCRETE PAD(S)).
  - INSTALL AST, PIPING, CONTROLS, AND OTHER ASSOCIATED EQUIPMENT AND SUPPLIES. PROVIDE A CONTROL PANEL IN A WEATHER-PROOF ENCLOSURE AND ALL REQUIRED APPURTENANCES TO ESTABLISH THE FOLLOWING CAPABILITIES:
    - FUEL LEVEL MONITORING WITH LOCAL DIGITAL READOUT.
    - HIGH (90% CAPACITY) AND LOW LEVEL SETPOINTS WITH CORRESPONDING ALARMS.
    - INTERSTITIAL LEAK DETECTION.
    - LOCAL ALARM ANNUNCIATION BY AUDIBLE AND VISUAL MEANS (HORN AND FLASHING RED LIGHT).
  - PERFORM TRENCHING AND FACILITATE INSPECTIONS OF UNDERGROUND FUEL TRANSFER PIPING AND DIRECT BURY ELECTRICAL CONDUIT. ENSURE APPLICABLE SOIL SAMPLES SHOWN ON DRAWING C-7 ARE COLLECTED PRIOR TO BACKFILLING.
  - PROVIDE A TEMPORARY, PORTABLE, 275-GALLON DOUBLE-WALL AST, FILLED WITH DIESEL FUEL, AND ALL NECESSARY APPURTENANCES ON STANDBY FOR POTENTIAL USE IF NEEDED WHILE THE GENERATOR IS BEING DISCONNECTED FROM THE UST SYSTEM TO BE REMOVED AND CONNECTED TO THE NEW AST SYSTEM (IF REQUIRED DUE TO EMERGENCY CONDITIONS).
  - COMPLETE PIPING CONNECTIONS AND INSTALL WIRING IN CONDUITS.
  - PERFORM ON-SITE LEAK/PRESSURE TESTING OF THE AST AND APPLICABLE SECTIONS OF PIPING PER CODE REQUIREMENTS AND MANUFACTURER'S RECOMMENDATIONS.
  - PROGRAM AND TEST THE TANK MONITORING AND FUEL DISPENSING SYSTEM COMPONENTS.
  - COMPLETE MANUFACTURER'S INSTALLATION CHECKLIST.
  - FACILITATE FINAL INSPECTIONS BY AUTHORITIES HAVING JURISDICTION.
  - TRANSFER USEABLE FUELS, IF ANY REMAIN, FROM THE EXISTING UST TO BE REMOVED TO THE NEW AST, OR OTHER APPROVED LOCATIONS.
  - PERFORM SITE RESTORATIONS (E.G., PLANTINGS AND TURF REPAIR, STREET CLEANING) AT THE DISTURBED AREAS AND AS OTHERWISE SPECIFIED IN THE VICINITY OF THE NEW AST.
  - PROVIDE FOR TRAINING OF SITE PERSONNEL BY A QUALIFIED MANUFACTURER'S REPRESENTATIVE.

**BATTELL HALL**

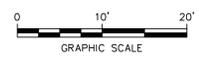
**LEGEND**

---C--- Com Copper	---P--- Product Line	⊕ Monitoring Well
---UC--- Com CTV	---COM--- Communication	▣ Catch Basin
---F--- Com Fiber	---D--- Util Storm Sewer	○ or ○ Manholes
---WF--- Com Fire f-opt	---W--- Util Water Dom	○ Valves
---FC--- Com Fire Copper	---F--- Util Water Fire P	○ Light Pole
---ED--- Electric Dist	---T--- Tunnel	⊗ Electric Light
---E--- Electric	---O.H.D.--- Overhead Door	○ Hydrant
---HW--- Util Hot Water	---V--- Vent Pipe	
---S--- Util Sanitary Sewer	---GAS--- Gas Supply (Natural Gas)	
---ST--- Util Steam		
---D--- Util Storm Sewer		

**GENERAL NOTES**

- ALL LOCATIONS ARE APPROXIMATE. NOT ALL FEATURES MAY BE SHOWN. TYPE AND STATUS OF UNDERGROUND UTILITIES SUBJECT TO CONFIRMATION. CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED UTILITY LOCATOR FOR THE WORK AREAS PRIOR TO PERFORMING ANY WORK. CONTRACTOR SHALL ALSO FIELD VERIFY THE LOCATIONS OF ALL UTILITIES IN THE WORK AREA USING METHODS WHICH MAY INCLUDE HAND DIGGING, TEST PITTING, AIR SHIFTE, SOFT DIG, OR OTHER SUITABLE MEANS. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REPAIRS REQUIRED DUE TO FAILURE TO COMPLY WITH THIS REQUIREMENT.
- BASE INFORMATION TAKEN FROM CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT. SCALE: "AS SHOWN". DATED: 12/12. NAME: SAMUEL MANNHART. TITLE: CVH CAMPUS UTILITIES WATER DISTRIBUTION PROVIDED BY CVH.

- TOPOGRAPHICAL CONTOURS TAKEN FROM AUTOCAD FILE PROVIDED BY CVH.
- EXISTING FUELING SYSTEM INFORMATION TAKEN FROM "AS-BUILT PLAN SHOWING EXISTING FUEL TANKS AT CONNECTICUT VALLEY HOSPITAL FOR ALLSTATE BOILER, HOLMES DRIVE". SCALE: "AS SHOWN". PREPARED BY NERIANI SURVEYING, AVON, CONNECTICUT, AUGUST 2008. PROVIDED BY CVH.
- ENGINEER OR OWNER MAY STOP WORK ON ANY ASPECT OF THIS PROJECT WITHOUT PENALTY IF HEALTH AND SAFETY MEASURES ARE NOT BEING ADHERED TO.
- MANAGE ALL HOT WORK USING AN APPROVED SYSTEM. OBTAIN APPLICABLE PERMITS FROM OWNER AND FM GLOBAL.
- INSTALLATION SHALL BE EXPLOSION PROOF INTRINSICALLY SAFE.



**BID DOCUMENTS**

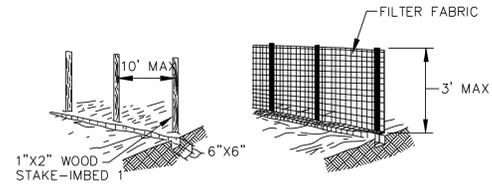
NO.	REVISIONS	DATE	APPROVAL
<b>CONNECTICUT VALLEY HOSPITAL</b> MIDDLETOWN, CONNECTICUT			
<b>REPLACEMENT OF FUEL STORAGE SYSTEMS AT BATTELL HALL AND THE HR SERVICES BUILDING</b> <b>AST INSTALLATION PLAN - BATTELL HALL</b>			
DESIGN:	BAK	05/31/13	
DRAWN:	REA	05/31/13	
CHECKED:	CNS	05/31/13	
SCALE:	AS NOTED		
PROJECT:	195531.000001.000003		
DRAWING:	<b>C-1</b>		

J:\CAD\195531\000001\000003\Battell & HR Services Design\Final Design\Plate-1.dwg Layout-C-5 Battell Hall June 06, 2013-12:05PM RAloma



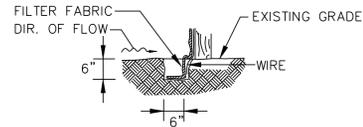






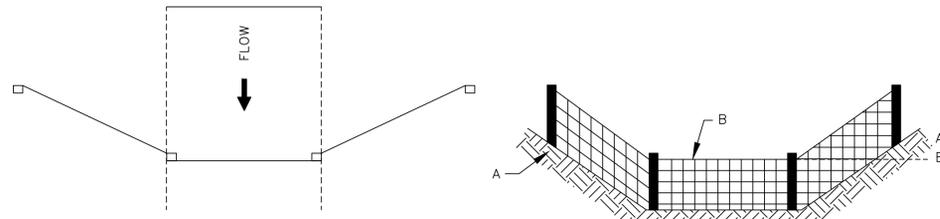
1. SET STAKE AND EXCAVATE A 6" X 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.
2. STAPLE FILTER FABRIC TO THE STAKE, OVERLAP A MINIMUM OF 6-INCHES AND EXTEND INTO TRENCH.
3. BACKFILL AND COMPACT THE EXCAVATED SOIL INTO THE TRENCH.
4. FILTER FABRIC SHALL MEET CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

**EXTENSION OF FABRIC INTO THE TRENCH**



**TEMPORARY SEDIMENT AND EROSION CONTROL BARRIER-SILT FENCE**

NTS

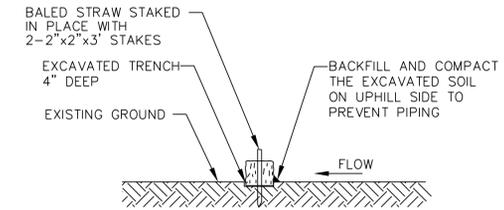


**PLAN VIEW**

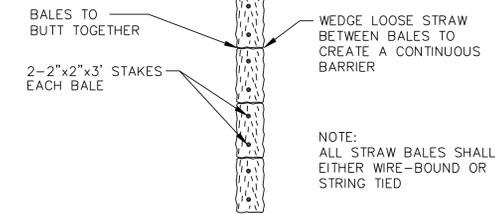
ELEVATION POINT 'A' SHOULD BE HIGHER THAN POINT 'B'.

**2 SILT FENCE SWALE BARRIER**

NTS



**ELEVATION**

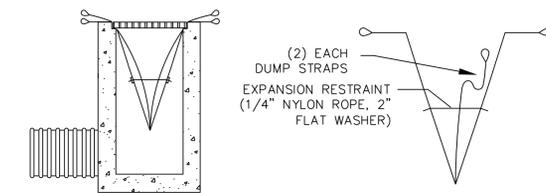


**PLAN**

NOTE: ALL STRAW BALES SHALL BE EITHER WIRE-BOUND OR STRING TIED

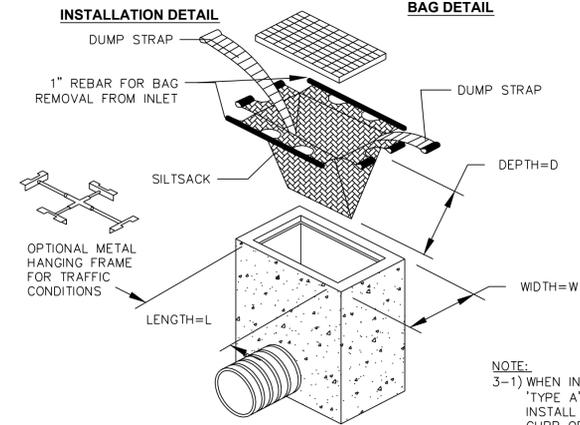
**1 TEMPORARY SEDIMENT AND EROSION CONTROL BARRIER-STRAW BALES**

NTS



**INSTALLATION DETAIL**

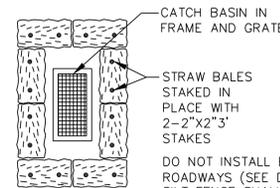
**BAG DETAIL**



**3 SILT SACK INLET SEDIMENTATION CONTROL DEVICE**

NTS

NOTE: 3-1 WHEN INSTALLING SILT SACK IN A 'TYPE A' CURBED CATCH BASIN, INSTALL A FOAM DEFLECTOR IN THE CURB OPENING.

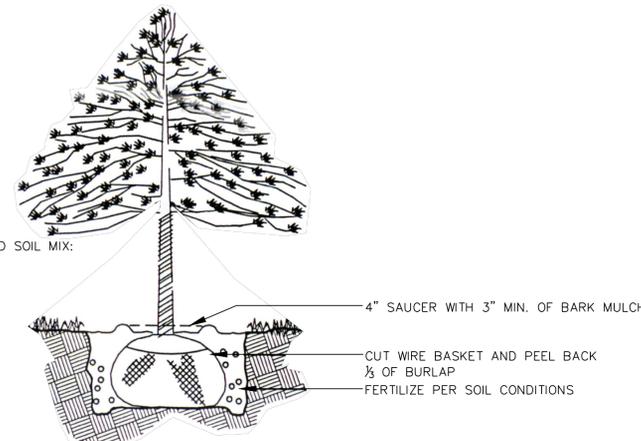


**PLAN**

DO NOT INSTALL BALES AROUND CATCH BASIN IN ROADWAYS (SEE DETAIL 6 INSTEAD). BALES OR SILT FENCE SHALL BE PLACED IN A CONFIGURATION TO CONTAIN FLOWS WITHOUT 'END RUNS'. CONTAINMENTS SHALL BE UP SLOPE OF BASIN.

**4 STRAW BALE CATCH BASIN TRAP**

NTS



**5 SMALL TREE PLANTING DETAIL**

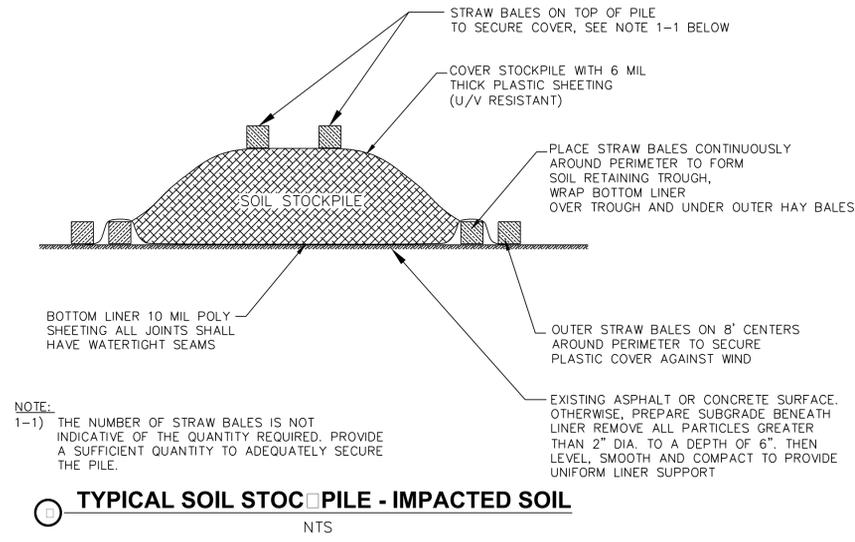
NTS

**SOIL EROSION AND SEDIMENT CONTROL NOTES**

- SE/SC-1. All soil erosion and sediment control practices shall be installed prior to any major soil disturbances, in their proper sequence, and maintained until permanent protection is established. This includes installing and maintaining sediment controls at all catch basins, until turf is established, and on all slopes. All disturbed areas shall be restored with topsoil and hydroseeded with mulch mixture as soon as possible following disturbance.
- SE/SC-2. Any disturbed areas that will be left exposed more than 30 days and not subject to construction traffic, will immediately receive a temporary seeding. If the season prevents the establishment of a temporary cover, the disturbed areas will be mulched with straw, or equivalent material, at a rate of two (2) tons per acre, or according to State Standards.
- SE/SC-3. Permanent vegetation to be seeded on all exposed areas within ten (10) days after final grading. Mulch will be used for protection until seeding is established.
- SE/SC-4. At the time when the site preparation for permanent vegetative stabilization is going to be accomplished, any soil that will not provide a suitable environment to support adequate vegetative ground cover, shall be removed or treated in such a way that will permanently adjust the soil conditions and render it suitable for vegetative ground cover. If the removal or treatment of the soil will not provide suitable conditions, non-vegetative means of permanent ground stabilization will have to be employed (e.g. erosion netting).

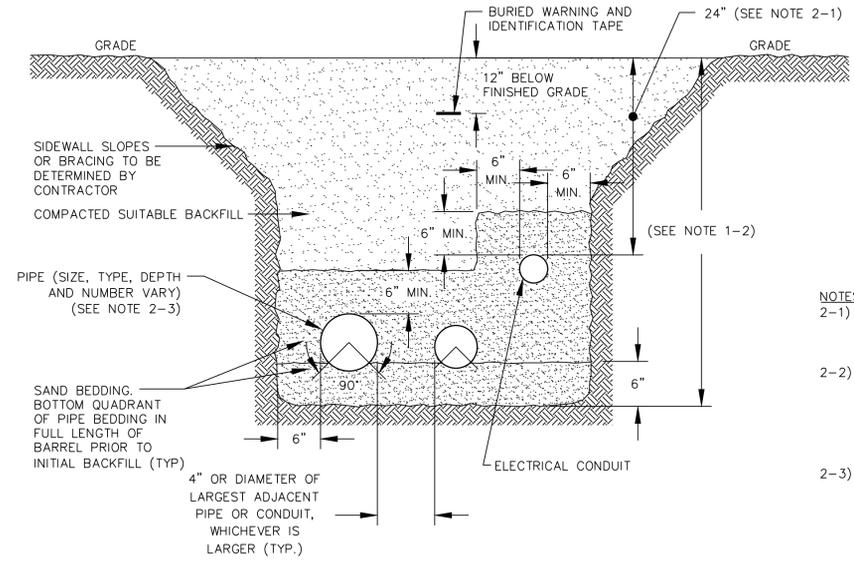
**BID DOCUMENTS**

NO.	REVISIONS	DATE	APPROVAL
<b>CONNECTICUT VALLEY HOSPITAL MIDDLETOWN, CONNECTICUT</b>			
<b>REPLACEMENT OF FUEL STORAGE SYSTEMS AT BATTELL HALL AND THE HR SERVICES BUILDING SOIL EROSION, SEDIMENT CONTROL AND SITE RESTORATION DETAILS</b>			
DESIGN:	BAK	05/31/13	
DRAWN:	REA	05/31/13	
CHECKED:	CNS	05/31/13	
SCALE:	AS NOTED		
PROJECT:	195531.000001.000003		
DRAWING:	C-		



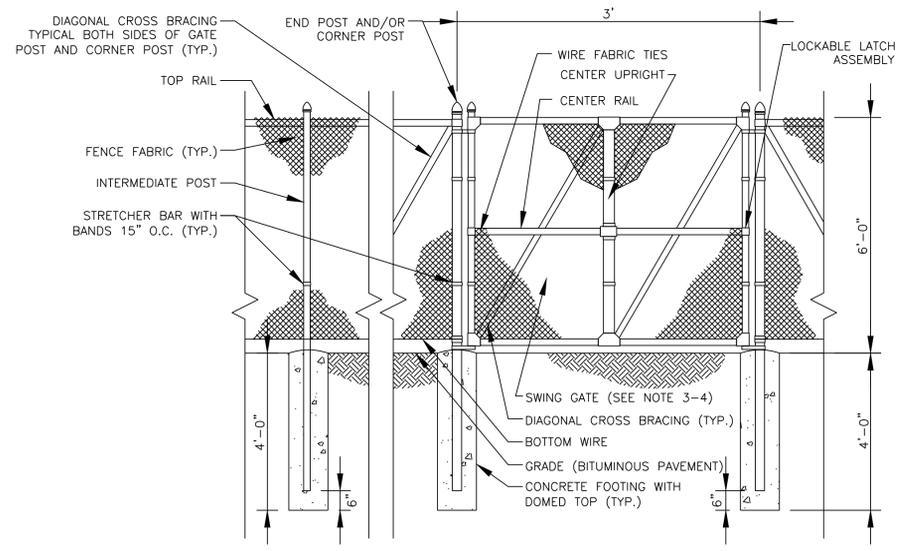
NOTE:  
1-1) THE NUMBER OF STRAW BALES IS NOT INDICATIVE OF THE QUANTITY REQUIRED, PROVIDE A SUFFICIENT QUANTITY TO ADEQUATELY SECURE THE PILE.

**1 TYPICAL SOIL STOCKPILE - IMPACTED SOIL**  
NTS



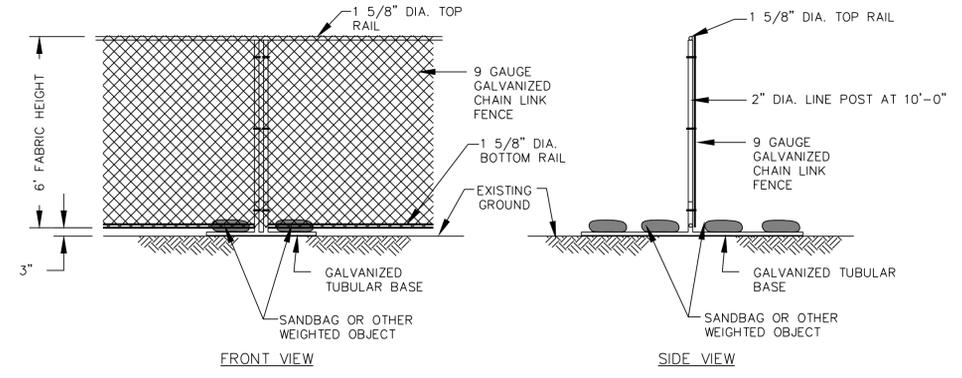
NOTES:  
2-1) ELECTRICAL CONDUIT SHALL BE BURIED AS PER CODE REQUIREMENTS (24" MIN. DEEP).  
2-2) TRENCH SIDEWALL SUPPORT SHALL BE PROPERLY INSTALLED IN ACCORDANCE WITH O.S.H.A. REQUIREMENTS FOR ALL EXCAVATIONS GREATER THAN 4 FEET DEEP.  
2-3) DETAIL IS SHOWN GENERICALLY. ACTUAL PIPING MAY BE DOUBLE WALLED AND/OR CONTAINED IN A CONCRETE TRENCH OR ENCASEMENT.

**2 TYPICAL PIPE AND UTILITY TRENCH**  
NTS



**3 TYPICAL 6' HIGH FENCE AND GATE DETAIL**  
NTS

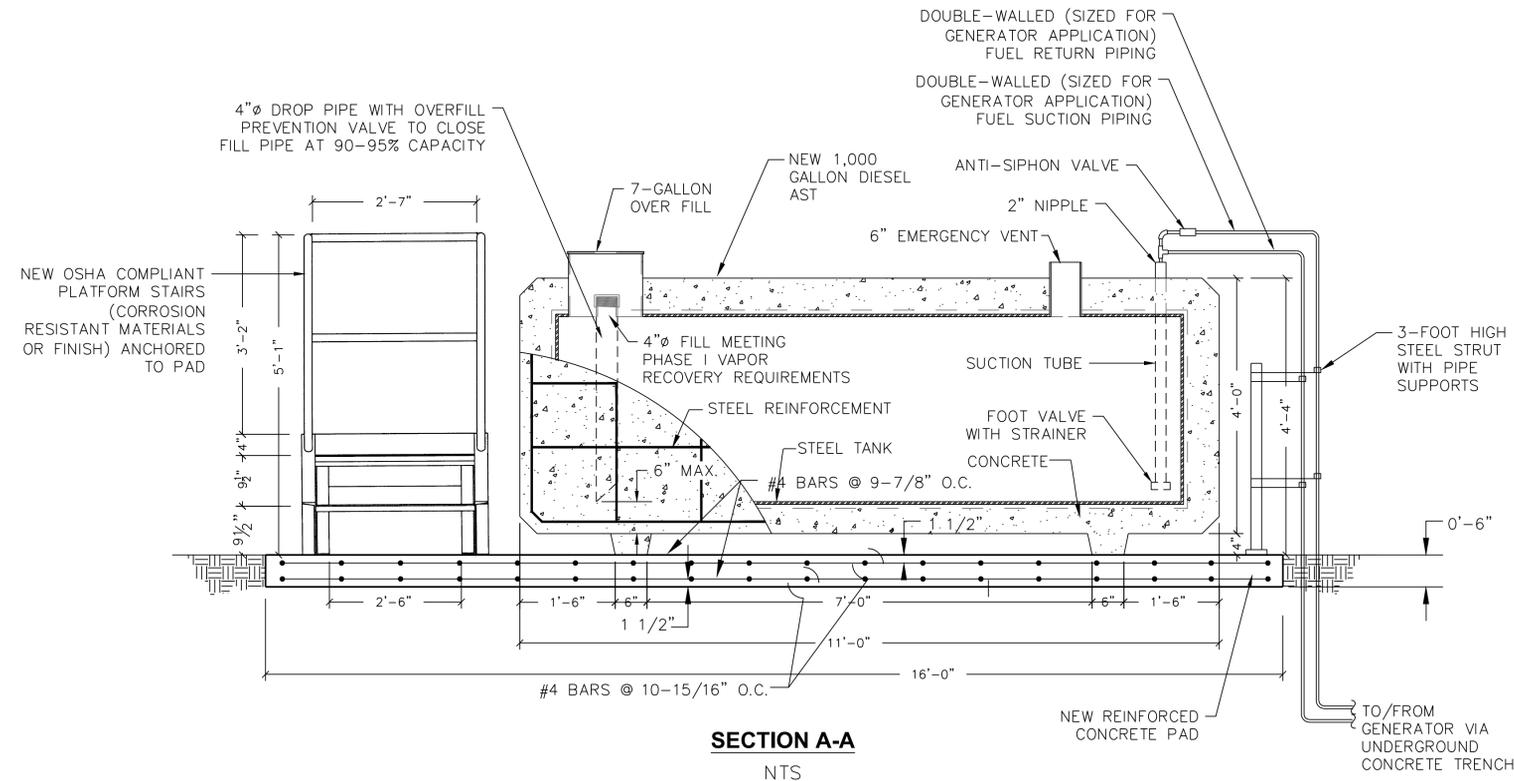
NOTES:  
3-1) PROVIDE GATE HOLDBACKS WHERE DIRECTED FOR ALL GATES.  
3-2) PROVIDE PRIVACY SLATS WHERE INDICATED ON PLANS.  
3-3) FENCING SHALL GALVANIZED OR COATED WITH OTHER APPROVED, CORROSION RESISTANT MATERIAL.  
3-4) PROVIDE DOUBLE GATES WHERE INDICATED.



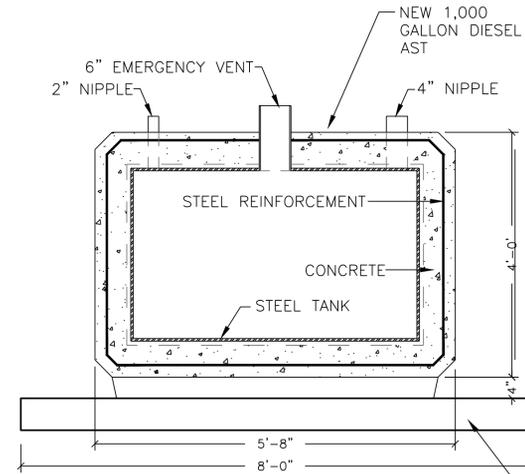
**4 TEMPORARY SECURITY FENCE DETAIL**  
NTS

**BID DOCUMENTS**

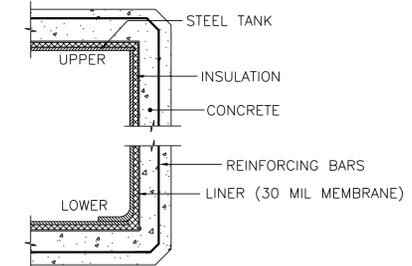
NO.	REVISIONS	DATE	APPROVAL
CONNECTICUT VALLEY HOSPITAL MIDDLETOWN, CONNECTICUT			 21 Griffin Road North Windsor, CT 06095 (860) 298-9682
REPLACEMENT OF EMERGENCY GENERATOR DIESEL FUEL STORAGE SYSTEM BATTELL HALL CONSTRUCTION DETAILS			
DESIGN:	BAK	05/31/13	
DRAWN:	REA	05/31/13	
CHECKED:	CNS	05/31/13	
SCALE:	1"=20'		
PROJECT:	195531.000001.000003		
DRAWING:	C-00		



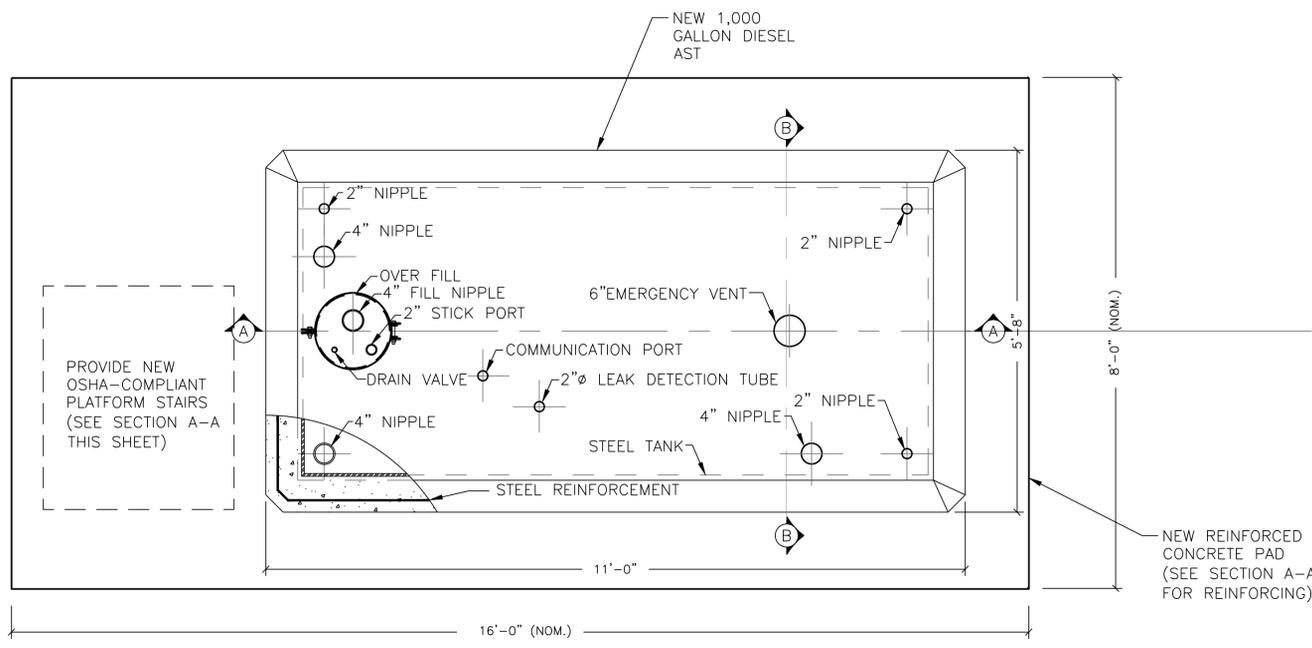
**SECTION A-A**  
NTS



**SECTION B-B**  
NTS



**CORNER DETAILS**  
NTS



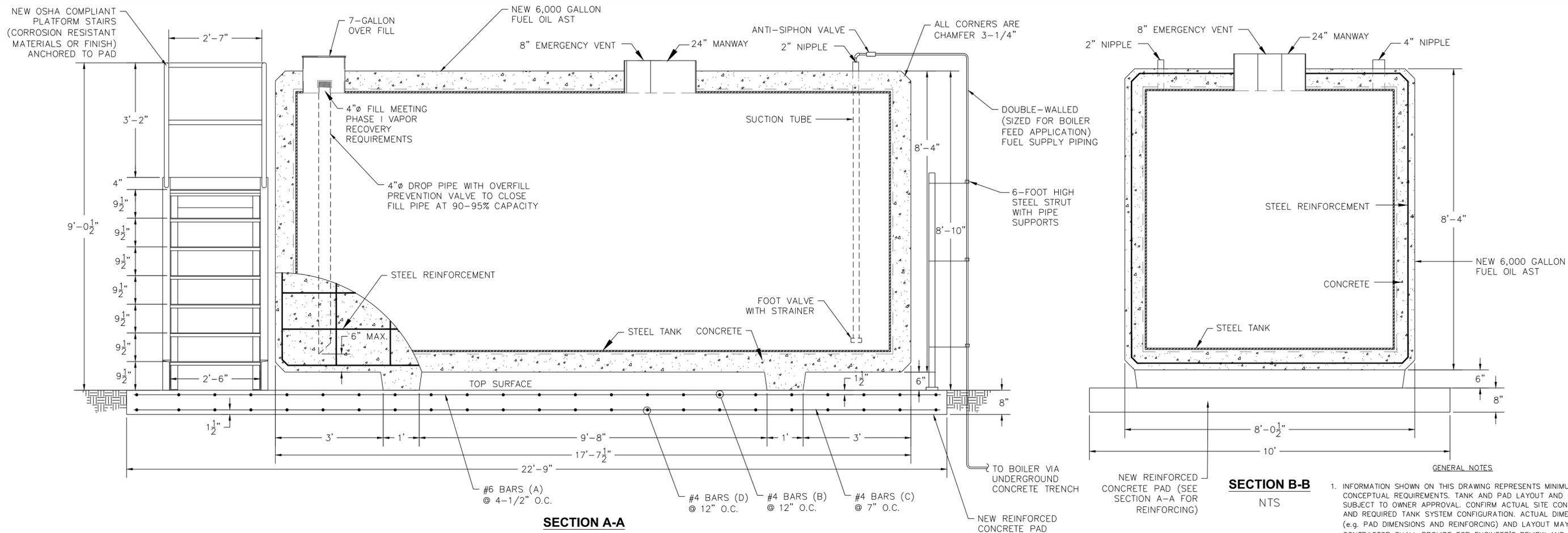
**PLAN VIEW**  
NTS

**GENERAL NOTES**

1. INFORMATION SHOWN ON THIS DRAWING REPRESENTS MINIMUM CONCEPTUAL REQUIREMENTS. TANK AND PAD LAYOUT AND DETAILS SUBJECT TO OWNER APPROVAL. CONFIRM ACTUAL SITE CONDITIONS AND REQUIRED TANK SYSTEM CONFIGURATION. ACTUAL DIMENSIONS (e.g. PAD DIMENSIONS AND REINFORCING) AND LAYOUT MAY VARY. CONTRACTOR SHALL PROVIDE FOR ENGINEER'S REVIEW AND APPROVAL A COMPLETE SET OF DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF CONNECTICUT SHOWING ALL DETAILS OF PROPOSED CONCRETE PADS, AND TANK SYSTEM LAYOUT. THE ENGINEER'S APPROVAL SHALL BE REQUIRED PRIOR TO CONSTRUCTION.
2. INSTALL A 1,000-GALLON CAPACITY UL 2085 DOUBLE-WALLED STORAGE TANK (20 YEAR WARRANTY), REINFORCED CONCRETE PAD, AND APPURTENANCES AS SHOWN AND AS DESCRIBED IN THE TECHNICAL SPECIFICATIONS. PROVIDE CONVAULT TANK OR APPROVED EQUAL.
3. INSTALL BONDING, GROUNDING, AND LIGHTNING PROTECTION FOR THE TANK AND PLATFORM STAIRS MEETING APPLICABLE REQUIREMENTS.
4. INSTALLATION SHALL COMPLY WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS, MANUFACTURER'S RECOMMENDATIONS, AND SHALL BE SUITABLE FOR THE LOCAL SEISMIC ZONE.
5. INSTALLATION SHALL BE EXPLOSION PROOF/ INTRINSICALLY SAFE.
6. PROVIDE AND INSTALL REINFORCED CONCRETE PAD FOR FULLY LOADED - AST AND PLATFORM STAIRS PER MANUFACTURERS RECOMMENDATIONS. CONCRETE PAD TO HAVE 28 DAY COMPRESSIVE STRENGTH REQUIRED BY CODES (MINIMUM OF 4500 PSI). REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60 OR ASTM A706 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI STANDARDS. INSTALL CONCRETE PAD ON SUITABLE LEVEL SUBBASE, CONSISTING OF APPROVED GRANULAR FILL ON SOIL WITH SUITABLE BEARING CHARACTERISTICS. GRADE PAD TO DRAIN AWAY FROM TANK.
7. ADDITIONAL AST APPURTENANCES TO INCLUDE 2" VENT PIPE 12' ABOVE GRADE WITH PRESSURE/VACUUM CAP, FUEL FILTER, MORRISON CLOCK GAUGE EMERGENCY SHUT OFF SWITCH MANWAY (IF REQUIRED BY OWNER AND HURRICANE TIE DOWNS) (IF REQUIRED BY OWNER). PROVIDE ANY ACCESSORIES REQUIRED TO WORK WITH EXISTING GENERATOR/ DAY TANK CONFIGURATION.
8. CERTAIN ONJECTS ARE SHOWN OUT OF PLANE OF CROSS SECTION FOR CLARITY OR TO CALL ATTENTION.

**BID DOCUMENTS**

NO.	REVISIONS	DATE	APPROVAL
<b>CONNECTICUT VALLEY HOSPITAL MIDDLETOWN, CONNECTICUT</b>			
<b>REPLACEMENT OF FUEL STORAGE SYSTEMS AT BATTELL HALL AND THE HR SERVICES BUILDING AST SYSTEM DETAILS - BATTELL HALL</b>			
		21 Griffin Road North Windsor, CT 06095 (860) 298-9692	
DESIGN:	BAK	05/31/13	
DRAWN:	REA	05/31/13	
CHECKED:	CNS	05/31/13	
SCALE:	AS NOTED		
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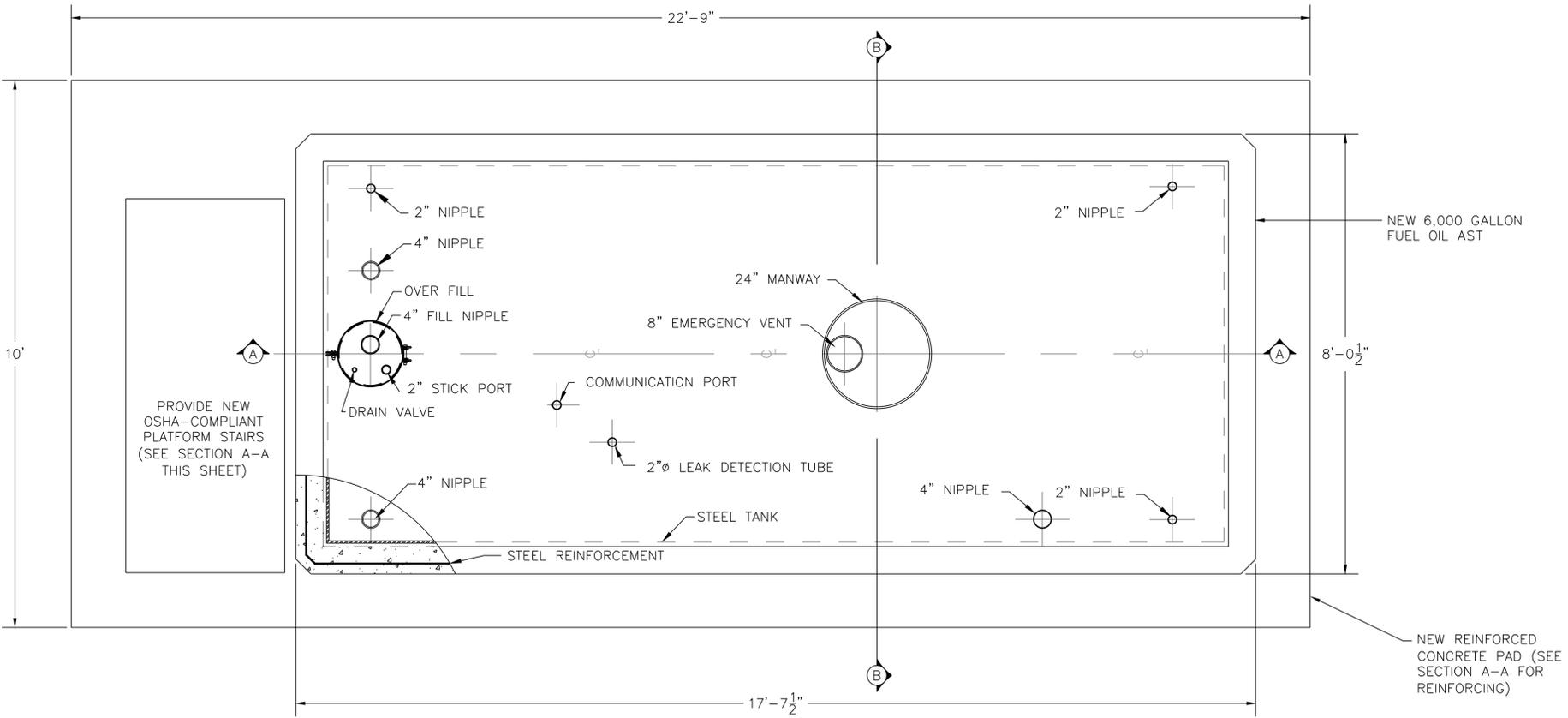


**SECTION A-A**  
NTS

**SECTION B-B**  
NTS

GENERAL NOTES

1. INFORMATION SHOWN ON THIS DRAWING REPRESENTS MINIMUM CONCEPTUAL REQUIREMENTS. TANK AND PAD LAYOUT AND DETAILS SUBJECT TO OWNER APPROVAL. CONFIRM ACTUAL SITE CONDITIONS AND REQUIRED TANK SYSTEM CONFIGURATION. ACTUAL DIMENSIONS (e.g. PAD DIMENSIONS AND REINFORCING) AND LAYOUT MAY VARY. CONTRACTOR SHALL PROVIDE FOR ENGINEER'S REVIEW AND APPROVAL A COMPLETE SET OF DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF CONNECTICUT SHOWING ALL DETAILS OF PROPOSED CONCRETE PADS, AND TANK SYSTEM LAYOUT. THE ENGINEER'S APPROVAL SHALL BE REQUIRED PRIOR TO CONSTRUCTION.
2. INSTALL A 6,000-GALLON CAPACITY UL 2085 DOUBLE-WALLED STORAGE TANK (20 YEAR WARRANTY), REINFORCED CONCRETE PAD, AND APPURTENANCES AS SHOWN AND AS DESCRIBED IN THE TECHNICAL SPECIFICATIONS. PROVIDE CONVAULT TANK OR APPROVED EQUAL.
3. INSTALL BONDING, GROUNDING, AND LIGHTNING PROTECTION FOR THE TANK AND PLATFORM STAIRS MEETING APPLICABLE REQUIREMENTS.
4. INSTALLATION SHALL COMPLY WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS, MANUFACTURER'S RECOMMENDATIONS, AND SHALL BE SUITABLE FOR THE LOCAL SEISMIC ZONE.
5. INSTALLATION SHALL BE EXPLOSION PROOF/ INTRINSICALLY SAFE. PROVIDE AND INSTALL REINFORCED CONCRETE PAD FOR FULLY-LOADED AST AND PLATFORM STAIRS PER MANUFACTURERS RECOMMENDATIONS. CONCRETE PAD TO HAVE 28 DAY COMPRESSIVE STRENGTH REQUIRED BY CODES (MINIMUM OF 5,000 PSI). REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60 OR ASTM A706 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI STANDARDS. CONCRETE THICKNESS AND CONCRETE COVERAGE TO BE INCREASED PER MANUFACTURER'S RECOMMENDATIONS IF SLAB IS POURED IN PLACE. INSTALL CONCRETE PAD ON SUITABLE LEVEL SUBBASE CONSISTING OF APPROVED GRANULAR FILL ON SOIL WITH SUITABLE BEARING CHARACTERISTICS. GRADE PAD TO DRAIN AWAY FROM TANK.
7. ADDITIONAL AST APPURTENANCES TO INCLUDE 2" VENT PIPE 12' ABOVE GRADE WITH PRESSURE/VACUUM CAP, MORRISON CLOCK GAUGE EMERGENCY SHUT OFF SWITCH, AND HURRICANE TIE DOWNS (IF REQUIRED BY OWNER). PROVIDE BOILER FEED PUMP AND ACCESSORIES TO MATCH BOILER REQUIREMENTS (IF REQUIRED).
8. CERTAIN OBJECTS ARE SHOWN OUT OF PLANE OF CROSS SECTION FOR CLARITY OR TO CALL ATTENTION.



**PLAN VIEW**  
NTS

**BID DOCUMENTS**

NO.	REVISIONS	DATE	APPROVAL
<b>CONNECTICUT VALLEY HOSPITAL MIDDLETOWN, CONNECTICUT</b>			
<b>REPLACEMENT OF FUEL STORAGE SYSTEMS AT BATTELL HALL AND THE HR SERVICES BUILDING AST SYSTEM DETAILS - HR SERVICES BUILDING</b>			
DESIGN:	BAK	05/31/13	
DRAWN:	KDH	05/31/13	
CHECKED:	CNS	05/31/13	
SCALE:	AS NOTED		
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21 Griffin Road North  
Windsor, CT 06095  
(860) 298-9692