



Office of General Services

DESIGN & CONSTRUCTION GROUP
THE GOVERNOR NELSON A. ROCKEFELLER
EMPIRE STATE PLAZA
ALBANY, NY 12242

ADDENDUM NO. 3 TO PROJECT NO. 47675

CONSTRUCTION WORK FUEL TANK MODIFICATION & ENVIRONMENTAL REMEDIATION – CENTRAL REGION SERVICE CONTRACT GNARESP CORNING TOWER ALBANY, NY 12242

June 3, 2025

<p>NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual. Acknowledge receipt of this Addendum in the space provided on the Bid Form.</p>
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BIDDING REQUIREMENTS

1. SECTION 004143 BID FORM: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 004143 – 1 thru 004143 – 22) noted “REVISED 05/28/2025”.

SPECIFICATIONS

2. SECTION 231323 ABOVE GROUND FUEL STORAGE TANKS AND FUEL SYSTEMS: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 231323 – 1 thru 231323 – 26) noted “Printed 06/03/2025”.
3. SECTION 310000 EARTHWORK: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 310000 – 1 thru 310000 – 18) noted “Printed 05/28/2025”.

END OF ADDENDUM

Brady Sherlock, PE
Director, Division of Design
Design & Construction

DETACH AND USE THIS FORM

BID FORM FOR: 47675-C

**CONSTRUCTION WORK
FUEL TANK MODIFICATION AND
ENVIRONMENTAL REMEDIATION
CENTRAL REGION SERVICE CONTRACT
DESIGN AND CONSTRUCTION
GNARESP CORNING TOWER
ALBANY, NY**

State of New York
Office of General Services
Design and Construction Group
Division of Contract Management
35th Floor, Corning Tower
The Gov. Nelson A. Rockefeller
Empire State Plaza
Albany, NY 12242

THIS IS A 22 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.

THE STATE RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY (AS DESCRIBED IN THE INSTRUCTIONS TO BIDDERS) IN THE AMOUNT STATED IN THE ADVERTISEMENT FOR BIDS.

The Undersigned agrees to complete the Work within the time stated in Section 011000 of the Specifications.

The Undersigned acknowledges his/her understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation as set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goals for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation as set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the State and he/she does not submit executed copies of the Agreement WITHIN TEN (10) DAYS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;

(3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(4) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his/her official duties."

Federal Employer I.D. No. _____

Updated 12/16/2024

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004143-1

Project No. 47675-C

(5) The Bidder understands and agrees to comply with the requirements of the Procurement Lobbying Law, State Finance Law § 139-j and § 139-k, and with OGS's procedures relating to permissible contacts during a procurement as required by State Finance Law § 139-j(3) and § 139-j(6)(b). Such requirements and procedures are posted at <https://ogs.ny.gov/acpl>.

(6) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link:

<https://ogs.ny.gov/iran-divestment-act-2012>

(7) Will New York State Businesses be used in the performance of this contract (refer to Document 007324)?

Yes ☐ No ☐

(8) The New York State Human Rights Law (Human Rights Law), Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and,
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution, Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

(9) In accordance with State Finance Law § 139-l, by submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

If the bidder cannot make the foregoing certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification.

(10) In accordance with Section 165(5) of the State Finance Law, the bidder, by submission of this bid, certifies that it or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

1. have business operations in Northern Ireland Yes ☐ No ☐ and if yes:
2. shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland, and shall permit independent monitoring of compliance with such principles.
Yes ☐ No ☐

(11) Certification Under Executive Order No. 16 - Prohibiting State Agencies and Authorities from Contracting with Businesses Conducting Business in Russia

Executive Order No. 16 provides that “all Affected State Entities are directed to refrain from entering into any new contract or renewing any existing contract with an entity conducting business operations in Russia.” The complete text of Executive Order No. 16 can be found here: <https://www.governor.ny.gov/executive-order/no-16-prohibiting-state-agencies-and-authorities-contracting-businesses-conducting>

The Executive Order remains in effect while sanctions imposed by the federal government are in effect. Accordingly, vendors who may be excluded from award because of current business operations in Russia are nevertheless encouraged to respond to solicitations to preserve their contracting opportunities in case the sanctions are lifted during a solicitation or even after award in the case of some solicitations.

As defined in Executive Order No. 16, an “entity conducting business operations in Russia” means an institution or company, wherever located, conducting any commercial activity in Russia or transacting business with the Russian Government or which the commercial entities headquartered in Russia or with their principal place of business in Russia in the form of contracting, sales, purchasing, investment, or any business partnership.

Is Vendor an entity conducting business operations in Russia, as defined above? Please answer by checking one of the following boxes:

- ☐ 1. No, Vendor does not conduct business operations in Russia within the meaning of Executive Order No. 16.
- ☐ 2.a. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but has taken steps to wind down business operations in Russia or is in the process of winding down business operations in Russia. (Please provide a detailed description of the wind down process and a schedule for completion.)
- ☐ 2.b. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but only to the extent necessary to provide vital health and safety services within Russia or to comply with federal law, regulations, executive orders, or directives. (Please provide a detailed description of the services being provided or the relevant laws, regulations, etc.)
- ☐ 3. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16.

(12) In accordance with New York State Labor Law Section 220-i, the bidder certifies that it is registered with the New York State Department of Labor (NYSDOL) for public work projects. By submission of this bid and providing the registration number in the space indicated on this bid form, the bidder affirms that its registration is current and valid as of the date of bid submission.

Federal Employer I.D. No. _____

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004143-3

Project No. 47675-C

<https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp>

TOTAL BID

Unit Price Schedule Total (from appended Unit Price Schedule) \$_____.

FEDERAL EMPLOYER I.D. NO. _____

NYS DOL CONTRACTOR REGISTRATION NO. (per NYS LABOR LAW 220-i) _____

Is your firm a NYS-Certified Minority and Women-Owned Business Enterprise (MWBE)? Yes ☐ No ☐

MWBE CERTIFICATION FILE NO. _____

SIGN BID HERE _____

Authorized Signature

PRINT NAME OF SIGNER _____

TITLE OF SIGNER _____

OFFICIAL COMPANY NAME _____

MAILING ADDRESS

Street

City	State	Zip
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TELEPHONE NO. _____ FAX NO. _____

Area Code

Area Code

E-MAIL ADDRESS

* * * * *

UNIT PRICE SCHEDULE FOLLOWS

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
001	026500.01	Disposal of Petroleum Contaminated Soil - Non Hazardous	1,250	tn		
002	026500.02	Disposal of Petroleum Contaminated Soil Hazardous Waste	100	tn		
003	026500.03	Removal and Transporting of Existing Fuel up to 500 Gallons	15	sites		
004	026500.04	Removal and Transporting of Existing Fuel over 500 Gallons	25,000	gal		
005	026500.05	Removal and Transporting of Existing Fuel Off Site up to 500 Gallons	5	sites		
006	026500.06	Removal and Transporting of Existing Fuel Off Site Over 500 Gallons	15,000	gal		
007	026500.07	Fuel Filtration mobilization and Treatment of Existing Fuel up to 1,000 gallons	10	sites		
008	026500.08	Fuel Filtration and Treatment of Existing Fuel over 1,000 Gallons	25,000	gal		
009	026500.09	Remove and Dispose of Contaminated Fuel up to 500 Gallons	15	sites		
010	026500.10	Remove and Dispose of Contaminated Fuel Over 500 Gallons	12,500	gal		

Federal Employer I.D. No. _____

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004143-5

Project No. 47675-C

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
011	026500.11	Remove and Dispose of Contaminated Groundwater up to 500 Gallons	5	sites		
012	026500.12	Remove and Dispose of Contaminated Groundwater over 500 Gallons	10,000	gal		
013	026500.13	Provide Private Utility Mark Out	20	sites		
014	026500.14	Remove and Dispose of 0-500 Gal Underground Tanks	5	tnk		
015	026500.15	Remove and Dispose of 501- 2,000 Gal Underground Tanks	3	tnk		
016	026500.16	Remove and Dispose of 2,001- 6,000 Gal Underground Tanks	10	tnk		
017	026500.17	Remove and Dispose of 6,001- 12,000 Gal Underground Tanks	3	tnk		
018	026500.18	Remove and Dispose of 12,001- 24,000 Gal Underground Tanks	3	tnk		
019	026500.19	Remove and Dispose of 24,001- 30,000 Gal Underground Tanks	2	tnk		
020	026500.20	Abandon in place 1,000-8,000 Gallon Underground Tanks	5	tnk		
021	026500.21	Abandon in place 8,001 -20,000Gallon Underground Tanks	5	tnk		
022	026500.22	Abandon in place 20,001-40,000 Gallon Underground Tanks	5	tnk		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
023	026500.23	Remove and Dispose of 0 - 500 Gallon Double Wall Steel Aboveground Tanks	5	tnk		
024	026500.24	Remove and Dispose of 501 - 1000 Gallon Double Wall Steel Aboveground Tanks	3	tnk		
025	026500.25	Remove and Dispose of 1,001 - 3,000 Gallon Double Wall Steel Aboveground Tanks	5	tnk		
026	026500.26	Remove and Dispose of 3,001 - 6,000 Gallon Double Wall Steel Aboveground Tanks	5	tnk		
027	026500.27	Remove and Dispose of 6,001 - 10,000 Gallon Double Wall Steel Aboveground Tanks	3	tnk		
028	026500.28	Remove and Dispose of 0-500 Gallon Concrete Encased Aboveground Tanks	3	tnk		
029	026500.29	Remove and Dispose of 501 - 1,000 Gallon Concrete Encased Aboveground Tanks	3	tnk		
030	026500.30	Remove and Dispose of 1,001 - 3,000 Gallon Concrete Encased Aboveground Tanks	10	tnk		
031	026500.31	Remove and Dispose of 3,001- 6,000 Gallon Concrete Encased Aboveground Tanks	5	tnk		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
032	026500.32	Remove and Dispose of 6,001- 10,000 Gallon Concrete Encased Aboveground Tanks	2	tnk		
033	026500.33	Remove and Dispose of Oil/Water Separator (0-1,000 gallons)	2	sep		
034	026500.34	Remove and Dispose of Oil/Water Separator (1,001- 2,000 gallons)	2	sep		
035	026500.35	Remove and Dispose of Oil/Water Separator (2,001- 3,000 gallons)	2	sep		
036	026500.36	Tank Fill Material	500	cy		
037	026500.37	Frac Tank, Mobilization	5	tnk		
038	026500.38	Frac Tank, Rental	100	day		
039	026500.39	Drum Disposal	25	ea		
040	026500.40	Moving & Stockpiling Contaminated Soil (Non Hazardous Regulated Soil Waste) to Another Location at Work Site	500	cy		
041	026500.41	Dumpster (10 cu yd)	10	ea		
042	033001.01	Cast In Place Concrete (steel reinforcement)	750	cy		
043	033001.02	Cast In Place Concrete (welded wire mesh reinforcement)	50	cy		
044	033001.03	Cast In Place Concrete Cold Weather Protection	100	sf		
045	079200.01	Expansion Joint	750	lf		
046	212414.01	Fire Suppression Systems	3	sys		
047	212414.02	Fire Extinguisher and Cabinet	10	units		

Federal Employer I.D. No. _____

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004143-8

Project No. 47675-C

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
048	212414.03	Removal and Disposal of Fire Suppression System	5	systems		
049	230533.01	Electric Heating Cable - Non Hazardous Locations	1000	lf		
050	230533.02	Electric Heating Cable Controller - Non-Hazardous Loc	30	ea		
051	230533.03	Electric Heating Cable - Hazardous Locations	100	lf		
052	230533.04	Electric Heating Cable Controller - Hazardous Locations	4	ea		
053	231010.01	Fuel Filtration System	8	ea		
054	231100.01	Core Drilling Concrete	1000	lin. in		
055	231100.02	2" FRP Pipe	75	lf		
056	231100.03	3" FRP Pipe	25	lf		
057	231100.04	4" FRP Pipe	25	lf		
058	231100.05	4" (nominal) Flexible Dual Layer Containment Pipe	250	lf		
059	231100.06	1/2" Black Steel Pipe	200	lf		
060	231100.07	3/4" Black Steel Pipe	500	lf		
061	231100.08	1" Black Steel Pipe	750	lf		
062	231100.09	1 1/2" Black Steel Pipe	500	lf		
063	231100.10	2" Black Steel Pipe	750	lf		
064	231100.11	3" Black Steel Pipe	200	lf		
065	231100.12	3/4" Flexible Double Wall Primary Piping	150	lf		
066	231100.13	1" Flexible Double Wall Primary Piping	300	lf		
067	231100.14	1 1/2" Flexible Double Wall Primary Piping	200	lf		
068	231100.15	2" Flexible Double Wall Primary Piping	150	lf		
069	231100.16	Transition Assembly	5	ea		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
070	231100.17	Sump Wall Seal - 2" Primary, 4" Containment	5	ea		
071	231100.18	Sump Wall Seal - 1" & 3/4" Primary, 4" Containment (Fuel Oil and Generator Systems)	5	ea		
072	231100.19	Sump Wall Seal - 1" & 3/4" Electrical Conduit	5	ea		
073	231100.20	1/4" Type K Copper Piping	750	lf		
074	231100.21	3/8" Type K Copper Piping	150	lf		
075	231100.22	1/2" Type K Copper Piping	350	lf		
076	231100.23	3/4" Type K Copper Piping	250	lf		
077	231100.24	1" Type K Copper Piping	150	lf		
078	231213.01	2.0 GPM Duplex Fuel Oil Transfer Pumps and Straining Set	4	sets		
079	231213.02	5.0 GPM Duplex Fuel Oil Transfer Pumps and Straining Set	4	sets		
080	231313.01	1,000 Gal. ACT 100- U Jacketed Secondary Containment Tank Assebly	1	tnk		
081	231313.02	2,000 Gal. ACT 100- U Jacketed Secondary Containment Tank Assembly	1	tnk		
082	231313.03	4,000 Gal. ACT 100- U Jacketed Secondary Containment Tank Assmebly	1	tnk		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
083	231313.04	6,000 Gal. ACT 100- U Jacketed Secondary Containment Tank Assmebly	1	tnk		
084	231313.05	8,000 Gal. ACT 100- U Jacketed Secondary Containment Tank Assmebly	1	tnk		
085	231313.06	10,000 Gal. ACT 100-U Jacketed Secondary Containment Tank Assmebly	1	tnk		
086	231313.07	1,000 Gal. Double Wall Fiberglass Tank Assembly	1	tnk		
087	231313.08	2,000 Gal. Double Wall Fiberglass Tank Assembly	1	tnk		
088	231313.09	4,000 Gal. Double Wall Fiberglass Tank Assembly	1	tnk		
089	231313.10	6,000 Gal. Double Wall Fiberglass Tank Assembly	1	tnk		
090	231313.11	8,000 Gal. Double Wall Fiberglass Tank Assembly	1	tnk		
091	231313.12	10,000 Gal. Double Wall Fiberglass Tank Assembly	1	tnk		
092	231313.13	Unleaded Gasoline Fuel Tank Installation Package	3	ea		
093	231313.14	Diesel Motor Fuel Tank Installation Package	10	ea		
094	231313.15	Fuel Oil or Diesel Generator Tank Installation Package	3	ea		
095	231313.16	Tank Gaging, Leak, and Overfill Monitoring System	10	ea		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
096	231313.17	Remote Tank Gaging, Leak Overfill Monitor System	3	ea		
097	231313.18	Instrumentation Package for Additional Tank	5	ea		
098	231313.19	Containment Sumps for Jacketed Secondary Containment Tanks	3	ea		
099	231313.20	Flush Mounted Watertight Access Lid Assembly	5	ea		
100	231313.21	Single Hose Unleaded Gasoline Dispenser	2	ea		
101	231313.22	Single Hose Diesel Dispenser	3	ea		
102	231313.23	Dual Hose/Single Pump Diesel Dispenser	3	ea		
103	231313.24	Dual Hose/Dual Pump Diesel Dispenser	5	ea		
104	231313.25	Fuel Management System (Type A)	5	sys		
105	231313.26	Fuel Management System (Type B)	5	sys		
106	231313.27	Concrete Deadman Anchoring System (4' dia. tank)	2	sys		
107	231313.28	Concrete Deadman Anchoring System (6' dia. tank)	2	sys		
108	231313.29	Concrete Deadman Anchoring System (8' dia. tank)	2	sys		
109	231313.30	Concrete Deadman Anchoring System (10' dia. tank)	2	sys		
110	231315.01	Rental Temporary Skid Tank (300 Gallon)	3	mo		
111	231315.02	Rental Temporary Skid Tank (500 Gallon)	6	mo		

Federal Employer I.D. No. _____

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004143-12

Project No. 47675-C

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
112	231315.03	Rental Temporary Skid Tank (1000 Gallon)	6	mo		
113	231315.04	Rental Temporary Skid Tank (2000 Gallon)	6	mo		
114	231315.05	Rental Temporary Skid Tank (3000 Gallon)	6	mo		
115	231315.06	Rental Temporary Skid Tank (4000 Gallon)	6	mo		
116	231315.07	Rental Temporary Skid Tank (6000 Gallon)	6	mo		
117	231315.08	Rental Temporary Skid Tank (8000 Gallon)	6	mo		
118	231315.09	Rental Temporary Skid Tank (10000 Gallon)	6	mo		
119	231315.10	Mobilization/Demobil ization, Temporary Skid Tank (300 Gallon)	3	tnk		
120	231315.11	Mobilization/Demobil ization, Temporary Skid Tank (500 Gallon)	5	tnk		
121	231315.12	Mobilization/Demobil ization, Temporary Skid Tank (1000 Gallon)	5	tnk		
122	231315.13	Mobilization/Demobil ization, Temporary Skid Tank (2000 Gallon)	15	tnk		
123	231315.14	Mobilization/Demobil ization, Temporary Skid Tank (3000 Gallon)	3	tnk		
124	231315.15	Mobilization/Demobil ization, Temporary Skid Tank (4000 Gallon)	5	tnk		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
125	231315.16	Mobilization/Demobilization, Temporary Skid Tank (6000 Gallon)	3	tnk		
126	231315.17	Mobilization/Demobilization, Temporary Skid Tank (8000 Gallon)	3	tnk		
127	231315.18	Mobilization/Demobilization, Temporary Skid Tank (10000 Gallon)	3	tnk		
128	231316.01	Painting Double Wall Steel Above Ground Tank	300	sf		
129	231316.02	Concrete Encased Above Ground Tank Repair	300	sf		
130	231316.03	Concrete Encased Above Ground Crack Repair Over 5 Linear Feet	50	lf		
131	231318.01	10 Gal. Day Tank System	3	ea		
132	231318.02	25 Gal. Day Tank System	3	ea		
133	231318.03	150 Gal. Day Tank System	4	ea		
134	231318.04	200 Gal. Day Tank System	4	ea		
135	231318.05	300 Gal. Day Tank System	4	ea		
136	231323.01	300 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	2	tnk		
137	231323.02	500 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	2	tnk		
138	231323.03	1,000 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	2	tnk		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
139	231323.04	2,000 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	5	tnk		
140	231323.05	3,000 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	2	tnk		
141	231323.06	4,000 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	2	tnk		
142	231323.07	5,000 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	1	tnk		
143	231323.08	6,000 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	1	tnk		
144	231323.09	8,000 Gallon Type DWS-1 Double Wall Steel Protected Storage Tank	1	tnk		
145	231323.10	10,000 Gallon Type DWS-1 Double Wall Steel Protected OP Storage Tank	1	tnk		
146	231323.11	12,000 Gallon Type DWS-1 Double Wall Steel Protected OP Storage Tank	1	tnk		
147	231323.12	20,000 Gallon Type DWS-1 Double Wall Steel Protected OP Storage Tank	1	tnk		
148	231323.13	30,000 Gallon Type DWS-1 Double Wall Steel Protected OP Storage Tank	1	tnk		
149	231323.14	2,000 Gallon Type DWS-1 Double Wall Steel Protected Split Storage Tank	2	tnk		
150	231323.15	3,000 Gallon Type DWS-1 Double Wall Steel Protected Split Storage Tank	2	tnk		

Federal Employer I.D. No. _____

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004143-15

Project No. 47675-C

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
151	231323.16	Type A Tank Gaging, Leak and Overfill Monitoring System	10	ea		
152	231323.17	Type A Tank Gaging, Leak, and Overfill Monitoring System for Additional Tank	10	ea		
153	231323.18	Type B Tank Gaging, Leak and Overfill Monitor System	5	ea		
154	231323.19	Remote Tank Gaging, Leak and Overfill Monitor System	10	ea		
155	231323.20	Non Discriminating Leak Sensor	8	ea		
156	231323.21	Power Integrity Control Panel	15	ea		
157	231323.22	Type UG-1 Unleaded Gasoline Installation Package	5	ea		
158	231323.23	Type D-1 Diesel Fuel Installation Package	10	ea		
159	231323.24	Type FO-1 Installation Package (Fuel Oil or Diesel Generator)	5	ea		
160	231323.25	Single Hose Unleaded Gasoline Suction Pump Dispenser	5	ea		
161	231323.26	Single Hose Diesel Fuel Suction Pump Dispenser	10	ea		
162	231323.27	Dual Hose/Single Pump Diesel Fuel Suction Pump Dispenser	3	ea		
163	231323.28	Dual Hose/Dual Pump Diesel Fuel Suction Pump Dispenser	3	ea		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
164	231323.29	High Hose Retractor for Diesel Dispensers	10	ea		
165	231323.30	1230 Watt Tank Heater Assembly	5	ea		
166	231323.31	1845 Watt Tank Heater Assembly	5	ea		
167	231323.32	3375 Watt Tank Heater Assembly	5	ea		
168	231323.33	5625 Watt Tank Heater Assembly	5	ea		
169	231323.34	Remote Fill Spill Container (10 gal., Single Port)	10	ea		
170	231323.35	Remote Fill Spill Container (20 gal., Double Port)	3	ea		
171	231323.36	Type DEF Diesel Exhaust Fluid Storage Tank (330 gallon w/ 50' hose reel)	5	tnk		
172	231323.37	Type DEF Diesel Exhaust Fluid Storage Tank (660 gallon w/ 50' hose reel)	5	tnk		
173	231323.38	Type DEF Diesel Exhaust Fluid Storage Tank (396 gallon w/ 25' hose reel)	5	tnk		
174	231324.39	Type DEF Diesel Exhaust Fluid Storage Tank (660 gallon w/ 34' hose reel)	5	tnk		
175	231323.40	2,000 Gal Type DWS-1 Double Wall Steel Tank Insulation Package	2	tnk		
176	231323.41	4,000 Gal Type DWS-1 Double Wall Steel Tank Insulation Package	2	tnk		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
177	231323.42	6,000 Gal Type DWS-1 Double Wall Steel Tank Insulation Package	2	tnk		
178	231323.43	8,000 Gal Type DWS-1 Double Wall Steel Tank Insulation Package	2	tnk		
179	231323.44	10,000 Gal Type DWS-1 Double Wall Steel Tank Insulation Package	2	tnk		
180	231323.45	12,000 Gal Type DWS-1 Double Wall Steel Tank Insulation Package	2	tnk		
181	231323.46	20,000 Gal Type DWS-1 Double Wall Steel Tank Insulation Package	2	tnk		
182	231323.47	30,000 Gal Type DWS-1 Double Wall Steel Tank Insulation Package	1	tnk		
183	231323.48	8,000 Gal Type DWS-1 Double Wall Steel Tank Catwalk Assembly	2	tnk		
184	231323.49	10,000 Gal Type DWS-1 Double Wall Steel Tank Catwalk Assembly	2	tnk		
185	231323.50	12,000 Gal Type DWS-1 Double Wall Steel Tank Catwalk Assembly	2	tnk		
186	231323.51	20,000 Gal Type DWS-1 Double Wall Steel Tank Catwalk Assembly	2	tnk		
187	231323.52	30,000 Gal Type DWS-1 Double Wall Steel Tank Catwalk Assembly	1	tnk		
188	231323.53	Electrical Island Shed	5	ea		
189	231323.54	Fuel Management System Enclosure	10	ea		

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Project No. 47675-C

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
190	260532.01	3/4" Conduit	12,250	lf		
191	260532.02	1" Conduit	3,000	lf		
192	260532.03	1-1/4" Conduit	1,000	lf		
193	260532.04	1-1/2" Conduit	500	lf		
194	260532.05	2" Conduit	500	lf		
195	260532.06	3/4" PVC-Coated Conduit	12,250	lf		
196	260532.07	1" PVC-Coated Conduit	3000	lf		
197	260532.08	1-1/4" PVC-Coated Conduit	1000	lf		
198	260532.09	1-1/2" PVC-Coated Conduit	500	lf		
199	260532.10	2" PVC-Coated Conduit	500	lf		
200	260924.01	Lighting Control Systems	10	ea		
201	260924.02	Contactor Base (2 poles - 30 amps each)	10	ea		
202	260924.03	Additional Contactor Pole (1 pole, 30 amps each)	15	ea		
203	262416.01	Panelboards (100 Ampere, Single Phase, 3 Wire, Main Lugs, 26 - 1 Pole Spaces, without Circuit Breakers)	10	ea		
204	262416.02	Circuit Breakers (1 Pole, 15 - 30 Ampere Trip)	75	ea		
205	262416.03	Circuit Breakers (2 Pole, 15 - 30 Ampere Trip)	10	ea		
206	262416.04	Circuit Breakers (2 Pole, 60 - 100 Ampere Trip)	20	ea		
207	262726.01	Receptacle (outdoors)	20	ea		
208	262726.02	Receptacle (indoors)	20	ea		
209	262726.03	Device Surge Suppression	25	ea		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
210	262812.01	Safety Switches – NEMA 1 (3 Pole, 30 Ampere, fused and unfused)	10	ea		
211	262812.02	Safety Switches – NEMA 3R (3 Pole, 30 Ampere, fused and unfused)	5	ea		
212	262812.03	Safety Switches – NEMA 4X (3 Pole, 30 Ampere, fused and unfused)	10	ea		
213	262817.01	Enclosed Circuit Breakers (120V, 100 Ampere Frame, 15 - 60 Ampere Trip, 1 Pole)	5	ea		
214	262817.02	Enclosed Circuit Breakers(240V, 100 Ampere Frame, 15 - 100 Ampere Trip, 2 Pole)	5	ea		
215	264313.01	Branch Panelboard Suppressor	20	ea		
216	265629.01	Luminaire (Type PLL-1) with Standard	15	ea		
217	265629.02	Luminaire (Type PLL-2)	5	ea		
218	310000.01	General Excavation (Up to 100 cu yds)	25	sites		
219	310000.02	General Excavation (Each cu yd over 100 cu yd)	5,000	cy		
220	310000.03	Trenching	300	cy		
221	310000.04	Hand Excavation	50	cy		
222	310000.05	Saw Cutting Pavement	3,500	lf		
223	310000.06	Removal of Asphalt Conc. Pavement or Conc. Sidewalk	500	cy		
224	310000.07	Removal of Concrete Surface Pads	500	cy		

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Project No. 47675-C

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
225	310000.08	Removal of Conc. Tank Hold Down Pads	50	cy		
226	310000.09	Disposal of Construction Debris	750	cy		
227	310000.10	Disposal of Unsuitable Excavated Material	1,500	cy		
228	310000.11	Subbase Course Type 2	2,500	tn		
229	310000.12	Pea Gravel	750	tn		
230	310000.13	Cushion Material	100	tn		
231	310000.14	Selected Fill	750	tn		
232	310000.15	Suitable Material	500	tn		
233	310000.16	Filter Fabric	5,000	sy		
234	310000.17	Lawn Restoration	2,000	sy		
235	310000.18	Remove and Stockpile Topsoil	100	cy		
236	310000.19	Dewatering	30	day		
237	310000.20	Moving & Stockpiling Unsuitable Excavated Material to Another Location at Work Site	1,000	cy		
238	310000.21	Item B-12 Crushed Stone	1,250	tn		
239	310000.22	Reuse excavated material classified as select fill	1,250	cy		
240	310000.23	Reuse excavated material classified as suitable material	1,250	cy		
241	310001.01	Off-Site Thermal Treatment (Transportation)	1,000	tn		
242	310001.02	Off-Site Thermal Treatment (Processing)	1,000	tn		
243	312316.01	Rock Removal, General	50	cy		
244	312316.02	Rock Removal, Trenches	5	cy		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
245	321216.01	Asphalt Concrete Paving Light Duty (less than 50 sy)	250	sy		
246	321216.02	Asphalt Concrete Paving Light Duty (more than 50 sy)	250	sy		
247	321216.03	Asphalt Concrete Paving Heavy Duty (less than 50 sy)	350	sy		
248	321216.04	Asphalt Concrete Paving Heavy Duty (more than 50 sy)	1500	sy		
249	321216.05	Asphalt Concrete Paving Overlay	1,000	sy		
250	321218.01	Precast Concrete Median Barriers - 8 foot	40	ea		
251	321218.02	Precast Concrete Median Barriers - 4 foot	25	ea		
252	321218.03	6 ft HDPE Barriers	30	ea		
253	321613.01	Portland Cement Concrete Curbs	100	lf		
254	347115.01	Steel Pipe Bollards	100	ea		
255	444249.01	Oil-Water Separator 2 Compartment (550 Gallon)	3	ea		
256	444249.02	Oil-Water Separator 2 Compartment (1,000 Gallon)	3	ea		
257	444249.03	Oil-Water Separator 2 Compartment (2,000 Gallon)	3	ea		
258	444249.04	Oil-Water Separator 3 Compartment (550 Gallon)	3	ea		
259	444249.05	Oil-Water Separator 3 Compartment (1,000 Gallon)	3	ea		
260	444249.06	Oil-Water Separator 3 Compartment (2,000 Gallon)	3	ea		
					UNIT PRICE SCHEDULE TOTAL:	

*Amount Bid = Estimated Quantity X Unit Bid Price

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Project No. 47675-C

SECTION 231323

ABOVE GROUND FUEL STORAGE TANKS AND FUEL SYSTEMS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Cast-In-Place Concrete: Section 033001.
- B. Fuel Management System Unit Price: Section 231313 (See Unit Price 231313.24).
- C. Wiring, General – 600 Volts and Under: Section 260519.
- D. Raceways, Fittings, and Accessories: Section 260532.
- E. Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits: Section 264313.

1.02 UNIT PRICE WORK

- A. Payment for unit price items includes all associated Work, including transportation, installation, testing, and “de-bugging”.
- B. The unit prices listed below shall include all Work specified in the Division 1 General Requirements Sections.
- C. Definitions for unit price items as listed in the Unit Price Schedule in Document 004143:
 - 1. **Item Nos. 231323.01 thru 231323.07- Type CE-1 Fuel Storage Tanks (500-8,000 gallon size Inclusive):** Payment for this Work will be made at the Contract unit price per tank. The unit price includes the Work required to provide the following:
 - a. Above ground tank
 - b. Tank accessory package consisting of stair/platform assembly, gaging and venting equipment, tank identification, Stage I vapor recovery valve assembly, fill limiting valve, fill port spill container, and stickport.
 - c. Note: Electrical wire and conduit shall be unit priced per section 260519 and 260532. Vehicle and tank pads and stair pads shall be unit priced per section 033001.
 - 2. **Item Nos. 231323.08 thru 231323.20 Type DWS-1 Double Wall Steel Protected Storage Tank (300-30,000 gallon size Inclusive):** Payment for this Work will be made at the Contract unit price per tank. The unit price includes the Work required to provide the following:
 - a. Above ground tank.
 - b. Tank accessory package consisting of stair/platform assembly, gaging and venting equipment, tank identification, fill limiting valve, hose drip containment chamber at fillport, and stickport.

- c. Tank sizes 10,000 gallon capacity and above shall be provided with an overfill prevention (OP) chamber.
 - d. Note: Electrical wire and conduit shall be unit priced per section 260519 and 260532. Vehicle and tank pads and stair pads shall be unit priced per section 033001.
3. **Item Nos. 231323.21 thru 231323.22 Type DWS-1 Double Wall Steel Protected Split Storage Tank (2,000- and 3,000-gallon size Inclusive):** Payment for this Work will be made at the Contract unit price per tank. The unit price includes the Work required to provide the following:
- a. Above ground tank.
 - b. Tank accessory package consisting of stair/platform assembly, gaging and venting equipment, tank identification, fill limiting valve, hose drip containment chamber at fillport, and stickport.
 - c. Note: Electrical wire and conduit shall be unit priced per section 260519 and 260532. Vehicle and tank pads and stair pads shall be unit priced per section 033001.
4. **Item No. 231323.23 Type A Tank Gaging, Leak and Overfill Monitor System:** Payment for this Work will be made at the Contract unit price per system. The unit price includes the Work required to provide the following:
- a. Alarm monitor panel.
 - b. Leak sensors and magnetostrictive gage probe.
 - c. Instrument control cables
 - d. Overfill alarm device and sign.
 - e. Printer (If printer is thermal type, include 6 rolls of thermal paper).
 - f. Heavy duty surge protection.
 - g. Uninterruptible power supply
 - h. Initial testing, and debugging.
 - i. Service of Company Field Advisor for minimum of 8 hours.
5. **Item No. 231323.24 – Type A Tank Gaging, Leak and Overfill Monitor System for an Additional Tank:** Payment for this Work will be at the Contract unit price per tank. The unit price includes the Work required to provide the following:
- a. Leak sensors, and magnetostrictive probe.
 - b. Instrument control cables
 - c. Initial testing and “debugging”.
 - d. Required connections to Alarm Monitor Panel specified in Item 231323.13 above, or to an existing panel.
6. **Item No. 231323.25 Type B Tank Leak and Overfill Monitor System:** Payment for this Work will be made at the Contract unit price per system. The unit price includes the Work required to provide the following:
- a. Alarm controller console.
 - b. Remote alarm panel.
 - c. Interstitial space sensor(s) and piping sump sensor(s).
 - d. High level sensor(s).
 - e. Instrument control cables
 - f. Overfill alarm device and sign.
7. **Item No. 231313.26 – Remote Tank Gaging, Leak and Overfill Monitor System:** Payment for this Work will be at the Contract unit price per package. The unit price includes the Work required to provide the following:

- a. Remote alarm monitor panel.
 - b. Instrument control cables
 - c. Heavy duty surge protection and uninterruptible power supply
 - d. Initial testing and debugging.
 - e. Service of Company Field Advisor for a minimum of 8 hours.
8. **Item No. 231323.27 – Non-Discriminating Leak Sensor:** Payment for this Work will be made at the Contract unit price per sensor. The unit price includes the Work required to provide leak sensor and connect to existing tank gaging, leak and overfill system.
- a. Electrical wire and conduit shall be unit priced per section 260532.
9. **Item No. 231323.28 Power Integrity Control Panel:** Payment for this Work will be made at the Contract unit price per system. The unit price includes the Work required to provide the following:
- a. NEMA enclosure.
 - b. Lockable maintenance switches.
 - c. Remote E-stop.
10. **Item No. 231323.29 Type UG-1 Installation Package:** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
- a. Manual shutoff valve, external emergency valve, pressure relief valve, and explosion-proof solenoid valve.
 - b. Flexible hose.
11. **Item No. 231323.30 Type D-1 Installation Package:** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
- a. Manual shutoff valve, external emergency valve, pressure/expansion relief valve, and explosion-proof solenoid valve.
 - b. Flexible hose.
12. **Item No. 231323.31 Type FO-1 Installation Package (Fuel Oil or Diesel Generator):** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
- a. Manual shutoff valve, external emergency valve, pressure/expansion relief valve, and explosion-proof solenoid valve.
 - b. Foot valve.
13. **Item No. 231323.32 Single Hose Unleaded Gasoline Suction Pump Dispenser:** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
- a. Single hose, single pump dispenser with illuminated product panel and register area, and pulser.
 - b. Dispenser sump/stand.
 - c. Sump leak sensor.
 - d. Warning sign.
 - e. Hose Assembly: Unleaded gasoline nozzle, reusable dry breakaway fitting, and (1) five-foot length and (1) ten-foot length of 3/4 inch dia. hose with swivel on each end.
 - f. Standard high hose retractor.

14. **Item No. 231323.33 Single Hose Diesel Fuel Suction Pump Dispenser:** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
- Single hose, single pump dispenser with illuminated product panel and register area, and pulser.
 - Dispenser sump/stand.
 - Leak sensor.
 - Hose Assembly: One inch dia., (2) nine-foot lengths of hose (18' total) with swivel fittings on each end, reusable dry breakaway fitting, and diesel nozzle.
 - Warning sign.
15. **Item No. 231323.34 Dual Hose/Single Pump Diesel Fuel Suction Pump Dispenser:** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
- Dual hose, single pump dispenser with illuminated product panel and register area, and pulser.
 - Dispenser sump/stand.
 - Leak sensor.
 - (2) Hose Assemblies: One inch dia., (2) nine-foot lengths of hose (18' total) with swivel fittings on each end, reusable dry breakaway fitting, and diesel nozzle.
 - Warning sign.
16. **Item No. 231323.35 Dual Hose/Dual Pump Diesel Fuel Suction Pump Dispenser:** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
- Dual hose, dual pump dispenser with illuminated product panel and register area, and pulser.
 - Dispenser sump/stand.
 - Leak sensor.
 - (2) Hose Assemblies: One inch dia., (2) nine-foot lengths of hose (18' total) with swivel fittings on each end, reusable dry breakaway fitting, and diesel nozzle.
 - Warning sign.
17. **Item No. 231323.36 – High Hose Retractor for Diesel Dispensers:** Payment for the Work will be made at the Contract unit price per system. The unit price includes the Work required to provide the following:
- Cast iron high hose retractor head and body, stainless steel cable, and steel base.
 - Side bracket bolted to the dispenser.
 - 20lb counterweight.
 - Hose cradle.
18. **Item Nos. 231323.37 thru 231323.40-Tank Heater Assembly (1,230 watt, 1,845 watt, 3,375 watt, and 5,625 watt sizes):** Payment for this Work will be at the Contract unit price per assembly. The unit price shall include the Work required to provide heater in aboveground tank including disconnect switch (NEMA 4X) and heavy duty surge protection.

19. **Item Nos. 231323.41 - Remote Fill Spill Container (10 gallon single port) and 231323.42 - Remote Fill Spill Container (20 gallon double port):** Payment for this Work will be at the Contract unit price per spill container. The unit price shall include remote fill spill container, fill pipe adapter, locking ball valve for fill, swing check valve, and dust cap.
20. **Item No. 231323.43 – Type DEF Diesel Exhaust Fluid Storage Tank (330 gallon size):** Payment for this Work will be at the Contract unit price per tank. The unit price includes the Work required to provide the following:
- a. 330-gallon tank with heated 50' hose reel.
 - b. 400w continuous duty forced air heating system with thermostat control.
 - c. Pulse meter option to connect DEF tank to the Fuel Management System.
 - d. Note: Electrical wire and conduit shall be unit priced per section 260519 and 260532. Vehicle and tank pads shall be unit priced per section 033001.
21. **Item No. 231323.44 – Type DEF Diesel Exhaust Fluid Storage Tank (600 gallon size):** Payment for this Work will be at the Contract unit price per tank. The unit price includes the Work required to provide the following:
- a. 600-gallon tank with heated 50' hose reel.
 - b. 400w continuous duty forced air heating system with thermostat control.
 - c. Pulse meter option to connect DEF tank to the Fuel Management System.
 - d. Note: Electrical wire and conduit shall be unit priced per section 260519 and 260532. Vehicle and tank pads shall be unit priced per section 033001.
22. **Item No. 231323.45 – Type DEF Diesel Exhaust Fluid Storage Tank (396 gallon size):** Payment for this Work will be at the Contract unit price per tank. The unit price includes the Work required to provide the following:
- a. 396 gallon tank with heated 25' hose reel.
 - b. Extreme cube package consisting of a 500W internal probe heater and temperature controller.
 - c. Pulse meter option to connect DEF tank to the Fuel Management System.
 - d. Note: Electrical wire and conduit shall be unit priced per section 260519 and 260532. Vehicle and tank pads shall be unit priced per section 033001.
23. **Item No. 231323.46 – Type DEF Diesel Exhaust Fluid Storage Tank (660 gallon size):** Payment for this Work will be at the Contract unit price per tank. The unit price includes the Work required to provide the following:
- a. 660-gallon tank with heated 34' hose reel.
 - b. Extreme cube package consisting of a 500W internal probe heater and temperature controller.
 - c. Pulse meter option to connect DEF tank to the Fuel Management System.

- d. Note: Electrical wire and conduit shall be unit priced per section 260519 and 260532. Vehicle and tank pads shall be unit priced per section 033001.
- 24. **Item Nos. 231323.47 thru 231323.54 – Type DWS-1 Double Wall Steel Tank Insulation Package (2,000, 4,000, 6,000, 8,000, 10,000, 12,000, 20,000, and 30,000 gallon size inclusive)-** Payment for this Work shall be made at the Contract unit price per tank. The unit price includes the Work to provide the following:
 - a. Complete 360° wrap of flexible insulation.
 - b. Complete 360° wrap with 26 gauge aluminum skin.
 - c. Extended length of fitting on AST to account for insulation thickness.
 - d. Bands, fasteners, adhesives required to secure insulation and aluminum skin in place.
- 25. **Item No. 231323.55 thru 231323.59-Catwalk Assembly (8,000, 10,000, 12,000, 20,000, and 30,000 gallon tank sizes):** Payment for this Work will be at the Contract unit price per catwalk. The unit price shall include the Work required to provide a catwalk system for aboveground tanks.
- 26. **Item No. 231323.60 Electrical Island Shed:** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
 - a. T1-11 Mini Shed, 8' X 8' Mini Shed with light switch and light.
 - b. Shed, door, and drip edge painted green in accordance with manufacturer.
 - c. Arch roof with black shingles.
 - d. 3' house door without windows.
 - e. Two metal vents.
- 27. **Item No. 231323.61 Fuel Management System Enclosure:** Payment for this Work will be at the Contract unit price per package. The unit price shall include the Work required to provide the following:
 - a. Fuel Management System Enclosure, 5-1/2' X 2-1/2' wood enclosure.
 - b. Slanted roof with black shingles.
 - c. Enclosure painted per OGS Director's Representative.

1.03 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. NFPA 110 – Standards for Emergency and Standby Power Systems.
- F. API 1615 - Installation of Underground Liquid Storage Systems.
- G. Underwriter's Laboratories (UL).

- H. ETL Testing Laboratories (ETL).
- I. Steel Tank Institute (STI).
- J. Factory Mutual Engineering and Research (FM).
- K. NYS Department of Environmental Conservation Regulations.
- L. US Environmental Protection Agency Regulations.

1.04 DEFINITIONS

- A. Fuel System for No. 2 Fuel Oil: Fuel storage tank including 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.
- B. Motor Fuel Dispensing System: Fuel storage tank including leak containment and detection for tank and underground piping, overfill prevention, high level alarm, gage system, remote pump, dispenser, and optional automated fuel management system.
- C. Fuel System for Diesel-Generators: Fuel storage tank including leak containment and detection for tank and underground piping, overfill prevention, high level alarm, gage system, and required accessories to connect to diesel-generator.

1.05 SUBMITTALS

- A. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to this Section.
- B. Submittals Package: Submit the Product Data, and Quality Control Submittals specified below at the same time as a package.
- C. Product Data: Catalog sheets, specifications, illustrations, wiring diagrams, CARB Stamp (where applicable), and installation instructions for each item specified for each type of system.
- D. 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.

1.06 WORK ORDER CLOSEOUT SUBMITTALS

- A. Work Order Closeout Submittals: Submit the following to the Director's Representative at substantial completion of each work order:
 1. Operation and Maintenance Data.
 2. Warranty: Copy of specified warranty.
 3. Tank Manufacturer Installation Check List.
 4. Spare parts and special tools.
 5. As-built drawings.

1.07 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 above ground 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 and diesel fuel for diesel-generators shall comply with the applicable requirements of UL 58, NFPA 30, NFPA 31, and NFPA 110.
 2. Systems for storing diesel fuel or unleaded gasoline for motor fuel dispensing systems shall comply with the applicable requirements of UL 58, NFPA 30 and NFPA 30A.
 3. New York State Department of Environmental Conservation Bulk Storage Regulations 6 NYCRR Part 613.
 4. New York State Department of Environmental Conservation Petroleum and Volatile Organic Liquid Storage and Transfer 6 NYCRR Part 229.
 5. New York State Department of Environmental Conservation Dispensing Site and Transport Vehicles 6 NYCRR Part 230.
 6. Stage I vapor recovery system shall be certified by the California Air Resources Board (C.A.R.B.).

- 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 6 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. Schedule training sessions with the Director's Representative.
 2. Secure the services of a Company Field Advisor of the manufacturer of the fuel management system for a minimum of 6 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. Schedule training sessions with the Director's Representative.

1.08 WARRANTY

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

1.09 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 CE-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: 3,000 psi.
 - b. Finish: Clear acrylic coating on exposed aggregate tank surface.
 - 1) Top of Tank including Chamfered Edges: Elastomeric 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.

2.02 DOUBLE WALL STEEL PROTECTED FUEL STORAGE TANKS (NON-SPLIT AND SPLIT TANKS) (TYPE DWS-1)

- 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.
 - a. Tanks shall be shipped from the manufacturer under vacuum at a minimum of 12 inHg. Upon delivery to the site, remeasure vacuum witnessed by the Construction Manager. Vacuum loss shall not exceed 5 inHg.
- B. Type: Double wall steel interior tank with minimum 3-inch interstitial space filled with lightweight, porous, monolithic insulation material.
 - 1. Exterior Protective Coating: Conforming to Steel Tank Institute and NYSDEC Standards.
 - a. Surface Preparation: SSPC-SP6 grit blast.
 - b. Primer: Corrosion resistant epoxy or urethane in accordance with UL 2085 requirements.
 - c. Top Coat: Epoxy or urethane in accordance with UL 2085 requirements.
 - 1. Paint all aboveground storage tanks white, beige, or cream in accordance with NYSDEC and New York State Legislation ECL Section 17-1016. Coordinate color selection with the EIC.
- C. Acceptable Tanks:
 - 1. Fireguard Thermally Protected Tank by Highland Tanks, Manheim, PA, (717) 664-0600.
 - 2. Fireguard Thermally Protected Tank by Modern Welding Company, Newark, OH, (740) 344-9425.
 - 3. Hoover Vault Tank by Containment Solutions, Conroe, TX 77301, (800) 537-4730.

2.03 TANK ACCESSORY PACKAGE

- A. Stair/Platform Assembly:
 - 1. Stairs and railings shall meet OSHA Standard 29 CFR Ch. XVII, Paragraph 1910.25.
 - 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 either be painted per Section 099103, or galvanized in accordance ASTM Standard A53-96.
 - 5. Provide right and left hand stairs/platform assemblies with railings on exposed sides only.
- 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. Order clock gauge by tank size geometry (unit display in gallons)

- 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.
 2. Pipe: Standard weight black steel pipe (2 inch size) with 150 lb malleable iron fittings with fuel resistant thread sealant.
 - a. Finish: Paint pipe and fittings in accordance with Section 099103.
 - b. Terminate pipe minimum 12 feet above grade.
 3. Vent Caps:
 - a. Unleaded Gasoline (Client usage under 120,000 gallons per year as per 6 NYCRR Part 230 requirements): Open type with 30 or 40 mesh screen; OPW 23, EMCO Wheaton A4103, Morrison Bros. 749, or EBW 800 series.
 - b. Fuel Oil, or Diesel Fuel: Open type with 30 or 40 mesh screen; OPW 23, EMCO Wheaton AH10, EBW 800, Morrison Bros. 354, or EBW 800 series.
 4. Emergency Vent: Aluminum body with cast iron lid, zinc plated steel shaft, and Buna-N O-ring; OPW 301 or EBW803, Morrison Bros. 2440M.
 - 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 to Bulk Storage Regulation 6 NYCRR Part 613.
 - 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 and installer.
 - h. Date of tank installation.
- E. Fill Limiting Valve:
1. Morrison Bros. 9095AA (includes adapter), EBW 709 Warden, or OPW 61FSTOP.
 - a. Drop tube as required.
 - b. Adapter: OPW 633AST, Morrison Bros. 800A; 3 inch size.
 - c. Cap: OPW 634B, EBW 774, or Morrison Bros. 800DC
- F. Spill Containment at Fill Port:
1. For 300-500 gallon DWS-1 Tanks: 7 gallon capacity with lockable watertight lid, drain valve, and Master Lock 911-DKA.
 2. For 1,000-8,000 gallon DWS-1 Tanks: Welded steel, 24 inch dia x 13-1/2 inch high x 1/4 inch thick, with lockable watertight lid, drain valve, and 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, EBW770, or OPW 83-0066.
 - 2. All tanks shall be provided with a stick gage.

2.04 STAGE I VAPOR RECOVERY VALVE ASSEMBLY (Client usage over 120,000 gallons per year as per 6 NYCRR Part 230 requirements)

- A. Vapor Recovery Valve: As approved by the N.Y.S. Department of Environmental Conservation.
- B. Lockable Cap: OPW Series1711T-7085-EVR, EBW 304, or Morrison Bros. 323C.
- C. Vent Cap: Pressure-vacuum type; OPW 523, EMCO Wheaton A84, EBW 802, or Morrison Bros. 749.
- D. Padlock: Master Lock 911-DKA.

2.05 REMOTE FILL SPILL CONTAINER

- A. Type: 12 gage stainless steel container and lockable cover, with welded hinge, height adjustable legs, lockable ball valve drain, flexible entry boot(s) and reducer insert(s), complete with poppeted fill pipe adapter swing check valve, dust cap, and 3 inch fittings; OPW Model 211SS, Morrison Bros. 715S (single port 10 gallon, and double port 20 gallon sizes).
- B. Spill Containment Mounting:
 - 1. Stand Mount: Metal stand mount with cross member support, secured to the concrete pad with wedge anchors.
 - 2. Post Mount: 3" stainless steel post secured to the remote fill spill container with mounting brackets and anchored in the concrete pad with a sonotube concrete support.

2.06 TYPE A TANK GAGING, LEAK AND OVERFILL MONITOR SYSTEM

- A. Acceptable Companies:
 - 1. Veeder Root Inc., Simsbury, CT, (800) 873-3313.
 - 2. OMNTEC/Electro Levels Mfg. Co., Ronkonkoma, NY, (516) 467-5787.
- B. Type: Continuous operation 7" graphic touchscreen tank gauging, 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 directed by Director's Representative.
 - 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 or as manufactured by tank gauging, 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.

2.07 TYPE B TANK LEAK AND OVERFILL MONITOR SYSTEM

- A. Type: Continuous operation tank leak detection and overfill monitor system for double wall storage tanks, double wall product piping, and containment sumps; LU series by OMNTEC/Electro Levels Mfg. Co., Ronkonkoma, NY, (516) 467-5787.
 - 1. Systems shall have system test capability, and shall be UL listed and/or FM approved.
- B. Alarm Controller Console: NEMA 4X type with remote sensor test capability at console utilizing test button (OMNTEC Model ELP21LU).
 - 1. When pressed, the test button will test entire system electronics from control panel to sensor(s)
 - 2. Provides intrinsically safe output circuits to electro-optic sensors in Class I, Group D hazardous locations.
 - 3. Monitors both interstitial space and 90 percent high level in tank for presence of liquid.

4. Visually indicates each alarm condition by a dedicated red LED indicator which remains lit until alarm condition is corrected.
 5. Audibly annunciates each high level alarm by via 95 decibel piezoelectric pulsing horn which can be silenced by horn silence button.
 6. Provides green system detecting indicator.
 7. Each alarm to have normally open dry contacts for control purposes, as well as low voltage outputs.
- C. Remote Alarm Panel: Audio/visual NEMA 4X type mounted by filling area outside hazardous area (OMNTEC Model RA series).
1. Visually indicates each high level alarm by a dedicated red LED indicator which remains lit until alarm condition is corrected.
 2. Audibly annunciates each high level alarm via 95 decibel piezoelectric pulsing horn with auto time out..
- D. Interstitial Space Sensor and Piping Sump Sensor: Self diagnostic type which alarms at 90 percent of tank capacity, with dry condition creating normally closed light beam, and alarm condition opening (refracting) the normally closed light beam (OMNTEC Model LS-ASC for steel tanks and/or piping sumps or Model LWF for fiberglass tanks).
- E. High Level Sensor: Self diagnostic type which alarms at 90 percent of tank capacity, with dry condition creating normally closed light beam, and alarm condition opening (refracting) the normally closed light beam (OMNTEC Model L-1).
- F. 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.

2.08 REMOTE TANK GAGING, LEAK AND OVERFILL MONITOR SYSTEM

- A. Acceptable Companies:
1. Veeder Root Inc., Simsbury, CT, (800) 873-3313.
 2. OMNTEC/Electro Levels Mfg. Co., Ronkonkoma, NY, (516) 467-5787.
- B. Provide a 7" color touch screen graphic remote display (Part Number RD7CTS) as manufactured by OMNTEC Mfg., Inc, or approved equal. Display must utilize industry standard protocol for use with most Automatic Tank Gauge monitoring systems. The remote ATG monitor shall display current tank inventory and leak sensor alarms. Display shall come equipped with three LED lights on panel face for Ok, Warning, and Alarm Status. Alarms shall be displayed visually on a 7" color touch screen with wide viewing angle as well as Warning and Alarm lights on face of panel. System shall have 85dB piezoelectric horn for audible alarm indication. Enclosure shall be powder coated industrial steel for indoor mounting. Must be capable of flush mount or recess mounting as required. Enclosure shall be compact in size, not to exceed (H) 7.63" (W) 8.08" (D) 3.20". System must operate on 120/240 VAC or 12VDC via hard wired or power cord kit (Part Number RD-PCK) Include a 75' extension cable for connection from RD7CTS to ATG monitor (Part Number RD-232C-75) For RS-232 connection at distances

greater than 75' and up to 3000' provide an RS-232 booster kit (Part Number C232-422-RD7CTS). For RS-485 connection (port must output industry standard protocol) at distances greater than 75' and up to 3000' Part number RD7CTS-485 is also available. If using with Proteus X model ATG, an RS-485 port comes standard. If using with Proteus K model ATG, a DB-485 RS-485 board must be added in order to connect to RD7CTS-485. Provide a wireless link that will allow 500' line of site communication between main ATG and RD7CTS (Part Number WRS-232) as manufactured by OMNTEC Mfg., Inc. To extend signal an additional 500' line of site, provide WRS-232R repeater. For distances up to One mile, provide WRS-232XR extended length wireless transceiver in lieu of WRS-232/WRS-232R.

2.09 POWER INTEGRITY CONTROL PANEL

- A. Acceptable Companies:
 - 1. OMNTEC/Electro Levels Mfg. Co., Ronkonkoma, NY, (516) 467-5787.
 - 2. Franklin Fueling System, Madison, WI, (608) 838-8786
 - a. Enclosure:
 - 1. NEMA 1 for indoor installation
 - 2. NEMA 3R, 4X for outdoor installation
 - b. Provide lockable maintenance switches
 - c. Provide remote E-stop as required
 - d. cULus listed.
 - e. Comply with NEC® 514.11 and NFPA® 30A Section 6.7 requirements for Emergency Disconnects at Motor Fuel Dispensing Facilities.
 - f. Comply with NEC® 514.13 requirements for Maintenance Disconnects at Motor Fuel Dispensing Facilities.
- B. Emergency shut off shall disconnect power to all dispensing devices, to all remote pumps serving the dispensing devices, to all associated power, control, and signal circuits, and to all other electrical equipment in the locations surrounding the fuel dispensing devices. Resetting from an emergency shut off shall require manual intervention.

2.10 TYPE UG-1 UNLEADED GASOLINE INSTALLATION PACKAGE

- A. Manual Shutoff Valve: Steel ball valve, 1 1/2 inch size, Jomar T-2000, or Morrison Bros. 691BSS (stainless steel).
- B. Explosion Proof Solenoid Valve: Brass, 1-1/2 inch size; ASCO 8210, or Morrison Bros. 710.
- C. Pressure/Expansion Relief Valve: Use one of the following types:
 - 1. Steel Body: 1/4 inch size; Morrison Bros. 77.
 - 2. Ductile Iron Body: 1/2 inch size, Morrison Bros. 078DI.
- D. Flexible Hose: Fire rated, UL listed, braided steel; as manufactured by Titeflex, Springfield MA, or Flexing, Sherman, TX.

- E. External Emergency Valve: Spring loaded fusible link type; OPW 178S-6130 or Morrison Bros. 346DI.

2.11 TYPE D-1 DIESEL FUEL INSTALLATION PACKAGE

- A. Manual Shutoff Valve: Brass, full port ball valve, 1 1/2 inch size, Jomar T-100NE, or Morrison Bros. 691B.
- B. Explosion Proof Solenoid Valve: Brass, 1-1/2 inch SIZE; ASCO 8210, or Morrison Bros. 710.
- C. Pressure/Expansion Relief Valve: Use one of the following types:
 - 1. Steel Body: 1/4 inch size; Morrison Bros. 77.
 - 2. Ductile Iron Body: 1/2 inch size, Morrison Bros. 078DI.
- D. Flexible Hose: UL listed, braided steel, by Titeflex, Springfield MA, or Flex-ing, Sherman, TX.
- E. External Emergency Valve: Spring loaded fusible link type; OPW 178S-6130 or Morrison Bros. 346DI.

2.12 TYPE FO-1 FUEL OIL AND DIESEL GENERATOR 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/Expansion Relief Valve: Use one of the following types:
 - 1. Steel Body: 1/4 inch size; Morrison Bros. 77.
 - 2. Ductile Iron Body: 1/2 inch size, Morrison Bros. 078DI.
- D. Foot Valve: Double poppet with strainer, EBW 50-201, or Morrison Bros. 335A.
- E. External Emergency Valve: Spring loaded fusible link type; OPW 178S-6130 or Morrison Bros. 346DI.
- F. Flexible Hose: Fire rated, UL listed, braided steel; as manufactured by Titeflex, Springfield MA, or Flexing, Sherman, TX.

2.13 HEATING OIL DE-AERATORS

- A. Acceptable De-aerators:
 - 1. Tigerloop S220 series by Westwood Products - 330 William St. PO Box 610 South River, NJ. (800) 442-1630
- B. Description: Provide heating oil de-aerator where indicated for a standard heating oil system to automatically and continuously de-aerate oil before it enters the oil

pump while allowing for a one-pipe connection between the oil tank and the de-aerator.

- C. UL Listed.
- D. Maximum nozzle capacity: 20 GPH.
- E. Maximum return oil flow: 30 GPH.
- F. Temperature range: 20F - 105F.
- G. Maximum inlet pressure: 8 PSI.
- H. Fuel: No. 1 & 2 heating oil, B5 Bio-Heat
 - 1. Not for use with E-diesel or any fuel containing Ethanol (alcohol).
- I. Connections: 1/4" – NPT (F)

2.14 SUCTION PUMP DISPENSERS

- A. Full Size Suction Pump Dispensers: Pad mounted.
 - 1. Types:
 - a. Single Hose, Single Product Type: Wayne G6201P/27AGJK/AJS with hose with swivel fittings on each end, breakaway fitting, illuminated product panel and register area, pulser, and high hose retractor; 115/230 V ac.
 - b. Dual Hose, Single Product Type: Wayne G6202P/27AGJK/AJS with hose with swivel fittings on each end, breakaway fitting, illuminated product panel and register area, pulser, and high hose retractor; 115/230 V ac.
 - c. Dual Hose, Dual Product Type: Wayne G6202P/27AGJK/AJS with hose with swivel fittings on each end, breakaway fitting, illuminated product panel and register area, pulser, and high hose retractor; 115/230 V ac.
 - 2. Aboveground Dispenser Sump:
 - a. Acceptable Companies:
 - 1) DP Series by Fairfield Industries, 827 North 6th Street, Newark, NJ 07107, (973-483-0100), www.fairfield-industries.com.
 - 2) Model 434S 17000 series by Morrison Bros.
 - b. Designed for use with single hose or dual hose, single product or dual product, Dresser/Wayne suction pump dispensers.
 - c. Heavy gage stainless steel construction.
 - d. Anchor feet for pad mounting.
 - e. Provides leak containment during dispenser use and filter change outs.
 - f. Penetrations for conduit and single or double wall piping.
 - g. Adjustable stabilizer bar.
 - 3. Hose Mast Kit: Wayne Option "J". Prevents hose from touching the concrete and out of the fueling lane when the nozzle is hung in its housing

4. Cabinet and Frame:
 - a. All stainless steel construction.
 5. Pumping Unit: Positive displacement, self priming, gear type with integral centrifugal air separator, adjustable bypass valve, suction strainers at inlet connection, and 1 hp continuous duty motor with thermal overload protection.
 6. Dispenser Accessories:
 - a. Totalizer.
 - b. Double swivel fitting.
 - c. Whip hose.
 - d. Pulser.
 - e. Fuel Filters: As manufactured by Cim-Tek for required fuel type and environmental conditions.
 - f. Balance Adapter: OPW 38CS-0380.
 - g. Hose Mast Assembly: Wayne 889918-001.
- B. Hose and Nozzle Assemblies:
1. Unleaded Gasoline Hose and Nozzle Assembly:
 - a. Nozzle: OPW 11AP.
 - b. Breakaway Coupling: Dry reusable type; Husky 3360, or EBW 697.
 - c. Hose: 3/4 inch dia, minimum 15 feet long (One 5-foot hose and One 10- foot hose).
 2. Diesel Fuel Hose and Nozzle Assemblies:
 - a. Nozzle: OPW 7H.
 - b. Breakaway Coupling: Dry reusable type; Husky 2776, EBW 697, or OPW 66RB.
 - c. Hose: One inch dia, minimum 18 feet required (two 9-foot hoses).
- C. Warning Sign: Dispenser area mounted, as required per local fire code; with the following text:
- “1. NO SMOKING.
 2. SHUT OFF MOTOR.
 3. DISCHARGE YOUR STATIC ELECTRICITY BEFORE FUELING BY TOUCHING A METAL SURFACE AWAY FROM THE NOZZLE.
 4. TO PREVENT STATIC CHARGE, DO NOT REENTER YOUR VEHICLE WHILE GASOLINE IS PUMPING.
 5. IF A FIRE STARTS, DO NOT REMOVE NOZZLE – BACK AWAY IMMEDIATELY.
 6. IT IS UNLAWFUL AND DANGEROUS TO DISPENSE GASOLINE INTO UNAPPROVED CONTAINERS.
 7. NO FILLING OF PORTABLE CONTAINERS IN OR ON A MOTOR VEHICLE. PLACE CONTAINER ON GROUND BEFORE FILLING.
 8. TURN OFF HANDHELD ELECTRICAL DEVICES BEFORE DISPENSING FUEL.
 9. REMAIN WITH THE VEHICLE WHILE FUELING.”
- D. Emergency Fuel Shutoff Sign
1. Distinctly label “EMERGENCY FUEL SHUTOFF”.
 2. Provide in accordance with New York State Fire Code Section 2303.2.

3. Provide sign on dispenser indicating Emergency Fuel Shutoff Switch Location.
- E. Emergency Procedures Sign: Dispenser area mounted, as required per local fire code; with the following text:
 “IN CASE OF FIRE, SPILL OR RELEASE
1. USE EMERGENCY PUMP SHUTOFF.
 2. REPORT THE ACCIDENT!
 FIRE DEPARTMENT TELEPHONE NO. – (local number entered here).
 NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL
 CONSERVATION SPILL HOTLINE NO. (Current NYS DEC number
 entered here).
 FACILITY ADDRESS _____ (Street address and name entered here).”

2.15 TANK HEATERS

- A. Acceptable Manufacturers:
1. Watlow Industries, Lockport, NY.
 2. Chromalox, Pittsburgh, PA.
- B. Screw Plug Immersion Heaters: 1,230 and 1,845 watt heater assemblies, 2 inch size.
1. Explosion Resistant Housing: NEMA Type 8 rated enclosure for Class I, Groups B, C and D.
 2. Element Sheath: (3) steel elements in 2 inch NPT steel plug.
 3. Thermocouples:
 - a. Process: Type J, located in the thermowell for process sensing.
 - b. Limit: Type J, attached to element sheath for over temperature sensing.
 4. Control Panel (Remote): NEMA 4, with electronic PID controller for controlling process temperature, electronic digital controller for high limit protection, mechanical relays for limit power switching, electronic/mechanical hybrid relay for main power switching, silicone rubber heater with integral thermostat for freeze protection, red strobe light for high limit alarm, control circuit fusing, and reset switch for limit control mounted on door.
 5. Electrical Requirements: 208 or 240 volt, single phase as directed.
 - a. Heater Watt Density for No. 2 Fuel Oil: 23 watts/sq. inch.
- C. Flanged Heater: 3,375 watt heater assembly, 4 inch size.
1. Explosion Resistant Housing: NEMA Type 8 rated enclosure for Class I, Groups B, C and D.
 2. Element Sheath: (6) incoloy elements.
 3. Thermocouple:
 - a. Process: Type J, located in thermowell for process sensing.
 - b. Limit: Type J, attached to element sheath for over temperature sensing.
 4. Control Panel (Remote): NEMA 4, with electronic PID controller for controlling process temperature, electronic digital controller for high limit protection, mechanical relays for limit power switching, electronic/mechanical hybrid relay for main power switching, silicone

rubber heater with integral thermostat for freeze protection, red strobe light for high limit alarm, control circuit fusing, and reset switch for limit control mounted on door.

5. Electrical Requirements: 208 or 240 volt, single phase as directed.
 - a. Heater Watt Density for No. 2 Fuel Oil: 23 watts/sq. inch.
- D. Flanged Heater: 5,625 watt heater assembly, 4 inch size.
 1. Explosion Resistant Housing: NEMA Type 8 rated enclosure for Class I, Groups B, C and D.
 2. Element Sheath: (6) incoloy elements.
 3. Thermocouple:
 - a. Process : Type J, located in thermowell for process sensing.
 - b. Limit: Type J, attached to element sheath for over temperature sensing.
 4. Control Panel (Remote): NEMA 4, with electronic PID controller for controlling process temperature, electronic digital controller for high limit protection, mechanical relays for limit power switching, electronic/mechanical hybrid relay for main power switching, silicone rubber heater with integral thermostat for freeze protection, red strobe light for high limit alarm, control circuit fusing, and reset switch for limit control mounted on door.
 5. Electrical Requirements: 208 or 240 volt, single phase as directed.
 - a. Heater Watt Density for No. 2 Fuel Oil: 23 watts/sq. inch.

2.16 DIESEL EXHAUST FLUID STORAGE ENCLOSURE

- A. Self-contained storage and dispensing unit.
 1. Acceptable Systems:
 - a. Titan Cube DEF Storage System by Blue1 Energy Equipment 3040 White Horse Road, Greenville, SC 29611 (864) 385-7030, www.blue1energyequipment.com
 - b. KleerBlue Solutions, 1601 Buchanan Road, Evansville, IN 44720 (800) 320-2122, www.kleerbluesolutions.com
- B. System Components: System shall be provided as a complete self-contained unit with all required equipment and hardware including but not limited to the following:
 1. For use with 35-foot or less hose: Titan Cube DEF Storage System by Blue1 Energy, or approved equal. 396-gallon or 660-gallon DEF tank.
 - A. Enclosure including:
 - a. Robust double wall containment.
 - b. Outer tank that holds 110% of inner tank volume.
 - c. 6 GPM 120V pump.
 - d. General construction inspection approval Z-40321-510.
 - e. Hinged, lockable lid.
 - f. Electronic overfill sensor.
 - g. Integral sump.

- h. Optical bund alarm.
 - i. 2" dry-break fill port.
 - j. Liquid level gauge.
 - k. Auto nozzle and auto nozzle holder.
 - l. Fully assembled and pre-wired.
 - m. Pulse meter to connect to card reader system.
 - n. 500W internal probe heater.
2. For use with 50-foot hose: KleerBlue Solutions, or approved equal. 330-gallon DEF tank.
- A. Enclosure including:
- a. Exterior Panels: High-performance smooth surface white composite panel using a high density polyethylene core, thermally bonded between (2) high-strength steel skins. Highly resistant to punctures, dents, corrosion. It will not tear or rip, nor will it gouge or splinter like plywood or Fiberglass Reinforced Panels (FRP) found on many enclosures.
 - b. R10 insulated top & sides.
 - c. Insulated powder coated steel base frame with forklift entry points.
 - d. Horizontal fill access door & vertical dispensing access door.
 - e. Easy-to-clean durable FRP interior.
 - f. Electrical control panel.
 - g. 400w continuous duty forced air heating system with highly accurate thermostat control.
 - h. Auto exhaust fan control turns on when temperature is greater than 80° F.
 - i. LED light with on/off switch.
 - j. Adjustable heat setting between 45° F & 75° F.
 - k. Audible beeper & color changing display when temperature falls below 20° F.
 - l. Power required: 120v 20 amp circuit.
 - m. Dimensions: 48" wide x 66" long x 85" total height x 76" side wall height, weighs approximately 650 lbs.
3. 110v Tote pump w/timer, 4' suction/20' discharge hose, no meter, ss auto nozzle, Micro Matic RSV Dispense coupler.
4. Hannay Spring Rewind Hose Reel with 25' hose & 3/4" NPT Thread - bottom roller.
5. 3/4" NPT SS Swivel (suggested for use with hose reel hose - with existing tote pump).
6. Fixed Powder Coated Shelf w/ SS Meter & Pulse Output to Fuel Management System for hose reel (not included), stainless steel meter & remote display (included, mounted on shelf), stainless steel 3/4" solenoid valve (supplied & mounted), electrical junction box (supplied & mounted), 1 micron filter cartridge in poly filter housing (supplied & mounted), nozzle holder.
7. Anchor Kit for Single Tote Enclosure 4 Brackets

2.17 FUEL MANAGEMENT SYSTEM

- A. Type A: Stand alone, magnetic strip card, programmable key or keyless activated, self contained, island mounted type capable of 24 hour monitoring, and simultaneous control of maximum of 4 hoses.

1. Acceptable Systems:

- a. FuelMaster 2500 System by Syn-Tech Systems, Inc., 100 Four Points Way, Tallahassee, FL 32305, (800) 888-9136, www.marketing@syntech-fuelmaster.com.
- b. K800 Fuel Control System by OPW , 6900 Santa Fe Drive, Hodgkins, IL 60525, (708) 485-4200, www.opwglobal.com.
- c. FCT-RT Fuel Control Terminal by E.J. Ward, 8801 Tradeway, San Antonio, TX 78217, (210) 824-7383, www.ejward.com.

2. Features:

- a. Microprocessor:
 - 1) Capable of reprogramming without changing hardware, and communicates with communication controller by internal network or by dial-up phone lines.
 - 2) Memory: 2 MEG.
- b. Keypad: Heavy duty, alpha-numeric membrane type with separate key for each letter (no shift or function keys required).
- c. Display: Backlit LCD with contrast adjustment that is highly visible and easy to read in total darkness or direct sunlight.
- d. Dispenser selection controlled thru system logic by vehicle and/or operator card data.
- e. Programmable to limit delivery by card or vehicle identification.
- f. Audible "Card Left in Reader" alarm.
- g. Capable of recording and storing transaction data including operator vehicle, quantities, day and time, odometer reading; and printing this information on demand.
- h. Interfaces with fuel dispensers, tank monitoring equipment, and capable of data transfer via modem to facility computers.
- i. Storage capacity with battery backup for minimum 500 transactions.
- j. Transient protection on AC power input and modem communication.
- k. Manual system override switches.
- l. Weatherproof Cabinet and Stand: Powder coated steel construction.
- m. Capable of reconciliation reporting.
- n. Maximum Operating Temperature: -40 degrees F to 122 degrees F.

- B. Type B: Stand alone, magnetic strip card, programmable keys or keyless activated, self contained, island mounted type capable of 24 hour monitoring, and simultaneous control of maximum of 16 hoses.

1. Acceptable Systems:

- a. AssetWorks Fuel Focus System by AssetWorks, 998 Old Eagle School Road, Suite 1215, Wayne, PA 19087, (610) 687-9202, www.assetworks.com.

2. Features:
 - a. Microprocessor:
 - 1) Capable of reprogramming without changing hardware, and communicates with communication controller by internal network or by dial-up phone lines.
 - 2) Memory: 1 GB RAM, battery backed
4 GB Industrial Flash Drive
 - b. Keypad: Heavy duty, alpha-numeric membrane type with separate key for each letter (no shift or function keys required).
 - c. Display: Backlit LCD with contrast adjustment that is highly visible and easy to read in total darkness or direct sunlight.
 - d. Dispenser selection controlled thru system logic by vehicle and/or operator card data.
 - e. Programmable to limit delivery by card or vehicle identification.
 - f. Capable of recording and storing transaction data including operator vehicle, quantities, day and time, odometer reading; and printing this information on demand.
 - g. Interfaces with fuel dispensers, tank monitoring equipment, and capable of data transfer via modem to facility computers.
 - h. 4 GB storage capacity for transactions and database history in the event of loss of communication with FleetFocus database.
 - i. Transient protection on AC power input and modem communication.
 - j. Manual system override switches.
 - k. Weatherproof Cabinet and Stand: Powder coated steel construction.
 - l. Capable of reconciliation reporting.
 - m. Maximum Operating Temperature: -40 degrees F to 130 degrees F.

2.18 COMPUTER AND ACCESSORIES

- A. Computer, monitor, printer and other associated accessories to meet recommended requirements for Fuel Management System.
 1. Data cable for connection of programming computer and dispensing area control terminal: General Cable's GenSpeed 6 or GenSpeed 5000 Outside Plant Cable.
 - a. Category 5e or Category 6 certified.
 - b. Rated for submersion in water.
- B. Hardwired Power Conditioner: Surge protection and power conditioner to meet the recommended requirements of fuel management. Powervar 3.0 amp power conditioner and surge protection; Syntech Model 262684.

2.19 FASTENERS

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

2.20 FUEL FOR TESTING

- A. Coordinate with the Facility thru the Director's Representative 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.

2.21 TYPE DWS-1 INSULATION PACKAGE

- A. The DWS-1 insulation package shall apply to cylindrical tanks only and meet the following requirements:
 - 1. Complete 360° flexible insulation with 26 gauge aluminum skin with straps and banding around entire tank.
 - 2. Thickness: 3 inch fiberglass
 - 3. Density: 2.5 pcf
 - 4. Maximum Use Temperature 850°
 - 5. Flame Spread 25 or less
 - 6. Smoke development 50 or less
 - 7. Facing temperature limit 150°
 - 8. Water Vapor performance 0.02 Perms

2.22 CATWALK ASSEMBLY

- A. Catwalk Assembly:
 - 1. Stairs and railings shall meet OSHA Standard 29 CFR Ch. XVII, Paragraph 1910.25.
 - 2. Platform Mounting Height: 0 to 14 inches above the top of tank.
 - 3. Platform provides access to the fill port, stick gage port, and all other tank top fittings.
 - 4. Assemblies shall either be painted safety yellow per Section 099103, or galvanized in accordance ASTM Standard A53-96.
 - 5. Provide right and left hand stairs/platform assemblies with railings on exposed sides and chain link on tank sides.

2.23 ELECTRICAL ISLAND SHED

- A. T1-11 Mini Shed, 8' X 8' Mini Shed with light switch and light.
 - 1. Acceptable Companies:
 - a. Quality Sheds, 1140 Route 17A, Greenwood Lake, NY 10925, (845-477-8800), <https://qualitysheds.com>
 - b. Garden Time Inc., 652 Quaker Road, Queensbury, NY 12804, (518-793-8555), <https://www.gardentimeinc.com>
 - 2. Features:
 - a. T1-11 construction.
 - b. Shed, door, and drip edge painted green in accordance with manufacturer.
 - c. Arch roof with black shingles.
 - d. 3' house door without windows.
 - e. Two metal vents.

2.24 FUEL MANAGEMENT SYSTEM ENCLOSURE

- A. Fuel Management System Enclosure, 5-1/2' X 2-1/2'.
 - 1. Features:
 - a. Wood 2x4 framing with T1-11 walls and door.
 - b. Slanted roof with 1/2" pressure-treated plywood and architectural shingles.
 - c. Wood frame secured with #10 X 3" deck screws or 3" framing nails.
 - d. Enclosure secured to concrete pad with 18"L – 1/2" X 1/2" X 1/2" X 1/4"T brackets.
 - e. Enclosure painted green.

2.25 FUEL MANAGEMENT SYSTEM SHED (PREFABRICATED)

- A. Vertical storage shed, 5' X 2' with double wall resin construction.
 - 1. Acceptable Companies:
 - a. Rubbermaid, 8900 Northpointe Executive Park Drive, Huntersville, NC 28078, (888-895-2110), <https://www.rubbermaid.com>
 - 2. Features:
 - a. Double wall construction.
 - b. All weather resin material.
 - c. impact resistant flooring.

PART 3 EXECUTION

3.01 PREPARATION

- A. Proof of Testing Prior to Installation:
 - 1. Before placing the tank in place, provide the factory pressure test reports with affidavit.
 - 2. Tank shall arrive to the site under vacuum. Shipping date and vacuum shall be recorded on the delivery receipt. The vacuum upon arrival shall be recorded on the delivery receipt and compared to the vacuum at the time of shipping.

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 in the presence of the Director's Representative, as follows:
 - 1. Piping:
 - a. Flexible Primary Piping and Flexible Containment Piping: Before backfilling, plug ends and test with air at manufacturer's recommended test pressure, and hold for 3 hours without leaking.
 - b. Copper Tubing and Steel Piping: Before painting or backfilling, plug ends and test with air at 1-1/2 times operating pressure, and hold for 3 hours without leaking.
 - 2. Product Level and Overfill Protection:
 - a. The Facility through the Director's Representative will arrange for delivery of product as needed to test high level alarm, and fill limiting valve.
 - b. During the filling process the Director's Representative will 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.
 - 3. Fuel System for No. 2 Fuel Oil:
 - a. After reconnecting all piping, burning apparatus and tanks, and when directed, perform a system acceptance test in the presence of the Director's Representative to demonstrate that the fuel system is operating properly.
 - b. Make required repairs and final adjustments.
 - 4. Motor Fuel Dispensing System:
 - a. After reconnecting all piping, dispensers, and tanks, and when directed, perform a system acceptance test in the presence of the Director's Representative to demonstrate that the fuel dispensing system is operating properly.
 - b. Make required repairs and final adjustments.
 - c. Minimum flow rate for diesel or gasoline systems is 11.0 gpm.
 - 5. Fuel System for Diesel-Generators:
 - a. After reconnecting all piping, diesel-generator, and tanks, and when directed, perform a system acceptance test in the presence of the Director's Representative to demonstrate that the fuel system is operating properly.
 - b. Make required repairs and final adjustments.

END OF SECTION

SECTION 310000

EARTHWORK

PART 1 GENERAL

1.01 UNIT PRICE WORK

- A. Payment for the Work listed in the Unit Price Schedule will be made at the unit price indicated multiplied by the units of completed Work including specified adjustments.
- B. The unit prices listed below shall include all Work specified in the Division 1 General Requirements Sections.
- C. Definitions for unit price items as listed in the Unit Price Schedule in Document 004143:
 - 1. **Item No. 310000.01 - General Excavation (Up to 100 cu yds):** Payment for this Work will be made at the Contract unit price per site. The unit price includes the Work required to stockpile excavated material as contaminated, suitable, or unsuitable, and to place and compact backfill.
 - a. Suitable material is defined as material that can be properly compacted as backfill.
 - b. Payment for borrow or other materials not available at the Work site shall be made under the appropriate items in the Unit Price Schedule.
 - c. Remove any material sliding into the excavation at no expense to the State.
 - 2. **Item No. 310000.02 - General Excavation (Each cu yd over 100 cu yd per Site):** Payment for this Work will be made at the Contract unit price per cubic yard. The unit price includes the Work required to stockpile excavated material as contaminated, suitable, or unsuitable, and to place and compact backfill.
 - a. Suitable material is defined as material that can be properly compacted as backfill.
 - b. Payment for borrow or other materials not available at the Work site shall be made under the appropriate items in the Unit Price Schedule.
 - c. Remove any material sliding into the excavation at no expense to the State.
 - 3. **Item No. 310000.03 - Trenching:** Payment for this Work will be made at the Contract unit price per cubic yard. The unit price includes the Work required to stockpile excavated material as contaminated, suitable, or unsuitable; and to place and compact backfill.
 - a. Suitable material is defined as material that can be properly compacted as backfill.
 - b. Payment for borrow or other materials not available at the Work site shall be made at the appropriate item in the Unit Price Schedule.
 - c. Trench Excavation: Any excavation where the length is more than 4 times the width, and depth is greater than the width.

- 1) Trench width shall be limited to 2'-0" plus the diameters of the pipe or conduit plus 3 inch space between each pipe or conduit.
- 2) Payment will be made for the material removed within the following limits:
 - a) Actual width measured at trench bottom times actual depth for trenches up to 4'-6" deep.
 - b) For trenches deeper than 4'-6", additional excavation required for stepback will be paid for at the unit price for general excavation.
- d. When grading and trenching operations occur in the same area, the term "original ground surface" is the ground surface existing at the time trenching commences.
 - 1) The sequence of trenching-grading operations will be as directed by the Director's Representative.
- e. Pipe Line Trenches in Earth: Excavation will be computed from original ground surface to the bottom of the pipe, measured vertically, and between vertical planes to a width of 24 inches plus the internal diameter of the pipe regardless of the actual width of the trench."
4. **Item No. 310000.04 - Hand Excavation:** Payment for this Work will be made at the contract unit price per cubic yard in place. The unit price includes the Work required for the following:
 - a. Removing, classifying (as contaminated or uncontaminated), and stockpiling contaminated and uncontaminated excavated materials, backfilling, compaction.
 - b. Any additional costs for moving materials into or out of the Work area, whether excess excavated material or fill material.
 - c. Hand excavation shall be limited to areas that are not accessible to equipment and with prior approval of the Director's Representative
5. **Item No. 310000.05 - Saw Cutting Pavement:** Payment for this Work will be made at the Contract unit price per linear foot. The unit price includes the Work required for the saw cutting of any type of pavement to a 12-inch depth, and providing a neat line for patching.
6. **Item No. 310000.06 - Removal of Asphalt Concrete Pavement or Concrete Sidewalk:** Payment for the Work will be made at the Contract unit price per cubic yard in place. The unit includes the Work required for the removal of pavement regardless of depth, thickness, woven wire mesh, rebar, and any additional cutting done inside the original cut line or below the 3-inch depth.
7. **Item No. 310000.07 - Removal of Concrete Surface Pads:** Payment for the Work will be made at the Contract unit price per cubic yard in place. The unit includes the Work required for the removal of concrete surface pad up to 12 inches thick, and steel reinforcement.
8. **Item No. 310000.08 - Removal of Tank Concrete Hold Down Pads:** Payment for this Work will be made at the Contract unit price per cubic yard in place. The unit price includes the work required for the removal of tank hold down pads regardless of depth, thickness, and steel reinforcement.
9. **Item No. 310000.09 - Disposal of Construction Debris:** Payment for this Work will be made at the Contract unit price per cubic yard. The unit

price includes the Work required for loading, trucking and disposal of the material, including landfill tipping fees.

- a. Construction Debris shall include concrete, any steel reinforcement or wire mesh and asphalt pavement and other materials which in the opinion of the Director's Representative cannot be used for backfill or fill, and cannot be disposed of on the Work site.
10. **Item No. 310000.10 - Disposal of Unsuitable Excavated Material:** Payment for this Work will be made at the Contract unit price per cubic yard. The unit price includes the Work required for loading, trucking and disposal of the material, including landfill tipping fees and any laboratory characterization testing required for landfill disposal.
 - a. Unsuitable excavated material shall include clay, silt, stumps or other material which in the opinion of the Director's Representative cannot be used for backfill or fill, and cannot be disposed of on the Work site.
11. **Item No. 310000.11 – Sub-base Course Type 2, Item No. 310000.12 - Pea Gravel, and Item No. 310000.13 - Cushion Material:** Payment for these materials will be made at the Contract unit price per ton delivered to the Work site placed, compacted and incorporated into the Work.
12. **Item No. 310000.14 - Selected Fill, and Item No. 310000.15 – Suitable Material:** Payment for these materials will be made at the Contract unit price per ton delivered to the Work site placed, compacted, and incorporated into the Work.
13. **Item No. 310000.16- Filter Fabric:** Payment for filter fabric will be made at the Contract unit price per square yard measured in place.
14. **Item No. 310000.17- Lawn Restoration:** Payment for this Work will be made at the Contract unit price per square yard. The unit price includes the Work required for raking and leveling subsoil, two inches of new topsoil, raking, de-clumping, leveling topsoil, compaction, seeding, watering, and furnish sufficient amount of grass seed for one complete reseeding. Seed type shall match existing grass type.
 - a. The Contractor shall be responsible for watering the seeded area immediately thereafter to insure seed is continuously moist, and at regular intervals until the construction work is complete, or grass is growing, which ever occurs first.
 - b. The facility will maintain the restored lawn areas thereafter.
15. **Item No. 310000.18 - Remove and Stockpile Topsoil:** Payment for this Work will be made at the Contract unit price per cubic yard. The unit price includes the Work required for stripping the top 4 inches of material from the Work area; loading, transporting and stockpiling of contaminated and uncontaminated material at nearby area where directed.
 - a. Where lawn restoration is required, the Contractor may elect not to salvage the topsoil, and provide new topsoil for the restoration work.
 - b. In the event that the Contractor exercises this option, payment will be made for the actual topsoil provided at the unit price to remove and stockpile topsoil.
16. **Item No. 0310000.19 - Dewatering:** Payment for this Work will be made at the Contract unit price per day for pumping unit required to maintain a workable excavation.

- a. A day shall be considered as an 8-hour period during normal working hours.
 - b. No additional payment will be made for hours beyond the 8 hours.
 - c. The pump shall be gasoline driven mud sucker or sewage pump of a minimum 3-inch inlet and outlet size.
 - d. Provide a minimum 12-foot long suction hose with filter and 25-foot long discharge hose.
 - e. Payment for additional pumps will be made at the published rental rate.
17. **Item No. 310000.20 - Moving and Stockpiling Unsuitable Excavated Material to Another Location at Work Site:** Payment for this Work shall be made at the Contract unit price per cubic yard. The unit price includes the following:
- a. Work required for loading, trucking and disposal of the material to another location on the site as directed by Director's Representative.
 - b. Unsuitable excavated material shall include clay, silt, stumps or other material which in the opinion of the Director's Representative cannot be used for backfill or fill, and cannot be disposed of on the Work site.
18. **Item No. 310000.21 – Item B-12 Crushed Stone:** Payment for this material will be made at the Contract unit price per ton delivered to the Work site placed, and incorporated into the Work.
19. **Item No. 310000.22 – Reuse excavated material classified as Selected Fill:** Payment for these materials will be made at the Contract unit price per cubic yard. The unit price includes the following:
- a. The required testing to classify excavated materials as Selected fill and for determination of compaction requirements.
 - b. Removal of all organic material and culling out particles greater than 4 inches in size.
 - c. Placement and compaction testing.
20. **Item No. 310000.23 – Reuse excavated material classified as Suitable Material:** Payment for these materials will be made at the Contract unit price per cubic yard. The unit price includes the following:
- a. The required testing to classify excavated materials as Suitable and for determination of compaction requirements.
 - b. Placement and compaction testing.

1.02 DEFINITIONS

- A. The following terms shall have the meanings ascribed to them in this Article, wherever they appear in this Section.
- 1. Earth Excavation: The removal of all surface and subsurface material not classified as rock (as defined below).
 - 2. Rock: Limestone, sandstone, shale, granite, or similar material in solid beds or masses in its original or stratified position which can be removed only by blasting operations, drilling, wedging, or use of pneumatic tools, and boulders with a volume greater than 1.0 cu yd. Concrete building foundations and concrete slabs, not indicated, with a volume greater than 1.0 cu yd shall be classified as rock.

- a. Materials which can be loosened with a pick or backhoe, frozen materials, soft laminated shale or hardpan, pavements, curbs, and similar materials shall be classified as earth excavation. Concrete building foundations and concrete slabs, where indicated, shall be classified as earth excavation. Masonry building foundations, whether indicated or not, shall be classified as earth excavation.
3. Subgrade Surface: Surface upon which subbase or topsoil is placed.
4. Subbase: Select granular material or subbase course Type 2, which is placed immediately beneath pavement or concrete slabs.
5. Foundation Bearing Grade: Grade/elevation at which the bottom-of-footings are constructed.
6. Maximum Density: The dry unit weight in pounds per cubic foot of the soil at "Optimum Moisture Content" when determined by ASTM D 698 (Standard Proctor), or ASTM D 1557 (Modified Proctor).
7. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
8. Landscaped Areas: Areas not covered by structures, walks, roads, paving, or parking.
9. Unauthorized Excavation: The removal of material below required elevation indicated on the Drawings or beyond lateral dimensions indicated or specified without specific written direction by the Director.
10. Grading Limit Line (Shown on Drawings): Limits of grading, excavations and filling required for the work of this contract. Unless specifically noted otherwise, the Grading Limit Line and Contract Limit Line shall be considered the same.

1.03 SUBMITTALS

- A. Product Data:
 1. Permanent Sheeting, Shoring, and Bracing: Specifications for materials and accessories.
 2. Filter Fabric: Manufacturer's catalog sheets, specifications, and installation instructions.
- B. Quality Control Submittals:
 1. Subbase Materials: Name and location of source and the DOT Source Number. If the material is not being taken from an approved DOT Source the results of the gradation and soundness tests performed by an ASTM certified soils laboratory will be required.
 2. Other Aggregates: Name and location of source and soil laboratory test results.
 3. Sheeting, Shoring, and Bracing (Not shown on the Drawings): Submit a detailed plan of intended sheeting, shoring and bracing, signed by a New York State licensed Professional Engineer, for the Director's information. This submittal will not relieve the Contractor of responsibility for the successful performance of the intended sheeting, shoring and bracing methods.
 4. Excavation Procedure: Submit a lay out drawing or detailed outline of intended excavation procedure for the Director's information. This

submittal will not relieve the Contractor of responsibility for the successful performance of intended excavation methods.

1.04 QUALITY ASSURANCE

- A. Provide prepackaged seed readily available to the public with quality and purity equal to product of Scotts Miracle-Gro Company, Marysville, OH 43041. On-the-job or made-to-order mixes will not be accepted.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect filter fabric from sunlight during transportation and storage.
- B. Deliver fertilizer in manufacturer's standard size bags or cartons showing weight, analysis, and the name of the manufacturer. Store as approved by Director's Representative.
- C. Store all seed at the site in a cool dry place as approved by the Director's Representative. Replace any seed damaged during storage.

1.06 SCHEDULING

- A. Time For Seeding: Sow grass seed between April 1 and May 15th or between August 15th and October 15th, except as otherwise approved in writing by the Director.

1.07 PROJECT CONDITIONS

- A. Protect existing trees and plants during performance of the Work. Box trees and plants indicated to remain within the grading limit lines with temporary steel fencing or solidly constructed wood barricades as required. Protect root systems from smothering. Do not store excavated material, or allow vehicular traffic or parking within the branch drip line. Restrict foot traffic to prevent excessive compaction of soil over root systems.
- B. Cold Weather Requirements:
 - 1. Excavation: When freezing temperatures are anticipated, do not excavate to final required elevations for concrete work unless concrete can be placed immediately.
 - 2. Backfilling: If backfill is being placed during freezing temperatures the backfilling operations shall be monitored by the Director's Representative and the following procedures shall be followed:
 - a. Frozen ground shall be removed in its entirety from beneath and five feet beyond the area of fill placement.
 - b. The fill material placed shall consist of Selected Fill and shall be free of all frozen chunks that exceed four inches in size. The material transported to the project site shall only consist of material excavated from below the frost depth.
 - c. At the end of the work day, the area of fill placement shall be covered with insulated blankets, or left unprotected. Other means of protection (hay, wood chips, etc.) may also be used for

protection provided it is approved by the Director's Representative.

- d. Following work day, remove the insulated blankets and/or strip the area of all frozen material as specified previously.
- e. Upon establishing the subgrade elevations, protect the grades with insulated blankets or place additional material that will adequately insulate the exposed earth surface from frost. This additional fill or protective material shall be stripped just prior to pouring concrete.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Select Granular Material: Stockpiled, sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation and material requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
2 inch	50.8	100
1/4 inch	6.35	30-65
No. 40	0.425	5-40
No. 200	0.075	0-10

1. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after four test cycles.
 2. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
 3. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its
- B. Subbase Course Type 2: Stockpiled, crushed ledge rock or approved blast furnace slag. Comply with the gradation and material requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
2 inch	50.8	100
1/4 inch	6.35	25-60
No. 40	0.425	5-40
No. 200	0.075	0-10

1. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after four test cycles.
2. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
3. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated

particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.

- C. Item B-12: Equal Blend of No.1 and No. 2 Crushed Stone that complies with material requirements of DOT Article 703-02, crushed stone only.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1-1/2 inch	38.1	100
1 inch	25.4	95-100
½ inch	12.7	45-60
¼ inch	6.35	0-15

- D. Selected Fill: Sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
4 inch	101.6	100
No. 40	0.425	0-70
No. 200	0.075	0-15

- E. Suitable Material (Fill and Backfill for Landscaped Areas): Material consisting of mineral soil (inorganic), blasted or broken rock and similar materials of natural or man-made origin, including mixtures thereof. Maximum particle size shall not exceed 2/3 of the specified layer thickness prior to compaction. NOTE: Material containing cinders, industrial waste, sludge, building rubble, land fill, muck, and peat shall be considered unsuitable for fill and backfill, except topsoil and organic silt may be used as suitable material in landscaped areas provided it is placed in the top layer of the subgrade surface.
- F. Cushion Material: Shall consist of clean, hard, durable, uncoated particles, free from lumps of clay and all deleterious substances and shall meet the following gradation requirements:

Sieve Size		Percent Passing
Sieve Size	Size opening (mm)	
1/4 inch	6.35	100
No. 60	0.25	0-35
No. 100	0.15	0-10

- G. Pea Gravel: Comply with DOT Article 703-02 for screened gravel.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1/2 inch	12.7	100
1/4 inch	6.35	90-100
1/8 inch	3.17	0-15
No. 200 Sieve	0.075	0-1

- H. Fertilizer: Mixed commercial fertilizers shall contain total nitrogen, available phosphoric acid and soluble potash in the ratio of 10-6-4 (50% N/UF). 50% of total nitrogen shall be derived from ureaform furnishing a minimum of 3.5% water insoluble nitrogen (3.5% WIN). The balance of the nitrogen shall be present as methylene urea, water-soluble urea, nitrate and ammoniacal compounds.
1. Other fertilizers meeting DOT Specification Section 713-03 Fertilizer can be used.
- I. Grass Seed:
1. Furnish fresh, clean, new-crop seed mixed in the proportions specified for species and variety, and conforming to Federal and State Standards.
 2. Acceptable material in a seed mixture other than pure live seed consists of nonviable seed, chaff, hulls, live seed of crop plants and inert matter. The percentage of weed seed shall not exceed 0.1 percent by weight.
 3. All seed will be rejected if the label indicates any noxious weed seeds.
 4. Provide seed mixture equal to Scotts Classic Sun and Shade Grass Seed Mixture, comprised of the following:

ED MIXTURE			
AMOUNT BY WEIGHT IN MIXTURE	SPECIES OR VARIETY *	PERCENTAGE	
		PURITY	GERMINATION
30 PERCENT	FENWAY RED FESCUE	97 PERCENT	80 PERCENT
30 PERCENT	ABBEY KENTUCKY BLUEGRASS BLEND	95 PERCENT	80 PERCENT
20 PERCENT	DEVINE PERENNIAL RYE	98 PERCENT	85 PERCENT
20 PERCENT	ENCHANTED PERENNIAL RYE	98 PERCENT	85 PERCENT
100 PERCENT			

*Variety may be altered depending on availability of seed from manufacturer.

- J. Mulch: Dry Application, Straw: Stalks of oats, wheat, rye or other approved crops that are free of noxious weed seeds. Weight shall be based on a 15 percent moisture content.
- K. Marker Tape: Blackburn/Elastimoid Type YT6, or Seton Nameplate Corporations Style 85524, imprinted with message suited to item buried below.

2.02 GEOTECHNICAL FABRICS

- A. Filter Fabric (GeoTextile)
1. Drainage and Erosion Control: Ten Cate Geosyntietics Mirafi 140N & 160N.
 2. Separation for foundation drains, underdrains, undercuts: Propex Geotex 250ST & 315ST, and Ten Cate Geosyntietics Mirafi Geolon HP570 & HP1500.

2.03 SHEETING, SHORING, AND BRACING

- A. Steel Sheetpiling: Continuous interlock type complete with all required accessories conforming to ASTM A 328 or ASTM A 572.
 - 1. Furnish steel sheet-piling of design, configuration, and length to sustain pressure of earth to be retained.
- B. Timber Sheeting, Shoring, and Bracing: Structural grade timber or lumber uprights, stringers and cross braces of sufficient dimension to resist pressure of Work to be retained.
 - 1. Timber and lumber used for permanent sheeting shall be pressure creosoted.
- C. Sheeting, shoring, and bracing Work will be handled on a per work order basis as non-unit price Work

PART 3 EXECUTION

3.01 CLEARING AND GRUBBING

- A. Clear and grub trees, shrubs, brush, other prominent vegetation, debris, and obstructions except for those items indicated to remain. Completely remove stumps and roots protruding through the ground surface.
- B. Fill depressions caused by the clearing and grubbing operations in accordance with the requirements for filling and backfilling, unless further excavation is indicated.

3.02 REMOVAL OF TOPSOIL

- A. Remove existing topsoil from areas where excavation or fill is required.
- B. Stockpile approved topsoil where directed until required for use. Place, grade, and shape stockpiles for proper drainage.
 - 1. Topsoil shall be tested prior to stockpiling. Stockpile only quantities of topsoil approved in writing for re-use. Dispose of excess topsoil as specified.

3.03 UNDERGROUND UTILITIES

- A. Locate existing underground utilities prior to commencing excavation work. Determine exact utility locations by hand excavated test pits. Support and protect utilities to remain in place.
- B. Do not interrupt existing utilities that are in service until temporary or new utilities are installed and operational.
- C. Utilities to remain in service: Shall be re-routed as shown on the Contract Drawings.

- D. Utilities abandoned beneath and five feet laterally beyond the structure's proposed footprint shall be removed in their entirety. Excavations required for their removal shall be backfilled and compacted as specified herein.
- E. Utilities located outside the limits specified above may be abandoned in place provided their ends are adequately plugged as described below.
 - 1. Permanently close open ends of abandoned underground utilities exposed by excavations, which extend outside the limits of the area to be excavated.
 - 2. Close open ends of metallic conduit and pipe with threaded galvanized metal caps or plastic plugs or other approved method for the type of material and size of pipe. Do not use wood plugs.
 - 3. Close open ends of concrete and masonry utilities with concrete or flow-able fill.

3.04 EXCAVATION AND TRENCHING

- A. Excavate earth as required for the Work.
- B. Install and maintain all erosion and sedimentation controls during all earthwork operations as specified on the Contract Drawings or as directed by local officials. If the erosion and sedimentation controls specified by the local officials are more stringent than those specified on the Contract Drawings contact the Director's Representative.
- C. Maintain sides and slopes of excavations in a safe condition until completion of backfilling. Comply with Code of Federal Regulations Title 29 - Labor, Part 1926 (OSHA).
 - 1. Trenches: Deposit excavated material on one side of trench only. Trim banks of excavated material to prevent cave-ins and prevent material from falling or sliding into trench. Keep a clear footway between excavated material and trench edge. Maintain areas to allow free drainage of surface water.
- D. Stockpile excavated materials classified as suitable material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage as approved by the Director's Representative.
- E. Concrete Slabs, Floors, and Bases: Excavate to the following depths below bottom of concrete for addition of Subbase Course Type 2:
 - 1. Interior: 6 inches unless otherwise indicated.
 - 2. Exterior: 12 inches unless otherwise indicated.
- F. Conduit, Cable, Tubing and Piping: Provide sufficient trench width for installation and to accommodate special backfill when specified.
- G. Underground Storage Tanks: Excavate as required to install tank and to accommodate special backfill.

1. The excavation shall have a bottom four feet wider and four feet longer than the tank with wall slope of 30 degrees off vertical.
- H. Pavement: Excavate to subgrade surface elevation.
- I. Open Ditches: Cut ditches to cross sections and grades indicated.
- J. Unauthorized Excavations: Unless otherwise directed, backfill unauthorized excavation under footings, foundation bases, and retaining walls with compacted select granular material without altering the required footing elevation. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavation of the same classification, unless otherwise directed by the Director.
 1. Unauthorized excavations under structural Work such as footings, foundation bases, and retaining walls shall be reported immediately to the Director before any concrete or backfilling Work commences.
- K. Notify the Director's Representative upon completion of excavation operations. Do not proceed with the Work until the excavation is inspected and approved. Inspection of the excavation by the Director's Representative will be made on 3 working days notice.

3.05 DEWATERING

- A. Prevent surface water and subsurface or ground water from flowing into excavations and trenches. Pump out any accumulated water.
- B. Do not allow water to accumulate in excavations or trenches. Remove water from all excavations immediately to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the Site.
- C. Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.
- D. Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

3.06 SHEETING, SHORING, AND BRACING

- A. Temporary Sheet piling: Install temporary sheeting (or sheet-piling) with shoring and bracing as required to create a safe working environment and prevent settlement or other damage to adjacent grounds and structures resulting from excavation operations. Shore and brace sheeting in a manner which will not interfere with progress of other Work or related contracts (if any) on this project. Check shoring and bracing for settlement, and adjust for settlement. Promptly remove temporary sheeting, shoring, and bracing when no longer required.

- B. Permanent Sheeting: Install permanent steel sheet-piling or timber sheeting where shown. Cut off top of permanent sheeting 12 inches below finish grade.
- C. Sheeting, shoring, and bracing Work will be handled on a per work order basis as non-unit price Work

3.07 SETTLEMENT DETECTION

- A. Establish a settlement detection method approved by the Director's Representative for structures subject to settlement from excavation, sheeting or sheet-piling operations. Maintain surveillance to detect any settlement.

3.08 PLACING FILTER FABRIC

- A. Place and overlap filter fabric in accordance with the manufacturer's installation instructions, unless otherwise shown.
- B. Cover tears and other damaged areas with additional filter fabric layer extending 3 feet beyond the damage.
- C. Do not permit traffic or construction equipment directly on filter fabric.
- D. Backfill over filter fabric within two weeks after placement. Backfill in accordance with the fabric manufacturer's instructions and in a manner to prevent damage to the fabric.

3.09 PLACING FILL AND BACKFILL

- A. Surface Preparation of Fill Areas: Strip topsoil, remaining vegetation, and other deleterious materials prior to placement of fill. Break up or scarify old pavements to a maximum of 2 square feet. Prior to placement of fill, smooth out and compact areas where wheel rutting has occurred due to stripping or earthwork operations.
- B. Excavations: Backfill as promptly as Work permits, but not until completion of the following:
 - 1. Inspection, testing, approval, and recording locations of underground utilities.
 - 2. Removal of concrete formwork.
 - 3. Removal of temporary sheeting (or sheet-piling) and backfilling of voids caused by removals.
 - 4. Cutting off top of permanent sheeting (or sheet-piling).
 - 5. Removal of trash and debris.
- C. Place backfill and fill materials in layers not more than 8 inches thick in loose depth unless otherwise specified. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not place backfill or fill material on surfaces that are muddy, frozen, or covered with ice. Do not backfill with excavated material unless it meets the requirements of this Section.

1. Place fill and backfill against foundation walls, and in confined areas (such as trenches) not easily accessible by larger compaction equipment, in maximum 6 inch thick (loose depth) layers.
- D. Prevent wedging action of backfill against fuel storage tanks by placing the material uniformly around the tank to approximately the same elevation in each layer.
- E. Under Concrete Surface Pads Not over Fuel Storage Tank(s), and Pump Islands:
 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 2. Subbase Material: Place 12 inches of Subbase Course Type 2 over subgrade surface.
- F. Under Concrete Surface Pads Over Fuel Storage Tank(s): Backfill with pea gravel as shown. Do not compact pea gravel.
- G. Under Interior Concrete Slabs and Bases:
 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 2. Subbase Material: Place 6 inches of Subbase Course Type 2 over subgrade surface.
- H. Under Exterior Pavement and Walks:
 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 2. Subbase Material: Subbase Course Type 2 over subgrade surface.
- I. Landscape Areas: Place suitable material when required to complete fill or backfill areas up to subgrade surface elevation. Do not use material containing rocks over 4 inches in diameter within the top 12 inches of suitable material.
 1. Item B-12 crushed stone may be used in lieu of suitable material to within 12 inches of subgrade surface elevation when directed by Director's Representative. Complete remainder of backfill with suitable material.
- J. Rigid Nonmetallic Conduit: Except where concrete encasement is required place cushion material a minimum of 4 inches deep under conduit, 4 inches on both sides, and 12 inches above top of conduit. Complete balance of backfill as specified. Compact in layers.
- K. Copper Tubing: Place cushion material a minimum of 6 inches deep under pipe, 6 inches on either side, and 12 inches above top of pipe. Complete balance of backfill as specified. Compact all backfill in layers.
- L. Underground glass-fiber-reinforced thermosetting-resin pipe and Polyethylene Piping: Place cushion material a minimum of 4 inches deep under pipe, 4 inches on either side and 12 inches above top of pipe. Complete balance of backfill as specified. Compact all backfill in layers.

- M. Underground Storage Tanks: Place pea gravel a minimum of 12 inches deep between tank and concrete mat. Backfill around sides and ends of tank with a minimum of 24 inches of pea gravel. Backfill over top of tank with a minimum of 24 inches of pea gravel. Do not compact pea gravel.
- N. Direct Burial Cable: Place sand a minimum of 6 inches deep under cable, 6 inches on either side, and 12 inches above top of cable. Complete balance of backfill as specified. Compact in layers.
- O. Marker Tape: Install marker tape 4 inches below finish grade directly over the following:
 - 1. Direct burial cable.
 - 2. Conduit.
 - 3. Motor fuel product and gage piping.
 - 4. Fuel oil product and gage piping.

3.10 COMPACTION

- A. All materials with exception of open graded stone (No. 2 Crushed Stone, No. 1 Crushed Stone, Item B-12, etc.):
 - 1. Compact each layer of fill and backfill for the following area classifications to the percentage of maximum density specified below and at a moisture content suitable to obtain the required densities, but at not less than three percent drier or more than two percent wetter than the optimum content as determined by ASTM D 698 (Standard Proctor) or 1557 (Modified Proctor).
 - a. Structures (entire area within ten feet outside perimeter): 95 percent.
 - b. Concrete Slabs and Steps: 95 percent.
 - c. Landscaped Areas: 90 percent.
 - d. Pavements and Walks: 95 percent.
 - e. Pipes and Tunnels: 95 percent.
 - f. Pipe Bedding: 95 percent. If a compacted layer fails to meet the specified percentage of maximum density, the layer will be re-compacted and retested. If compaction cannot be achieved the material/layer will be removed and replaced. No additional material may be placed over a compacted layer until the specified density is achieved
- B. Open graded Stone (Item B-12 crushed stone, etc): Place material in maximum twelve inch lifts. Each lift shall be raked smooth and compacted through several passes of a walk behind vibratory roller. Compaction Testing is **not** required.
- C. Moisture Control:
 - 1. Where fill or backfill must be moisture conditioned before compaction, uniformly apply water to the surface and to each layer of fill or backfill. Prevent ponding or other free water on surface subsequent to, and during compaction operations.
 - 2. Remove and replace, or scarify and air dry, soil that is too wet to permit compaction to specified density. Soil that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing, until moisture

content is reduced to a value which will permit compaction to the percentage of maximum density specified.

3.11 ROUGH GRADING

- A. Interior Grading: Trim unexcavated spaces within the building to levels indicated.
 - 1. Subgrade for Interior Slabs: Compact as specified to receive fill material. Finish subgrade surface within 1 inch above or below level specified for fill required.
- B. Exterior Grading: Trim and grade excavations required by this Contract, to a level of 4 inches below the finish grades indicated unless otherwise indicated. Provide smooth uniform transition to adjacent areas.

3.12 FINISH GRADING

- A. Finish surfaces free from irregular surface changes, and as follows:
 - 1. Grassed Areas: Finish areas to receive topsoil to within 1 inch above or below the required subgrade surface elevations.
 - 2. Walks: Place and compact subbase material as specified. Shape surface of areas under walks to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.
 - 3. Pavements: Place and compact subbase material as specified. Shape surface of areas under pavement to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.
 - 4. Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified, and to required subbase elevation. Finish final grades within a tolerance of 1/4 inch when tested with a 10 foot straightedge.
- B. Spread topsoil directly upon prepared subgrade surface to a depth measuring 4 inches after natural settlement of the topsoil has occurred in areas to be seeded or to receive sod. Place to greater depth when necessary to adjust grades to required elevations.
 - 1. Approved existing topsoil shall be used.
- C. Finish topsoil surface free of depressions which will trap water, free of stones over 1 inch in any dimension, and free of debris.

3.13 SPREADING TOPSOIL

- A. Perform topsoil spreading operations only during dry weather.
- B. To insure a proper bond with the topsoil, harrow or otherwise loosen the subgrade to a depth of 3 inches before spreading topsoil.
- C. Spread topsoil directly upon prepared subgrade to a minimum depth measuring 4 inches after natural settlement in areas to be seeded. Smooth out unsightly

variations, bumps, ridges, and depressions that will hold water. Remove stones, litter, or other objectionable material. Finished surfaces shall conform to the contour lines and elevations indicated on the drawings or fixed by the Director's Representative.

3.14 PREPARATION FOR SEEDING

- A. Seed Bed: Scarify soil to a depth of 2 inches in compacted areas. Smooth out unsightly variations, bumps, ridges, and depressions that will hold water. Remove stones, litter, or other objectionable material.

3.15 FERTILIZING

- A. Apply 10-6-4 fertilizer evenly at the rate of 40 pounds per 1000 sq ft .

3.16 SEEDING

- A. Assume all risks when seed is sowed before approval of seed analysis.
- B. Do not seed when the wind velocity exceeds 5 miles per hour.
- C. Application Rate: 8 pounds per 1000 sq ft.
- D. Dry Application: Sow seed evenly by hand or seed spreader on dry or moderately dry soil.

3.17 MULCHING

- A. Dry Application: Within 3 days after seeding, cover the seeded areas with a uniform blanket of straw mulch at the rate of 50 pounds per 1000 sq ft of seeded area.

3.18 LAWN ESTABLISHMENT

- A. Maintain the grass at heights between 2-1/2 inches and 3-1/2 inches and include a minimum of 2 mowings.
- B. Water and protect all seeded areas until final acceptance of the lawn.

3.19 FINAL LAWN ACCEPTANCE

- A. Final acceptance of seeded areas will be granted when a uniform stand of acceptable grass is obtained, with a minimum of 95 percent coverage. Portions of the seeded areas may be accepted at various times at the discretion of the Director's Representative.
- B. Unacceptable seeded areas, dry application: Reseed as specified and fertilized at one-half the specified rate.
- C. Once accepted, the State will assume all maintenance responsibilities.

3.20 MAINTENANCE AND RESTORATION

- A. Restore pavements, walks, curbs, lawns, and other exterior surfaces damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable.
- B. Topsoil and seed or sod damaged lawn areas. Water as required until physical completion of the Work.

3.21 DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS (OTHER THAN PETROLEUM CONTAMINATED SOIL AND WATER)

- A. Excess and Unsuitable Materials including materials resulting from clearing and grubbing and removal of existing improvements: Use one of the following as directed for each Site:
 - 1. Remove of materials from State Property and dispose off site.
 - 2. Transport materials to spoil areas on State property designated by the Director's Representative, and dispose of such materials as directed.
- B. Excess Topsoil: Transport topsoil to areas on State property designated by the Director's Representative. Smooth grade deposited topsoil.

3.22 FIELD QUALITY CONTROL

- A. Compaction Testing: Notify the Director's Representative at least 3 working days in advance of all phases of filling and backfilling operations.
- B. Compaction testing will be performed by the State Term Consultant to ascertain the compacted density of the fill and backfill materials.
- C. Compaction testing will be performed on certain layers of the fill and backfill as determined by the Director's Representative.
- D. If a compacted layer fails to meet the specified percentage of maximum density, the layer shall be recompact and will be retested.
- E. No additional material may be placed over a compacted layer until the specified density is achieved.

3.23 PROTECTION

- A. Protect graded areas from traffic and erosion, and keep them free of trash and debris.

END OF SECTION