NEW MILFORD BOARD OF EDUCATION
New Milford Public Schools
50 East Street
New Milford, Connecticut 06776

FACILITIES SUB-COMMITTEE
MEETING NOTICE

DATE:	**December 8, 2020**
TIME:	**6:45 P.M.**
PLACE:	**Via Zoom Virtual Meeting**

Join Zoom Meeting
https://zoom.us/j/96697410411?pwd=TUVsd01rTzdrbVFPamtHSSsrK04wUT09
Meeting ID: 966 9741 0411
Passcode: 197379
One tap mobile
+13017158592,,96697410411#,,,,,,0#,,197379# US (Germantown)
+13126266799,,96697410411#,,,,,,0#,,197379# US (Chicago) Dial by your location
+1 929 205 6099 US (New York)
Meeting ID: 966 9741 0411
Passcode: 197379
Find your local number: https://zoom.us/u/absehR6M40

AGENDA

New Milford Public Schools Mission Statement

The mission of the New Milford Public Schools, a collaborative partnership of students, educators, family, and community, is to prepare each and every student to compete and excel in an ever-changing world, embrace challenges with vigor, respect and appreciate the worth of every human being, and contribute to society by providing effective instruction and dynamic curriculum, offering a wide range of valuable experiences, and inspiring students to pursue their dreams and aspirations.

1. **Call to Order**
2. **Public Comment**
   An individual may address the Board concerning any item on the agenda for the meeting subject to the following provisions:
   A. A three-minute time limit may be allocated to each speaker with a maximum of twenty minutes being set aside per meeting. The Board may, by a majority vote, cancel or adjust these time limits.
   B. If a member of the public comments about the performance of an employee or a Board member, whether positive, negative, or neutral, and whether named or not, the Board shall not respond to such comments unless the topic is an explicit item on the agenda and the employee or the Board member has been provided with the requisite notice and due process required by law. Similarly, in accordance with federal law pertaining to student confidentiality, the Board shall not respond to or otherwise discuss any comments that might be made pertaining to students.
3. **Discussion and Possible Action**
   A. NMHS Roof Project
      1. Education Specs
   B. SNIS Oil Tank

4. **Items for Information and Discussion**
   A. NV5 Update
   B. Lillis Building
5. **Public Comment**
   An individual may address the Board concerning any item on the agenda for the meeting subject to the following provisions:
   A. A three-minute time limit may be allocated to each speaker with a maximum of twenty minutes being set aside per meeting. The Board may, by a majority vote, cancel or adjust these time limits.
   B. If a member of the public comments about the performance of an employee or a Board member, whether positive, negative, or neutral, and whether named or not, the Board shall not respond to such comments unless the topic is an explicit item on the agenda and the employee or the Board member has been provided with the requisite notice and due process required by law. Similarly, in accordance with federal law pertaining to student confidentiality, the Board shall not respond to or otherwise discuss any comments that might be made pertaining to students.
6. **Adjourn**

Sub-Committee Members: **Brian McCauley, Chairperson**
Pete Helmus
Eileen P. Monaghan
Olga I. Rella

Alternates: **Angela C. Chastain**
Wendy Faulenbach

NMHS Roof Project - grant

Tammy Reardon <treardon@newmilford.org> Wed, Nov 25, 9:54 AM (5 days ago)

Good morning all,

As directed by the Municipal Building Committee, the application for the School Construction Grant for reimbursement of a portion of the eligible costs associated with the NMHS roof replacement will be submitted after December 1, 2020. This will maximize our reimbursement rate for 2021 construction, which is 43.93% of eligible expenses.

The School Construction Grant request must be submitted by the Superintendent of Schools. I will assist the superintendent's office to submit the online application when the time comes, as needed.

We need to collect a few more required documents now that we have an Interim Superintendent of Schools in place that will be in hopefully be office when our application is submitted :)

The following items need to be approved/authorized by the Board of Education and/or the Superintendent:

- Education Specs - This document provides a summary of the project, including location and project information. Silver Petrucelli has developed it - I've attached both the word document and a pdf. This document needs to be brought forward to the BOE for approval via a formal motion and vote of approval, as appropriate. We will need the minutes of the Board of Education meeting approving the Education Specs mentioned above.
- The latest professional full district enrollment report. It's okay if it's 2/3 years old, and one hasn't been completed more recently. This document is to be supplied by the Superintendent's Office.
- The Superintendent must complete SGC053 (Site Analysis for School Building Projects). Silver Petrucelli has developed it and sent it to me (attached).
- The Superintendent must complete SGC9000 (School Safety and Security Letter) - Completed last week.
- A compliance letter from DEMHS to the BOE confirming our school security complies with state requirements - Received from DEMHS Region 5.
- Confirmation of Municipal funding for the project, explicitly having the NMHS roof project identified. The Special Town Meeting for the bond approval held on May 28th, 2019 does not meet this requirement, as the buildings were not identified in the motion. The Superintendent and Mayor can co-sign and submit a fund commitment letter.

I've also attached the two forms of estimates and the roof sketch and key plan, so that you have them on file.

Please let me know if you have any questions or need additional information to complete these items.

Stay well,

Tammy

Tammy Reardon

Grant Writer and Compliance Specialist

The Town of New Milford

Office: 860-457-4195

Email: TReardon@newmilford.org

6 Attachments

STATE OF CONNECTICUT
DAS – Office of School Construction Grants & Review
450 Columbus Blvd., Suite 1503
Hartford, Connecticut 06103
(860) 713-6490

FORM SCG-053
SITE ANALYSIS FOR SCHOOL BUILDING PROJECTS

C.G.S. Secs. 10-286d & 10-291

INSTRUCTIONS

Submission of a complete FORM SCG-053 - including the applicable documents in PART V - is required for all School Building Projects. The Local Education Agency (LEA) or Regional Educational Service Center (RESC) should arrange for a planning meeting with the Office of School Construction Grants & Review (OSCG&R) ***prior*** to submitting a State grant application for a School Building Project involving New Construction, Expansion, Replacement, and/or Site Acquisition.

- For New Construction, Expansion, or Replacement projects (even within new areas of an existing school property and/or site improvements), the district must complete Parts I, II, IV and V.
- For an Acquisition grant, the district must complete Parts I, II, III, IV, and V.
- For all other types of projects the district must complete Parts I, IV and V.

Prior to submitting FORM SCG-053, or seeking DAS Site Approval, the applicant's **Municipal Planning Department** or **Engineering Consultant** or will need to assess whether the project would directly or indirectly impact environmental resources.

Review the following environmental mapping websites and the noted resources, and document the findings on this FORM SCG-053.

- **FEMA:** https://msc.fema.gov/portal
- **Environmental Conditions Online:** UCONN/DEEP: Maps and Geospatial Data
- **Coastal Hazards Viewer:** DEEP: Coastal Hazards in Connecticut

NOTE: **The Additional Documentation listed in PART V of this form must be submitted with this completed FORM SCG-053.**

PART I: PROJECT INFORMATION

DISTRICT NAME:	FACILITY NAME AND ADDRESS:	STATE OSCG&R PROJECT NUMBER:
NEW MILFORD CT PUBLIC SCHOOLS	**New Milford High School** **388 Danbury Rd. New Milford, Connecticut**	
CONTACT PERSON & TELEPHONE NUMBER:	PROJECT DESCRIPTION (*new construction, expansion, replacement, site acquisition grant, square footage, etc.*): ☐ NEW CONSTRUCTION ☐ EXPANSION ☒ REPLACEMENT ☐ SITE ACQUISITION ☐ OTHER	

IS THIS A REVISED SITE ANALYSIS? ☐ YES ☒ NO ARE MULTIPLE SITES BEING CONSIDERED? ☐ YES ☒ NO IF YES, PROVIDE THE NUMBER OF SITES:	HAS THE SUBJECT SITE BEEN APPROVED BY THE STATE UNDER A SEPARATE SCHOOL BUILDING PROJECT? ☐ YES ☒ NO IF YES, DATE OF APPROVAL: HAS ANY STATE BONDING BEEN APPROVED: ☐ YES ☒ NO
EXISTING STUDENT ENROLLMENT: 1353 PROJECTED STUDENT ENROLLMENT: 1600 EXISTING GROSS SQUARE FOOTAGE: 180,847 PROPOSED DEMOLITION: PROPOSED NEW GROSS SQUARE FOOTAGE:	EXISTING PARKING SPACES: n/a PROPOSED NEW PARKING SPACES: n/a TOTAL PARCEL/SITE SIZE (AC.): n/a PROPOSED AREA FOR PROJECT (AC): n/a DEVELOPABLE AREA (AC): n/a

PART II: SITE INFORMATION (to be completed by Municipal Planner or Civil Engineer)

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) ISSUED FLOOD MAPS (https://msc.fema.gov)

100-YR Floodplain:	☐ Direct Impact	☐ Indirect Impact	☐ No Impact
500-YR Floodplain:	☐ Direct Impact	☐ Indirect Impact	☐ No Impact
Floodway:	☐ Direct Impact	☐ Indirect Impact	☐ No Impact
Coastal Hazard Zones:	☐ Direct Impact	☐ Indirect Impact	☐ No Impact

CONNECTICUT COASTAL HAZARDS VIEWER (UCONN-CLEAR) http://cteco.uconn.edu/viewers/index.htm

Hurricane Surge Inundation:	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	List the Highest Zone:
Erosion Susceptibility Sites:	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	
Mean High Water (MHW) Inundation	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	
MHW Inundation + 6 in	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	
MHW Inundation + 12 in	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	
MHW Inundation + 18 in	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	
MHW Inundation + 24 in	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	
MHW Inundation + 36 in	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	
MHW Inundation + 60 in	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	
MHW Inundation + 79 in	☐ Direct Impact	☐ Indirect Impact	☐ No Impact	

☐ MUNICIPAL OWNED PROPERTY	☐ DEVELOPED	☐ OTHER RESOURCES:
☐ PRIVATE PROPERTY	☐ VACANT	☐ OTHER RESOURCES:
☐ NEW SITE	☐ COASTAL BOUNDARY	☐ OTHER RESOURCES:
COVENANTS/EASEMENTS/RESTRICTIONS	☐ NONE	☐ YES (EXPLAIN, PROVIDE ATTACHMENTS)
ACRAGE BEING DISTURBED	☐ NONE ☐ LESS THAN ONE ACRE*	☐ MORE THAN ONE ACRE**

EXISTING LAND USE:

SURROUNDING LAND USES:

CURRENT LOCAL ZONING CLASSIFICATION:

IS A ZONE CHANGE REQUIRED FOR THE PROJECT: ☐ YES ☐ NO

IS THE PROXIMITY TO OTHER EXISTING SCHOOL FACILITIES ADEQUATE?..... ☐ YES ☐ NO ☐ UNDETERMINED

IS THE SIZE AND SHAPE ADEQUATE TO SUPPORT THE PROPOSED SCHOOL FACILITIES?... ☐ YES ☐ NO ☐ UNDETERMINED

IS THE ACCESSIBILITY TO THE SITE ADEQUATE?..... ☐ YES ☐ NO ☐ UNDETERMINED

HAS THE PROJECT CONSIDERED DEMOGRAPHIC AND POPULATION TRENDS?..... ☐ YES ☐ NO ☐ UNDETERMINED

*IF LESS THAN ONE ACRE, EROSION/SEDIMENT PLAN PER CT DEEP GENERAL PERMIT REQUIREMENTS

** IF MORE THAN ONE ACRE, STORMWATER POLLUTION CONTROL PLAN REQUIRED PER CT GUIDELINES, AS AMENDED

UTILITY SERVICES	AVAILABLE?	ADEQUATE?	COMMENTS
Water			
Sanitary Sewers			
Electricity			
Fire services			

PART III: LIST COSTS (include other sites being considered)

Site Name:						
Acquisition (Purchase Price):						
Est. Development Costs:						

Est. Annual Maintenance Costs:						
Est. Annual Transportation Costs:						
TOTAL:						

List the Selected Site:

Date Site Selection Approved: Local Board of Education Local Building Committee

Comments:

PART IV: AUTHORIZED SIGNATURES

By signing this form, the district (grant applicant) acknowledges it has provided the above information using the best available information and any undetermined or unknown information will be obtained and provided to OSCG&R prior to site approval. Furthermore, should any of the above information change during the grant process; the district (grant applicant) shall submit a revised page to OSCG&R. Based upon revised information, previous site approval may be withdrawn, pending a revised site approval analysis.

AUTHORIZED DISTRICT SIGNATURE:		**CONSULTANT OR DISTRICT PLANNER SIGNATURE:**	
	(Signature)		*(Signature)*
PRINT NAME:		**PRINT NAME:**	
DATE:		**DATE:**	
PHONE NUMBER:		**PHONE NUMBER:**	

PART V: ADDITIONAL REQUIRED INFORMATION (provide all that apply)

REQUIRED FORMS/DOCUMENTS TO BE SUBMITTED IN DIGITAL FORMAT: email to: das.scgform053@ct.gov

	CHECK IF PROVIDED	REMARKS
Covenants / Easements / Restrictions	☐	
Environmental Site Assessment(s) (Phase I, II, or III)	☐	
8.5" x 11" parcel map of property (or properties) to be acquired	☐	
Proposed Site Plan (if available)	☐	
FEMA issued Flood Map for the subject site	☐	
Print out of the site from Connecticut Environmental Conditions Online	☐	
Print out of the site from Connecticut Coastal Hazards Viewer (if applicable)	☐	
FORM SCG-5003, Flood Management Certification Notice	☐	

Send this form with PART V attachments to: DAS FORM 053 mailbox: das.scgform053@ct.gov

For general inquires or assistance, contact: The Office of School Construction Grants & Review
450 Columbus Blvd, Hartford CT 06103 (860) 713-6490

OSCG&R USE ONLY

DATE OF SITE VISIT: _____

SITE VISIT CONDUCTED BY: _____

DATE ENTERED IN CORE-CT: _____ **REMARKS:** _____

Silver/Petrucelli & Associates
Architects/Engineers/Interior Design
3190 Whitney Avenue, Hamden Ct 06606

June 5, 2020

Educational Specification for New Milford High School

Project: Roof Replacement, New Milford High School,

388 Danbury Road, New Milford, Connecticut 06776

1. RATIONALE:

The long range plan for the district shows the New Milford High School (student population 1,350) calling for a replacement of 128,405 s.f. of sloped roofs at the school & repairs to 52,442 s.f. of low sloped roofs . The last roof replacement project was performed in 2000 when the facility was constructed and the roofs are now 20 years old, marginally meeting their life expectancy. It has been brought to our attention, however, that the BOE did not accept the roof as being complete until November 2002, and therefore, making the roofs 18 years old in terms of State reimbursement eligibility. There are numerous areas of current leaking roofs, as reported by Maintenance personnel, and it appears that numerous ongoing repairs are being continuously performed. In May 2018, the New Milford High School and surrounding towns was impacted by a micro-burst resulting in significant roof failure. Temporary roof "patches" have been in place since the event, further reinforcing the urgency to replace the roof as soon as possible. The district plans to phase the construction of the re-roofing operations over the course of 2 calendar years, due to budget constraints. Extensive interior and deck damage could be caused if the roofs are left un-replaced.

2. LONG – RANGE PLAN:

The districts school facilities provision calls for a safe and appropriate learning environment for the students and staff. In order to comply with this aspect of the plan, it is required to replace all of the sloped asphalt roof sections at New Milford High School and to repair all of the low sloped roof areas.

3. THE PROJECT:

This project will be bid with two options, with the Building Committee choosing their preference once bids are received from roofing contractors. The two options are as follows:

Option #1 (Low slope roof restoration & asphalt shingles on sloped roofs)

Low Sloped Roofs (with 4 ply built-up roofs):

- Clean asphalt shingle debris
- Clean all debris from drains including natural debris, asphalt shingles & ballast
- Restore all primary & secondary drains, cutting out BUR, creating new sumps, new BUR and ballast
- Replace all drains, clamping rings & metal strainers
- Remove all moss, Sweep up all loose ballast and stockpile for reuse.
- Flood coat roof and install reclaimed ballast, supplementing with new ballast as required.
- Perimeter metal flashing to remain (repair any damaged/failed sections – minimal in scope)
- Lightening rod system to remain
- Reset ladders & mechanical units currently on pressure treated blocking with proper curbs
- Remove abandoned weather station and patch roof penetration
- Remove and install all concrete splash blocks after flood-coat/ballast work

Sloped Roofs (asphalt shingles)

- Test and identify any remnant asbestos containing flashings, roofing or caulking.
- Remove all fiberglass asphalt shingles
- Remove building paper (below asphalt shingles
- Remove ¾" oriented strand board (below building paper)
- Remove all perimeter aluminum gutters, rakes, soffits, edge strips, etc
- Existing 3"polyisocyanurate insulation ((2) 1.5" layers) to remain. (Metal deck below remains also)
- Install ice & water shield over existing insulation
- Install new vented nail-able deck board with integral 1" insulation, 1.5" air space & ¾" OSB
- Install ice & water shield on top of OSB over the entire deck
- Install premium grade 40 year Architectural asphalt shingle rated for wind speeds greater than 130 mph
- Install new aluminum 8"x8" gutters, 4x4 downspouts, rakes, fascia soffits, edge strips, etc
- Construct new soffit ventilation intake below (and behind gutter)
- Install new vented asphalt ridge caps

Option #2 (Low slope roof restoration & standing seam roofing on sloped roofs)

Low Sloped Roofs (with 4 ply built-up roofs):

- Clean asphalt shingle debris
- Clean all debris from drains including natural debris, asphalt shingles & ballast
- Restore all primary & secondary drains, cutting out BUR, creating new sumps, new BUR and ballast
- Replace all drains, clamping rings & metal strainers
- Remove all moss, Sweep up all loose ballast and stockpile for reuse.
- Flood coat roof and install reclaimed ballast, supplementing with new ballast as required.
- Perimeter metal flashing to remain (repair any damaged/failed sections – minimal in scope)
- Lightening rod system to remain
- Reset ladders & mechanical units currently on pressure treated blocking with proper curbs
- Remove abandoned weather station and patch roof penetration
- Remove and install all concrete splash blocks after flood-coat/ballast work

Sloped Roofs (standing seam metal roofing)

- Test and identify any remnant asbestos containing flashings, roofing or caulking.
- Remove all fiberglass asphalt shingles
- Remove building paper (below asphalt shingles
- Existing oriented strand board decking to remain
- Existing 3”polyisocyanurate insulation ((2) 1.5” layers) to remain. (Metal deck below remains also)
- Existing aluminum gutters, rakes, soffits, edge strips, 4x4 downspouts to remain
- Install ice & water shield over entire deck
- Install standing seam metal roofing system on hat channels
- Install new cap flashings and standing seam accessories
- Install new continuous snow fence above gutter line (mounted on standing ribs)

- The current school includes grades 9-12 and houses various classrooms, Multi-purpose room, gymnasium, art rooms, music rooms, special education classes, nurses office, main office, kitchen, server, cafeteria, custodial spaces, storage rooms, boiler room and administration offices.
- No FFE will be included in this project.

4. **BUILDING SYSTEMS:**
    - Security: n/a
    - Public Address: n/a
    - Technology: n/a
    - Phone System: n/a
    - Clocks: n/a
    -

5. **INTERIOR BUILDING ENVIRONMENT:**
    - Acoustics: na
    - Ceilings: If ceiling tiles are damaged due to water leaking from the roof, they will be replaced by the district and will not be part of the project. As well, if walls were stained due to water infiltration, the district will also be handling this scope.
    - Lighting: n/a
    - HVAC: limited rooftop equipment will be affected in order to satisfy roofing warranties.
    - Plumbing: new storm piping will be required if drain location are relocated or if additional secondary drainage is required by code.
    - Windows & Doors: n/a

6. **SITE DEVELOPMENT:**
    - Site Acquisitions: n/a
    - Parking: n/a
    - Drives: n/a
    - Walkways: n/a
    - Outdoor Athletic Fields: n/a
    - Landscaping: n/a
    - Site Improvements: n/a

7. **CONSTRUCTION BONUS REQUESTS:**

New Milford High School does not house any special program eligible for a school construction bonus.

- School Rediness: n/a
- Lighthouse School: n/a
- CHOICE: n/a
- Full Day kindergarten: n/a
- Reduced class size: n/a
- Regional Vo-ag Center: n/a
- Inter-District Magnet School: n/a
- Inter-District Cooperative School: n/a
- Regional Special Education Center: n/a

8. COMMUNITY USES:

New Milford High School is designed for community use during school hours, before and after school hours and on some weekends throughout the school year and summer months. The uses included but are not limited to include:

- PTO
- The Recreation Department
- Town Voting
- Summer Enrichment Programs
- Neighborhood and town wide public meetings
- Boys & Girl scouts
- Community choral and other performing arts programs

Various and sometimes multiple areas are used for these functions.

Connecticut Department of Administrative Services
Office of School Construction Grants
Public School Construction Cost Database

Home Help

Grant Application Phase Cost Estimate

State Project #	EstNum000153				
LEA	New Milford Public Schools				
School Name	(New) New Milford High Sch				
Project Type					
Square Footage of Construction	180,847				
Grades	G1				
Enrollment Projections					
Reimbursement Rate			Cost/Square Feet		Ineligible
Project Cost	$4,353,210.00	of Project Costs	$24.07	Project Ineligible Costs	$648,988.00
All Soft Cost	$126,500.00			Ineligible Soft Costs	$9,467.00
Construction Cost	$4,226,710.00	of Construction Cost	$23.37	Ineligible Construction Costs	$639,521.00
Eligible Construction Costs	$3,587,189.00	of Eligible Costs	$19.84		

Consultants	FF&E	Fees	Contingencies	Acquisition
$125,400.00	$0.00	$1,100.00	$0.00	$0.00

Construction Cost		Cost	Ineligibles
A. SUBSTRUCTURE	A10. Foundations	0.00	0.00
	A20. Basements	0.00	0.00
B. SHELL	B10. Super Structure	0.00	0.00
	B20. Exterior Enclosures	0.00	0.00
	B30. Roofing	2613182.00	108000.00
C. INTERIORS	C10. Interior Construction	0.00	0.00
	C20. Stairs	0.00	0.00
	C30. Interior Finishes	0.00	0.00
D. SERVICES	D10. Conveying	0.00	0.00
	D20. Plumbing	96000.00	96000.00
	D30. HVAC	0.00	0.00
	D40. Fire Protection	0.00	0.00
	D50. Electrical	0.00	0.00
E. EQUIPMENT & FURNISHINGS	E10. Equipment	0.00	0.00
	E20. Furnishings	0.00	0.00
F. SPECIAL CONSTRUCTION AND DEMOLITION	F10. Special Construction	0.00	0.00
	F20. Selective Building Demolition	364789.00	0.00
	F30. Abatement	0.00	0.00
X. GENERAL CONDITIONS, OFFICE OVERHEAD, & PROFIT	X10. General Conditions	307397.00	20510.00
	X20. Overhead & Profit	461096.00	30765.00
Z. ALLOWANCES	Z10. Design Contingency	0.00	0.00
	Z20. Inflation (Escalation) Allowance	0.00	0.00
	Z30. Construction Contingency	384246.00	384246.00

Soft Cost		Cost	Ineligibles
G. SITEWORK (beyond 5 ft from Building)	G1010. Site Clearing	0.00	0.00

	G1020. Site Demolition & Relocation	0.00	0.00
	G1030. Site Earthwork	0.00	0.00
	G1040. Hazardous Waste Remediation	0.00	0.00
	G2010 Roadways	0.00	0.00
	G2020. Parking	0.00	0.00
	G2030. Pedestrian Paving	0.00	0.00
	G2040. Site Development	0.00	0.00
	G2045. Athletic Fields	0.00	0.00
	G2050. Landscaping	0.00	0.00
	G3010. Water Supply	0.00	0.00
	G3020. Sanitary Sewer	0.00	0.00
	G3030. Storm Sewer	0.00	0.00
	G3040. Heating Distribution	0.00	0.00
	G3050. Cooling Distribution	0.00	0.00
	G3060. Fuel Distribution	0.00	0.00
	G3090. Other Site Mechanical Utilities	0.00	0.00
	G4010. Electrical Distribution	0.00	0.00
	G4020. Site Lighting	0.00	0.00
	G4030. Site Communications & Security	0.00	0.00
	G4090. Other Site Electrical Utilities	0.00	0.00
	G9010. Service & Pedestrian	0.00	0.00
	G9020. Bleachers, Concession Stands, etc.	0.00	0.00
	G9090. Other Site Systems	0.00	0.00
Y.SITE GENERAL CONDITIONS, OFFICE OVERHEAD, PROFIT, & ALLOWANCES	Y1010. Site General Conditions	0.00	0.00
	Y2010. Site Overhead & Profit	0.00	0.00
	Y3010. Site Design Contingency	0.00	0.00
	Y4010. Site Inflation (Escalation) Allowance	0.00	0.00
	Y5010. Trade Contractor Bond Costs	0.00	0.00
	Y3020. Site Construction Contingency	0.00	0.00
R. CONSULTANTS	R1010. Architect/Engineer	125400.00	8367.00
	R2010. Environmental	0.00	0.00
	R3010. Commissoning	0.00	0.00
	R4010. Geotechnical	0.00	0.00
	R5010. Cost Estimator	0.00	0.00
	R6010. Owners Rep	0.00	0.00
	R7010. CM Pre-Construction	0.00	0.00
	R8010. FF&E Coordinator	0.00	0.00
	R9010. Legal	0.00	0.00
S. FF&E	S1010. FF&E	0.00	0.00
	S2010. Technology	0.00	0.00
	S3010. Playground Equipment	0.00	0.00
	S4010. Playground Surfacing	0.00	0.00
	S5010. Moving	0.00	0.00
T. FEES	T1010. District Bonding Fees	0.00	0.00
	T2010. Insurance Cost	0.00	0.00
	T3010. Town Staff Cost	0.00	0.00
	T4010. Town Permit Fees	0.00	0.00
	T5010. State Permit Fees	1100.00	1100.00
	T6010. Testing/Inspection Fees	0.00	0.00
	T7010. Printing & Mailing	0.00	0.00
	T8010. Other Costs	0.00	0.00
U. CONTINGENCIES	U1010. Owner Contingency	0.00	0.00

W. ACQUISITION COSTS W	W1010. Land/Building Purchase	0.00	0.00
	W2010. Swing Space/Portables	0.00	0.00
	W3010. Site Remediation	0.00	0.00
	W4010. Appraisals	0.00	0.00
	W5010. Land Survey	0.00	0.00
	W6010. Other Acquisition Costs	0.00	0.00

Save and Continue | Save and Exit | Signoff and Submit

New Milford High School Roof Replacement — 10-Jun-20

388 Danbury Road. New Milford, Connecticut 06776

Owner: TOWN OF NEW MILFORD — **JOB NO: 19.326**

OPINION OF PROBABLE CONSTRUCTION COST — **STANDING SEAM- FLAT ROOF REPAIRS**

180,847 (SQUARE FEET) — **CT STATE PROJECT #**

SECTION NUMBER	WORK CATEGORIES	QTY.	UNIT	MATERIAL COST UNIT $	MATERIAL COST TOTAL	LABOR COST UNIT $	LABOR COST TOTAL	ALLOWANCE	TOTAL $	CT INELIGIBLE
	OTHER COSTS									
	STATE PERMIT FEE (.26 PER 1,000)	1	LS					$1,100.00	$1,100	$1,100
				OTHER SUB-TOTAL				$1,100		TOTAL: $1,100
	DIVISION TWO									
	DUMPSTERS	25	EA	$2,500.00	$62,500				$62,500	$0
	DEMO - ASPHALT SHINGLE ROOF	128,405	SF		$0	$1.70	$218,289		$218,289	$0
	DEMO - WOOD BLOCKING	1200	LF	$0.00	$0	$5.00	$6,000		$6,000	$0
	REMOVE DEBRIS (FLAT ROOF AREAS)	1	LS				$28,000		$28,000	$0
	STAGING SYSTEM	1	LS				$25,000		$25,000	$0
	CRANE RENTAL	1	LS				$25,000		$25,000	$0
				DIVISION TWO SUB-TOTAL				$364,789		$0
	DIVISION FIVE									
	METAL SNOW FENCE	1,500	LF	$6	$9,000	$12	$18,000		$27,000	$0
	METAL HAT CHANNEL	1	LS	$20,000	$20,000	$30,000	$30,000		$50,000	$0
	METAL REPAIR WORK (EXIST GUTTERS/ FASCIA)	1	LS	$6,000	$6,000	$12,000	$12,000		$18,000	$6,000
				DIVISION FIVE SUB-TOTAL				$95,000		$6,000
	DIVISION SIX									
	5% TOTAL DECK REPLACEMENT ALLOWANCE	6500	SF	$ 2.00	$ 13,000	$ 2.00	$13,000		$ 26,000	$26,000
				DIVISION SIX SUB-TOTAL				$ 26,000		$26,000
	DIVISION SEVEN									
	ICE & WATER SHIELD	45,000	SF	$2.00	$90,000	$0.50	$22,500		$112,500	$0
	30 LB. BUILDING PAPER	85,000	SF	$1.50	$127,500	$0.50	$42,500		$170,000	$0
	STANDING SEAM ROOFING	128,405	SQ	$6.50	$834,633	$10.00	$1,284,050		$2,118,683	$0
	FLOOD COAT & RECLAIM STONE BALLAST	1	LS					$48,000	$48,000	$48,000
	PERIMETER FLASHING REPAIRS	1	LS					$28,000	$28,000	$28,000
	SEALANTS	1	LS					$5,000	$5,000	$0
	MISC ROOF ACCESSORIES	1	LS					$5,000	$5,000	$0
	ADHESIVES	1	LS					$5,000	$5,000	$0
				DIVISION SEVEN SUB-TOTAL				$2,492,183		TOTAL: $76,000
	DIVISION FIFTEEN									
	RESTORE PRIMARY & SECONDARY DRAINS	1	LS					$96,000.00	$96,000	$96,000
				DIVISION FIFTEEN SUB-TOTAL				$96,000		TOTAL: $96,000
						SUBTOTAL =			$3,073,971	TOTAL: $205,100
	CONSTRUCTION COST PER SQUARE FOOT = $21.25									
						GEN. CONDITIONS		10.00%	$307,397	$20,510
						OVERHEAD & PROFIT		15.00%	$461,096	$30,765
						Subtotal			$3,842,464	
						CONSTRUCTION TOTAL =			**$3,843,564**	TOTAL: $256,375
						A/E FEES =			$125,400	$8,367
						ENVIRONMENTAL FEE			$0	$0
						CONTINGENCY =		10.00%	$384,246	$384,246
						GRAND TOTAL			**$4,353,210**	TOTAL: $648,988

SILVER/ PETRUCELLI + ASSOCIATES
Architects & Engineers
3190 Whitney Avenue
Hamden, CT 06518
Phone: 203 230 9007 ext. 203
Fax: 203 230 8247
www.silverpetrucelli.com

DEDUCT ALTERNATE ASPHALT SHINGLE ROOF	TOTAL DEDUCT COST FROM BASE BID	$686,869
TOTAL ROOF REPLACEMENT COST, INCLUDING DEDUCT ALTERNATE FOR ASPHALT SHINGLES		**$3,666,341**

ROOF INFORMATION LEGEND

ROOF AREA DESIGNATION	S.Q. FT.	PITCH	EXIST. ROOF ON EXIST. BUILDING	NEW ROOF ON EXISTING BUILDING	ROOFING TYPE	ORIGINAL CONST. DATE	DATE OF LAST REPAIR/ REPLACEMENT	DECK TYPE	PROGRAMMATIC AREA BELOW REPLACEMENT ROOF
ROOF "A"	15,377	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	CAFETERIA
ROOF "B"	5,740	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	CLASSROOMS
ROOF "C"	3,405	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	ENTRANCE
ROOF "D"	27,076	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	CLASSROOMS
ROOF "E"	597	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	ENTRANCE
ROOF "F"	597	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	ENTRANCE
ROOF "G"	8,308	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	CLASSROOMS/ CAFETERIA
ROOF "H"	5,935	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	LIBRARY
ROOF "J"	597	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	ENTRANCE
ROOF "K"	29,656	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	CLASSROOMS
ROOF "L"	5,574	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	AUDITORIUM
ROOF "M"	14,675	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	AUDITORIUM
ROOF "N"	1,028	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	AUDITORIUM
ROOF "P"	9,153	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	CLASSROOMS
ROOF "Q"	597	6":1'-0"		X	STANDING SEAM	2001	2001	METAL	ENTRANCE
ROOF "1"	4,839	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "2"	2,147	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS/ CAFETERIA
ROOF "3"	9,114	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	MECHANICAL ROOM
ROOF "4"	92	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "5"	1,759	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "6"	13,615	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "7"	2,081	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS/ CAFETERIA
ROOF "8"	3,286	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	MECHANICAL ROOM
ROOF "9"	2,912	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "10"	1,097	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS

Project Title:
Town of New Milford
New Milford High School Partial Roof Replacement
388 Danbury Road
New Milford, Connecticut 06776

SILVER / PETRUCELLI + ASSOCIATES
Architects/ Engineers/ Interior Designers
3190 Whitney Avenue, Hamden, CT 06518-2340
One Post Hill Place, New London, CT 06320
Tel. 203 230 9007 Fax. 203 230 8247
silverpetrucelli.com

Revisions: Description: Date: Revised By:

Drawing Title:
Roof Information Legend
STATE PROJECT # RR

Date: 6/8/2020
Scale: NONE
Drawn By: K. LINSLEY
Project Number: 19326
Drawing Number: R1

ROOF INFORMATION LEGEND

ROOF AREA DESIGNATION	S.Q. FT.	PITCH	EXIST. ROOF ON EXIST. BUILDING	NEW ROOF ON EXISTING BUILDING	ROOFING TYPE	ORIGINAL CONST. DATE	DATE OF LAST REPAIR/ REPLACEMENT	DECK TYPE	PROGRAMMATIC AREA BELOW REPLACEMENT ROOF
ROOF "11"	876	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "12"	92	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS/ CAFETERIA
ROOF "13"	4,704	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "14"	199	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "15"	3,021	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "16"	92	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "17"	284	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS/ CAFETERIA
ROOF "18"	92	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "19"	1,089	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS
ROOF "20"	1,051	1/4":1'-0"		X	BUR ROOF	2001	2001	METAL	CLASSROOMS

TOTAL 2001 SLOPED ROOFS	128,405	TOTAL BEING REPLACED
TOTAL 2001 FLAT ROOFS	52,544	TOTAL BEING REPLACED
TOTAL ROOF AREA	180,847	TOTAL ROOF AREA

Project Title:
Town of New Milford
New Milford High School Partial Roof Replacement
388 Danbury Road
New Milford, Connecticut 06776

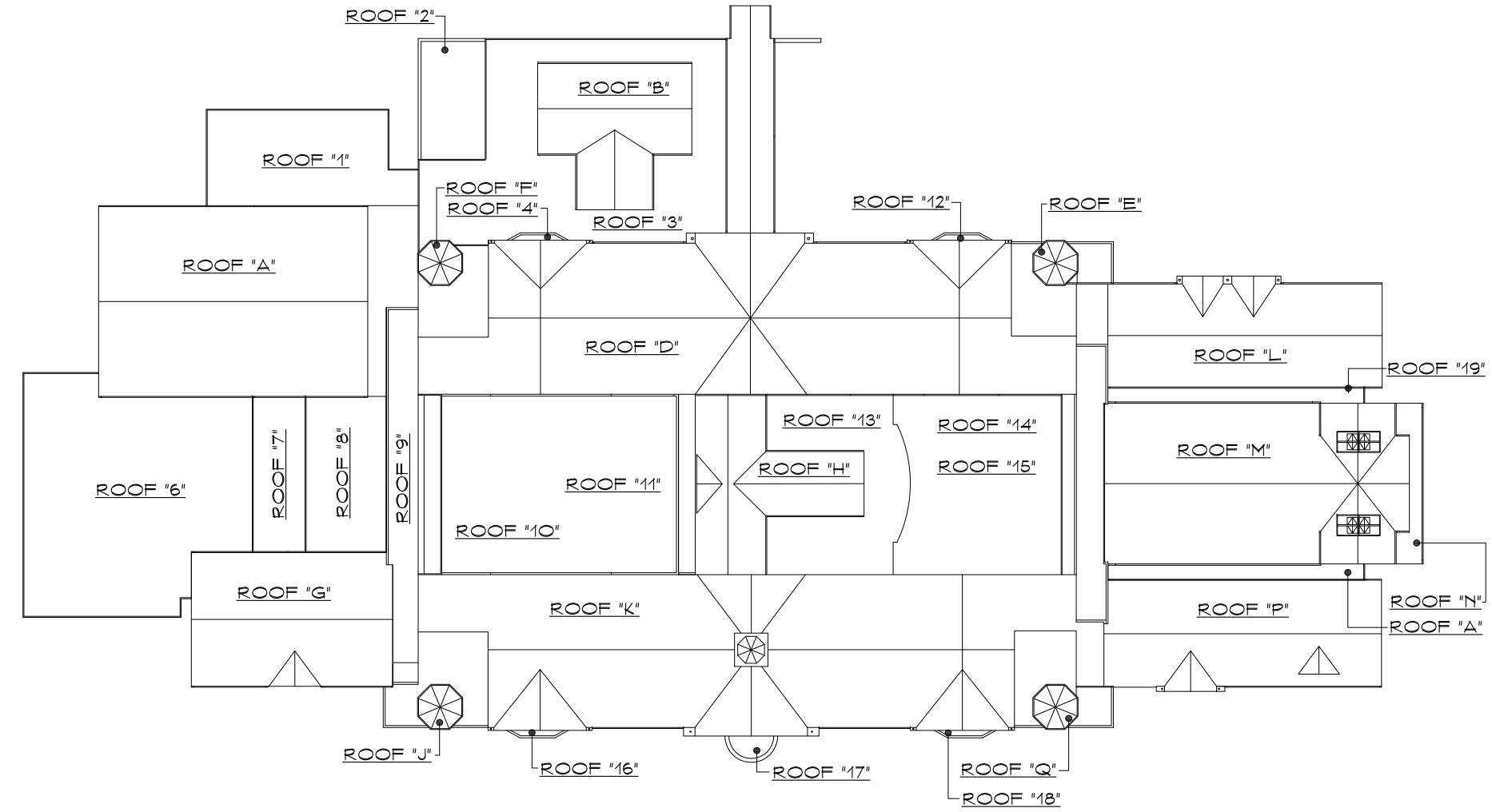
SILVER / PETRUCELLI + ASSOCIATES
Architects/ Engineers/ Interior Designers
3190 Whitney Avenue, Hamden, CT 06518-2340
One Post Hill Place, New London, CT 06320
Tel. 203 230 9007 Fax. 203 230 8247
silverpetrucelli.com

Revision: Description: Date: Revised By:

Drawing Title:
Roof Information Legend
STATE PROJECT # RR

Date: 6/8/2020
Scale: NONE
Drawn By: K. LINSLEY
Project Number: 19326

Drawing Number:
R2



NORTH

ROOF PLAN (2/R2)

SCALE: NONE

Project Title:
Town of New Milford
New Milford High School Partial Roof Replacement
388 Danbury Road
New Milford, Connecticut 06776

SILVER / PETRUCELLI + ASSOCIATES
Architects/ Engineers/ Interior Designers
3190 Whitney Avenue, Hamden, CT 06518-2340
One Post Hill Place, New London, CT 06320
Tel. 203 230 9007 Fax. 203 230 8247
silverpetrucelli.com

Revision: Description: Date: Revised By:

Drawing Title:
Roof Information Legend

STATE PROJECT # RR

Date: 6/8/2020
Scale: NONE
Drawn By: K. LINSLEY
Project Number: 19326
Drawing Number: R3

ISSUED FOR Review Only

Sarah Noble Intermediate School
UST Removal

Sarah Noble Intermediate School

25 Sunny Valley Rd
New Milford, CT 06776

State of Connecticut Project Numbers

Sarah Noble Intermediate School # xxx xxxx CV

Certifications of Local Approval:

I certify that I have local jurisdiction over the **State Building Code** and that the plans and project manual dated _____ for the above referenced project comply with all applicable building codes.

_____ _____ _____

Local Building Official's Name Signature Date

I certify that I have local jurisdiction over the **State Fire Safety Code** and that the plans and project manual dated _____ for the above referenced project comply with all applicable fire codes.

_____ _____ _____

Local Fire Marshal's Name Signature Date

I certify that I have local jurisdiction over the **State Health Code** and that the plans and project manual dated _____ for the above referenced project comply with all applicable health codes.

_____ _____ _____

Local Health Official's Name Signature Date

I certify that I have local jurisdiction over **Section 504 of the Rehabilitation Act of 1973**, and the Uniform Federal Accessibility Standards (UFAS). I further certify that the plans and project manual dated _____ for the above referenced project comply with all applicable accessibility codes.

_____ _____ _____

Local Federal 504 Official's Name Signature Date

BL Companies
Architecture
Engineering
Environmental
Land Surveying

355 Research Prkwy
Meriden, CT 06450
Phone: 203.630.1406
BL Project No: 2000752

END OF TABLE OF CONTENTS

Certifications of Local Approval:

I certify that I have local jurisdiction over the **State Building Code** and that the plans and project manual dated _____ for the above referenced project comply with all applicable building codes.

Local Building Official's Name	Signature	Date

I certify that I have local jurisdiction over the **State Fire Safety Code** and that the plans and project manual dated _____ for the above referenced project comply with all applicable fire codes.

Local Fire Marshal's Name	Signature	Date

I certify that I have local jurisdiction over the **State Health Code** and that the plans and project manual dated _____ for the above referenced project comply with all applicable health codes.

Local Health Official's Name	Signature	Date

I certify that I have local jurisdiction over **Section 504 of the Rehabilitation Act of 1973**, and the Uniform Federal Accessibility Standards (UFAS). I further certify that the plans and project manual dated _____ for the above referenced project comply with all applicable accessibility codes.

Local Federal 504 Official's Name	Signature	Date

REMOVAL AND DISPOSAL OF UNDERGROUND PETROLEUM STORAGE TANK

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Work under this item shall include all activities related to the excavation, removal and disposal of a total of one (1) underground fuel oil storage tank (UST) and its associated piping. The number of USTs and capacities include a 10,000-gallon UST. UST removal activities will include excavating the surficial soils of the tank to open and assess any remaining contents within the UST. The contractor will pump out any contents and then wash out the tank, removing any excess liquid prior to further excavation and removal of the tank from the ground.

B. The work shall be performed by an experienced and licensed Contractor that has successfully completed UST excavation, removal and disposal work similar to that indicated herein.

C. All activities shall be performed in accordance with USEPA 40 CFR Parts 260-268, 280 and 281, OSHA 29 CFR 1926, OSHA 29 CFR 1910.120, CTDEEP 22a-449(d)-1 and 22a-449(c), NFPA 30, NFPA 327, API 1604, API 2015, and all other applicable state and federal regulations and codes.

1.2 SUBMITTALS:

A. Under Section. 22a-449 (d)-107 of the Connecticut General Statutes for out-of-service UST systems and closure: At least thirty (30) days notification must be made to the CTDEEP before beginning permanent closure under subdivision 22a-449 (d)-107 (b).

B. At least ten (10) working days prior to the start of any excavation, removal and disposal work, the Contractor shall submit the following to the Owner and Engineer for review and acceptance:
   1. A Health & Safety Plan prepared in accordance with pertinent sections of OSHA 1926 and 1910.120.
   2. Proposed excavation and removal procedures to be utilized, including vapor purging and atmosphere testing.
   3. Proposed limits of the required work area, including locations of waste and/or imported backfill materials.

4. Proposed protective/safety measures to be implemented to protect utilities and the general public
5. Name and licenses/permits of the Hazardous Material Transporter the Contractor intends use to transport hazardous materials (fuel oil and waste residues) from this Project.
6. Name of the treatment facility or recycling facility the Contractor intends to use to receive fuel oil and waste residues from this project.
7. Proposed C&D bulky waste disposal facility.
8. Proposed steel/scrap metal recycling facility.

C. Seventy-two (72) hours prior to the start of any excavation/removal related activity, the Contractor shall notify the following:
1. Town of New Milford Fire Marshal.
2. Town of New Milford Engineering and Facilities.

1.3 POST EXCAVATION AND REMOVAL SUBMITTALS:

A. The Contractor shall properly dispose of the USTs and provide the Engineer/Environmental Consultant, within 30 days of completion of the excavation and removal work, a compliance package; which shall include, but not be limited to, the following:

1. Shipping papers from the CTDEEP solid waste bulky waste disposal/recycling facility indicating receipt and acceptance of C&D bulky waste debris.
2. Shipping papers and Certificates of Destruction/Recycling from the approved scrap metal recycling facility indicating receipt and acceptance of scrap metal debris (tank, piping, etc).
3. Fully executed waste disposal paperwork from the management of fuel oil and waste residues.

B. In order to avoid surface water erosion and/or contamination to groundwater, the Contractor shall backfill each tank grave the same day the tank was removed, in accordance with the Earthwork specification Section 312100.

PART 2 - MATERIALS:

2.1 Back fill material shall conform to the requirements of the project specifications. All paved areas shall be re-paved to match existing. All concrete sidewalks shall be patched, replaced, or repaired to match existing. All other disturbed areas are to be covered by 6” (min) of top soil and be hydro-seeded (or re-seeded with 12 fescue seed mix and straw cover), coordinate seeding and restoration work with owner.

PART 3 - CONSTRUCTION METHODS:

3.1 GENERAL PROVISIONS:

A. The Contractor shall remove and dispose of the fuel oil USTs presumed located at the sites. The size and location of each UST is documented on Connecticut Department of Energy and Environmental Protection (CTDEEP) Notification for Underground Storage Tanks forms attached hereto.

B. Removal and disposal shall include all contents and appurtenances associated with the tanks (manways, fuel piping, vent piping, conduits, tank and piping monitoring devices, etc.). Removal shall also include all necessary vapor purging, defuming, cleaning, etc.

C. Disposal of petroleum product, sludges, residues, waters, etc. from within the tanks and piping structures shall be performed by the Contractor in accordance with this specification and regulatory standards.

D. Excavation and disposal of contaminated soil and/or ground water is not included in the specification, however may become necessary following removal of the USTs. The Contractor shall be prepared to provide the necessary equipment and tools in order to complete contaminated soil excavation.

E. The Contractor shall exercise all necessary precautions for fire prevention. Acceptable fire extinguisher shall be made available at all times. Flame/torch cutting is prohibited.

F. The Contractor shall prevent damage to any existing utilities, structures, equipment and appurtenances that are to remain in service. Any damages that occur shall be replaced by the Contractor at no additional cost to the Owner.

3.2 EXCAVATION AND REMOVAL PROVISIONS:

A. Excavation and removal practices shall be acceptable to the Engineer, shall assure the safety of persons, equipment, utilities and structures that are to remain, and shall provide adequate protection of the environment. The Contractor shall schedule excavation and removal activities to minimize delays and construction traffic on-site.

B. The Contractor shall furnish and employ such shores, braces, pumps, etc., as may be necessary for the protection of property, proper completion of the work and the safety of the public and employees of the Contractor and the Owner and Engineer.

C. Excavation by machinery shall be discontinued when excavation approaches pipes, conduits or other underground structures. The work shall be completed in these areas by use of hand tools to the extent practical.

D. The Contractor shall excavate test pits when necessary to determine the exact location of tank(s), pipe(s) or other underground structure.

E. For structures not scheduled for demolition, any holes resulting from the removal of vent pipe brackets, return and supply pipes, or other conduits removed or abandoned as a part of excavation and removal activities shall be plugged with cement masonry.

F. The Contractor shall saw cut bituminous concrete in a neat and workman-like manner anywhere partial pavement removal is necessary to complete the work.

G. The Contractor shall prevent surface waters from entering the tank excavation area(s) at all times.

H. The Contractor shall allow for the inspection of the UST and tank grave following removal. If evidence of a release is observed by the contractor and/or the Environmental Consultant, excavation activities should be suspended and the owner notified. Excavation of contaminated soil, if present, shall only be conducted if authorized by the owner.

I. The Contractor shall assist in tank grave confirmation sampling by providing equipment and an operator to collect excavation bottom and side-wall soil. After collection of samples, the Contractor shall backfill the tank grave, as directed by the Engineer. Unless unforeseen impacts exist, the tank grave must be backfilled the same day. If the tank grave cannot be backfilled before the end of the day the excavation shall be adequately protected by equipment, temporary fencing, steel plates or equivalent by the Contractor. This includes the use of safety fencing or other appropriate barricade to prevent individuals or vehicles from falling into

excavations, orange flashing hazard lighting along the fencing, or other lighting considered necessary by the Engineer.

J. Excavation areas (tank grave areas, piping removal areas, soil removal areas, etc.) shall be backfilled to an appropriate elevation to allow for the restoration of pre-construction grade. Material excavated in order to remove the UST may not be used as backfill unless tested and determined to meet the requirements of the attached General Earthwork Specifications. Any additional fill material required to bring the subsurface area to grade shall conform to requirements of the attached General Earthwork Specifications. Prior to placement of fill materials, areas to be filled shall be free of standing water, frost, frozen material, trash and debris.

K. After fill placement and compaction of backfill, the Contractor shall replace removed concrete sidewalks, curbing or asphalt in accordance with the attached “Concrete Paving and Sidewalks” and “concrete Curbing” Specification. The Contractor shall restore any unremoved paved surfaces within the work area to equal or better quality than before disturbance. All pavement markings disturbed during construction shall be restored.

3.3 DISPOSAL:

A. Scrap metal (tanks, piping, etc) generated during the demolition process shall be recycled as scrap metal at an approved scrap metal recycling facility following cleaning.

B. Non-hazardous, non-metallic waste shall be recycled off site or disposed of at a landfill. The Contractor shall transport materials, including, but not limited to, concrete and asphalt removed from excavated USTs and dispose/recycle off site as C&D bulky waste in accordance with the CTDEEP solid waste management standards. The Contractor shall recycle as much C&D bulky waste as practical.

C. Excavated underground items shall not be reused or salvaged by the Contractor.

3.4 METHOD OF MEASUREMENT:

A. The lump sum bid price for the removal and disposal of the USTs shall also include all other related necessary work and materials associated with the excavation, backfill, removal and disposal of the USTs, such as permits, equipment, disposal, etc.

B. Unit pricing for “Extra Work” shall include all related work and material associated with the excavation, handling, stockpiling, transportation and disposal of contaminated soil.

3.5 BASIS OF PAVEMENT:

A. The Contract price for the removal and disposal of the USTs shall include all related necessary work, materials, tools and labor associated with the excavation, removal and disposal of the USTs, including, but not limited to, permits, equipment, removal and disposal of residual liquid product from the USTs, material recycling and disposal, air monitoring, backfill, fencing, barricades, and lighting. No additional payment will be made for shoring, bracing, pumping, bailing, or for material or equipment necessary for the satisfactory completion of the work.

B. If necessary and as directed by the Engineer, contaminated soil excavation, handling and disposal will be paid for as “Extra Work.” In the event that actual releases from the USTs is observed, the Engineer will coordinate with the Contractor and Owner concerning the removal and stockpile of petroleum-impacted soil.

C.

Pay Item	Pay Unit
Removal and Disposal of USTs	Lump Sum
“Extra Work” – Excavation/Stockpiling/ Management of Contaminated Soil	Per Day/ Yard
“Extra Work” -Transportation and Disposal of Contaminated Soil	Per Ton/ Yard

END OF SECTION

SECTION 231113 - FACILITY FUEL-OIL PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. None

1.2 SUMMARY

A. Section Includes:

1. Fuel-oil pipes, tubes, and fittings.
2. Double-containment piping and fittings.
3. Piping specialties.
4. Joining materials.
5. Specialty valves.
6. Mechanical leak-detection valves.
7. Leak detection and monitoring system.
8. Labels and identification.

1.3 DEFINITIONS

A. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

B. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

C. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, and dimensions of individual components and profiles.
2. Include, where applicable, rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
3. For valves, include pressure rating, capacity, settings, and electrical connection data of selected models.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings:

1. Plans and details, drawn to scale, on which fuel-oil piping is shown and coordinated with other installations, using input from installers of the items involved.
2. Site Survey: Plans, drawn to scale, on which fuel-oil piping and tanks are shown and coordinated with other services and utilities.

B. Field quality-control reports.

C. Sample Warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fuel-oil equipment and accessories to include in emergency, operation, and maintenance manuals.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store pipes and tubes with protective PE coating to avoid damaging the coating and to protect from direct sunlight.

C. Store PE pipes and valves protected from direct sunlight.

1.8 FIELD CONDITIONS

A. Interruption of Existing Fuel-Oil Service: Do not interrupt fuel-oil service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary fuel-oil supply according to requirements indicated:

1. Notify owner and engineer no fewer than 7 days in advance of proposed interruption of fuel-oil service.
2. Do not proceed with interruption of fuel-oil service without owners written permission.

1.9 WARRANTY

A. Standard Warranty: Manufacturer agrees to repair or replace components of flexible, double-containment piping and related equipment that fail in materials or workmanship within specified warranty period.

1. Failures due to defective materials or workmanship for materials including piping, dispenser sumps, water-tight sump entry boots, terminations, and other end fittings.
2. Warranty Period: 30 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with ASME B31.9, "Building Services Piping," for fuel-oil piping materials, installation, testing, and inspecting.

C. Fuel-Oil Valves: Comply with UL 842 and have service mark initials "WOG" permanently marked on valve body.

D. Comply with requirements of the EPA and of state and local authorities having jurisdiction. Include recording of fuel-oil piping.

2.2 PERFORMANCE REQUIREMENTS

A. Maximum Operating-Pressure Ratings: 5 psig fuel-oil supply pressure at oil-fired appliances.

2.3 DOUBLE-CONTAINMENT PIPE AND FITTINGS

A. Flexible, Double-Containment Piping: Comply with UL 971.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. OmegaFlex.
    b. OPW Fueling Components; Dover Company.
    c. PermaPipe

2. Pipe Materials:
    a. Primary Pipe: T316 series stainless steel strip conforming to ASTM A240. Piping shall not be subjected to heat treating or annealing after the corrugation operation has been performed. Piping shall be suitable for operation will all fuels as defined in UL971A.
    b. Secondary Jacket: Jacket shall be a 2-layer co-extrusion of EFEP and Nylon 12. The secondary jacket shall be rated for 50 psig. Nylon 12 is to be UV resistant.
3. Mechanical Attachment Fittings

a. Fittings shall be made from yellow brass or 300 series stainless steel
b. Fittings shall provide a metal-to-metal seal. No gaskets shall not be used.
c. Fittings shall incorporate a port for interstitial space monitoring and testing.

4. Fiberglass or PE sumps.
5. Watertight sump entry boots, pipe adapters with test ports and tubes, coaxial fittings, and couplings.
6. Minimum Operating Pressure Rating: 10 psig (69 kPa).
7. Plastic to Steel Pipe Transition Fittings: Factory-fabricated fittings with plastic end matching or compatible with carrier piping, and steel pipe end complying with ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.
8. Include design and fabrication of double-containment pipe and fitting assemblies with provision for field installation of cable leak-detection system in annular space between carrier and containment piping.

2.4 SPECIALTY VALVES

A. Emergency Shutoff Valves:
1. Listed and labeled for fuel-oil service by an NRTL acceptable to authorities having jurisdiction.
2. Single poppet valve.
3. Body: bronze.
4. Disk: Bronze.
5. Poppet Spring: Cadmium plated steel.
6. Stem: Zinc plated malleable iron.
7. O-Ring: FPM.
8. Packing Nut: PTFE-coated brass.
9. Fusible link to close valve at 165 deg F (74 deg C).

2.5 LEAK-DETECTION AND MONITORING SYSTEM

A. Cable and Sensor System: Comply with UL 1238.
1. Calibrated leak-detection and monitoring system with probes and other sensors and remote alarm panel for fuel-oil piping.
2. Include fittings and devices required for testing.

2.6 LABELS AND IDENTIFICATION

A. Detectable Warning Tape: Acid- and alkali-resistant PE film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (152 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (762 mm) deep; colored yellow.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas for compliance with requirements for installation tolerances and other conditions affecting performance of fuel-oil piping.

B. Examine installation of fuel-burning equipment and fuel-handling and storage equipment to verify actual locations of piping connections before installing fuel-oil piping.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Close equipment shutoff valves before turning off fuel oil to premises or piping section.

B. Comply with NFPA 30 and NFPA 31 requirements for prevention of accidental ignition.

3.3 OUTDOOR PIPING INSTALLATION

A. Install Underground Fuel-Oil Piping Buried:

1. Under Compacted Backfill: 18 inches below finished grade, minimum.
2. Under Asphalt 2 Inches Thick: 8 inches below bottom of asphalt.
3. Under 4 Inches of Reinforced Concrete in Areas Subject to Vehicle Traffic: 4 inches below bottom of concrete.

B. Install double-containment, fuel-oil pipe at a minimum slope of 1 percent downward toward fuel-oil storage tank sump.

C. Install vent pipe at a minimum slope of 2 percent downward toward fuel-oil storage tank sump.

D. Assemble and install entry boots for pipe penetrations through sump sidewalls for liquid-tight joints.

E. Install metal pipes and tubes, fittings, valves, and flexible connectors at piping connections to AST and UST.

F. Install fittings for changes in direction in rigid pipe.

G. Install system components with pressure rating equal to or greater than system operating pressure.

3.4 INDOOR PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Arrange for pipe spaces, chases, slots, sleeves, and openings in building structure during progress of construction to allow for mechanical installations.

C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings at a height that allows sufficient space for ceiling panel removal.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Comply with requirements for equipment specifications for roughing-in requirements.

I. Conceal pipe installations in walls, pipe spaces, or utility spaces; above ceilings; below grade or floors; and in floor channels unless indicated to be exposed to view.

J. Prohibited Locations:

1. Do not install fuel-oil piping in or through HVAC ducts and plenums, clothes or trash chutes, chimneys or gas vents (flues), ventilating ducts, or dumbwaiter or elevator shafts.
2. Do not install fuel-oil piping in solid walls or partitions.

K. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down.

L. Connect branch piping from top or side of horizontal piping.

M. Install unions in pipes NPS 2 and smaller at final connection to each piece of equipment and elsewhere as indicated. Unions are not required on flanged devices.

N. Do not use fuel-oil piping as grounding electrode.

O. Install sleeves and sleeve seals for piping penetrations of walls, ceilings, and floors.

P. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.5 VALVE INSTALLATION

A. Install valves in accessible locations.

B. Install oil safety valves.

C. Install pressure relief valves in distribution piping between the supply and return lines.

D. Install one-piece, bronze ball valve with hose end connection at low points in fuel-oil piping.

E. Install manual air vents at high points in fuel-oil piping.

F. Install emergency shutoff valves at dispensers.

3.6 PIPING JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Flanged Joints: Install gasket material, size, type, and thickness for service application. Install gasket concentrically positioned.

D. Flared Joints: Comply with SAE J513. Tighten finger tight then use wrench according to fitting manufacturer's written instructions. Do not overtighten.

3.7 LEAK-DETECTION AND MONITORING SYSTEM INSTALLATION

A. Install leak-detection and monitoring system. Install alarm panel inside building where indicated.

B. Double-Containment, Fuel-Oil Piping: Install leak-detection sensor probes at low points in piping

3.8 CONNECTIONS

A. Where installing piping adjacent to equipment, allow space for service and maintenance.

B. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment having threaded pipe connection.

C. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment having flanged pipe connection.

3.9 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplates and signs on or near each service regulator, service meter, and earthquake valve.

1. Text: In addition to identifying unit, distinguish between multiple units; inform operator of operational requirements; indicate safety and emergency precautions; and warn of hazards and improper operations.

B. Install detectable warning tape directly above fuel-oil piping, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs. Terminate tracer wire in an accessible area, and identify as "tracer wire" for future use with plastic-laminate sign.

1. Piping: Over underground fuel-oil distribution piping.

3.10 FIELD QUALITY CONTROL

A. Pressure Test Piping: Minimum hydrostatic or pneumatic test-pressures measured at highest point in system:

1. Fuel-Oil Distribution Piping: Minimum 30 psig for minimum 30 minutes.
2. Fuel-Oil, Double-Containment Piping:

a. Carrier Pipe: Minimum 5 psig for minimum 30 minutes.
b. Containment Conduit: Minimum 5 psig for minimum 60 minutes.

3. Suction Piping: Minimum 20-in. Hg for minimum 30 minutes.
4. Isolate storage tanks if test pressure in piping will cause pressure in storage tanks to exceed 10 psig .

B. Inspect and test fuel-oil piping according to NFPA 31, "Tests of Piping" Paragraph; and according to requirements of authorities having jurisdiction.

C. Test leak-detection and monitoring system for accuracy by manually operating sensors and checking against alarm panel indication.

D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Bleed air from fuel-oil piping using manual air vents.

F. Fuel-oil piping and equipment will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

3.11 OUTDOOR PIPING SCHEDULE

A. Underground Fuel-Oil Piping: Flexible, double-containment piping. Size indicated is carrier-pipe size.

B. Underground fuel-oil-tank fill and vent piping shall be one of the following:

1. NPS 2 and Smaller: Steel pipe, steel or malleable-iron threaded fittings, and threaded joints. Coat pipe and fittings with protective coating for steel piping.
2. NPS 2-1/2and Larger: Steel pipe, steel welding fittings, and welded joints. Coat pipe and fittings with protective coating for steel piping.

3.12 INDOOR PIPING SCHEDULE

A. Aboveground fuel-oil piping shall be one of the following:

1. NPS 2 and Smaller: Steel pipe, steel or malleable-iron threaded fittings, and threaded joints. Coat pipe and fittings with protective coating for steel piping.
2. NPS 2-1/2and Larger: Steel pipe, steel welding fittings, and welded joints. Coat pipe and fittings with protective coating for steel piping.

B. Connect to existing fuel oil piping in side boiler room.

3.13 SHUTOFF VALVE SCHEDULE

A. Valves for aboveground distribution piping NPS 2 and smaller shall be one of the following:

1. One-piece, bronze ball valve with bronze trim.
2. Two-piece, full -port, bronze ball valves with bronze trim.

END OF SECTION 231113

SECTION 231323 - FACILITY ABOVEGROUND FUEL-OIL STORAGE TANKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Vertical, steel, fuel-oil ASTs.
2. Horizontal, steel, fuel-oil ASTs.
3. Containment-dike, steel, fuel-oil ASTs.
4. Insulated, steel, fuel-oil ASTs.
5. Concrete-vaulted, steel, fuel-oil ASTs.

1.3 DEFINITIONS

A. AST: Aboveground storage tank.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, and dimensions of individual components and profiles.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
3. Fuel-oil storage tank accessories.

B. Shop Drawings:

1. Include plans, elevations, sections, and ballast pads and anchors, and lifting or supporting points.
2. Indicate dimensions, components, and location and size of each field connection.
3. Shop Drawing Scale: 1/4 inch per foot.

1.5 INFORMATIONAL SUBMITTALS

A. Site Survey: Plans, drawn to scale, on which fuel-oil storage tanks are shown and coordinated with other services and utilities.

B. Qualification Data: For qualified professional engineer.

C. Seismic Qualification Certificates: For ASTs, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Brazing certificates.

E. Welding certificates.

F. Field quality-control reports.

G. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fuel-oil equipment and accessories to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. EPA Compliance: Comply with EPA and state and local authorities having jurisdiction. Include recording of fuel-oil storage tanks and monitoring of tanks.

B. Steel Support Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of fuel-oil storage tanks that fail in materials or workmanship within specified warranty period.

1. Storage Tanks:

a. Failures include, but are not limited to, the following when used for storage of fuel oil at temperatures not exceeding 150 deg F:

1) Structural failures including cracking, breakup, and collapse.
2) Corrosion failure including external and internal corrosion of steel tanks.

b. Warranty Period: 30 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design restraint and anchors for fuel-oil ASTs, and equipment, including comprehensive engineering analysis, using performance requirements and design criteria indicated.

B. Seismic Performance: Factory-installed support attachments for AST shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified."

2.2 CONCRETE-VAULTED, STEEL, FUEL-OIL AST

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. ConVault, Inc.

B. Description: UL 142 and UL 2085; thermally insulated, fire-resistant and protected, double-wall, horizontal, steel tank; with primary- and secondary-containment walls and insulation and with interstitial space.

C. Construction: Fabricated with welded, carbon steel and insulation and encased in concrete that will protect from bullets; suitable for operation at atmospheric pressure and for storing fuel oil with specific gravity up to 1.1 and with test temperature according to UL 2085.

D. Capacities and Characteristics:

1. Capacity: 3000 gal.
2. Connection Sizes:

a. Fill Line: 4”
b. Vent Line: 4”
c. Outlet: 2”
d. Return: 2”
e. Gage: 2”

3. Manholes:

a. Number Required: 1
b. Diameter: 36”

4. Fuel-Oil Grade Number: Grade No. 2.

2.3 SHOP PAINTING OF AST

A. Apply manufacturer's standard prime coat to exterior steel surface of AST and supports.

B. Prepare exterior steel surface of AST and tank supports.

C. Shop Cleaning: After fabrication, blast clean according to SSPC-SP 6/NACE No. 3.

D. After cleaning, remove dust or residue from cleaned surfaces.

E. If surface develops rust before prime coat is applied, repeat surface preparation.

F. Apply manufacturer's standard prime coat to shop-cleaned, dry surface same day as surface preparation.

G. Apply manufacturer's standard two-component, epoxy finish coats.

2.4 FUEL-OIL AST ACCESSORIES

A. Tank Manholes: 22-inch-minimum diameter; bolted, flanged, and gasketed; centered on top of tank.

B. Tank Manholes: 22-inch-minimum diameter; bolted, flanged, and gasketed; on top and at side of tank.

C. Threaded pipe connection fittings on top of tank, for fill, supply, return, vent, sounding, and gaging. Include cast-iron plugs for shipping.

D. Threaded pipe connection fittings on top or sides of tank as indicated, for fill, supply, return, vent, sounding, and gaging. Include cast-iron plugs for shipping.

E. Striker Plates: Inside tank, on bottom below fill, vent, sounding, gage, and other tube openings.

F. Lifting Lugs: For handling and installation.

G. Ladders: Carbon-steel ladder inside tank, anchored to top and bottom, and located as indicated. Include reinforcement of tank at bottom of ladder.

H. Ladders: Carbon-steel ladder outside tank, anchored to top and side wall. Comply with requirements in Section 055000 "Metal Fabrications" for exterior steel ladder.

I. Supply Tube: Extension of supply piping fitting into tank, terminating 6 inches above tank bottom and cut at a 45-degree angle.

J. Sounding and Gage Tubes: Extension of fitting into tank, terminating 6 inches above tank bottom and cut at a 45-degree angle.

2.5 LIQUID-LEVEL GAGE SYSTEM

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Pneumercator Inc.

B. Description: Calibrated liquid-level gage system complying with UL 180 with floats or other sensors and remote annunciator panel.

C. Annunciator Panel: With visual and audible, high-tank-level and low-tank-level alarms; fuel indicator with registration in gallons; and overfill alarm. Include gage volume range that covers fuel-oil storage capacity.

D. Controls: Electrical, operating on 120-V ac.

2.6 LEAK-DETECTION AND MONITORING SYSTEM

A. Cable and Sensor System: Comply with UL 1238.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Pneumercator Inc.

2. Calibrated leak-detection and monitoring system with probes and other sensors and remote alarm panel for fuel-oil storage tanks and fuel-oil piping.
3. Include fittings and devices required for testing.
4. Controls: Electrical, operating on 120-V ac.
5. Calibrated liquid-level gage complying with UL 180 with floats or other sensors and remote annunciator panel.
6. Remote Annunciator Panel: With visual and audible, high-tank-level and low-tank-level alarms; fuel indicator with registration in gallons and overfill alarm. Include gage volume range that covers fuel-oil storage capacity.
7. Controls: Electrical, operating on 120-V ac.

B. Hydrostatic System: Comply with UL 1238.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Pneumercator Inc.

2. Calibrated leak-detection and monitoring system with brine antifreeze solution, reservoir sensor, and electronic control panel to monitor leaks in inner and outer tank walls.
3. Include fittings and devices required for testing.

4. Controls: Electrical, operating on 120-V ac.
5. Calibrated liquid-level gage complying with UL 1238 with probes or other sensors and remote annunciator panel.
6. Remote Annunciator Panel: With visual and audible, high-tank-level and low-tank-level alarms; fuel indicator with registration in gallons; and overfill alarm. Include gage volume range that covers fuel-oil storage capacity.
7. Controls: Electrical, operating on 120-V ac.

2.7 FUEL OIL

A. Fuel Oil: ASTM D 396, Grade No. 2.

B. Diesel Fuel Oil: ASTM D 975, Grade No. 2-D, general purpose, high volatility.

2.8 SOURCE QUALITY CONTROL

A. Pressure test and inspect fuel-oil storage tanks, after fabrication and before shipment, according to ASME and the following:

1. Vertical or Horizontal, Single-Wall Steel ASTs: UL 142.
2. Vertical or Horizontal, Double-Wall Steel ASTs: UL 142, STI F921, and STI R931.
3. Horizontal, Containment-Dike, Steel ASTs: UL 142 and STI F911.
4. Horizontal, Concrete-Vaulted and Insulated, Steel ASTs: UL 142 and UL 2085.

B. Affix standards organization's code stamp.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for aboveground fuel-oil storage tanks to verify actual locations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

B. Allow for cast-in-place, concrete base.

3.3 FUEL-OIL AST INSTALLATION

A. Install tank bases and supports.

B. Concrete Bases: Anchor AST to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Use 3000-psig, 28-day, compressive-strength concrete and reinforcement as specified in Section "Cast-in-Place Concrete."

C. Connect piping and vent fittings.

D. Install ground connections.

E. Install tank leak-detection and monitoring devices.

F. Install steel ASTs according to STI R912.

G. Install insulated and concrete-vaulted, steel ASTs according to STI R942.

H. Fill storage tanks with fuel oil.

3.4 LIQUID-LEVEL GAGE SYSTEM INSTALLATION

A. Install liquid-level gage system. Install panel inside building where indicated.

3.5 LEAK-DETECTION AND MONITORING SYSTEM INSTALLATION

A. Install leak-detection and monitoring system. Install alarm panel inside building where indicated.

1. Double-Wall, Fuel-Oil Storage Tanks: Install probes or use factory-installed integral probes in interstitial space.
2. Single-Wall, Fuel-Oil Storage Tanks: Install probes as indicated.
3. Double-Containment, Fuel-Oil Piping: Install leak-detection sensor cable probes in interstitial space of double-containment piping.
4. Install liquid-level gage.

3.6 LABELING AND IDENTIFYING

A. Nameplates, pipe identification, and signs are specified in Section 230553 "Identification for HVAC Piping and Equipment."

3.7 FIELD PAINTING OF AST

A. Prepare and touch up damaged exterior surface of AST and supports as specified in "Shop Painting of AST" Article.

B. Prepare exterior steel surface of AST and tank supports.

C. Field Cleaning: After fabrication, blast clean according to SSPC-SP 6/NACE No. 3.

D. After cleaning, remove dust or residue from cleaned surfaces.

E. If surfaces develop rust before prime coat is applied, repeat surface preparation.

F. Prepare surface of AST and supports and apply painting systems according to specifications in Section 099600 "High-Performance Coatings" for moderate environment semigloss finish for ferrous metal.

3.8 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Tanks: Minimum hydrostatic or compressed-air test pressures for fuel-oil storage tanks that have not been factory tested and do not bear the ASME code stamp or a listing mark acceptable to authorities having jurisdiction:

    a. Single-Wall Tanks: Minimum 3 psig and maximum 5 psig.
    b. Double-Wall Tanks:

        1) Inner Tanks: Minimum 3 psig and maximum 5 psig.
        2) Interstitial Space: Minimum 3 psig and maximum 5 psig, or 5.3-in. Hg vacuum.

    c. Where vertical height of fill and vent pipes is such that the static head imposed on the bottom of the tank is greater than 10 psig, hydrostatically test the tank and fill and vent pipes to a pressure equal to the static head thus imposed.
    d. Maintain the test pressure for one hour.

C. ASTs will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 231323

SECTION 312100 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 221113 Facility Water Distribution Piping

C. Section 311000 Site Clearing

D. Section 312100.01 Topsoil

E. Section 312500 Sedimentation & Erosion Control

F. Section 320100 Restoration

G. Section 321216 Asphalt Paving

H. Section 321313 Concrete, Sidewalks and Curbing

I. Section 321700 Site Improvements

J. Section 329218 Landscaping

K. Section 333111 Site Sanitary Sewerage Utilities

L. Section 334113 Site Stormwater Utilities

M. Section 335111 Site Natural Gas Distribution

1.2 REFERENCES

A. ASTM D-422 Method for sieve analysis of fine and coarse aggregates.

B. ASTM D-1140 Method for determination of fine soil fraction.

C. ASTM D-1556 Test method for density of soil and soil aggregate in place by the sand cone method.

D. ASTM D-1557 Test method for moisture density relationships of soils and soil aggregate mixtures.

E. ASTM D 4318 Test method for determination of plasticity index of soils.

F. AASHTO T 180 D – Test method for moisture density relationships of soils and soil aggregate mixtures in pavement areas.

G. Geotechnical Study for Proposed New Helicopter Hanger for Hartford Healthcare MidState Hospital, 435 Lewis Avenue, Meriden, CT, prepared by Dr. Clarence Welti, P.E., P.C., dated March 18, 2016.

1.3 SUMMARY

A. The specifications herein are minimum requirements and shall apply to all work under this Contract. If the specifications conflict with any Federal, Local and/or State Codes, Regulations and/or Ordinances, the more stringent shall apply and be adhered to.

B. The work under this Section includes all labor, supervision, materials and equipment necessary for the completion of all earthwork including, but not be limited to:

1. Excavation and backfilling for demolition of utilities.
2. Preparation of subgrades for pads, walks, pavements, turf and landscaping.
3. Subbase and base courses for concrete walks and pads.
4. Subbase and base courses for asphalt pavements.
5. Removal and offsite disposal of unsuitable materials.
6. Furnishing and placement of fill.
7. Protection of existing structures, utilities and site improvements.
8. Dewatering if necessary.
9. Excavation and backfilling for light poles, lighting conduit, and conduit.
10. Excavation and backfilling for bollards, gates, and fencing.
11. Compaction of fills.
12. Excavation and backfilling for utilities.
13. Excavation and backfilling for building footings and slabs.
14. Base courses for building footings and slabs.
15. Removal and replacement of fills.
16. Legal offsite disposal of unsuitable materials, unsatisfactory soils and excess materials not incorporated into the work.
17. Excavation and backfill for irrigation sleeves.
18. Furnishing and placing specified materials in logical sequences to balance site cuts and fills as close as feasible.
19. Aeration of wet soils before reuse.

1.4 SUBMITTALS

A. A report containing the following shall be submitted for all soil materials to be used as fill:
1. Gradation test results, for each type of fill beneath structures, pavements sidewalks and utilities.
2. Plasticity test results per ASTM D 4318.
3. Compaction Curves per ASTM D-1557 for each type of soil material used.

B. Environmental Test Reports for any common or controlled fill material that is obtained from offsite sources.

1.5 PROJECT CONDITIONS

A. The Contractor shall visit the site prior to bidding and familiarize himself with existing site conditions and project requirements. The Contractor shall be responsible for identifying any conflicts between existing conditions and these specifications and/or drawings. The Contractor shall notify the Engineer of any such conflicts prior to bidding.

B. Demolition, earthwork and/or other construction operations shall not interfere with building/facility ingress or egress unless approved by the Owner in writing. All building ingress and egress points shall be accessible at all times. Walks, parking areas, drives and roads shall remain unobstructed. The Contractor shall utilize signage, cones, barrels and other forms of traffic control to direct protect pedestrians and vehicles during demolition, earthwork and construction operations. The Contractor may only close off walks, parking areas, drives and roads if approved by the Engineer in writing. As part of the approval, the Engineer may require alternate routes and traffic controls to be implemented.

C. Demolition, earthwork and/or other construction operations shall not interfere with existing utility services. The Contractor shall provide temporary utility service prior to disconnecting any existing utilities. All utility disconnections and temporary utilities services shall be coordinated with the Owner. Provide and install temporary lighting if required by the Owner.

D. The Contractor shall contact “Call Before You Dig” at 800.922.4455 at least 72 hours prior to the commencement of any construction operations, including, but not limited to demolition, site clearing, earthwork, site work and work in driveways and parking areas.

E. Sedimentation and Erosion Controls shall be installed as shown on the Contract Drawings and/or as specified herein.

F. The Contractor shall furnish and install any sheeting, shoring and bracings for excavations as required by Federal, State and Local Laws, Regulations and Ordinances including CFR 29 Part 1926.

G. Costs for sampling, transporting, and making all laboratory tests required to obtain characteristics of materials from on-site and off-site sources proposed to be used for fills and backfills including gradations tests and determination of moisture density relationships, shall be borne by the Contractor.

1.6 SITE INVESTIGATION

A. The Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, groundwater table or similar physical conditions at the site, the conformation of subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this contract. Any failure by the Contractor to acquaint himself with all information concerning these conditions will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work.

1.7 SUBSURFACE DATA

A. The Contractor acknowledges that he assumes all risk contingent upon the nature of the subsurface conditions, including rock, to be actually encountered by him in performing the

work covered by the Contract, even though such actual conditions may result in the Contractor performing more or less than he originally anticipated. No warranty, either expressed or implied, is made as to the accuracy of any subsurface information presented.

B. Variations in existing ground or subsurface soil conditions differing from those indicated in the Contract Documents shall not under any conditions constitute grounds for changes in Contract Price or completion dates of this Contract.

1.8 PROTECTION OF EXISTING STRUCTURES

A. The Contractor shall protect existing underground utilities to remain, the location of which is shown approximately on the drawings or which are located in the field. Utilities whose location is not known shall be protected insofar as possible. All costs for repair of broken or damaged utilities will be the responsibility of the Contractor.

B. Visit the site to review all details of the work and working conditions and to verify dimensions in the field including headroom and interferences from adjacent structures. Notify the Owner in writing of any discrepancy before performing any work.

C. Protect existing above ground structures, landscaping, appurtenances from movement or settlement. Provide bracing and shoring as needed.

D. Consult official records of existing utilities, both surface and subsurface, and their connections to be fully informed on all existing conditions and limitations as they apply to this work and its relation to other construction work. The Contractor shall contact **Call Before You Dig" at 1-800-922-4455** to assist in locating utilities at least 3 working days prior to performing any earthwork operations on the site.

E. Make a personal inspection of the site to evaluate the conditions affecting the work. No claim for additional costs will be allowed because of lack of knowledge of any existing conditions discernible from observation of the site, adjoining properties, or other available sources of information.

1.9 APPLICABLE STANDARDS

A. ASTM D-422 - Method for sieve analysis of fine and coarse aggregates.

B. ASTM D-1140 - Method for determination of fine soil fraction.

C. ASTM D-1556 - Test method for density of soil and soil aggregate in place by the sand cone method.

D. ASTM D-1557 - Test method for moisture - density relationships of soils and soil aggregate mixtures.

E. ASTM D-2167 - Test method for density of soil and soil aggregate in place by the balloon method.

F. ASTM D 4318 Test method for determination of Plasticy Index of soils.

G. ASTM D-5195 - Test method for density of soil and rock at depths below the surface by nuclear methods.

H. ASTM D-5220 - Test method for water content of soil and rock in-place by neutron depth probe method.

1.10 SITE PREPARATION

A. The Subcontractor shall verify existing grades prior to beginning general earthwork. If existing grades are at variance with the Contract Drawings, notify the Engineer and receive instructions prior to proceeding.

B. All bench marks and monuments shall be protected during construction. If disturbed or destroyed, replace in original position.

C. Construction stakeout shall be by a licensed surveying firm provided by the Contractor. Exact locations and grade points are to be staked or fixed by the surveying firm prior to construction.

PART 2 - MATERIALS

2.1 SOIL MATERIALS

Provide soil materials when sufficient satisfactory soil materials are not available from required excavation operations as shown on the Contract Drawings and/or specified herein.

A. Suitable Native Material

1. Material that is found on-site and is approved by the Engineer for use. Material shall be free of ice, snow, roots, vegetation, organics and any other deleterious materials.

   Material shall only be used beneath pavement if the material's plasticity index does not exceed 15 (20 when used below 2-feet of subgrade) and liquid limit does not exceed 40. Clayey and/or silty soils are prohibited for use beneath pavement.

   Material may be used for fill slopes and in areas outside any existing or future structural bearing zone.

B. On-site Fill

1. Material shall consist of on-site excavated soil may be used if meeting the gradation requirements for Controlled Fill if tested and approved by the Geotechnical Engineer and if environmentally clean. Material shall be free of ice, snow, roots, vegetation, organics and any other deleterious materials. Material shall consist of sand, gravel, rock fragments, or a mixture thereof. Material may only be used as fill if rocks larger than 3.5 inches have been removed and it is placed and compacted sufficiently so that a stable subgrade is achieved.

   Material may be used for backfill for structures, pavements, as indicated on the Contract Drawings and as specified herein. Material may not be used in areas requiring greater infiltration rates for drainage. If needed and/or as directed by the Engineer, the Contractor shall screen the material to segregate and remove unsuitable materials.

C. Controlled Fill

Material shall be free of ice, snow, roots, vegetation, organics and any other deleterious materials. Material conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight
3½ inch	100
¾ inch	50 - 100
No. 4	25 - 75

The fraction passing the No. 4 sieve shall have <15% passing the No. 200 sieve. (On-site soils will not meet this gradation.)

Material shall be used in demolition voids and in existing and future structure areas including, but not limited to, beneath future structure foundations, slabs and other areas considered to be soil bearing. This material may also be used for fill beneath pavements, fill slopes, general fill and as subbase for walks.

D. Free Draining Sand

1. Material shall be free of ice, snow, roots, vegetation, organics and any other deleterious materials and shall consist of hard durable sand conforming to the following gradation requirements:

Sieve Size	Percent Passing by Weight
1½ inch	100
1 inch	45 - 80
¼ inch	25 - 60
No. 10	15 - 45
No. 40	5 - 25
No. 100	0 - 10
No. 200	0 - 4

Material may be used for bedding for utilities.

E. Processed Aggregate Base

1. Material shall consist of hard, durable processed gravel. Material shall be free of ice, snow, roots, vegetation, organics and any other deleterious materials and shall be uniformly blended. Material shall conform to CONNDOT Form 816 Standard Specifications, Section M.05.01 and meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
2 ½ inch	100
2 inch	95 - 100
¾ inch	50 - 75
¼ inch	25 - 45
No. 40	5 - 20
No. 100	2 - 12

Material shall be used a base beneath asphalt pavements and as shown on the Contract Drawings and as specified herein.

F. Gravel Base/Subbase

1. Material shall be free of ice, snow, roots, vegetation, organics and any other deleterious materials and conform to the requirements of the CONNDOT Form 816 Standard Specifications, Section M.02.02 and M 02.06 Gradation A and the following gradation requirements:

Sieve Size	Percent Passing by Weight
3½ inch	100
1½ inch	55 - 100
¼ inch	25 - 60
No. 10	15 - 45
No. 40	5 - 25
No. 100	0 - 10
No. 200	0 - 5

Material shall be used a subbase where indicated beneath asphalt pavements and as a base beneath walks and as shown on the Drawings and as specified herein.

G. Crushed Stone – ¾ Inch

1. Material shall consist of hard durable crushed rock or crushed stone free of ice, snow, roots, vegetation, organics, and any other deleterious materials and shall conform to CTDOT Form 816 Standard Specifications Section M.02.01.1 for crushed stone and meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
1¼ inch	100
1 inch	90 - 100
¾ inch	75 - 100
¼ inch	25 - 60
No. 40	10 - 35
No. 100	3 - 12
No. 200	0 - 5

H. Crushed Stone – $^{3}/_{8}$ inch

1. Material shall consist of hard durable crushed rock or crushed stone free of ice, snow, roots, vegetation, organics, and any other deleterious materials and shall conform to CTDOT Form 816 Standard Specifications Section M.02.01.1 for crushed stone and meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
½ inch	100
$^{3}/_{8}$ inch	85 - 100
No. 4	10 - 30
No. 8	0 - 10
No. 16	0 - 5

I. DOT No. 3 Crushed Stone

1. Material shall consist of hard durable crushed rock or crushed stone free of ice, snow, roots, vegetation, organics, and any other deleterious materials and shall conform to CTDOT Form 816 Standard Specifications Section M.02.01 for crushed stone and meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
2 ½ inch	100
2 inch	90 - 100
1½ inch	35 - 70
1 inch	0 - 15
½ inch	0 - 5

J. Underground-Type Plastic Line Markers: Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide x 4 mils thick. Provide (standard utility colors) tape with black printing reading "CAUTION (NAME OF UTILITY) LINE BELOW" by ProLine, Inc., Harris Industries or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

B. Protect and maintain erosion and sedimentation controls during earthwork operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Prevent surface water and groundwater from entering excavations, from ponding on prepared subgrades and from flooding the Project Site, street Rights of Way, structures and surrounding areas.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

C. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches unless noted otherwise on the Contract Drawings.

3.3 EXPLOSIVES

A. Explosives are not permitted and shall not be used.

3.4 GENERAL EXCAVATION

A. Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation, unsuitable soil excavation or removal of obstructions. If excavated materials intended for fill and backfill include unsatisfactory soil materials and/or rock, replace with satisfactory soil materials.

3.5 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions shown on Contract Drawings or as directed by the Engineer. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
   1. Excavation for any Underground Tanks and Utility Structures: Do not disturb bottom of excavations intended as bearing surfaces.
   2. Footing excavation shall be on natural inorganic soils or on controlled fill after removal of any existing fills. Where footing subgrade is wet and subject to remolding after exposure to equipment, over-excavate a minimum of 6 inches as directed by the Geotechnical Engineer and replace with a minimum of 6 inches of 3/8 inch crushed stone beneath the footings on the natural soils and beneath controlled fills where over a wet subgrade. Controlled fill shall extend horizontally beyond the footings for a distance equal to at least the depth of fill beneath the footings. All backfill and fill shall be compacted to 95% of modified optimum density per ASTM D1557.
   3. Slab-on-grade excavation shall be constructed by removing all existing fill beneath the proposed slab. Remove all existing fill and/or natural inorganic soils to allow installation of 16 inches minimum of controlled fill beneath the proposed slab and 6 inches of ¾ inch processed stone base below underside of slab compacted to at least 97% of modified optimum density per ASTM D1557.

B. Excavations at Edges of Tree- and Plant-Protection Zones:
   1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
   2. If root trimming is needed, roots of “Trees to be protected” shall be selectively trimmed by a Connecticut Licensed Arborist.

C. If unsuitable soil material and/or rock is encountered in load bearing areas, remove off-site and replace with satisfactory soil materials.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations and/or subgrades.

B. If unsuitable soil material and/or rock is encountered in load bearing areas, remove off-site and replace with satisfactory soil materials.

3.7 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations or as required for utility removals.

B. Excavate trenches to uniform widths to provide the required clearance on each side of pipe or conduit, as indicated in the Drawings.

C. Trench Bottoms: Excavate trenches to the depth indicated on the Drawings to allow for bedding course. Hand-excavate deeper for bells of pipe.

D. Trenches in Tree- and Plant-Protection Zones: Hand-excavate to indicated lines, cross sections, elevations and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. If root trimming is needed, roots of “Trees to be protected” shall be selectively trimmed by a Connecticut Licensed Arborist.

E. If unsuitable soil material and/or rock is encountered in load bearing areas, remove off-site and replace with satisfactory soil materials.

3.8 SUBGRADE INSPECTION

A. The Contractor shall notify the Engineer when excavations have reached required subgrade. The Contractor shall not proceed with any backfilling, subbase or base course operations until the subgrade has been inspected by the Engineer.

B. If the Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed by the Engineer.

C. Proof-roll subgrade below all pads, pavements and walks by doing a minimum of eight (8) passes with a vibratory steel drum roller with a minimum static weight of 10,000 pounds to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
   1. Completely proof-roll subgrade in one direction and repeating in direction perpendicular to first direction.
   2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill or fill as directed by the Engineer.

D. Subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities shall be reconstructed, as directed by the Engineer, at no additional cost to the Owner.

3.9 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 GENERAL BACKFILL

A. Materials suitable for reuse as determined by the Engineer shall be stored in designated locations. Topsoil that is to be reused shall be stored separately from general fill.

B. Backfill shall only take place after demolition in the immediate area is complete and subgrades, utility installations, underground drainage and any other underground work has been completed and approved by the Engineer.

C. All temporary shoring, bracing, sheeting, formwork, debris shall be removed prior to backfilling.

D. Plow, scarify, bench or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

E. Place and compact fill material in maximum 12 inch lifts for demolition void backfills, match to existing adjacent finished grade to required elevations.

F. The Contractor shall provide off-site borrow material if necessary to achieve design subgrades after suitable onsite materials have been utilized.

G. Grade and compact fill so that the final surface will readily shed water. Slope fill surfaces away from buildings a minimum of two inches in 10 feet, unless otherwise noted.

H. Where horizontal layers meet a naturally rising slope exceeding 1 vertical to 5 horizontal, key layer into slope by benching into the slope with minimum 4 foot high vertical steps.

I. At completion of work, excess fill materials shall be removed from the site.

J. The degree of compaction shall be based on a maximum dry density as determined by ASTM D-1557. Compaction of silt and clays and of fine sand and silty sand shall be for materials at moisture contents within the percentages of acceptable optimum moisture contents. The degree of compaction for fill placed in various areas shall be as follows:

Area	Degree of Compaction
Controlled Fill	
Below existing and future floor slabs	97%
Below existing and future foundations	95%
Controlled Fill	
Below pavements, pads and sidewalks	95%
Deeper than 6 feet below pavement, pads and sidewalks	92%
Pavement base courses	95%
Sidewalk base courses	95%
Below pavement and sidewalk subbase courses	95%
Trench backfill outside of building, pavement and load bearing areas	92%
Trench backfill inside of building and beneath pavement and load bearing areas	95%

All fill outside building, pavement, sidewalk and load bearing zones	92%
All fill in slope areas at or steeper than 10H:1V	92%
General landscaping areas	90%

H. Fill shall be placed in loose lift thickness not exceeding twelve (12) inches in depth. The entire area of each layer shall be compacted with the specified equipment to the specified degree as outlined herein. No subsequent layer shall be deposited until the specified compaction is achieved for the previous layer. Compacted fills shall be prevented from freezing by use of approved admixtures or by use of approved protection on the surface, or both.

3.11 UTILITY TRENCH BACKFILL

A. Once subgrade has been inspected and approved by the Engineer, the pipe or conduit has been removed or has been placed and the pipe joints made in accordance with these specifications, backfilling shall be performed. The Contractor shall be held responsible for the satisfactory execution of pipe line and conduit demolition backfill or construction. If subsequent testing shows defects in materials or workmanship, the necessary repairs and replacements shall be made by the Contractor at his own expense to the satisfaction of the Engineer.

B. Bedding shall be as specified as shown on the Contract Drawings and/or as specified herein. Backfill shall be placed simultaneously on either side of the pipe alignment.

C. The trench shall be backfilled between the bottom of the pipe to a minimum of 12 inches above the crown of the pipe by placing and compacting the specified materials by hand.

D. No stone or rock fragment greater than 3 inches shall be used as trench backfill until a minimum of 12 inches of backfill has been placed above the pipe. Backfilling shall be placed in 9-inch maximum loose lifts.

E. Material compaction is prohibited if the material is too wet to be compacted properly; at such times, the compaction work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction, or such other precautions shall be taken as may be necessary to obtain proper compaction. Water jetting or flooding to attain compaction is not permitted.

F. An independent testing laboratory shall perform compaction tests at intervals not exceeding 150 feet of trench for the first and final 9 inch lift of compacted trench backfill and furnish copies of test results as specified.

3.12 PAVEMENT BASE AND SUBBASE

A. Subbase preparation shall be carefully shaped to the required cross section and compacted as specified herein. The entire area of each layer of the embankment and the subgrade in the excavated areas 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 shall not be

considered as compaction equipment. Compact each lift by a minimum of six passes of a Bomag 210 vibratory roller or equivalent vibratory roller.

B. The dry density after compaction shall not be less than 95 percent of the dry density for that soil when tested in accordance with ASTM D-1557 (Modified Proctor).

C. Where underdrains and outlets are specified on the plans needed per direction by the Engineer, they shall be in place and functioning before any subbase material is placed.

D. Spread subbase material uniformly upon the required grade, in courses not to exceed 6 inches in thickness after final compaction. However, if the required thickness of subbase does not exceed 8 inches, it may be placed in one course.

E. Compact after each course has been placed as specified above; its entire area shall be compacted with equipment specifically manufactured for that purpose. The sole use of hauling and spreading equipment shall not be considered as a substitute for compacting equipment.

F. Spreading shall begin at the end of the project nearest the source of supply of the material in such a way that as the work progresses the material is trucked over material that is already in place so as to obtain as much compaction as possible during construction.

G. Should the foundation material beneath any subbase become churned up and mixed with subbase at any time, the Contractor shall, without additional compensation, remove the mixture and replace it with new subbase material to the required thickness shown on the plans or as previously required by the Engineer. Such replaced subbase material shall be compacted to the required minimum density placed upon the prepared subbase to a depth which will not be less than the required depth after compaction. The subbase shall be true to line and grade a minimum of 200 feet in advance of the work. Maximum thickness of the course shall not exceed four (4) inches prior to compaction unless permitted by the Engineer.

H. Processed aggregate base preparation shall be uniformly placed upon the prepared subbase to a depth which will not be less than the required depth after compaction. The subbase shall be true to line and grade a minimum of 200 feet in advance of the work. Maximum thickness of the course shall not exceed four (4) inches prior to compaction unless permitted by the Engineer.

I. The bottom course shall be spread uniformly upon the prepared subbase. Only approved spreaders or stone boxes shall be used. Power graders shall not be used unless otherwise permitted by the Engineer. After the aggregate is spread, it shall be thoroughly compacted and bound use of equipment specifically manufactured for that purpose. Rollers shall deliver a ground pressure of not less than 300 pounds per linear inch of contact width and shall weigh not less than 10 tons. Vibratory units shall have a static weight of not less than 4 tons. Water may be used during the compaction and binding operation. Water shall be applied from an approved watering device. The direction and intensity of the stream shall be as ordered by the Engineer. The compacting and binding operation shall begin at the outside edges, overlapping the shoulders for a distance of not less than 6 inches and progress towards the middle, parallel with the centerline of the pavement. The work shall cover the entire surface of the course with uniform overlapping of each preceding track or pass. Areas of super-elevation and special cross slope shall be compacted by beginning at the lowest edge and proceeding towards the higher edge, unless otherwise directed by the Engineer. The compacting and binding operation shall be continued until the voids in the aggregates have been reduced to provide a firm and uniform surface satisfactory to the Engineer. The amount of compactive effort shall be as directed by the Engineer, but in no case shall be less than four (4) complete passes of the compacting equipment being used. Any surface fines shall be distributed uniformly by use of brooms during the compacting and binding operations. All aggregate shall be completely compacted and bound at the end of each day's work or when traffic is to be permitted to operate on the road.

J. Construction methods for the top course shall be the same as described for the bottom course. Construction of the top course shall not commence until the bottom course has been approved by the Engineer and accepted. Final total thickness of the two courses shall equal the thickness as specified on the plans. Any soft yielding or irregular areas which develop during or after work on either course shall be removed and replaced with suitable aggregate as required. The area shall then be rebound and recompacted until it is brought to a uniform surface to match the adjacent base all as approved by the Engineer.

3.13 GRADING

A. Grading outside building lines shall consist of grading areas adjacent to building lines to drain away from structures and to prevent ponding. Finish ground surfaces shall be free from irregular surface changes, and meet the following requirements:

1. Grassed areas: Finish areas scheduled to receive topsoil to within not more than 2” above or below the required subgrade elevations.
2. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1” above or below the required subgrade elevation.
3. Pavements: Shape surface areas under pavement to line, grade and cross-section, with finish surface not more than 1” above or below the required subgrade elevation.

B. Grading between final grades indicated on drawing shall be smooth with even surfaces, except if noted otherwise.

C. Modify dewatering procedures which cause, or threaten to cause, damage to new or existing facilities.

3.14 SHORING, SHEETING AND BRACING

A. Provide shoring, sheeting and/or bracing of excavations as required to assure complete safety against collapse of earth at side of excavations. Alternatively, lay back excavations to a stable slope. Shoring Sheeting and Bracing shall be designed by the Contractor’s Connecticut Licensed Professional Engineer and submitted to the Owner’s Geotechnical Engineer for review prior to construction.

B. Excavations shall be adequately sheeted, shored and braced as necessary to permit proper execution of the work and to protect all slopes and earth banks until new building walls are cured and acceptable for backfill. Sheet piling shall be installed if required to prevent cave-ins or settlement and to protect workmen and utilities. Shoring and bracing may be removed as the backfilling progresses, but only when banks are safe against caving, taking all necessary precautions to prevent collapse of excavation sides. Bracing of all foundation walls during backfilling and compaction is the responsibility of the Contractor.

C. Comply with OSHA and local safety regulations, and CFR 29 part 1926.

D. Remove sheeting or shoring, etc. as backfilling operations progress, taking all necessary precautions to prevent collapse of excavation sides. Where sheeting is required to be left in place, as determined by the Geotechnical Engineer, in areas not indicated on Contract Drawings, additional payment will be made as provided under changes in the work.

E. Temporary bracing of all below-grade walls to eliminate movement during backfilling will be required except in cases where the walls have been integrated into the permanent superstructure and derive support there from. The design and proposed construction procedure

for bracing systems shall be prepared by the Contractor's Connecticut Licensed Professional Engineer and submitted to the Owner's Geotechnical Engineer for review at least one week prior to commencing backfill operations.

3.15 FIELD QUALITY CONTROL

A. Provide for the observation of the excavation bottoms and bearing surfaces for the Engineer.

B. Testing and analysis of fill materials will be performed in accordance with ASTM D422, D1140 and D1557.

C. In-place compaction testing will be performed in accordance with ASTM D1556, D2167 or ASTM D5195 or ASTM D1557.

D. If tests indicate work does not meet specified requirements, remove work or recompact where appropriate, replace and retest at no cost to Owner.

3.16 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris. Do not place fill over frozen soil.

B. Repair and reestablish grades where completed or partially completed surfaces have become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible. Recompact fills subject to vehicular traffic or other disturbances.

D. Protect excavations to prevent cave in or loose soil or debris from falling into excavation. Observe OSHA Standards for trenching and excavation.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION

SECTION 312500 – SEDIMENTATION AND EROSION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 311000 Site Clearing

C. Section 312100 Earthwork

D. Section 329218 Landscaping

1.2 SUMMARY

A. The specifications herein are minimum requirements and shall apply to all work under this Contract. If the specifications conflict with any Federal, Local and/or State Codes, Regulations and/or Ordinances, the more stringent shall apply and be adhered to.

B. The work under this Section includes all labor, supervision, materials and equipment necessary for the completion of all work including, but not be limited to:

1. Construction and maintenance of project sedimentation and erosion controls as noted on the Contract Drawings and as specified herein.

1.3 SUBMITTALS

A. Silt sack product data.

PART 2 - MATERIALS

2.1 SILT SACK

A. Silt sack shall be Siltsack as manufactured by SI Geosolutions or approved equal.

2.2 STONE CONSTRUCTION ENTRANCE

A. Crushed Stone of the nominal size if indicated on the Contract Drawings and with Filter Fabric per the Contract Drawings and these specifications.

2.3 TEMPORARY GRASS SEED

A. A perennial rye grass (Lolium Perenne) or an improved variety thereof such as Manhattan, having a minimum purity of 98% and a minimum germination of 90%.

2.4 SILT FENCE

A. Silt fence shall consist of polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average properties:

1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
2. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491.
3. Ultraviolet Resistance: 80 percent minimum, when tested in accordance with ASTM G-26.
4. Tensile Strength: 120 lb-f, minimum, when tested in accordance with ASTM D1682.
5. Elongation: 20 percent maximum, when tested in accordance with ASTM D1682.
6. Tear Strength: 55 lb-f, minimum, when tested in accordance with ASTM D4533.
7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
8. Manufacturers:
   a. Propex Geotex
   b. Tencate Envirofence
   c. Engineer approved equal
9. Fabric: 36 inches minimum in width
10. Posts: Hardwood 2 by 2 inches in cross section

PART 3 - EXECUTION

3.1 INSTALLATION AND MAINTENANCE

A. Erosion control measures shall be installed and maintained according to the Contract Drawings and as specified herein and as directed by the Engineer or Regulatory Agencies. Comply with Connecticut Guidelines for Soil Erosion and Sediment Control, latest edition.

B. Comply with CGS 22a 430b and NPDES requirements as applicable for Stormwater Discharges from Construction Activities.

C. The Owner and Inspector have the authority to control the surface area of earth materials exposed by construction operations and to direct the Contractor to immediately provide permanent or temporary pollution control measures to prevent contamination of adjacent property and downstream areas, streams, watercourses, lakes, ponds, or other areas of water impoundment. Every effort shall be made by the Contractor to immediately provide permanent or temporary pollution control measures to prevent contamination of adjacent streams, watercourses, lakes, ponds, or other areas of water impoundment. Every effort shall be made by the Contractor to prevent erosion on the site and abutting property.

D. The Owner and Inspector have the authority to direct the Contractor to divert surface water runoff away from exposed raw earth surfaces through the use of temporary berms, dikes, and diversion channels.

E. The erosion control features shall be installed and maintained by the Contractor, and shall be checked daily after each severe rain storm for damage, until such features are no longer needed. Any sediment traps and sediment basins shall have the accumulated sediment and/or clean water removed before it significantly reduces their storage volume or function, prior to the next rain storm forecast for the region.

F. The installations shall be maintained or replaced until they are no longer necessary for the purposed intended or are ordered removed by the Owner.

G. Silt Sacks shall be installed in existing or proposed catch basins. Remove the grate and place the sack in the opening. Hold out approximately 6 inches of the sack outside the frame. Replace the grate to hold the sack in place. The Silt Sack is considered full and should be emptied when the restraint cord is no longer visible. To remove the Silt Sack, take two pieces of 1" diameter rebar and place through the lifting loops on each side of the sack to facilitate the lifting of the Silt Sack. To empty the Silt Sack, place it where the contents will be collected. Place rebar through the lifting straps (connected to the bottom of the sack) and lift. This will

turn the Silt Sack inside out and empty the contents. Clean out with a shovel and rinse. Return the Silt Sack to its original shape and place back in the basin.

H. Temporary erosion control systems installed by Contractor shall be maintained as directed by Owner to control siltation during life of contract. Contractor must respond to maintenance or additional work ordered by Property Owner within 24 hours.

I. All Dewatering Filter Bags shall be placed within non-regulated areas and embedded on 2-inch nominal crushed stone.

J. Stone Construction Entrances shall be installed in accordance with Section 312100 Earthwork and the Contract Drawings and shall be replaced or have addition stone added as construction progresses to ensure continued functionality of the construction entrance as a device for removal of sediment from vehicle tires and as directed by the Engineer.

K. Silt Fences:

1. Store and handle fabric in accordance with ASTM D4873.
2. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
3. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

L. Removal and Disposal of all erosion and sediment controls, temporary structures, silt sacks, temporary fences, stakes, etc. as areas are accepted and stabilized and as approved by Owner and governing agencies.

M. Contractor shall maintain all erosion controls as indicated in plans and specifications as a minimum and as directed by Owner.

END OF SECTION

SECTION 321700 – SITE IMPROVEMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract including General and Supplementary conditions apply to this Section.

The following are minimum requirements and shall govern except that all Federal, Local and/or State Codes and Ordinances shall govern when their requirements are more stringent.

1.2 SUMMARY

Work included: Provide all labor, materials and equipment necessary to supply and install the following:

A. Concrete Filled Steel Pipe Bollards

1.3 REFERENCE STANDARDS

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

A 120 Pipe, Steel, Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless, for Ordinary Uses.

A 569 Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled, Sheet and Strip Commercial Quality

C 33 Concrete Aggregates

C 94 Ready-Mixed Concrete

C 150 Portland Cement

1.4 RELATED SECTIONS

A. Section 312100 – Earthwork

B. Section 321313 – Concrete, Sidewalks and Curbing

C. Section 321400 – Site Concrete Formwork

1.5 SUBMITTALS

A. Product Data: Submit manufacturer’s specifications and installation instructions for each item which is factory-fabricated.

B. Shop Drawings: Submit shop drawings showing location of each item, dimensions, plans and elevations, large scale details, attachment device and other components.

1. Shop drawings shall be accompanied with written evidence of compliance with ASTM standards and specified bending strengths.

1.6 QUALITY ASSURANCE

A. Codes and Standards: Perform excavation and base preparation in compliance with applicable requirements of authorities having jurisdiction.

B. Concrete: Comply with requirements for Site Cast-in-Place Section 321402.

C. Earthwork: Comply with requirements for Earthwork per Section 312100.

PART 2 - PRODUCTS

A. Concrete: Shall conform to Section 321402 Site Cast-in-Place Concrete for 28 day 3,000 psi concrete.

B. Bollards: Fabricated 6" bollards from steel tube, size as detailed, G-60 hot dipped galvanized finish. Fill with concrete and provide galvanized ¼-inch steel plate cap as detailed, joints welded, ground and polished smooth and level. If the steel post is not galvanized it shall be painted. Painting shall consist of one primer coat conforming to Federal Specification TT-P-615d, Type II. Where no PVC external sleeve is indicated, there shall be two finished coats of paint. The final finish coat shall conform to Federal Specification TT-E-527 Air Drying, and the color shall be yellow. The bollards, where indicated, shall otherwise have a PVC external sleeve, color yellow affixed per manufacturer's specifications to the outside of the pipe bollard as indicated on the Contract Drawings.

PART 3 - EXECUTION

A. General: Install site improvements after final grading is complete. Layout locations accurately according to layout plans. Coordinate with paving and other site related work. Coordinate layout with manufacturer's recommendations and with approved shop drawings.

B. Excavation: Excavate holes to diameters and spacing indicated, in firm undisturbed soil or compacted soil.

C. Footings: Form and place concrete according to depth and dimensions on the Contract Drawing details for Bollards. See Section 321400 Site Concrete Formwork, and Section 321402 Site Cast-in-Place Concrete.

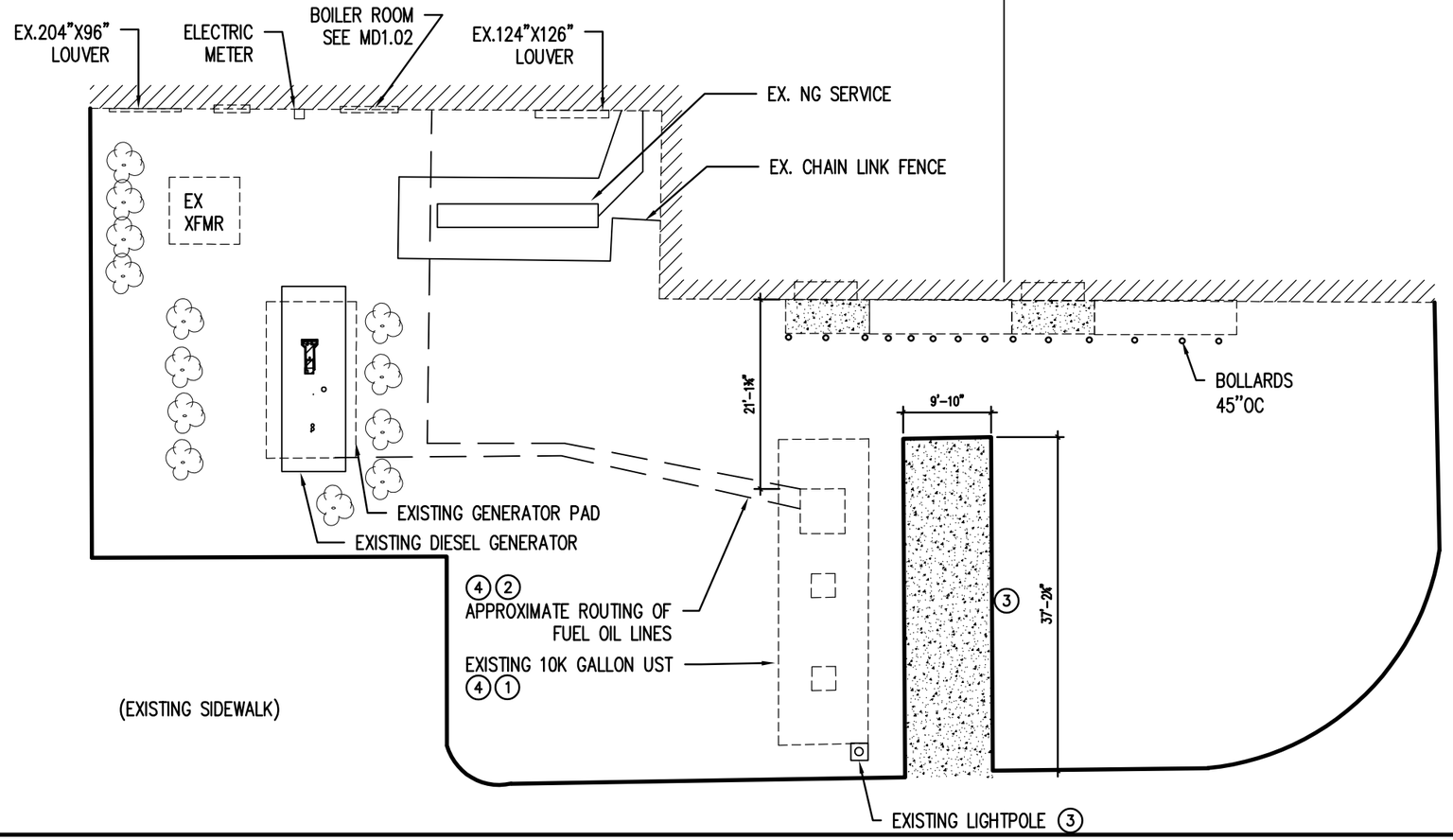
D. Setting of Bollards: Set bollards to be plumb and at correct height and alignment, and at center of hole. Support post or form securely in correct position for concrete placement and finish. Protect exposed post from spatter.

1. The bollard post shall be filled with concrete. The top shall be rounded to a convex surface. No sharp edges, burrs, threads or other defects shall be exposed. Trowel tops of bollards to a smooth finish with a slight crown to shed water.

E. Adjustment, Cleaning and Finishing of site improvements shall consist of:

1. The repair or replacement of defective items; Replacement shall be made if repair is unacceptable to the Owner.
2. Cleaning items of construction dirt, adhesive, etc.
3. Adjusting operable items for proper operation.
4. Touching up damaged painted or galvanized items with matching paint, stain or cold galvanizing paint
5. Protecting site improvements from damage until project completion.

END OF SECTION



LEGEND:

GRASS

BUILDING EDGE

CONCRETE SIDEWALK

GENERAL NOTES:

1. THE EXISTING OIL TANKS HAVE APPROXIMATELY 5,000 GAL. CONTRACTOR SHALL PROVIDE ALL SERVICES TO DISPOSE OF REMAINING OIL IN ACCORDANCE WITH STATE, LOCAL, AND FEDERAL REQUIREMENTS. PROVIDE DOCUMENTATION FOR COMPLIANCE VERIFICATION.
2. CONTRACTOR IS TO MAINTAIN FULL FUEL LEVEL IN GENERATOR BELLY TANK. FUEL LEVEL SHALL BE CHECKED DAILY DURING CONSTRUCTION..
3. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSION, QUANTITIES, AND DISTANCES.
4. SEE FULL SPECIFICATIONS FOR SITE RESTORATION REQUIREMENTS.

KEY NOTES:

① EXCAVATE AS REQUIRED. REMOVE EXISTING FUEL OIL TANK VENT. RESTORE DISTURBED AREA TO MATCH EXISTING. REMOVE EXISTING UNDERGROUND FUEL OIL STORAGE TANK, PAD, ASSOCIATED BALLAST, AND APPURTENANCES. RESTORE DISTURBED AREA TO MATCH EXISTING

② EXCAVATE AS REQUIRED REMOVE EXISTING FUEL LINES FROM UST. FLUSH LINES TO REMOVE OIL CONTAMINATION, CAP LINES AT BUILDING FOUNDATION, ABANDOM PIPING BELOW BUILDING FOUNDATION. RESTORE DISTURBED AREA TO MATCH EXISTING.

③ EXISTING STRUCTURES TO BE PROTECTED DURING CONSTRUCTION. ANY STRUCTURES REQUIRED TO BE REMOVED TO FACILITATE REMOVAL OF EXISTING UST SHALL BE REPLACED OR REPAIRED TO MATCH THE EXISTING. SEE RESTORATION DETAILS ON M4.01, M4.02.

④ SEE RESTORATION SPECIFICATIONS AND DETAILS ON M4.01 AND M4.02 FOR SITE RESTORATION REQUIREMENTS.

PARTIAL SITE PLAN: SARAH NOBLE INTERMEDIATE SCHOOL - DEMO

SCALE: 3/32"=1'-0"

PLAN NORTH

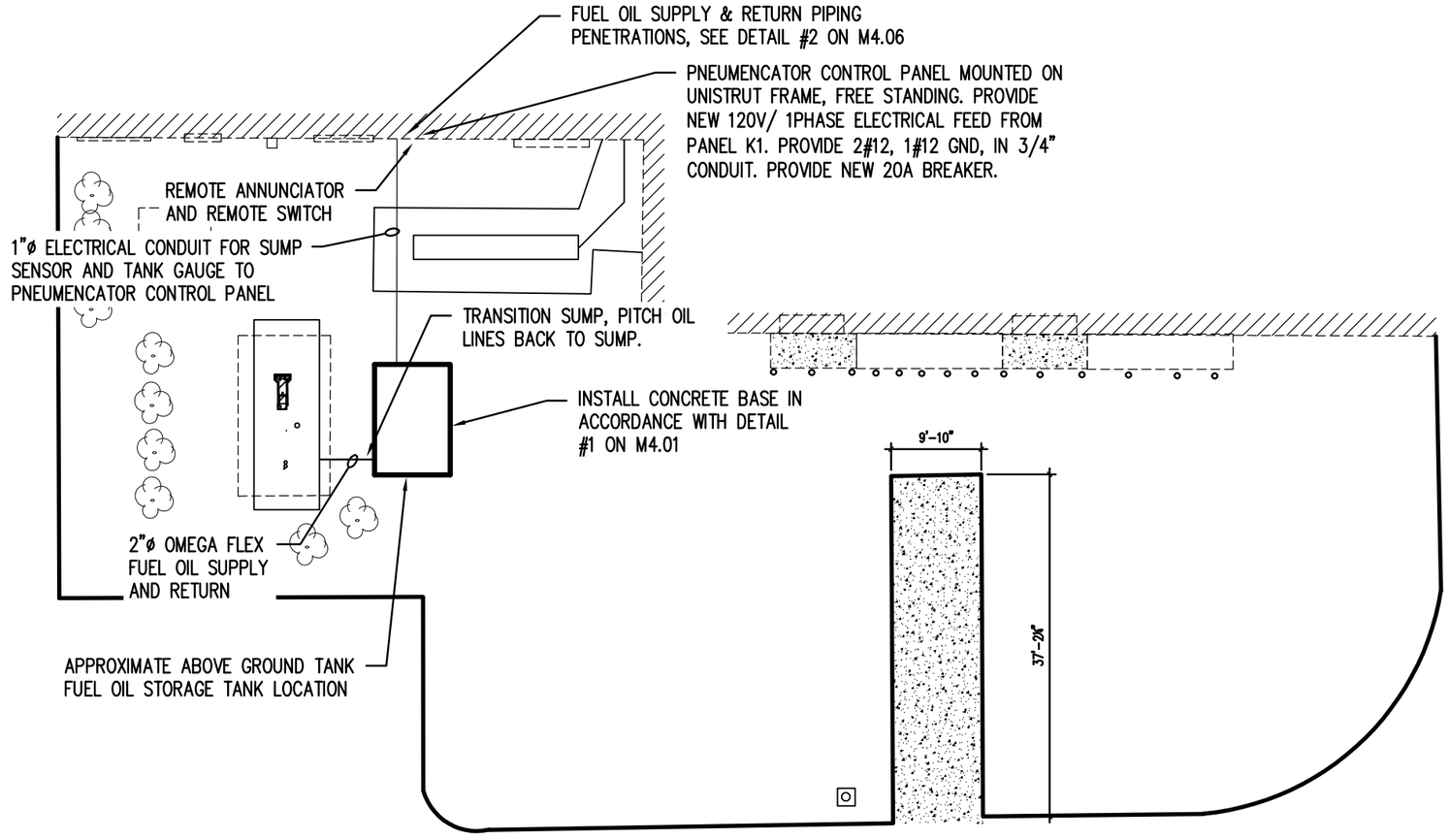
KEYPLAN

Drawn By: M.D. | Origin:
Checked By: B.R. | DWG. Ref:
Project No. 16D3011 | Scale: 1"=16'-0"
CAD File: MD1.01 | Date: 08/31/2018
Title: MD1.01

SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax
BL Companies

1/26/2012 2:13 PM, BRICHARDSON, C:\JOBS20\06\2000752\DWG-ARCH\MD1.01.DWG, MD1.01.
Xrefs: ; BD16D3011-11X17N



LEGEND:

- GRASS
- BUILDING EDGE
- CONCRETE SIDEWALK

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSION, QUANTITIES, AND DISTANCES.
2. RESTORE ALL DISTURBED SOILS TO MATCH EXISTING, SEE SITE RESTORATION SPECIFICATIONS.
3. COORDINATE FINAL TANK LOCATION WITH SITE PLAN. NO EQUIPMENT SHALL BE LOCATED ABOVE NATURAL GAS PIPING.

PARTIAL SITE PLAN: SARAH NOBLE INTERMEDIATE SCHOOL - NEW

SCALE: 3/32"=1'-0"

PLAN NORTH

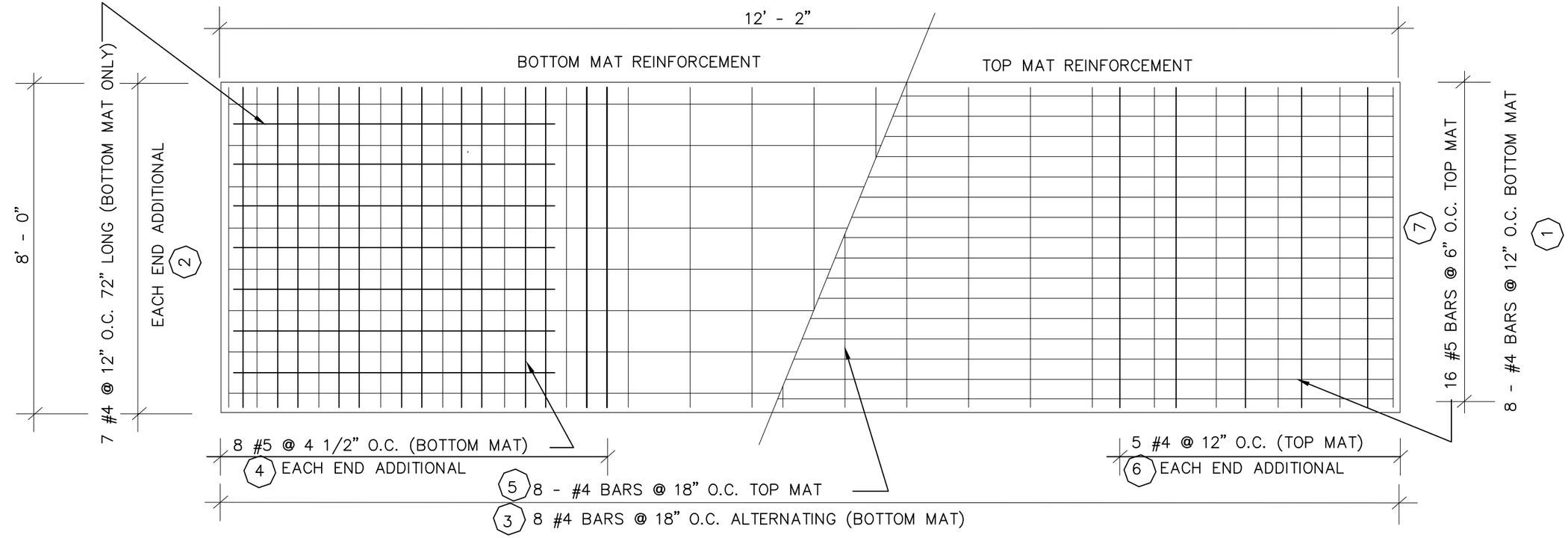
KEYPLAN

SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

Drawn By:	M.D.	Origin:	
Checked By:	B.R.	DWG. Ref:	
Project No.	16D3011	Scale:	1"=16'-0"
CAD File:	M1.01A	Date:	08/31/2018
Title:			MD1.01

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax
BL Companies

1/26/2012 2:13 PM, BRICHARDSON, G:\JOBS20\06\2000752\DWG-ARCH\M1.01A.DWG, M1.01.
Xrefs: ; BD16D3011-11X17N



PLAN - SLAB REINFORCING

NOTES:

CONCRETE COMPRESSIVE STRENGTH: 5,000 psi @ 28 DAYS

REINFPRCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60 OR ASTM A706 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH LATEST ACI STANDARDS.

LIFTING INSERTS FOR HANDLING SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS.

APPROXIMATE SLAB WEIGHT: 14,000 LBS.

MIN. SOIL BEARING CAP. = 3000 psf.

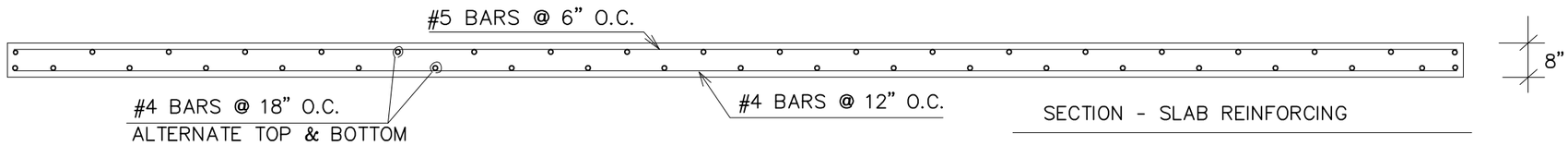
SUB-BASE REQUIREMENTS

NOTES:

ALL FOUNDATIONS HAVE BEEN DESIGNED FOR AN ALLOWABLE NET SOIL BEARING PRESSURE OF 3,000 PSF, PER PRESUMPTIVE BEARING VALUES FOR ANTICIPATED SOILS. NO FOUNDATION SHALL BEAR ON LOAM OR SOIL FILL. THE CONTRACTOR SHALL VERIFY THE EXISTING SOIL SUBGRADE IN THE FIELD WITH A TEST PIT AND PROVIDE DOCUMENTATION TO THE ENGINEER PRIOR TO THE PLACEMENT OF ANY CONCRETE.

REMOVE ALL DEBRIS FROM BOTTOM OF FOUNDATION PRIOR TO PLACING CONCRETE. DO NOT PLACE CONCRETE ON FROZEN SOIL, ICE, MUD, OR IN WATER. ALL FOUNDATION SUBGRADES SHALL BE INSPECTED AND APPROVED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER PRIOR TO BEING CONCRETED.

IF UNSUITABLE SOIL IS ENCOUNTERED AT THE PROPOSED BOTTOM OF FOUNDATION ELEVATIONS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER, AND NOT PROCEED WITH THE AFFECTED WORK. IF ROCK IS ENCOUNTERED PRIOR TO THE PROPOSED BOTTOM OF FOOTING ELEVATION, THE ROCK SHALL BE OVEREXCAVATED BY 1'-0", AND BACKFILLED WITH ¾" CRUSHED STONE TO THE BOTTOM OF FOOTING, AND COVERED WITH FILTER FABRIC.



SECTION - SLAB REINFORCING

NOTE:
12" SLAB IS REQUIRED WHEN POURED IN THE FIELD
8" SLAB IS AVAILABLE WHEN ORDERED IN PRECAST FROM UNITED CONCRETE

(#) ORDER IN WHICH REBAR SHOULD BE PLACED

1 SLAB DETAILS FOR 4,000 GALLON CONVAULT TANK

NOT TO SCALE

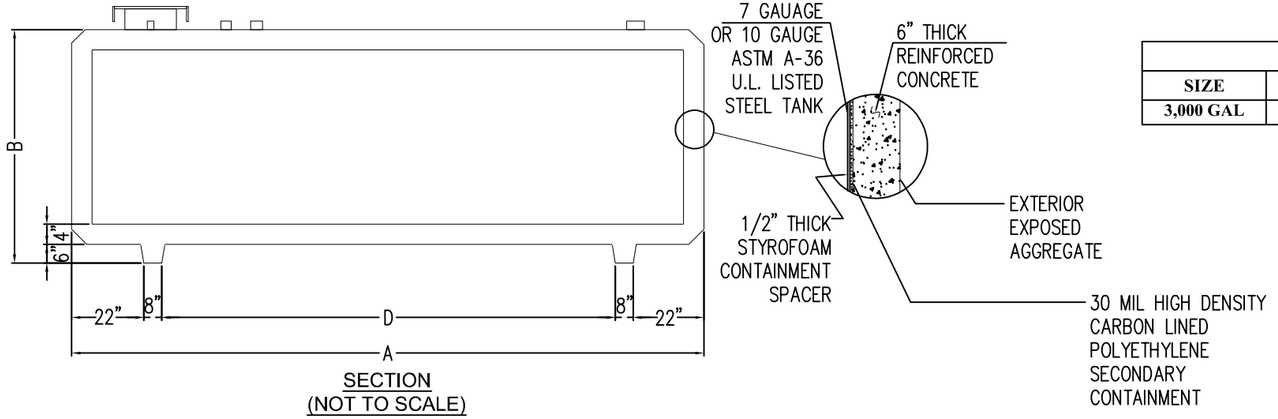
Drawn By: M.D. | Origin:
Checked By: B.R. | DWG. Ref:
Project No. 16D3011 | Scale: NTS
CAD File: M4.01 | Date: 08/31/2018
Title:

M4.01

SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

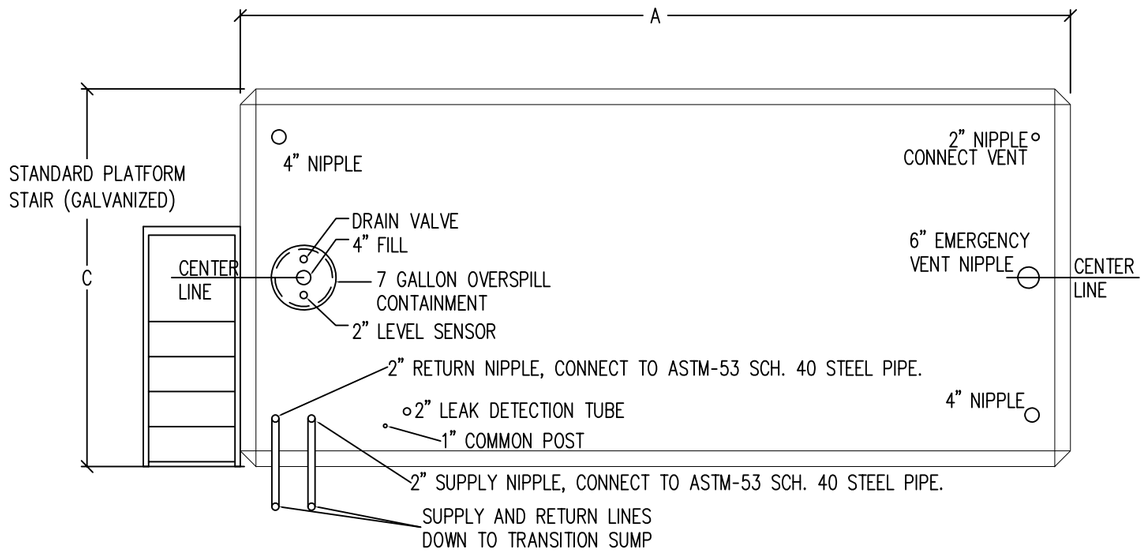
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
365 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax
BL Companies

1/26/2012 2:13 PM, BRICHARDSON, G:\JOBS20\06\2000752\DWG-ARCH\M4.01.DWG, M4.01.
Xrefs: ; BD1603071-11X17H



SECTION
(NOT TO SCALE)

TANK SIZE CHART					
SIZE	WEIGHT	A	B	C	D
3,000 GAL	36,000 LBS.	12'-2"	6'-11"	8'-0"	7'-2"



1 3,000 GALLON CONVAULT TANK

NOT TO SCALE

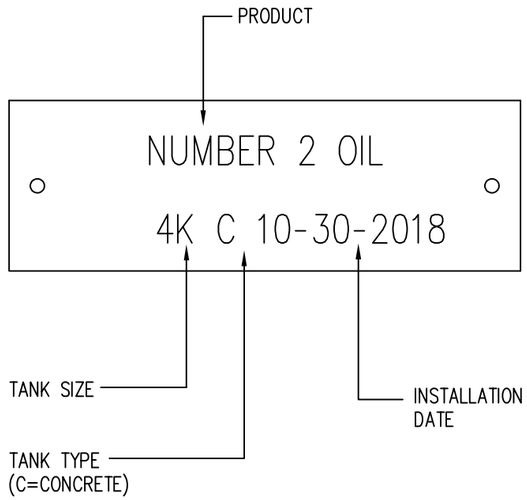
Drawn By: M.D. | Origin:
Checked By: B.R. | DWG. Ref:
Project No. 16D3011 | Scale: NTS
CAD File: M4.01 | Date: 08/31/2018
Title:

M4.02

SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
365 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 639-2615 Fax
BL Companies

1/26/2012 2:13 PM, BRICHARDSON, G:\JOBS20\06\2000752\DWG-ARCH\M4.01.DWG, M4.02.
Xrefs: ; BD1603071-11X17H



I.D. TAG

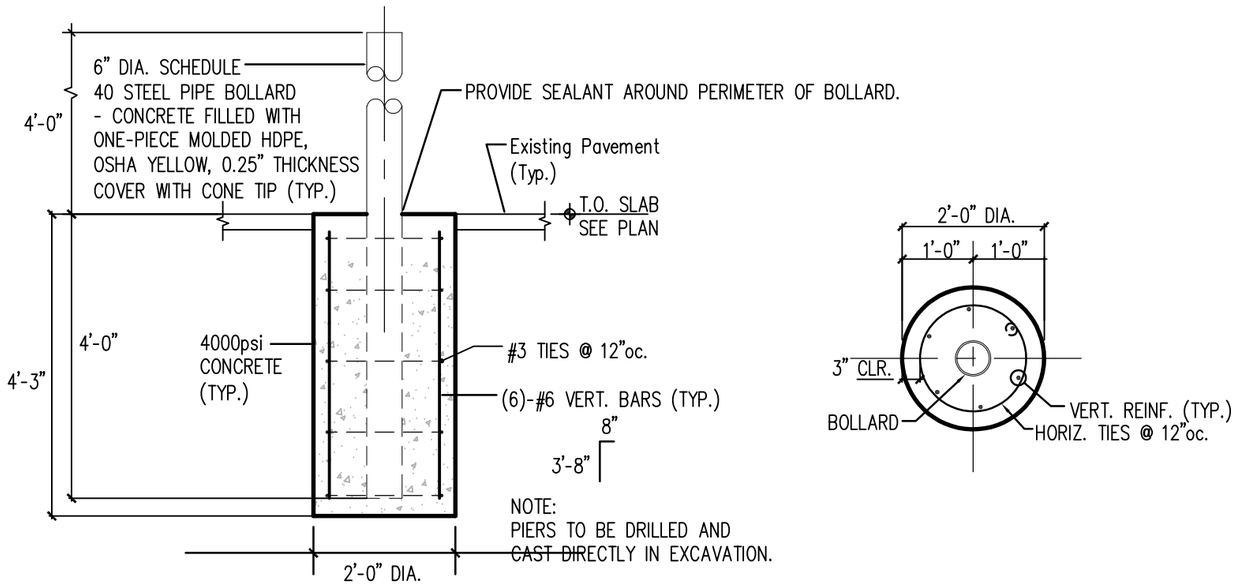
1" STAMPED STEEL

NOTES :

1 . ATTACH I.D. TAG TO ACCESS SIDE OF TANK

1 IDENTIFICATION TAG

NOT TO SCALE



2 BOLLARD DETAIL

NOT TO SCALE

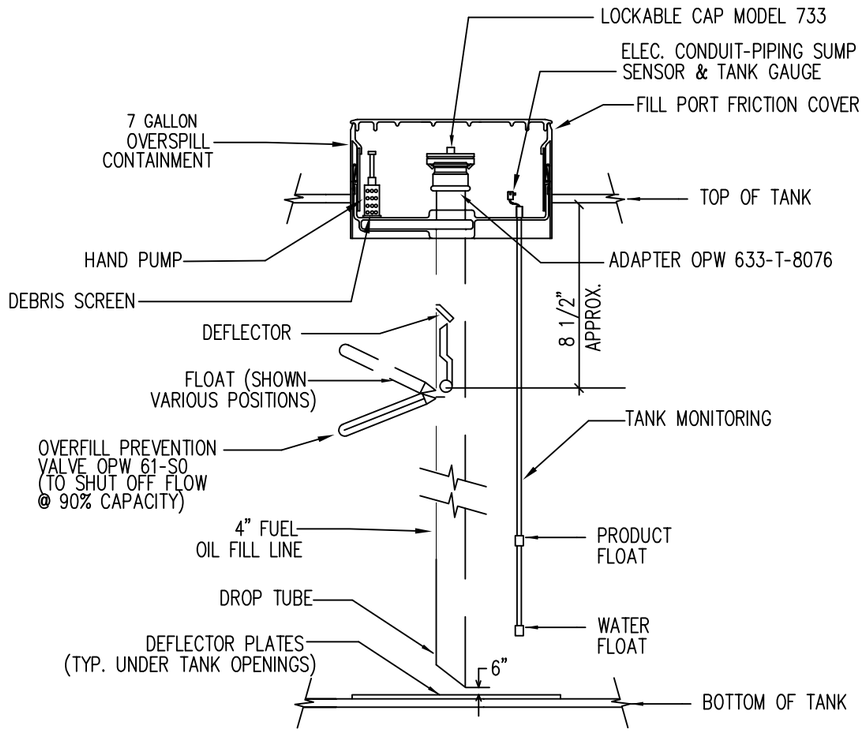
Drawn By: M.D. | Origin:
Checked By: B.R. | DWG. Ref:
Project No. 16D3011 | Scale: NTS
CAD File: M4.01 | Date: 08/31/2018
Title:

M4.03

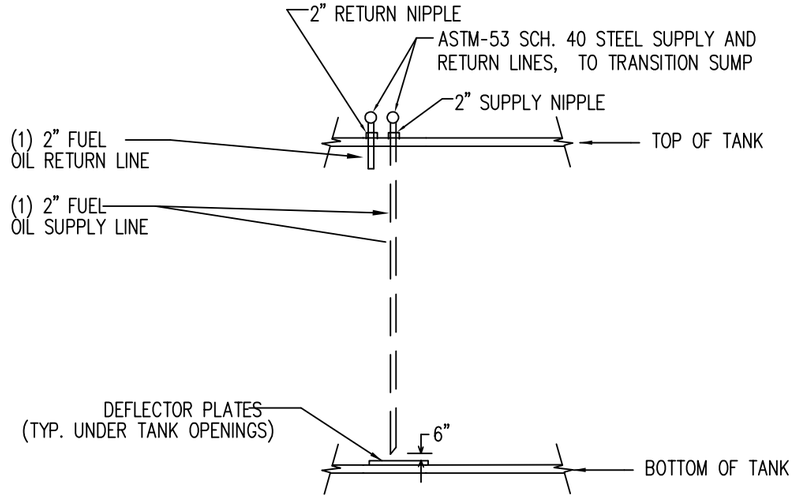
SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
365 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax
BL Companies

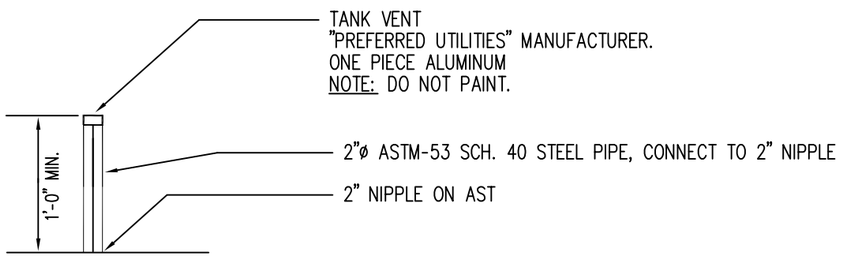
1/26/2012 2:13 PM, BRICHARDSON, G:\JOBS20\06\2000752\DWG-ARCH\M4.01.DWG, M4.03.
Xrefs: ; BD1603071-11X17H



1 AST FILL CONNECTION DETAIL
NOT TO SCALE



2 AST SUPPLY/ RETURN CONNECTION DETAIL
NOT TO SCALE



3 AST VENT DETAIL
NOT TO SCALE

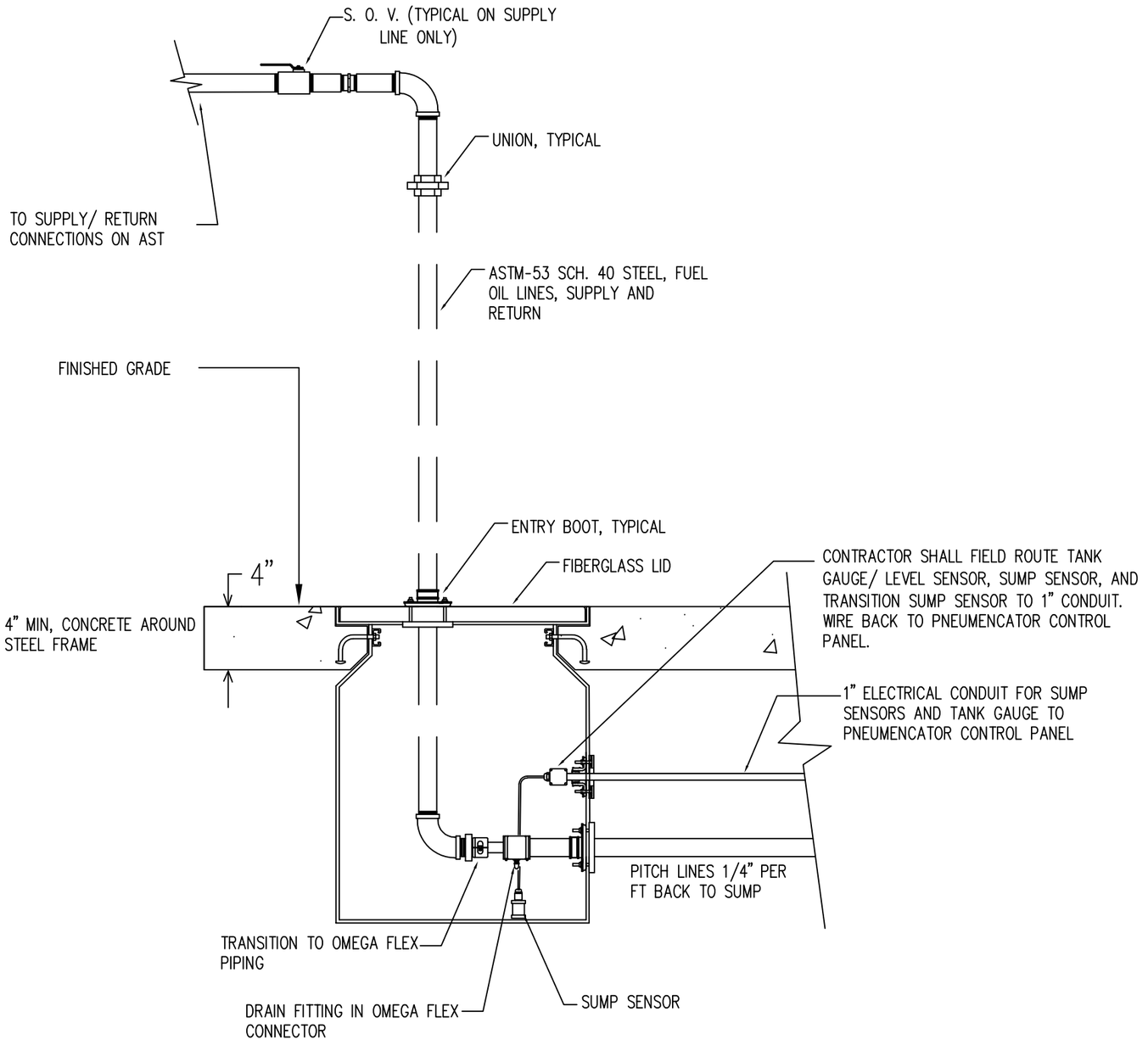
Drawn By: M.D. | Origin:
Checked By: B.R. | DWG. Ref:
Project No. 16D3011 | Scale: NTS
CAD File: M4.01 | Date: 08/31/2018
Title:

M4.04

SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax
BL Companies

1/26/2012 2:13 PM, BRICHARDSON, C:\JOBS20\06\2000752\DWG-ARCH\M4.01.DWG, M4.04.
Xrefs: ; BD16D3071-11X17H



1 TRANSITION SUMP DETAIL

NOT TO SCALE

Drawn By: M.D. | Origin:
Checked By: B.R. | DWG. Ref:
Project No. 16D3011 | Scale: NTS
CAD File: M4.01 | Date: 08/31/2018
Title:

M4.05

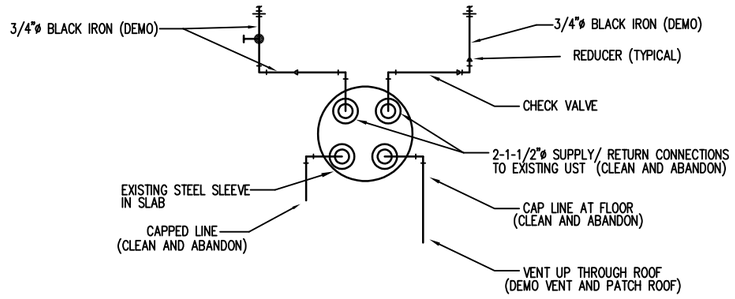
SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

365 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax

BL Companies

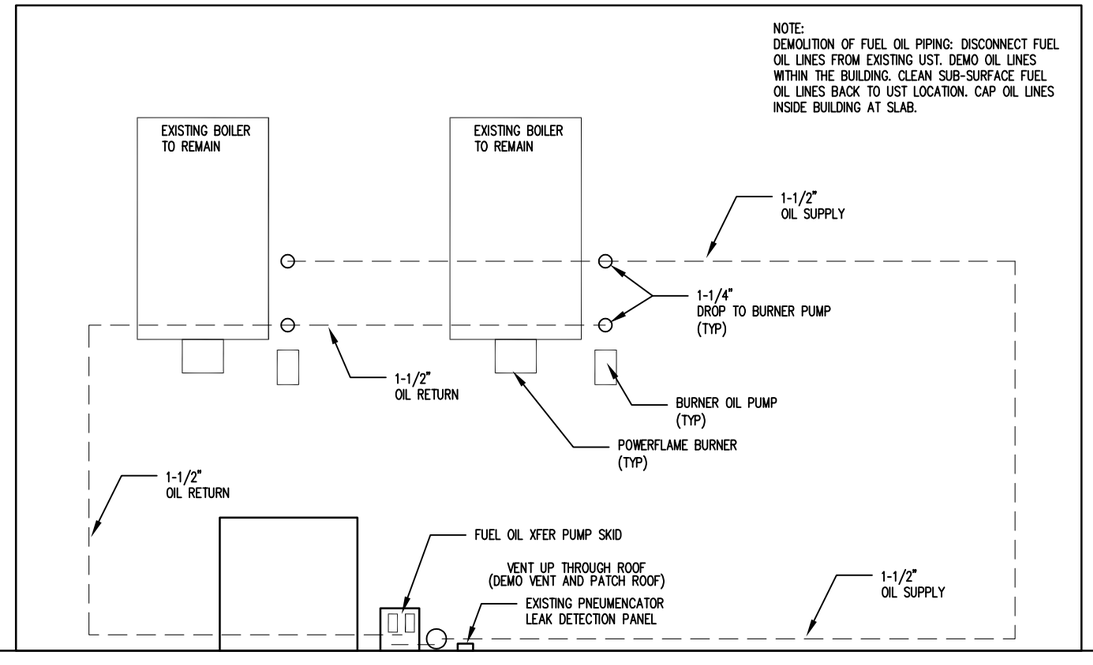
1/26/2012 2:13 PM, BRICHARDSON, G:\JOBS20\06\2000752\DWG-ARCH\M4.01.DWG, M4.05.
Xrefs: ; BD1603071-1X17H



NOTE:
DEMOLITION OF FUEL OIL PIPING: DISCONNECT FUEL OIL LINES FROM EXISTING UST. DEMO OIL LINES WITHIN THE BUILDING. CLEAN SUB-SURFACE FUEL OIL LINES BACK TO UST LOCATION. CAP OIL LINES INSIDE BUILDING AT SLAB.

1 INTERIOR FUEL OIL PIPING – DEMO SCHEMATIC

NOT TO SCALE



2 INTERIOR FUEL OIL PIPING – DEMO SCHEMATIC

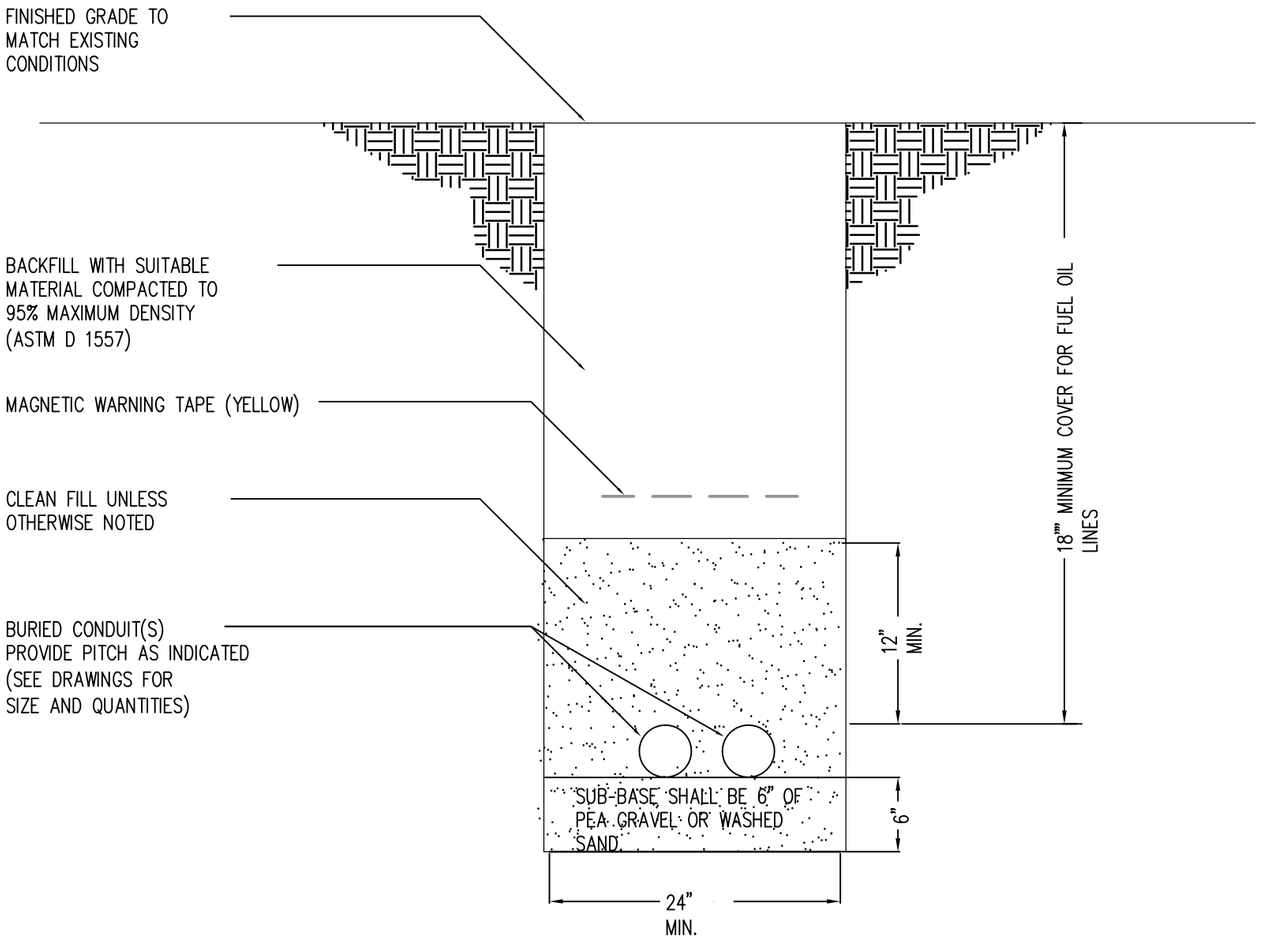
NOT TO SCALE

Drawn By: M.D. | Origin:
Checked By: B.R. | DWG. Ref:
Project No. 16D3011 | Scale: NTS
CAD File: M4.01 | Date: 08/31/2018
Title: M4.06

SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax
BL Companies

1/26/2012 2:13 PM, BRICHARDSON, G:\JOBS20\06\2000752\DWG-ARCH\M4.01.DWG, M4.06.
Xrefs: ; BD160307I-11X17H



NOTES

1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.

2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.

3. PROVIDE 4" SEPARATION OF CONDUITS. COORDINATE ROUTING OF CONDUITS WITH OTHER TRADES TO MAINTAIN REQUIRED SEPARATION WITH GAS, WATER, ETC., SERVICES.

1 TYPICAL TRENCHING DETAIL
NOT TO SCALE

1/26/2012 2:13 PM, BRICHARDSON, C:\JOBS20\06\2000752\DWG-ARCH\M4.01.DWG, M4.07.
Xrefs: ; BD16D3071-11X17H

Drawn By: M.D. | Origin:
Checked By: B.R. | DWG. Ref:
Project No. 16D3011 | Scale: NTS
CAD File: M4.01 | Date: 08/31/2018
Title:

M4.07

SARAH NOBLE INTERMEDIATE SCHOOL
AST INSTALLATION
NEW MILFORD, CT 06776

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax
BL Companies

ITEM OF INFORMATION
DECEMBER 2019
3C - Facilities Sub-Committee
4A - Operations Sub-Committee

Proposed Relocation of Administrative Offices

Background

There continue to be interior and exterior issues affecting occupancy of the Lillis Building. Most recently, on November 12, 2019 at the Facilities Sub-Committee meeting, a memo was distributed that explained the latest repairs needed. Payment was later approved at the full Board of Education meeting on November 19, 2019. These repairs re-started conversation internally about possible alternatives for the location of district offices.

Advantages of Relocation

- Reduces the footprint of the district, allowing for operating cost reductions including utilities, repairs and maintenance (plow/mow) outlined in the *Operating Savings* chart on page 3. It is anticipated that in year one (2020-2021) these savings would be used to fund the move and required setup (see *2020-2021 Relocation Operating Expenses* chart on page 3), but in 2021-2022 and beyond those savings would be a real reduction to the bottom line operating cost for the district.

- Avoids the forthcoming capital projects for the Lillis Building such as the cupola, boiler replacement, foundation repairs and needed roof replacement that are outlined in the *Capital Savings For Projects to be Removed from 5 Year Plan* chart on page 3.

- Allows ADA accommodations in the operation of the district offices without the exceptions currently allowed at the Lillis Building.

- Relocates district office staff to a better maintained building that has a new roof, central air conditioning and that is covered by a generator, since SNIS is currently designated as one of the emergency shelters for the Town of New Milford.

- Provides sufficient room for the Facilities department staff to be moved from the Farmhouse, consolidating district office personnel into one location for the public.

- Provides for district office staff to be at a location where the district currently employs safety monitors.

- Could accommodate a dedicated Board Room that would be wired for recording of all Board of Education Sub-Committee meetings. The specifications and funding to accomplish this have not been identified and would need a separate proposal.

- May lower the Board of Education's liability and property insurance premiums through CIRMA. This amount is yet to be determined.

Time Frame

Summer of 2020.

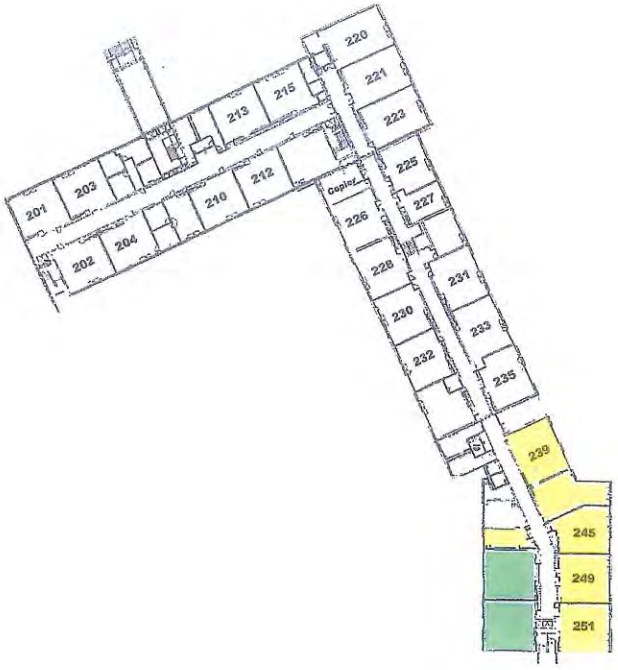
Savings & Costs

OPERATING SAVINGS		
DEPARTMENT	**AMOUNT**	**DESCRIPTION**
FACILITIES - MAINTENANCE	$5,500	CONTRACTED REPAIRS FOR CENTRAL OFFICE
	$500	GROUNDS MAINTENANCE FOR CENTRAL OFFICE
	$1,600	WATER FOR CENTRAL OFFICE
	$900	SEWER FOR CENTRAL OFFICE
	$36,532	PHONE SERVICE FOR CENTRAL OFFICE
	$21,269	ELECTRIC FOR CENTRAL OFFICE
	$26,775	OIL FOR CENTRAL OFFICE
	$1,784	MAINTENANCE SUPPLIES FOR CENTRAL OFFICE
FACILITIES - CUSTODIAL	$12,710	TRASH COLLECTION FOR CENTRAL OFFICE
	$2,434	GENERAL REPAIRS FOR CENTRAL OFFICE
	$1,350	FACILITIES SUPPLIES FOR CENTRAL OFFICE
TECHNOLOGY	$9,000	FIBER SERVICE FOR CENTRAL OFFICE
	$120,355	

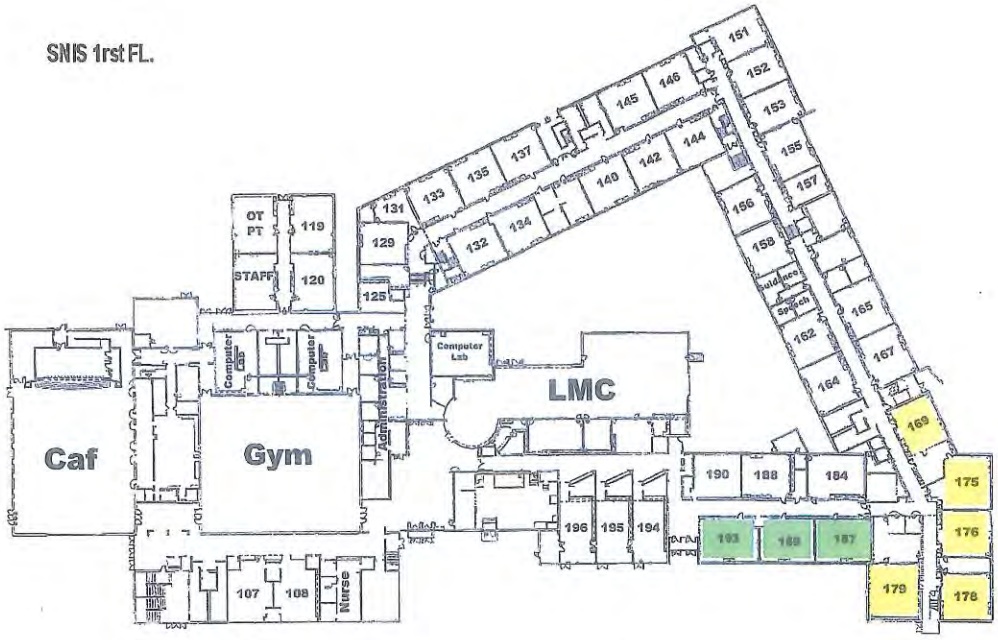
2020-2021 RELOCATION OPERATING EXPENSES		
DEPARTMENT	**AMOUNT**	**DESCRIPTION**
FACILITIES - MAINTENANCE	$22,400	INTERCOMS & CARD SWIPES FOR BUILDING ACCESS
	$44,323	INTERIOR & EXTERIOR DOOR RECONFIGURATION
	$3,000	ROOM REPAIRS
TECHNOLOGY	$36,532	RELOCATED PHONE SERVICE
	$4,500	NEW PHONE HOOKUPS
	$4,600	NETWORK HOOKUPS AND ADDITIONAL ACCESS POINTS
OTHER	$5,000	SIGNAGE, FURNITURE & ANY UNANTICIPATED COSTS
	$120,355	

CAPITAL SAVINGS FOR PROJECTS TO BE REMOVED FROM 5 YEAR PLAN		
DEPARTMENT	**AMOUNT**	**DESCRIPTION**
FACILITIES	$60,000	ROOF CUPOLA - 2020/2021
	$95,000	STEAM BOILER REPLACEMENT - 2020/2021
	$40,000	FOUNDATION REPAIR - 2021/2022
	$900,000	ROOF REPLACEMENT - 2022/2023
	$1,095,000	

SNIS 2nd FL.



SNIS 1rst FL.



New Milford Public Schools
Facilities Department
386 Danbury Road
New Milford, CT 06776
(860) 354-6265
FAX (860) 210-2233

TO: Ms. Alisha DiCorpo, Interim Superintendent
FROM: Kevin Munrett, Facilities Director
DATE: December 3, 2020
RE: Boiler Replacement Assessment at Central Office

The replacement of the boiler and heating system at Central Office has been in constant discussion. As we are all aware, this is an aging building with much differed maintenance. Back in the winter of 2016 we had conducted an ADA accessibility survey of the building, which included a mechanical component. One of the recommended projects was to replace the existing steam boiler within the next 4-5 years. That project was placed on our Capital 5 Year Plan based on the recommendations from the engineering firm.

The Facilities Department has taken numerous steps to elongate the life expectancy of the boiler both in preventative and reactionary maintenance and repairs. Since the fall of 2019, we have not experienced any steam leaks within the building, but that does not preclude them from happening in the future. The piping in the building is nearing 100 years old and the corrosive nature of the water in the steam boiler system has deteriorated the pipes slowly, over time.

We have at minimum 4 possible scenarios confronting us to address the aging steam boiler system. I would be happy to elaborate on any of these scenarios at the upcoming Board of Education meeting:

1. Maintain the status quo: Run, operate and repair the system on a Time and Materials basis. Annually, the boiler is cleaned and serviced. Steam traps are replaced, added and maintained to provide heat to the building as needed. These repairs and services are funded through the operating budget. This is the least expensive option and allows for further discussion and a possible vote by the public into the future of the building.
2. Replace the steam boiler in kind- Steam boilers are not a recommended option as they tend to be highly energy inefficient. This option could require the steam pipes to be replaced throughout the building. If not, future steam leaks in the floors, walls etc. remain highly likely.

3. Replace the steam boiler with a hot water system- Hot water systems are more common and energy efficient than steam. This approach would most likely require much disruption to the building occupants as it is highly likely the piping, radiators and controls would all need to be replaced.
4. Install wall mounted ductless split systems: These systems provide both heat and air conditioning to offices. The existing steam system and boiler could be abandoned altogether. While these wall mounted systems would be relatively easy to install and provide the added benefit of cooling, they would also require increasing the electrical service to the building.

Notes:

- All scenarios above would require some degree or combination of: abatement of asbestos containing materials, engineering services, planning and permitting applications and prevailing wage rates.
- I have begun investigating price points for the different options and can provide an update to the Board in the coming weeks.

It is important to highlight that we recently received and are reviewing the 60% IGA (Investment Grade Audit) as provided by ESG Group to NV5 for the town wide energy audit. In this submission, ESG notes that while they initially considered the replacement of this boiler with an energy efficient system, they have since removed the project from their possible scope. Unfortunately, there is very little energy savings in a new steam boiler system and a full conversion replacement would not be cost effective from their standpoint.

As a result, at this point in time, I am recommending we maintain the status quo as highlighted in option 1 above. We can certainly explore pricing and options to make a more informed decision over what to do next, however the sheer expense of this undertaking cannot be over emphasized. Having a town vote on the future of this property is well founded and should be considered heavily before investing large amounts of project money on either the boiler, roof or other infrastructure.

Respectfully,
Kevin Munrett
Facilities Director