constructconnect insight

New Rochelle City School District - Capital Projects Phase 2

Category:	Elementary, Pre Schools, High Schools, Junior High Schools	Project ID #:	1004344394
Street Address:	Multiple Locations New Rochelle NY 10801	Staff Estimate Value	$2,000,000.00
County:	Westchester	Stage:	Biddate Set
Bid Date:	5/1/2017 , 02:00PM		
Architect:	CSArch Architecture | Construction Management		
Documents Available:	Plans, Specs, Addenda available in Insight	Plans available from Rev Plans	
Last Update:	4/18/2017	Plans,Specs were Added/Updated	

Notes

Scope

Site work and renovation of a mixed-use development in New Rochelle, New York. Completed plans call for the renovation of a educational facility. Contract No. GC-02 - Isaac E. Young Middle School - Site work (including pad for Oil Tanks) Contract No. GC-03 - Jefferson Elementary School - Site work Contract No. GC-04 - Site work - Playgrounds (Webster, Barnard, Jefferson, Trinity, Columbus) Contract No. GC-07 - Isaac Young Middle School - Exterior Envelope Contract No. GC-08 - Jefferson Elementary School - Exterior Envelope Contract No. GC-010 - Isaac Young Middle School - Interior Work Contract No. GC-011 - Jefferson Elementary School - Interior Work Contract No. MC-03 - Oil Tank Replacement (New Rochelle HS and Isaac E. Young MS) Bidding/Contract Document drawings and specifications may be examined free of charge at the following locations: CSArch Architecture |Engineering Construction Management 19 Front Street Newburgh, New York 12550 REV 330 Route 17A Goshen, New York 10924 Each Bidder must deposit a Bid Security in the form of a certified check or bid bond in the amount and form per the conditions provided in Instructions to Bidders. All Bids will remain subject to acceptance for forty-five (45) days after the Bid opening. Owner may, in its sole discretion, release any Bid and return Bid Security prior to that date. A full performance bond, together with labor and material payment bonds in form acceptable to Owner, shall be required of the successful Bidder for the full contract amount. The award of bid pursuant to this notice is subject appropriation of funds for this purpose in accordance with the applicable provisions of the General Municipal Law. All bids must meet the requirements of the General Municipal law of the State of New York and all other applicable statues and have attached a statement of non-collusion. All documents submitted in connection with this bid will become the property of the City School District of New Rochelle. Bids or bid documents will not be returned. The contract will be awarded by the school district to the lowest responsible bidder. In cases where two or more responsible Bidders submit identical bids as to price, the school district may award the contract to either of such bidders. The school district reserves the right to reject all bids and re-advertise for new bids in its discretion and/or to waive any informality in any bid which it deems immaterial in nature. All questions must be submitted by end of business on April 21, 2017. The Architect will transmit to all listed Bidders record of Addenda in response to questions arising at the Conference. This project is publicly funded. The Bidders must comply with New York State Department of Labor Prevailing Wage Rate Schedule and conditions of employment.

Notes

Bid Date: 05/01/2017 02:00PM Two copies of sealed bids in an envelope which clearly states the contract no. and title shall be addressed to Attn: Ann Marie Brady, 515 North Avenue New Rochelle, New York.Bids received after this time will not be accepted and returned to the Bidder unopened. Bids will be opened publicly and read aloud after specified receipt time. All interested parties are invited to attend. Pre-Bid Meeting: 04/17/2017 04:00PM At New Rochelle High School , 265 Clove Rd, New Rochelle, NY 10801.Contractors shall report to the Main Office for all Pre-Bid Conferences. Use this page to verify identification as a Bidder. Attendance of this meeting is requested, as the Owner, Architect and consultants will be present to discuss the Project. Attendees should anticipate a Q & A session followed by a walk-through of the building and site. Pre-Bid Meeting: 04/18/2017 04:00PM At Isaac Young Middle School ,270 Centre Ave, New Rochelle, NY 10805.Contractors shall report to the Main Office for all Pre-Bid Conferences. Use this page to verify identification as a Bidder. Attendance of this meeting is requested, as the Owner, Architect and consultants will be present to discuss the Project. Attendees should anticipate a Q & A session followed by a walk-through of the building and site. Pre-Bid Meeting: 04/20/2017 04:30PM At Jefferson Elementary School ,100 Princetown Rd, Schenectady, NY.Contractors shall report to the Main Office for all Pre-Bid Conferences. Use this page to verify identification as a Bidder. Attendance of this meeting is requested, as the Owner, Architect and consultants will be present to discuss the Project. Attendees should anticipate a Q & A session followed by a walk-through of the building and site. Development include(s): Site Work, Renovation

Details

[Division 2]: Building Demolition, Hazardous Material Abatement, Clearing, Dewatering, Shoring, Earthwork, Grading, Slope Protection & Erosion Control, Paving & Surfacing, Water Systems, Wells, Sewerage & Drainage, Fences & Gates, Landscaping. [Division 3]: Concrete Formwork, Concrete Reinforcement, Structural Concrete, Architectural Concrete, Structural Precast Concrete, Architectural Precast Concrete. [Division 4]: Clay Unit Masonry, Concrete Unit Masonry, Stone, Marble, Granite, Masonry Restoration & Cleaning. [Division 5]: Structural Steel, Metal Joists, Metal Decking, Metal Fabrications, Metal Railings, Ornamental Metals. [Division 6]: Rough Carpentry, Architectural Woodwork. [Division 7]: Waterproofing, Insulation, Fireproofing, Firestopping, Shingles, Roofing Tiles,

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Skylights. [Division 8]: Metal Doors, Wood Doors, Plastic Doors, Entrances & Storefronts, Metal Windows, Wood Windows, Hardware, Glass & Glazing. [Division 9]: Ceiling Suspension Systems, Lath & Plaster, Drywall/Gypsum, Tile, Terrazzo, Acoustical Ceilings, Resilient Flooring, Carpet, Painting. [Division 10]: Compartments & Cubicles, Louvers & Vents, Directories, Exterior Signs, Interior Signs, Lockers, Protective Covers, Toilet & Bath Accessories. [Division 11]: Vehicle Service Equipment, Athletic Equipment. [Division 12]: Manufactured Casework, Furniture, Multiple Seating. [Division 13]: Radiation Protection, Pre-Engineered Structures, Swimming Pools, Ground Storage Tanks. [Division 14]: Elevators, Wheelchair/People Lifts. [Division 15]: Mechanical Insulation, Plumbing Fixtures, Boilers, Cooling Towers, Heat Pumps, Air Handling, Ductwork, Testing & Balancing. [Division 16]: Service/Distribution, Interior Lighting, Exterior Lighting, Alarm & Detection Systems.

Additional Details

Listed On:	4/13/2017	Floor Area:	
Contract Type:		Work Type:	Alteration
Stage Comments 1:		Floors Below Grade:	
Stage Comments 2:		Owner Type:	City
Bid Date:	5/1/2017	Mandatory Pre Bid Conference:	
Invitation #:	188-15-03.02	Commence Date:	6/30/2017
Structures:	1	Completion Date:	
Single Trade Project:		Site Area:	
Floors:		LEED Certification Intent:	
Parent Project ID:		Units:	
Parking Spaces:			

Project Participants

Company Role	Company Name	Contact Name	Address	Phone	Email	Fax
Architect	CSArch Architecture | Construction Management		40 Beaver St. , Albany, NY 12207	(518) 463-8068	information@csarchpc.com	(518) 463-8069
Plans Representative	Rev Plans		330 Route 17A Suite #2, Goshen, NY 10924	(877) 272-0216		(845) 978-4736
Owner	New Rochelle City School District	Ann Marie Brady	515 North Ave. , New Rochelle, NY 10801	(914) 576-4300		(914) 632-4144

Bidders

Company Name	Added Date	Address	Phone	Email	Bidding Role	Bid Rank	Bid Value	Fax Number
Nickerson Corporation	4/15/2017	11 Moffitt Blvd. PO Box 5751, Bay Shore, NY 11706	(631) 666-0200		Prospective Bidder - General Contractor			(631) 968-4760
Marfi Contracting Corp	4/13/2017	826 72nd St , Brooklyn, NY 11228	(718) 748-9041		Prospective Bidder - General Contractor			(718) 680-8035
Foremost Electric Corporation	4/15/2017	37 Old Albany Post Road Ste. 2, Ossining, NY 10562	(914) 941-6100		Prospective Bidder - General Contractor			(914) 941-0476
Milcon Construction Corp	4/13/2017	142 Dale St. , West Babylon, NY 11704	(631) 756-9530		Prospective Bidder - General Contractor			(631) 756-9537
All Bright Electric	4/15/2017	100 Snake Hill Road , West Nyack, NY 10994	(845) 358-1200	hhelman@allbrightelectric.com	Prospective Bidder - General Contractor			(845) 358-1247
Empire Energy Specialists, Inc.	4/15/2017	970 Nepperhan Avenue , Yonkers, NY 10703	(914) 965-3222	andy@empirewindoor.com	Prospective Bidder - General Contractor			(914) 965-0442
Franklin Company Contractors	4/13/2017	22-04 119th St. , College Point, NY 11356	(718) 762-5200		Prospective Bidder - General Contractor			(718) 359-7865
Sea Breeze General Construction, Inc.	4/13/2017	2438 47th Street Second Floor, Astoria, NY 11103	(718) 721-9030	estimating@seabreezegc.com	Prospective Bidder - General Contractor			(718) 721-2145
ATT Sports Inc.	4/15/2017	115 Cross Keys Rd , Berlin, NJ 08009	(856) 767-3088		Prospective Bidder - General Contractor			(856) 767-3422
Gianfia Corp.	4/15/2017	179 Brady Avenue , Hawthorne, NY	(914) 358-4601	rruggiero@gianfiacorp.com	Prospective Bidder - General			(914) 358-4603

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		10532			Contractor			
Surge Inc.	4/15/2017	8269 251st Street , Bellerose, NY 11426	(917) 864-6972	infosurgeinc@yahoo.com	Prospective Bidder - General Contractor			(718) 347-3028
BLH Construction Inc.	4/13/2017	62 Hillbright terrace , Yonkers, NY 10703	(917) 373-0771		Prospective Bidder - General Contractor			(718) 279-8671
Siba Contracting Corp.	4/15/2017	221 Park Avenue , West Harrison, NY 10604	(914) 315-1758		Prospective Bidder - General Contractor			(866) 570-2104
Contech Construction Tech Inc	4/15/2017	28 Lakeview Dr , Yorktown Heights, NY 10598	(914) 455-3100		Prospective Bidder - General Contractor			(914) 962-4500

Planholders

Company Name	Address	Phone	Email	Fax
J.S. McHugh	839 Stewart Avenue , Garden City, NY 11530	(888) 922-1551		(516) 222-2202
GPI - Greenman-Pedersen, Inc - Albany	80 Wolf Road Suite 300, Albany, NY 12205	(518) 898-9559		(518) 453-9458
T.S. Associates, Inc.	1088 Midwood Drive , Rahway, NJ 07065	(732) 381-3804		(732) 381-3340
Naber Electric Corp	5 Schuman Road , Millwood, NY 10546	(914) 941-2244		(914) 923-3022
Pierotti Corp.	35 West Broad Street Suite 211, Stamford, CT 06902	(203) 912-5327		

Contracts

Classification	Conditions	Bonding	Bid Date	Bids To	Bid Type
General Contractor		Perf:100.00%,Pay:100.00%	5/1/2017	Owner	Open Bidding

History

User	Viewed	First Viewed Date	Currently Tracked?	Date Tracked
Adam Sweet	True	4/18/2017	True	4/18/2017

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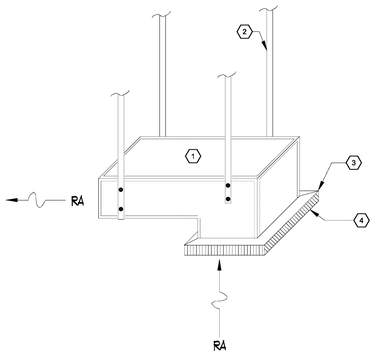
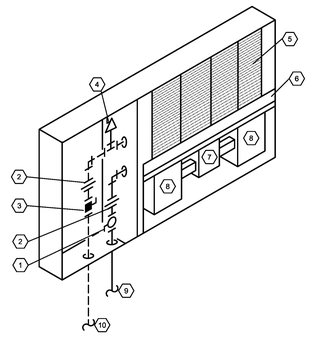


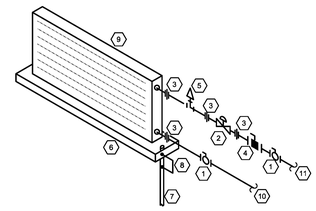
1. 24x14 RETURN DUCT WITH 1" ACOUSTICAL DUCT LINER; 22X12 INTERNAL DIMENSION
2. 1" SHEETMETAL HANGER STRAPS SUPPORT FROM STRUCTURE (TYPICAL)
3. FLANGE AS REQUIRED TO CONNECT TO GRILLE
4. RETURN AIR GRILLE

8 / H602 NON-DUCTED RETURN GRILLE
SCALE: NONE



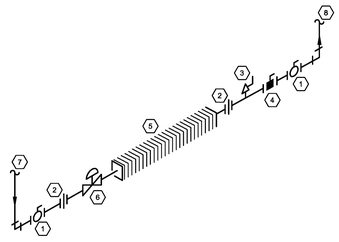
1. BALL VALVE
2. UNION
3. BALANCING VALVE
4. AIR VENT
5. COIL
6. CABINET
7. FAN MOTOR
8. FAN
9. HOT WATER SUPPLY
10. HOT WATER RETURN

5 / H602 HOT WATER CABINET HEATER (UPFEED)
SCALE: NONE



1. BALL VALVE
2. TWO-WAY VALVE
3. UNION
4. BALANCING VALVE
5. AIR VENT
6. CONDENSATE DRAIN PAN
7. CONDENSATE DRAIN PIPE
8. AUXILARY DRAIN
9. COIL
10. DUAL TEMPERATURE WATER SUPPLY
11. DUAL TEMPERATURE WATER RETURN

3 / H602 2-PIPE UNIT VENTILATOR
SCALE: NONE

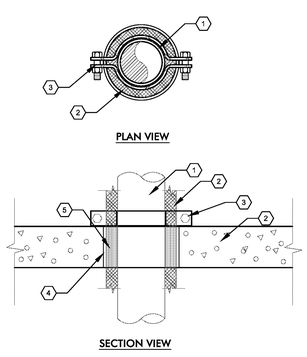


1. BALL VALVE
2. UNION
3. AIR VENT
4. BALANCING VALVE
5. FINNED ELEMENT
6. TWO-WAY VALVE
7. HOT WATER SUPPLY
8. HOT WATER RETURN

7 / H602 FIN RADIATION PIPING
SCALE: NONE

1. UNIT VENTILATOR
2. SUPPLY AIR DUCT CONNECTION
3. RETURN AIR DUCT CONNECTION
4. OUTDOOR AIR DUCT CONNECTION
5. INSTALL UNIT VENTILATOR 14" ABOVE TOP SIDE OF CEILING
6. FILTER ACCESS PANEL
7. CEILING

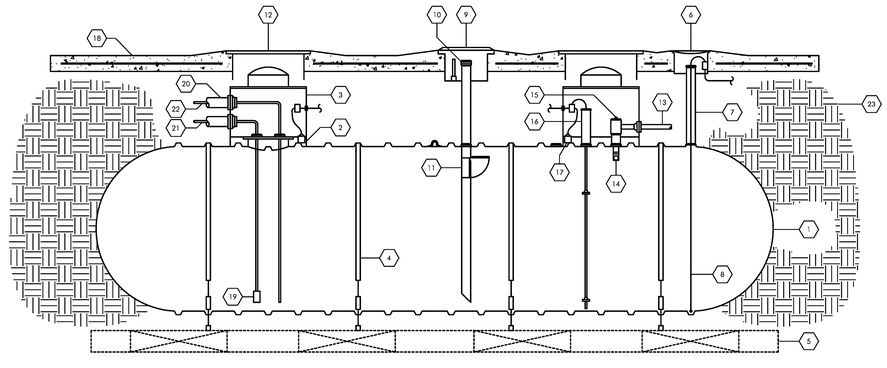
4 / H602 UNIT VENTILATOR INSTALLATION
SCALE: NONE



1. PIPE
2. PIPE INSULATION
3. PIPE RISER CLAMP
4. PIPE SLEEVE WHERE SPECIFIED
5. FIRE STOPPING AS SPECIFIED

2 / H602 TYPICAL HW RISER SUPPORT
SCALE: NONE

6 / H602 NOT USED
SCALE: NONE



1. DOUBLE WALL FIBERGLASS FUEL OIL TANK
2. 42" FIBERGLASS ATTACHED COLLAR (2 TYP); (SUPPLIED PER TANK MANUF.)
3. 42" WATERTIGHT FIBERGLASS ATTACHED COLLAR RISER (2 TYP); (SUPPLIED PER TANK MANUF.)
4. HOLD DOWN STRAPS WITH TURNBUCKLE; (SIZE AND NUMBER PER MANUF. RECOMMENDATION)
5. PRECAST DEADMAN SYSTEM; (SIZE AND NUMBER PER MANUF. RECOMMENDATION)
5. 14" Ø ROUND MONITORING MANHOLE
7. SENSOR RISER AND CAP.
8. INTERSTITIAL LIQUID SENSOR
9. FIVE GALLON SPILL FILL MANHOLE
10. LOCKABLE FILL CAP, FILL ADAPTER AND PRODUCT LABEL MARKER
11. OVERFILL PREVENTION VALVE
12. 30" Ø ROUND MANHOLE (2 TYP)
13. SINGLE WALL VENT PIPE
14. BALL FLOAT
15. EXTRACTOR ASSEMBLY
16. LEVEL PROBE
17. SUMP LIQUID SENSOR (2 TYP)
18. 8" THICK CONCRETE PAD WITH #4 REBARS AT 12" CENTERS EACH WAY
19. FOOT VALVE
20. SECONDARY CONTAINMENT PIPE (TYP)
21. FUEL OIL SUPPLY CARRIER PIPE
22. FUEL OIL RETURN CARRIER PIPE
23. BED AND BACKFILL (PER MANUF. RECOMMENDATION)

1 / H602 UNDERGROUND FUEL OIL STORAGE TANK DETAIL
SCALE: NONE

CSArch
Architecture|Engineering|Construction Management
19 Front St., Newburgh, New York 12550-7601
845.561.3179 FAX 845.561.3215
www.csarchpc.com

Consultant
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ALBANY, NY 12205
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WWW.GPINET.COM

CITY SD OF THE CITY OF NEW ROCHELLE
CAPITAL PROJECTS PHASE 2
NEW ROCHELLE HIGH SCHOOL

Project Title

DATE	DESCRIPTION

Drawn By: JRM
Checked By: DAH
Proj. #: 66-11-00-01-0-001-023
CSArch Proj. #: 188-1503.02
Issued for Bid: 4/10/2017

Sheet Title
HVAC DETAILS

Sheet No.
NRHS
H602

CONSTRUCTION DOCUMENTS

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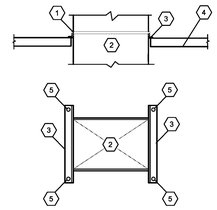
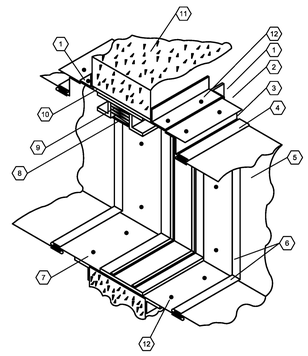


1. DUCT SEAM
2. DUCT
3. 2"**2"**1/8" ANGLE RIVETED TO DUCT
4. NON-RATED FLOOR CONSTRUCTION
5. ANCHOR BOLTS

NOTE:

ALL DUCT RISERS WHICH ARE EXPOSED, SUCH AS THRU ATTICS, FLOORS AND FAN ROOMS, SHALL BE PROVIDED WITH A 4" HIGH CONC. CURB AROUND OPENING FOR DUCTS.

8 / H-603 TYPICAL SUPPORT FOR VERTICAL DUCTS
SCALE: NONE



1. RETAINING ANGLE
2. STEEL SLEEVE
3. COLLAR EXTENSION
4. "S" SLIP BREAKAWAY CONNECTION
5. SHEET METAL DUCT
6. "S" SLIP CONNECTION
7. TYPICAL SLEEVE ATTACHMENT TO RETAINING ANGLE
8. FUSIBLE LINK
9. CURTAIN TYPE BLADES
10. CLEARANCE FOR EXPANSION
11. RATED SEPARATION
12. RETAINING ANGLE FASTENERS. (SLEEVE FASTENERS SPACED 8" APART) (MINIMUM 2 FASTENERS ON ALL 4 SIDES)

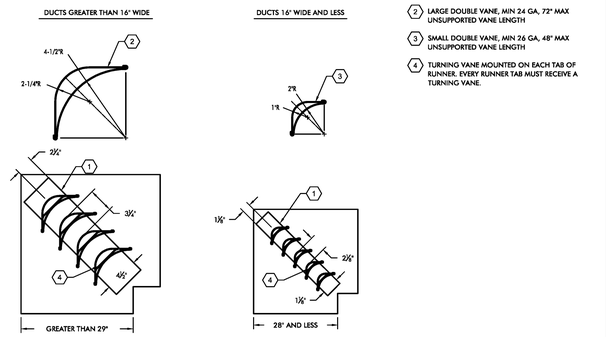
NOTES:

REFER TO SMACNA FIRE DAMPER GUIDE FOR CONSTRUCTION DETAILS

DAMPERS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURES PRINTED INSTRUCTIONS

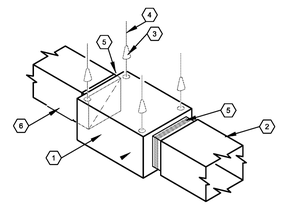
PROVIDE DUCT ACCESS DOOR MINIMUM 16"X16" OR DUCT WIDTH BY 16" AT EACH FIRE DAMPER. LABEL EACH DOOR WITH 1/2" TALL LETTERS "FD". POSITION ACCESS DOOR TO PROVIDE SERVICE ACCESS OF THE FIRE DAMPER TO INCLUDE FUSIBLE LINK REPLACEMENT.

8 / H-603 FIRE DAMPER TYPE "B"
SCALE: NONE



1. 22 GA VANE RUNNER BOLTED, SCREWED OR WELDED TO DUCT
2. LARGE DOUBLE VANE, MIN 24 GA, 72" MAX UNSUPPORTED VANE LENGTH
3. SMALL DOUBLE VANE, MIN 26 GA, 48" MAX UNSUPPORTED VANE LENGTH
4. TURNING VANE MOUNTED ON EACH TAB OF RUNNER. EVERY RUNNER TAB MUST RECEIVE A TURNING VANE.

3 / H-603 VANED ELBOW TURNING VANE
SCALE: NONE

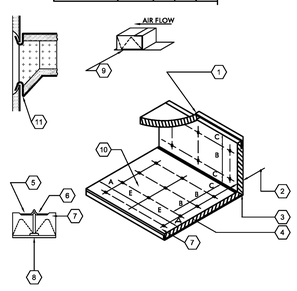


1. INLINE EXHAUST FAN
2. INLET EXHAUST DUCT
3. VIBRATION ISOLATOR (TYP FOR 4)
4. THREADED ROD (ATTACH TO STRUCTURE-TYP FOR 4)
5. FLEXIBLE CONNECTOR (TYPICAL)
6. DISCHARGE EXHAUST DUCTWORK

7 / H-603 INLINE EXHAUST FAN DETAIL
SCALE: NONE

MAXIMUM SPACING FOR FASTENERS.
ACTUAL INTERVALS ARE APPROXIMATE.

VELOCITY	DIMENSIONS			
	A	B	C	E
0-6000 FPM	3"	6"	4"	16"

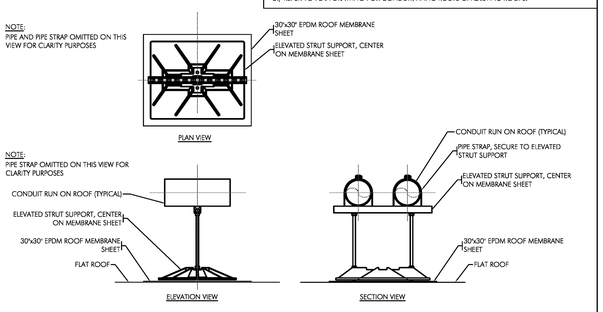


1. LAPPED AND BUTTED CORNER
2. 1" THICK LINER OR AS SPECIFIED
3. ALTERNATE FOLDED CORNER
4. ALL TRANSVERSE EDGES TO BE COATED WITH ADHESIVE
5. INTEGRAL OR PRESSURE ON HEAD
6. WASHER
7. LINER ADHERED TO THE DUCT WITH A 100% MIN. AREA COVERAGE OF ADHESIVE
8. WELDED PIN
9. USE METAL NOSING ON INITIAL LEADING EDGE. NOSING MAY BE FORMED ON DUCT, BE CHANNEL OR ZEE ATTACHED BY SCREWS, RIVETS OR WELDS
10. THE VELOCITY RATED SIDE OF LINER MUST FACE THE AIR FLOW
11. LINED DUCT CONNECTION (NO EXPOSED LINER EDGES)

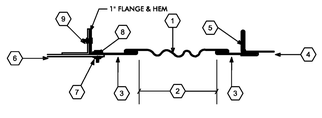
4 / H-603 FLEXIBLE DUCT LINER INSTALLATION DETAIL
SCALE: NONE

NOTES:
1.) INSTALL CONDUIT/PIPE SUPPORTS AT 8'-0" ON CENTER MAXIMUM.
2.) INSTALL CONDUIT/PIPE SUPPORTS WITHIN 30" OF ELBOWS AND TEES IN HORIZONTAL PIPING.
3.) INSTALL ALUMINUM PIPE STRAP AT EACH CONDUIT SUPPORT, PROVIDE 'MIRO INDUSTRIES' STANDARD PIPE STRAPS AND FASTENERS.
4.) CONDUIT/PIPE SUPPORTS SHALL BE MADE OF A POLYCARBONATE BASE, GALVANIZED STEEL STRUT AND STAINLESS STEEL THREADED ROD. MAX LOAD WEIGH OF 640 POUNDS PER SUPPORT. PROVIDE 'MIRO INDUSTRIES' MODEL 24-BASE STRUT-18 OR EQUAL BY MIFAB INC.
5.) REFER TO PLAN DRAWING FOR CONDUIT/PIPING ROUTE ON EXISTING ROOFS.

NOTE:
PIPE AND PIPE STRAP OMITTED ON THIS VIEW FOR CLARITY PURPOSES

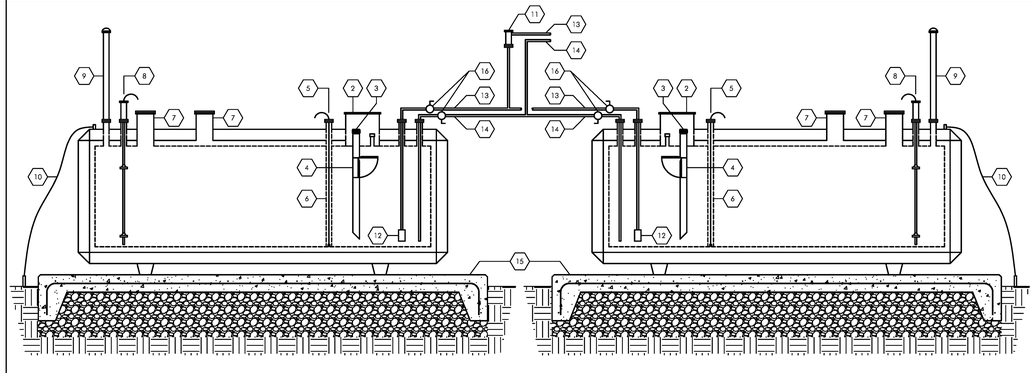


2 / H603 ROOF MOUNTED CONDUIT/PIPING SUPPORT
SCALE: NONE



1. FLEXIBLE MATERIAL AS SPECIFIED
2. 6" NOMINAL LENGTH, 1 1/2" TO 3" INSTALLED LENGTH
3. SHEET METAL SPECIFIED FOR DUCTWORK
4. DUCT
5. 1 1/2" POCKET SLIP
6. FLANGED CONNECTION TO MECHANICAL EQUIPMENT
7. WASHER
8. BOLT ON 4" CENTERS
9. ALTERNATE POSITION OF BOLT

6 / H-603 RECTANGULAR FLEX CONNECTION
SCALE: NONE



1. PROTECTED / SECONDARILY CONTAINED CONCRETE ABOVEGROUND FUEL OIL TANK
2. FIVE GALLON SPILL CONTAINMENT WITH FILL PORT AND DRAIN VALVE
3. LOCKABLE FILL CAP, FILL ADAPTER AND PRODUCT LABEL MARKER
4. OVERFILL PREVENTION VALVE
5. INTERSTITIAL LIQUID SENSOR AND RISER CAP
6. THRU TANK LEAK DETECTOR RISER
7. EMERGENCY VENT
8. LEVEL PROBE
9. VENT RISER WITH VENT CAP (TERMINATE 12' ABOVE GRADE)
10. GROUNDING CABLE AND ROD FOR LIGHTNING PROTECTION PER NFPA 780
11. ANTI SYPHON VALVE; LOCATE AT HIGH POINT OF PIPING
12. FOOT VALVE WITH STRAINER
13. FUEL OIL SUPPLY PIPE
14. FUEL OIL RETURN PIPE
15. REFER TO STRUCTURAL DOCUMENTS FOR CONCRETE PAD REQUIREMENTS.
16. MANUAL SHUT-OFF BALL VALVES

1 / H603 ABOVEGROUND FUEL OIL STORAGE TANK DETAIL
SCALE: NONE

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CITY SD OF THE CITY OF NEW ROCHELLE
CAPITAL PROJECTS PHASE 2
NEW ROCHELLE HIGH SCHOOL

Project Title

DATE	DESCRIPTION

Drawn By:	JRM
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Sheet Title
HVAC DETAILS

Sheet No.
NRHS
H603

CONSTRUCTION DOCUMENTS

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SECTION 230411 - LIQUID FUEL PIPING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Basic HVAC Requirements: Section 230010

B. Cutting and Patching: Section 230015

C. Valves: Section 230100

D. Underground Fuel Storage Tanks and Fuel Systems: Section 230485.

1.02 SUBMITTALS

A. Product Data:
   1. Catalog sheets and specifications indicating manufacturer's name, type, applicable reference standard, schedule, or class for specified pipe and fittings.
   2. Material Schedule: Itemize pipe and fitting materials for each specified application in Pipe and Fittings Schedule in Part 3 of this Section. Where optional materials are specified indicate option selected.

1.03 QUALITY ASSURANCE

A. Qualification of Brazers: Comply with the following:
   1. The persons performing the brazing and their supervisors shall be personally experienced in brazing procedures.

PART 2 PRODUCTS

2.01 STEEL PIPE AND FITTINGS

A. Steel Pipe for Threading: Standard Weight, Schedule 40, black or galvanized; ASTM A 53, or ASTM A 135.

B. Malleable Iron, Steam Pattern Threaded Fittings:
   1. 150 lb Class: ASME B16.3.

C. Unions: Malleable iron, 250 lb class, brass to iron or brass to brass seats.

D. Couplings: Same material and pressure rating as adjoining pipe, conforming to standards for fittings in such pipe. Use taper tapped threaded type in screwed pipe systems operating in excess of 15 psig.

E. Nipples: Same material and strength as adjoining pipe, except nipples having a length of less than one inch between threads shall be extra heavy.

2.02 COPPER TUBING AND FITTINGS

a. Titeflex Inc., Springfield, MA.
b. Flex-ing, Sherman, TX.

2. Features:
a. Construction: Stainless steel innercore covered with braided type 304 stainless steel outer jacket.
b. UL listed for underground fuel storage tank systems.
c. Connections for unleaded gasoline systems shall be fire rated.
d. Permanently crimped stainless steel collars with one threaded end and one threaded swivel end.

B. Underground or Above Ground Application:
1. Acceptable Companies:
a. Titeflex Inc., Springfield, MA.
b. Flex-ing, Sherman, TX.
2. Features:
a. Construction: Convoluted, Type 321 stainless steel inner core, minimum .012 inch wall thickness covered with braided Type 304 stainless steel outer jacket.
b. UL listed for above ground and underground use.
c. Connections for unleaded gasoline systems shall be fire rated.
d. Factory installed male swivel on one end.

2.12 FLEXIBLE CONNECTION ISOLATION JACKET

A. Type: High density polyethylene flexible tube with Buna-N rubber compression seals, air valve stem, and stainless steel clamps; Titeflex Inc.'s Model 111466-1, or Flexing Model Yellow Jacket.

2.13 TEST BOOTS

A. Test boots complete with stainless steel clamps, and air valve stem for tightness testing.
1. Flexible Nitrile Rubber: OPW TBA series, or APT STB or STB-SW series.
2. Flexible Pelethane (Filled with Petroseal Paste): Blue-Line Model Quick Fit series.

2.14 TRANSITION ASSEMBLY

A. The unit shall include all parts required to interface and seal a rigid 1-inch supply pipe and a rigid 3/4-inch return pipe with flexible underground piping of the same size enclosed in a nominal 4-inch dia. flexible containment pipe; OPW FlexWorks PTA-4175, or APT Model TSL, TST, or TSB.

2.15 SUMP WALL SEAL ASSEMBLY – 2 INCH PRIMARY PIPE, 4 INCH CONTAINMENT PIPE

A. Seal assembly complete with stainless steel clamps, and air valve stem for tightness testing.
1. Flexible Nitrile Rubber: OPW FlexWorks Model DEB-4020, or APT Model DEB-200-DA.
2. Flexible Pelethane (Filled with Petroseal Paste): Blue-Line Model Quick Fit series.

I. Threading: Use American Standard Taper Pipe Thread Dies.

3.02 FUEL OIL SYSTEM PIPING

A. Underground Piping:
1. Pitch horizontal piping upward from containment sump 1/8 inch per foot minimum.
2. Install copper tubing in continuous lengths from containment sump to fuel burning apparatus.
   a. Exception: Where black steel piping is used for fuel oil supply, return, and gage piping inside building, run copper tubing in continuous lengths from containment sump to one foot beyond interior surface of exterior building wall.
3. Run fuel oil supply, return, and gage piping in single containment pipe from containment sump to one foot beyond interior surface of exterior building wall.
   a. Exception: Where flexible primary piping is used for fuel oil supply and return, run copper tubing gage line in polyethylene (PE) piping from containment sump to one foot beyond interior surface of exterior building wall.
4. Install flexible primary piping and/or Type K copper tubing in continuous lengths from containment sump to one foot beyond interior surface of exterior building wall.

B. Piping Inside Building:
1. Pitch horizontal piping downward from wall 1/8 inch per foot minimum.
2. Where copper tubing is used, install in continuous lengths to burning apparatus and gage display.

C. Above Ground Piping (Exterior to Building):
1. Pitch horizontal piping from tank 1/8 inch per foot minimum.
2. Run piping from tank to one foot beyond interior surface of exterior building wall.
3. At interior surface of exterior building wall, provide required adapters.
   a. Run fuel oil supply and return piping to burning apparatus.
   b. Run gage piping to gage display.

3.04 PIPE JOINT MAKE-UP

A. Threaded Joint: Make up joint with a pipe thread compound applied in accordance with manufacturer's printed application instructions for the intended service.

B. Brazed Joint: Thoroughly clean tube end and inside of fitting with emery cloth, sand cloth, or wire brush. Apply flux to the pre-cleaned surfaces. Install fitting, heat to brazing temperature, and join the metals with brazing alloy. Remove residue.

C. Fiberglass Reinforced Plastic Pipe Joint: Follow the manufacturer's printed installation instructions.

D. Polyethylene Containment Pipe Joint: Follow manufacturer's printed installation instructions.

b. In Containment Sump, and Above Ground: SW BS pipe, with SE 150 lb MI fittings, and fuel resistant thread sealant. Prime and paint steel pipe installed to the exterior of a building (exposed to the elements).

2. Fuel Oil Product Piping (FOS and FOR):
   a. Underground:
      1) Option No. 1: Type K soft annealed copper tubing with brass or bronze automotive tube type flared fittings, and polyethylene containment pipe.
      2) Option No. 2: Double wall flexible primary piping with polyethylene containment pipe, with fittings, joining methods, and materials as recommended by flexible primary piping and polyethylene containment pipe manufacturers.
      3) Option No. 3: Double wall FRP with fittings, joining methods, and materials as recommended by pipe manufacturer.
   b. Above Ground
      1) Option No. 1: SW BS pipe, with SE 150 lb. MI fittings, and fuel resistant thread sealant. Prime and paint steel pipe installed to the exterior of a building (exposed to the elements).
      2) Option No. 2: Type L hard drawn copper tubing with wrot copper or cast copper alloy fittings, and brazing alloy.
   c. Inside Building (125 psig and Less):
      1) 3/4 Inch and Less: Type K soft annealed copper tubing with automotive tube type flared fittings.
      2) 1 Inch and Up: SW BS pipe, with SE 150 lb MI fittings and fuel resistant thread sealant, or WE SW ST fittings.
   d. Inside Containment Sump:
      1) Option No. 1: Type K soft annealed copper tubing with automotive tube type flared fittings.
      2) Option No. 2: Double wall flexible primary piping with fittings, joining methods, and materials as recommended by flexible primary piping manufacturer.

4. Fill Piping (Underground): SW BS pipe with SE 150 lb MI fittings, and fuel resistant sealant. Coat piping with corrosion protective tape primer, and wrap with corrosion protective tape.
5. Interstitial Leak Monitor and Probe Riser Piping: SW BS pipe with SE 150 lb MI fittings, and fuel resistant sealant. Coat piping with corrosion protective tape primer, and wrap with corrosion protective tape.
6. Fuel Oil Suction Drop Pipe: SW BS pipe, length as required to reach within 4 inches of tank bottom.

END OF SECTION

SECTION 230485 - UNDERGROUND FUEL STORAGE TANKS AND FUEL SYSTEMS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Valves: Section 230100

B. Liquid Fuel Piping: Section 230411.

C. Earthwork: Section 310000.

1.02 REFERENCES

A. NFPA 30 - Flammable and Combustible Liquids Code.

B. NFPA 30A - Automotive and Marine Service Station Code.

C. NFPA 31 - Oil Burning Equipment.

D. NFPA 70 - National Electric Code.

E. API 1615 - Installation of Underground Liquid Storage Systems.

F. Underwriter's Laboratories (UL).

G. ETL Testing Laboratories (ETL).

H. Steel Tank Institute (STI).

I. Factory Mutual Engineering and Research (FM).

J. NYS Department of Environmental Conservation Regulations.

K. US Environmental Protection Agency Regulations.

1.03 DEFINITIONS

A. Fuel System for No. 2 Fuel Oil: Fuel storage tank including corrosion prevention (steel tanks only), leak containment and detection for tank and underground piping, overfill prevention, high level alarm, gage system, and required accessories to connect to fuel burning apparatus.

1.04 SUBMITTALS

A. Submittals Package: Submit the Product Data, and Quality Control Submittals specified below at the same time as a package.

B. Product Data: Catalog sheets, specifications, illustrations, wiring diagrams, CARB Stamp (where applicable), and installation instructions for each item specified for each type of system.

C. Quality Control Submittals:
1. Tank Installation Contractor's Qualifications Data:
a. Name of Contractor, business address and telephone number.
b. Names and addresses of 3 similar projects that the Contractor has worked on during the past 5 years.

2. Pipe Installer's Qualifications Data:
a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
b. Names and addresses of 3 similar projects that each person has worked on during the past 5 years.
c. Copy of certification from pipe manufacturer(s).
3. Company Field Advisor Data: Include:
a. Name, business address and telephone number of Company Field Advisor secured for the required services.
b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
c. Services and each product for which authorization is given by the Company, listed specifically for this project.
4. Factory Test Certificate: For each fuel storage tank.
5. Final test procedure documentation.

D. Contract Closeout Submittals:
1. Operation and Maintenance Data: Two copies, covering the installed products.
2. Warranty: Copy of specified warranty.
3. Tank Manufacturer Installation Check List: Two copies.

1.05 QUALITY ASSURANCE

A. Qualifications:
1. Tank Installation Contractor: The firm performing the Work of this Section shall have been regularly engaged in the installation and maintenance of underground fuel storage tanks for a minimum of 5 years, and shall have completed 3 similar projects.
2. Pipe Installer: Individual with minimum 5 years experience in installing fuel piping, have worked 3 similar projects, and shall be certified by pipe manufacturer of the type of pipe being installed.

B. Listings: Components of the system(s) for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark.

C. Regulatory Requirements:
1. Systems for storing No. 2 fuel oil shall comply with the applicable requirements of UL 58, NFPA 30 and NFPA 31.
3. New York State Department of Environmental Conservation Bulk Storage Regulations 6 NYCRR Parts 612, 613, and 614.
4. New York State Department of Environmental Conservation Petroleum and Volatile Organic Liquid Storage and Transfer 6 NYCRR Part 229.

D. Company Field Advisor:
1. Secure the services of a Company Field Advisor of the manufacturer of the leak and overfill monitoring system for a minimum of 8 hours for the following:
a. Inspect installation and witness initial startup of system.
b. Train facility personnel in the operation and maintenance of the system (minimum of two 2 hour training sessions).

1.06 WARRANTY

A. Fiberglass Tanks: Thirty year manufacturer's warranty for each tank.

1.07 MAINTENANCE

A. Spare Parts:
1. Two keys for each padlock.

B. Special Tools:
1. One stick gage and two calibration charts for each fuel tank.
2. Two tools for each type and size vandal resistant fastener.
3. Two lifting arms for composite type manhole frames and lids.

PART 2 PRODUCTS

2.01 FIBERGLASS FUEL STORAGE TANKS

A. Features:
1. Double wall fiberglass reinforced plastic (FRP) underground storage tanks with a primary (internal) tank and a secondary (external) tank.
2. Interstitial space between the primary and secondary tank walls to allow for the free flow and containment of all leaked product from the primary tank, and the insertion of a monitoring device at bottom of secondary tank.

B. Design Criteria:
1. UL labeled for underground service in accordance with UL-1316 Construction Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks, and conforming to NYC Codes and Regulations.
2. Internal Load: Primary and secondary tanks shall withstand air pressure test as recommended by tank manufacturer to meet NYC Codes and

Regulations. Maximum test pressure as recommended by tank manufacturer.

3. Internal and external tanks shall be factory vacuum tested to assure structural integrity.
4. Surface Loads: H-20 axles loads when properly installed according to current manufacturer's installation instructions.
5. External Hydrostatic Pressure: 7 feet of overburden with the hole fully flooded.
6. Tanks capable of supporting accessory equipment such as drop tubes, submersible pumps and ladders when installed according to tank manufacturer's recommendations and limitations.
7. Vent primary and secondary tanks to atmospheric pressure. The tanks are not designed as pressure vessels.

C. Product Storage:
1. Tanks capable of storing fuel oil at temperatures not to exceed 150 degrees F.

D. Construction:
1. Materials (Primary and Secondary Tanks): Isophthalic polyester resin and glass fiber reinforcement.
2. Manway:
   a. Above liquid level type with 22 inch minimum inside diameter. Provide one manway on tanks.
   b. Bolted cover with UL listed gasket, and welded threaded openings of number and sizes required. Secure nuts or heads of bolts to underside of flange.
   c. Protect threads on bolts during transit and installation.
3. Containment Sump Mounting Collar: Sized to accept 42 inch fiberglass containment sump.
4. Monitor Fittings: 4 inch NPT fitting.
5. Gage/Deflector Plates (Under Manways and Fitting Openings): Steel.

E. Containment Sump: Flat sided type with watertight lids, 42 inch dia., by fiberglass tank manufacturer.
1. Construction: Same material as tank.
2. Bonding Kit: As recommended by fiberglass tank manufacturer.

F. Tank Hold-Down Device:
1. Hold-Down Strap (By Tank Manufacturer): Fiberglass reinforced plastic, preshaped to fit the tank contour. The quantity and location of hold down straps shall be as recommended by tank manufacturer.
2. Eye Bolt: Cadmium plated ASTM A 36 steel, eye on one end, and the other threaded and fitted with a l/4" x 4" square steel plate, structural nut and washer. Rod length as required for proper anchoring into the concrete mat.
3. Wire Rope: Improved plow steel, 6 x 19 strand, galvanized, fiber core, minimum tensile strength 12500 pounds.

4. Wire Rope Clamps: Cadmium plated for corrosion resistance.

G. Tank Identification: Permanent stencils, labels, or plates mounted on tanks, and include the following information:
1. Manufacturer's statement that tank conforms with Bulk Storage Regulation 6 NYCRR Part 614.
2. Standard of Design by which tank was manufactured.
3. List of products and additives which may be permanently stored in tank.
4. Year in which tank was manufactured.
5. Unique identification number.
6. Dimensions, design, working capacity, and tank model number.
7. Name of tank manufacturer.

H. Flanged Manway: One required.
1. Ring Pattern (Tanks with Mounting Collar): One ring pattern for mounting cover plate.

2.02 FLUSH MOUNT WATERTIGHT ACCESS LID ASSEMBLY (AT GRADE)

A. Acceptable Manufacturers:
a. EBW Safe-Lite FRC Slide Action.
b. OPW Conquistador.

B. Cover: Fiber reinforced composite type complying with DOT H-20 load requirements, and identified with API color coding, and fuel identification plate, minimum 36 inch dia.

C. Skirt: 1/4 inch rolled steel angle iron ring welded to 14 gage steel skirt with galvaneel finish, and provisions to secure cover to skirt ring with vandal resistant fasteners.

D. Slide Action Handle: Allows cover removal from a standing position.

2.03 TANK ACCESSORY PACKAGE

A. Tank Fill Assembly:
1. Top Seal Fill Pipe Cap: OPW 634-TT, Franklin 777-201-01.
2. Top Seal Fill Pipe Swivel Adapter: CARB/EVR approved; OPW61SALP-1020-EVR, or Franklin SWF-100-B.
3. Below Grade Spill Containment Assembly: EBW 705-474-01 Flex Catch, or OPW 101BG-2100.
a. Size: 5 gallon.
b. Cover: Waterproof, hinged, locking type.
c. Shell: Durable polyethylene, or fiberglass shell with plastic or cast iron base.
d. Cover Lid Manhole: Plastic or steel skirt with composite manhole cover complying with DOT H-20 load requirements.
e. Drain valve.

4. Fill Limiting Valve: OPW 61SO, EBW 708-49 series, or EMCO Wheaton A1100.
   a. Any hydraulic shock resulting from valve operation shall be minimal to prevent damage to the delivery hose.

B. Nameplate Holders: Corrosion resistant steel plates and straps (4 inch) with vandal resistant fasteners; OPW 107, or EBW 787.

C. Fill Port Nameplate:
1. Construction: Minimum 1/8 inch thick two color laminated plastic engravers stock with the following items engraved in contrasting symbol and background colors conforming to the American Petroleum Institute (API) color coding for the particular fuel type, and consistent with facility fuel supplier's marking.
   1. Manufacturer's statement that tank conforms with Bulk Storage Regulation 6 NYCRR Part 614.
   2. Standard of Design by which tank was manufactured.
   3. List of products and additives which may be permanently stored in tank.
   4. Year in which tank was manufactured.
   5. Unique identification number.
   6. Dimensions, design, working capacity, and tank model number.
   7. Name of tank manufacturer.
   8. Date of tank installation.
   9. API color symbol.
   10. Installers name.

D. Padlock: Bronze, Master Lock 911-DKA.
1. Key all locks alike.

E. Stick Gage: Hardwood, calibrated in 1/8 inch increments.

F. Manhole for Leak Monitor System: H-20 loading, 18 inch dia cast iron body, minimum 18 inch steel skirt and cover secured with minimum of 2 cap screws; OPW 6110-18WT, Morrison Bros. 418TM (18 inch dia.), or EBW MW-1800.

2.04 FUEL OIL TANK INSTALLATION PACKAGE

A. Vents: Aluminum body and cover, open type 30 or 40 mesh brass screen, and rain shield, designed to direct vapors upward; OPW 23; EMCO Wheaton A4103, Morrison Bros. 354, or EBW 800 series.

B. Foot Valve Extractor Assembly:
1. Pipe Cap: Die cast zinc, steel cross bar, (4 inch), OPW 116, Morrison Bros. 578, or EBW 320 series.
2. Foot Valve: Double poppet type with bronze body and poppet, metal to metal seat, 8 or 24 mesh galvanized brass screen, and extension legs; OPW 92, Morrison Bros. 335A, or EBW 50 thru 201 series.

3. Extractor Fitting: Cadmium plated cast iron body with bronze cap and chromed tanned leather gasket; OPW 233, Morrison Bros. 560, or EBW 320 series.

C. Locking Pipe Cap with Adapter (Fuel Oil): Cast iron collar and cap with buna gasket (3 inch); OPW 634TE-7085 cap with OPW 633T-8076 adapter, Morrison Bros. 178 cap with Morrison Bros. 305 adapter, or EBW 779-200-01 cap with 778-302-01 adapter.

D. Riser: Standard weight galvanized steel pipe with 150 lb galvanized malleable iron fittings, and threaded joints with thread sealant.

E. Test Valve: 200 psig WOG, bronze body, screwed end, gate or ball valve; Morrison Bros. 691, or OPW 21BV.

F. Combination Fusible Plug and Shut Off Valve: Bronze body globe valve with threaded ends, spring and replaceable fusible element which melts at 165 degrees F; Preferred Utilities Fusomatic Valve, or Morrison Bros. 939.

G. Oil Filter: Cast iron body with threaded ends, clamped cover and handle, brass bracket strainer with 3/64 inch perforations, and designed for 150 psig maximum working pressure; Preferred Utilities 72.

H. Anti-Siphon Valve: Clear anodized aluminum body with powder-coated aluminum bonnet and cap, stainless steel spring, and nitrile poppet seal; OPW 199ASV.
1. Used when supply line is below liquid level of tank.

2.05 TANK GAGING, LEAK AND OVERFILL MONITOR SYSTEM

A. Acceptable Companies:
1. Veeder Root Inc., Simsbury, CT, (800) 873-3313.
2. OPW, Hotchkins, IL, (708) 465-4200.
3. Pneumercator Co., Inc., Farmingdale, NY, (516) 293-8450.
4. Intelligent Controls Inc., Saco, ME, (800) 225-9787.
5. OMNTEC/Electro Levels Mfg. Co., Ronkonkoma, NY, (516) 467-5787.

B. Type: Continuous operation tank gaging, leak detection and overfill monitor system for double wall storage tanks, double wall product piping, and containment sumps.
1. Systems shall have system test capability, and shall be UL listed and/or FM approved.

C. Alarm Monitor Panels: Locate panel inside nearest appropriate building as shown on plans.
1. The alarm panel shall visually indicate the following:
a. Status of each tank's interstitial space.
b. Status of each containment system.

c. Status of high level sensor set at 95 percent of tank operating capacity (on or off). When sensor is tripped, audio alarm shall be activated and be audible at fill port location.

D. Non Discriminating Leak Sensors:
1. Detects leaks in the following:
a. Interstitial space between tank walls.
b. Piping system which drains into containment sump.
2. Sensors: Non discriminating type not sensitive to condensation forming on the sensor surface, or dripping across the sensor surface.

E. Magnetostrictive Gage Probe:
1. Includes temperature sensors, and both product and water floats capable of sensing product level to nearest 0.001 inch.
2. Upon demand, the system shall indicate water level, product level, and average product temperature.
3. System shall sense and alarm leakage rates greater than 0.2 gal/hr.

F. Instrumentation Control Cable: Connect probe and sensor to alarm monitor panel, as recommended by manufacturer of leak and overfill monitor system.

G. Audible Overfill Alarm Device: Weatherproof, surface mounted basic grille type, 120 V ac as manufactured by tank gaging, leak detection and overfill monitor system manufacturer.

H. Overfill Alarm Device Sign: Constructed of 1/8 inch thick two color laminated plastic engravers stock, with the words “OVERFILL ALARM DEVICE” engraved in white on red background. Size sign and lettering for easy reading from ground level.

I. Printer: As recommended by system manufacturer. If printer is thermal type provide 6 rolls of thermal paper at each location.

2.06 FUEL FOR TESTING

A. Coordinate with the Facility for the delivery of a full tank of each appropriate fuel type for testing to verify that fuel transfer equipment and instrumentation is operating properly.
1. The Facility shall pay for delivery of fuel.

2.07 FASTENERS

A. Vandal Resistant Fasteners: Stainless steel, allen or torx head, both with center post.

PART 3 EXECUTION

3.01 PREPARATION

A. Testing Prior to Installation:
   1. Before placing the tank into its excavation, plug all openings and pressure test tank in accordance with manufacturer's printed test instructions, unless otherwise specified.
   2. Tanks should not be pressurized beyond manufacturer's specified limits. The tank must hold the test pressure for 30 minutes.
   3. Check fitting connections, and seams in outermost tank by applying a soap suds solution.
   4. Reject any leaking tanks.

3.02 INSTALLATION

A. Install the Work of this section in accordance with the item manufacturer's printed installation instructions, unless otherwise shown or specified.

3.03 FUEL STORAGE TANKS

A. Fiberglass Tanks: Touch-up any abraded or marred factory coating as directed by tank manufacturer before placing tank and containment sump into excavation.

B. Lower tank carefully into the excavation using lifting lugs provided on the tank. Set the tank between manufacture provided deadman system on manufacturer recommended bedding.

C. Set tank to pitch one inch down toward the interstitial leak monitor.

D. Do not use chocks or saddles to support or block the tank in position.

E. Install tank anchoring devices to secure tank firmly in place.

F. Do not place fuel into tank until backfilling is completed.

G. Plug and seal all unused openings in containment sump.

3.04 TANK ACCESSORIES

A. Fuel Identification: Attach laminated plastic nameplate to each tank fill pipe to identify the fuel in the tank.

B. Tank Identification: Affix tank identification stencil, label, or plate permanently to tanks and fill ports.

C. Install padlocks on all lockable caps on fill piping.

D. Terminate vent lines with vent caps.

E. Overfill Alarm Device Sign: Mount sign adjacent to alarm device in a location that is easily readable from ground level.

F. Vent Caps:
1. Install vent caps at end of vent piping minimum of 12 feet above finished grade.

3.05 FIELD QUALITY CONTROL

A. Testing: After installation of tank and piping, test the system as follows:
1. Piping: Before painting or backfilling, plug ends and test with air at manufacturer's recommended test pressure, and hold for 5 hours without leaking.
2. Tanks:
a. Before backfilling, pressure test tank in accordance with manufacturer's printed test instructions, unless otherwise specified.
b. Tanks should not be pressurized beyond manufacturer's specified limits.
c. The tank must hold the test pressure for 30 minutes.
d. Check fitting connections, and seams in outermost tank by applying a soap suds solution.
e. After backfilling, make measurement of vertical distance from top of 4 inch gage opening to top of impact/deflector plate.
3. Fuel System for No. 2 Fuel Oil:
a. After reconnecting piping, burning apparatus, and tanks, perform a system acceptance test to demonstrate that the fuel system is operating properly.
b. Make required repairs and final adjustments.

3.06 ALARMS

A. The high level sensor shall be set to trip the system at 90% of full tank capacity. The visual and audible alarm devices shall be seen and heard from the fill port location.

END OF SECTION

SECTION 230486 - ABOVE GROUND FUEL STORAGE TANKS AND FUEL SYSTEMS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Liquid Fuel Piping: Section 230411

1.02 REFERENCES

A. NFPA 30 - Flammable and Combustible Liquids Code.

B. NFPA 31 - Oil Burning Equipment.

C. Underwriter's Laboratories (UL).

D. ETL Testing Laboratories (ETL).

E. Factory Mutual Engineering and Research (FM).

1.04 DEFINITIONS

A. Fuel System for No. 2 Fuel Oil: Fuel storage tank including leak containment and detection for tank, overfill prevention, high level alarm, gage system, and required accessories to connect to fuel burning apparatus.

1.05 SUBMITTALS

A. Submittals Package: Submit the Product Data, and Quality Control Submittals specified below at the same time as a package.

B. Product Data: Catalog sheets, specifications, illustrations, wiring diagrams, and installation instructions for each item specified for each type of system.

C. Quality Control Submittals:
   1. Tank Installation Contractor's Qualifications Data:
      a. Name of Contractor, business address and telephone number.
      b. Names and addresses of 3 similar projects that the Contractor has worked on during the past 5 years.
   2. Pipe Installer's Qualifications Data:
      a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
      b. Names and addresses of 3 similar projects that each person has worked on during the past 5 years.
      c. Copy of certification from pipe manufacturer(s).
   3. Factory Test Certificate: For each tank.
   4. Company Field Advisor Data:

a. Name, business address and telephone number of Company Field Advisor secured for the required services.
b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
c. Services and each product for which authorization is given by the Company, listed specifically for this project.

E. Contract Closeout Submittals:
1. Operation and Maintenance Data: Two copies, covering the installed products.
2. Warranty: Copy of specified warranty.
3. Tank Manufacturer Installation Check List: Two copies.

1.06 QUALITY ASSURANCE

A. Qualifications:
1. Tank Installation Contractor : The firm performing the Work of this Section shall have been regularly engaged in the installation and maintenance of underground fuel storage tanks for a minimum of 5 years, and shall have completed 3 similar projects.
2. Pipe Installer: Individual with minimum 5 years experience in installing underground fuel piping, have worked 3 similar projects, and shall be certified by pipe manufacturer of the type of pipe being installed.

B. Listings: Components of the system(s) for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark.

C. Regulatory Requirements:
1. Systems for storing No. 2 fuel oil shall comply with the applicable requirements of UL 2085, NFPA 30 and NFPA 31.
2. New York State Department of Environmental Conservation Bulk Storage Regulations 6NYCRR Parts 612, 613, and 614.

D. Company Field Advisor:
1. Secure the services of a Company Field Advisor of the manufacturer of the leak and overfill monitoring system for a minimum of two 2 hour training sessions to train facility personnel in the operation and maintenance of the system. Schedule training sessions with the Facility.

1.07 WARRANTY

A. Warranty: Twenty year manufacturer's warranty for each tank.

1.08 MAINTENANCE

A. Spare Parts:
1. Two keys for each padlock.

B. Special Tools:
1. One stick gage and two calibration charts for each fuel tank.
2. Two tools for each type and size vandal resistant fastener.

PART 2 PRODUCTS

2.01 TYPE 1 FUEL STORAGE TANKS

A. Tanks shall be listed as secondary containment in accordance with UL 2085, and shall be marked for fire resistance, and protected from vehicle impact and projectile hazards.

B. Type: Double wall steel interior tank enclosed within a 6 inch thick concrete secondary tank.
1. Concrete Tank:
a. Minimum Compressive Strength of Concrete: 3000 psi.
b. Finish: Clear acrylic coating on exposed aggregate tank surface.
c. Concrete Tank Surface: Free of voids, cracks and patches.

C. Acceptable Tanks:
1. Convault Tank by Convault, Denair, CA, (800) 222-7099.
2. Armor Cast Tank by Containment Management Systems, Schuylerville, NY, (800) 355-8265.

D. Tank Identification: Permanent stencils, labels, or plates mounted on tanks, and include the following information:
1. Manufacturer's statement that tank conforms with Bulk Storage Regulation 6 NYCRR Part 614.
2. Standard of Design by which tank was manufactured.
3. List of products and additives which may be permanently stored in tank.
4. Year in which tank was manufactured.
5. Unique identification number.
6. Dimensions, design, working capacity, and tank model number.
7. Name of tank manufacturer.

2.02 TANK ACCESSORIES

A. Stair/Platform Assembly:
1. Stairs and railings shall meet OSHA Standard 29 CFR Ch. XVII, paragraph 2910.24.
2. Platform Mounting Height: 30 to 36 inches from the top of tank.
3. Platform provides access to the fill port and stick gage port.
4. Assemblies shall be galvanized in accordance ASTM Standard A53-96.

B. Gaging Equipment:
1. Stick Gage Port (Furnished with all tanks): Accessible from ground level or stair/platform assembly.

2. Mechanical Gaging: Field adjustable float type gage with minimum 4-1/2 inch dia. display face, vapor tight construction, and stainless steel float; 818 Clock Gage by Morrison Bros., Dubuque, IA.
3. Electronic Gaging: Magnetostrictive probe which include temperature sensors and both product and water floats capable of sensing product level to nearest 0.001 inch.
    1. Acceptable Manufacturers: Intelligent Controls Inc., Saco, ME, (800) 872-3455 or (207) 283-0156; Veeder Root, Simsbury, CT, (800) 873-3313 or OMNTEC, Ronkonkoma, NY, (516) 467-5787.
    2. Upon demand, the system shall indicate water level, product level, and average product temperature.
    3. System shall sense and alarm leakage rates greater than 0.2 gal/hr.

C. Venting:
1. Vent primary tank with normal and emergency venting (NFPA 30 and UL 2085 test configuration). Vent interstitial space with emergency venting only.
3. Pipe: Standard weight black steel pipe (2 inch size) with 150 lb malleable iron fittings with fuel resistant thread sealant.
    a. Finish: Prime and paint pipe installed to the exterior of a building (exposed to the elements).
    b. Terminate pipe minimum 12 feet above grade.
4. Vent Caps:
    a. Fuel Oil: Open type with 40 mesh screen; OPW 23, EMCO Wheaton AH10, or Morrison Bros. 354.
5. Emergency Vent: Aluminum body with cast iron lid, zinc plated steel shaft, and Buna-N O-ring; OPW 201.
    a. Conforming to NFPA 30, and UL 2085 test configuration.

D. Tank Identification:
1. Type: Two layer etched plastic or metal permanently attached to the tank.
    a. Decals or stenciling is not acceptable.
2. Signs shall include the following information:
    a. Manufacturer's statement that tank conforms with Bulk Storage Regulation 6 NYCRR Part 614.
    b. Standards of Design by which tank was manufactured.
    c. List of products and additives which may be permanently stored in tank.
    d. Year in which tank was manufactured.
    e. Unique identification number.
    f. Dimensions, working capacity, and tank model number.
    g. Name of tank manufacturer.
    h. Date of tank installation.

E. Fill Limiting Valve:
1. Tanks 4000 gallons and less: Clay & Bailey F-30, Morrison Bros. 9095A (includes adapter), or OPW 61FSTOP.
    a. Drop tube as required.

b. Adapter: OPW 633-T, EMCO Wheaton A30; 2 inch size.
c. Cap: OPW 634-TT, EMCO Wheaton A97, or Morrison Bros. 305C.

2. Tanks 6000 gallons and up: Clay & Bailey F-35 or Morrison Bros 9095A. (includes adapter), EBW 709 Warden, or OPW 61FSTOP.
a. Drop tube as required.
b. Adapter: OPW 633-T, EMCO Wheaton A30; 3 inch size.
c. Cap: OPW 634-TT, EMCO Wheaton A97, EBW 774, or Morrison Bros. 305C.

F. Hose Drip Containment Chamber At Fill Port:
1. Type: Minimum 5 gallon capacity with drain valve and water tight lid; Pomeco/OPW 221AST, or Morrison Bros. 518.
2. Lock: Master Lock 911-DKA.

G. Stickport:
1. Provide a port for manually gaging the tank including a lockable vapor tight twist off cap; Morrison Bros. 178X, or OPW 83-0066.
2. All tanks shall be provided with a stick gage.

2.03 TANK GAGING, LEAK AND OVERFILL MONITOR SYSTEM

A. Acceptable Companies:
1. OMNTEC/Electro Levels Mfg. Co., Ronkonkoma, NY, (516) 467-5787.
2. Veeder Root Inc., Simsbury, CT, (800) 873-3313.
3. OPW, Hotchkins, IL, (708) 465-4200.
4. Pneumercator Co., Inc., Farmingdale, NY, (516) 293-8450.
5. Intelligent Controls Inc., Saco, ME, (800) 872-3455 or (207) 283-0156.

B. Type: Continuous operation tank gaging, leak detection and overfill monitor system for double wall storage tanks, double wall product piping, and containment sumps.
1. Systems shall have system test capability, and shall be UL listed and/or FM approved.

C. Alarm Monitor Panels: Locate panel inside nearest appropriate building as shown on plans.
1. The alarm panel shall visually indicate the following:
a. Status of each tank's interstitial space (dry, water, or hydrocarbon condition).
b. Status of each containment system (dry, water, or hydrocarbon condition).
c. Status of high level sensor set at 95 percent of tank operating capacity (on or off). When sensor is tripped, audio alarm shall be activated and be audible at fill port location.

D. Leak Sensors:
1. Detects leaks in the following:

a. Interstitial space between tank walls.
b. Piping system which drains into containment sump.

2. Sensors: Non distinguishing type not sensitive to condensation forming on the sensor surface, or dripping across the sensor surface.

E. Instrumentation Control Cable: Connect probe and sensor to alarm monitor panel, as recommended by manufacturer of leak and overfill monitor system.

F. Audible Overfill Alarm Device: Weatherproof, surface mounted basic grille type, 120 V ac as manufactured by tank gaging, leak detection and overfill monitor system manufacturer.

G. Overfill Alarm Device Sign: Constructed of 1/8 inch thick two color laminated plastic engravers stock, with the words "OVERFILL ALARM DEVICE" engraved in white on red background. Size sign and lettering for easy reading from ground level.

2.04 TYPE C INSTALLATION PACKAGE

A. Manual Shutoff Valve: Steel ball valve, 1 1/2 inch size, Jomar T-2000, or Morrison Bros. 619BSS (stainless steel).

B. Explosion Proof Solenoid Valve: Brass, 1-1/2 inch size; ASCO 8210, or Morrison Bros. 710.

C. Pressure Relief Valve: Steel, 1/4 inch size, Morrison Bros. 77.

D. Check Valve: Bronze body and disc; Crane 37, Nibco T413, or Morrison Bros. 246.

E. Foot Valve: Double poppet with strainer, OPW 86, or Morrison Bros. 335A.

F. Anti-Siphon Valve: Clear anodized aluminum body with powder-coated aluminum bonnet and cap, stainless steel spring, and nitrile poppet seal; OPW 199ASV.

1. Used when supply line is below liquid level of tank.

2.15 FUEL FOR TESTING

A. Coordinate with the Facility for the delivery of a full tank of each appropriate fuel type for testing to verify that fuel transfer equipment and instrumentation is operating properly.

1. The Facility shall pay for delivery of fuel.

2.17 FASTENERS

A. Vandal Resistant Fasteners: Stainless steel, allen or torx head, both with center post.

PART 3 EXECUTION

3.01 PREPARATION

A. Testing Prior to Installation:
   1. Before placing the tank in place, plug all openings and pressure test tank in accordance with manufacturer's printed test instructions, unless otherwise specified.
   2. Tanks should not be pressurized beyond manufacturer's specified limits.
   3. The tank must hold the test pressure for 30 minutes.
   4. Check fitting connections, and seams in tank by applying a soap suds solution.
   5. Reject any leaking tanks.

3.02 INSTALLATION

A. Install the Work of this section in accordance with the item manufacturer's printed installation instructions, unless otherwise shown or specified.

3.03 TANK ACCESSORIES

A. Fuel Identification: Attach laminated plastic nameplate to each tank fill pipe to identify the fuel in the tank.

B. Tank Identification: Affix tank identification label, or plate permanently to tanks and fill ports.

C. Install padlocks on all lockable caps on fill and vapor recovery piping.

D. Terminate vent lines with vent caps.

E. Overfill Alarm Device Sign: Mount sign adjacent to alarm horn in a location easily readable from ground level.

3.04 FIELD QUALITY CONTROL

A. Testing: After installation of tank and piping, test the system as follows:
   1. Piping: Before painting or backfilling, plug ends and test with air at 5 psi and hold for two hours without leaking.
   2. Tanks: Pressure test tank in accordance with manufacturer's printed test instructions, unless otherwise specified.
      a. Tanks should not be pressurized beyond manufacturer's specified limits.
      b. The tank must hold the test pressure for 30 minutes.
      c. Check fitting connections, and seams in outermost tank by applying a soap suds solution.

3. Product Level and Overfill Protection:
   a. The Facility shall arrange for delivery of product as needed to test high level alarm, and fill limiting valve.
   b. During the filling process monitor and record the low level alarm, quantity of product as compared to reading on the Control Panel, the overfill alarm, and will test the overfill valve.
   c. Make required repairs and final adjustments.
4. Fuel System for No. 2 Fuel Oil:
   a. After reconnecting all piping, burning apparatus and tanks perform a system acceptance test to demonstrate that the fuel system is operating properly.
   b. Make required repairs and final adjustments.

END OF SECTION