

Replace Ground Fueling Facility, DLA, Fort Belvoir, VA

<u>Category:</u>	Automotive	<u>Project ID #:</u>	1004309155
<u>Street Address:</u>	Fort Belvoir, Virginia Fort Belvoir VA 22060	<u>Staff Estimate Value</u>	\$5,000,000.00
<u>County:</u>	Fairfax	<u>Stage:</u>	BIDDING - Biddate Set
<u>Bid Date:</u>	7/12/2017 , 11:00AM		
<u>Architect:</u>			
<u>Documents Available:</u>	Plans, Specs, Addenda available in Insight		Plans available from US Army Corps of Engineers - Baltimore District
<u>Last Update:</u>	6/29/2017		Project reviewed, Stage confirmed as Biddate Set

Personal Notes

User	Note	Update Date	Private?
Adam Sweet	12,000 GALLON DW UST FRP BIODIESEL 12,00 GALLON DW UST FRP E-85 STORAGE TANK; 20,000 GALLON DW UST FRP MOGAS; 30,000 GALLON DW FRP UST DIESEL; DISPENSERS; PIPING; CANOPY; DW OIL WATER SEPARATOR	6/29/2017	False

Notes

Scope

Demolition, site work and new construction of a service station / car wash facility in Fort Belvoir, Virginia. Completed plans call for the demolition of a service station / car wash facility; and for the construction of a 1,078-square-foot service station / car wash facility. This proposed procurement is a Competitive, 8(a) Set Aside; NAICS 236220 "Commercial and Institutional Building Construction" with a size standard of \$36,500,000.00. Project Description: The USACE, Baltimore District, has been tasked to solicit for and award construction services to Replace Ground Vehicle Fueling Facility, DLA, Fort Belvoir, Virginia. The proposed project includes providing a ground vehicle fueling facility consisting of four self-contained double-walled underground tanks consisting of two (2) 12,000 gallons, one (1) 20,000 gallons and one (1) 30,000 gallons, dispensing stations with four outlets and canopy and secondary containment. In addition the project will provide two truck fillstands with canopy parking for two re-fueler trucks, provide a 1,078 square foot fuel station control building with appurtenances including site work, storm water system, paving, fencing with gates and utilities. The magnitude of construction is between \$1,000,000.00 and \$5,000,000.00. Construction duration is approximately 480 calendar days from Notice to Proceed. Additional information in accordance with the statement of work will be included in the invitation for bid package. Bids due on or about 5 July 2017. The solicitation will be provided in an electronic format, free of charge to all authenticated account holders of Federal Business Opportunities (FBO) System. Please note that all Corps of Engineers acquisitions are considered sensitive, but unclassified documents, and require users to have a valid MPIN entered in the FBO system to access packages. Vendors must be registered with the System for Award Management (SAM) database to receive a government contract award. Vendors must also be registered in Representations and Certifications Applications (included in SAM). The North American Industry Classification System (NAICS) Code applicable (236220 listed above) to this acquisition must be in vendor's SAM registration. Note: Update SAM profile to include all applicable NAICS Codes associated with your company. Vendors may register for SAM online at www.sam.gov or by calling 1-866-606-8220. Contracting Office Address: 10 South Howard Street Baltimore, Maryland 21203 United States Place of Performance: Defense Logistics Activity Fort Belvoir, Virginia United States Primary Point of Contact.: Sierra S. Marshall sierra.s.marshall@usace.army.mil Phone: 4109626037

Notes

Bid Date: 07/12/2017 11:00AM the bid dated has been changed to 07/12/2017. Bids - 10 South Howard Street, Baltimore, Maryland 21203 , United States Development include(s): New Construction, Demolition, Site Work

Details

[Division 2]: Building Demolition, Clearing, Dewatering, Shoring, Earthwork, Grading, Paving & Surfacing, Water Systems, Sewerage & Drainage, Irrigation, Landscaping. [Division 3]: Concrete Formwork, Concrete Reinforcement, Structural Concrete, Structural Precast Concrete. [Division 4]: Clay Unit Masonry, Concrete Unit Masonry, Masonry Restoration & Cleaning. [Division 5]: Structural Steel, Metal Decking, Cold Formed Metal Framing, Metal Fabrications, Expansion Joints. [Division 6]: Rough Carpentry, Finish Carpentry, Custom Casework, Plastic Fabrications. [Division 7]: Insulation, Fireproofing, Firestopping, Manufactured Roofing & Siding. [Division 8]: Metal Doors, Metal Windows, Wood Windows, Hardware, Glass & Glazing. [Division 9]: Ceiling Suspension Systems, Lath & Plaster, Drywall/Gypsum, Tile, Acoustical Ceilings, Resilient Flooring, Painting. [Division 10]: Wall & Corner Guards, Directories, Protective Covers, Partitions, Toilet & Bath Accessories. [Division 11]: Parking Control Equipment. [Division 12]: Manufactured Casework, Window Treatment. [Division 13]: Pre-Engineered Structures. [Division 14]: Material Handling Systems. [Division 15]: Mechanical Insulation, Plumbing Fixtures, Water Heaters, Air Handling, Ductwork. [Division 16]: Service/Distribution, Interior Lighting, Exterior Lighting, Emergency Lighting, Lightning Protection Systems, Alarm & Detection Systems, Voice & Data Systems.

Additional Details

<u>Listed On:</u>	3/14/2017	<u>Floor Area:</u>	1,078Square Feet
<u>Contract Type:</u>		<u>Work Type:</u>	New
<u>Stage Comments 1:</u>		<u>Floors Below Grade:</u>	
<u>Stage Comments 2:</u>		<u>Owner Type:</u>	Federal
<u>Bid Date:</u>	7/12/2017	<u>Mandatory Pre Bid Conference:</u>	
<u>Invitation #:</u>	W912DR-17-B-0010	<u>Commence Date:</u>	9/4/2017
<u>Structures:</u>	2	<u>Completion Date:</u>	12/28/2018
<u>Single Trade Project:</u>		<u>Site Area:</u>	
<u>Floors:</u>		<u>LEED Certification Intent:</u>	
<u>Parent Project ID:</u>		<u>Units:</u>	
<u>Parking Spaces:</u>			

Project Participants

Company Role	Company Name	Contact Name	Address	Phone	Email	Fax
Civil Engineer, Owner, Structural Engineer	US Army Corps of Engineers - Baltimore District		10 S Howard St. P.O. Box 1715, Baltimore, MD 21203	(410) 962-4045		(410) 962-0933
Civil Engineer, Owner, Structural Engineer	US Army Corps of Engineers - Baltimore District	C Kelly	10 S Howard St. P.O. Box 1715, Baltimore, MD 21203	(410) 962-4045		(410) 962-0933
Civil Engineer	Austin Brockenbrough and Associates	Keith D. Stanley	1011 Boulder Springs Dr. , Richmond, VA 23225	(804) 592-3889	kstanley@brockenbrough.com	(804) 592-3901
Owner	US Army Corps of Engineers - Memphis District	Sierra Marshall	167 N. Main St. , Memphis, TN 38103	(410) 962-6037	sierra.s.marshall@usace.army.mil	(901) 544-3786
Civil Engineer, Owner, Structural Engineer	US Army Corps of Engineers - Baltimore District	Wayne Boeck	10 S Howard St. P.O. Box 1715, Baltimore, MD 21203	(410) 962-4045		(410) 962-0933

Bidders

Company Name	Contact Name	Added Date	Address	Phone	Email	Bidding Role	Bid Rank	Bid Value	Fax Number
Doyon Project Services	Michael Jackson	6/9/2017	33810 Weyerhaeuser Way S. Ste. 100, Federal Way, WA 98001	(253) 344-5300		Bidder - General Contractor			(253) 344-5301
SAF Inc (Alexandria)	William Rowles	6/19/2017	6014 Rock Cliff Lane # M, Alexandria, VA 22315	(703) 417-9112	trowles@safinc.us.com	Prospective Bidder - General Contractor			(703) 991-2442
IMEC Group LLC	Gudell Ward	6/19/2017	6470 Dobbin Road, Ste B , Columbia, MD 21045	(443) 583-7890	gward@imeccgroupllc.com	Bidder - General Contractor			(443) 458-7743
Tidewater Inc	Jason M. Gauthier	6/19/2017	6625 Selnick Drive , Elkridge, MD 21075	(410) 540-8700		Prospective Bidder - General Contractor			
Luke Oil Company	Daniel Tursman	6/19/2017	3592 N. Hobart Road , Hobart, IN 46342	(219) 962-7676	dtursman@lukeoil.com	Prospective Bidder - General Contractor			(219) 962-9529
James Frankie		6/19/2017	2745 Fernlawn Rd , Salem, VA 24153	(540) 797-2406		Prospective Bidder - General Contractor			

Planholders

Company Name	Contact Name	Address	Phone	Email	Fax
PowerTec Inc.	Taylor Londeree	1708 MacTavish Ave. , Richmond, VA 23230	(804) 359-3600	taylor@powertecva.com	(804) 359-0663
L & L Enterprises, Inc	Dawn Louizes	709 Keith Lane , Owings, MD 20736	(301) 855-8787	dawn@shoringup.com	(301) 855-6660

Tanks Direct	Jeff Shultz	8580 Laureldale Dr. , Laurel, MD 20724	(301) 317- 6000	jeff@tanksdirect.com	(301) 317- 8265
Kau Inc	Kathryn Waldron	2625 Wheatland Woods Dr , Fredericksburg, VA 22408	(540) 903- 4290	kathryn@kauinc.com	(866) 493- 3299
Odell Associates, Inc	Jim Snyder	2700 East Cary St. , Richmond, VA 23223	(804) 287- 8200	snyderj@odell.com	(804) 287- 8279
SDC Contracting, LLC	Jennifer Strickland	2404 Castleton Commerce Way , Virginia Bch, VA 23456	(757) 689- 3665	estimatina@sdcontractina.com	
UST Services Corporation		920 Keith Ln. , Owings, MD 20736	(410) 286- 3850		

Contracts

Classification	Conditions	Bonding	Bid Date	Bids To	Bid Type
General Contractor		Bid:20.00%,Perf:100.00%,Pay:100.00%	7/12/2017	Owner	Open Bidding

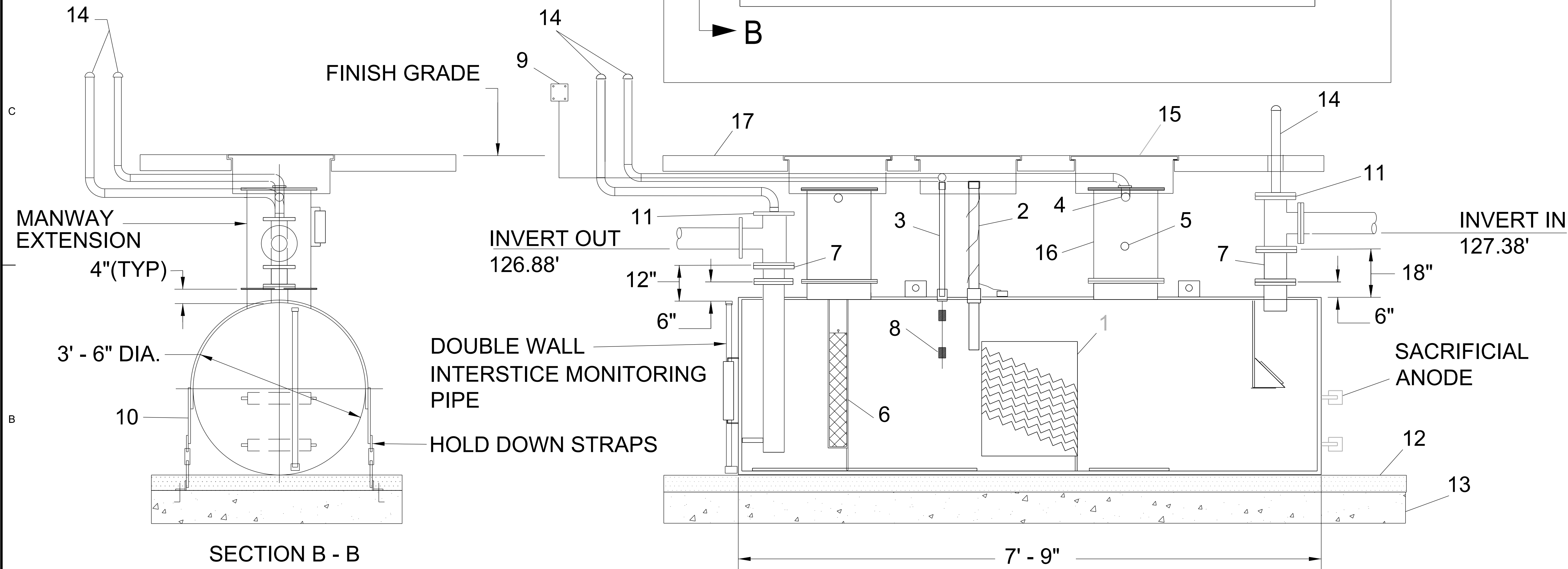
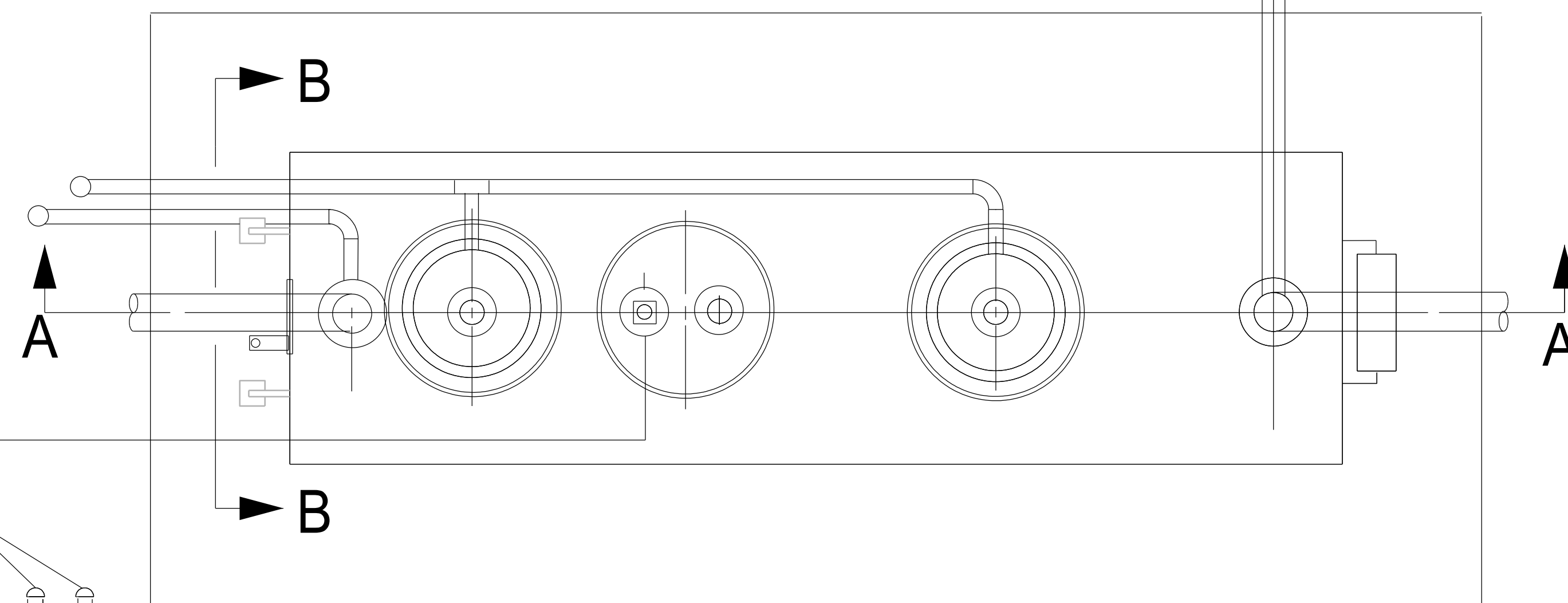
History

User	Viewed	First Viewed Date	Currently Tracked?	Date Tracked
Mike Long	True	6/5/2017	False	
Adam Sweet	True	3/27/2017	True	3/20/2017



US ARMY CORPS
OF ENGINEERS
OMAHA DISTRICT

PLAN VIEW
NO SCALE



OIL WATER SEPARATOR EQUIPMENT

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> 1. PARALLEL CORRUGATED PLATE COALESCER 2. OIL PUMP OUT PIPE WITH RISER PIPE 3. LEVEL SENSOR RISER PIPE 4. N.P.T. - FITTING FOR VENT (TYP. BOTH MANWAYS) 5. N.P.T. -FITTING FOR SKIMMER 6. COALESCER PACKS 7. ISOLATION SPOOL | <ul style="list-style-type: none"> 8. INTERFACE / LEVEL SENSOR 9. ALARM / CONTROL PANEL 10. HOLD DOWN STRAPS / TURNBUCKLES 11. FLANGED TEE 12. APPROVED BEDDING MATERIAL 13. CONCRETE BASE PAD 14. VENT PIPING 15. MANWAY AND COVER 16. MANWAY EXTENSION | <ul style="list-style-type: none"> 17. CONCRETE HOLD-DOWN PAD |
|--|---|--|

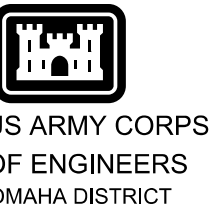
MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: RAK	CHKD BY: RAK	SUBMITTED BY: DNC	FILE NAME: 060-3-010	DATE: 3/1/22	SCALE: AS SHOWN	DATE: 05/20/22	SCALE: AS SHOWN
SOLICITATION NO.: W912DR17E0010		CONTRACT NO.: W912DR17E0010		FILE NUMBER: 060-3-010		DATE: 05/20/22	

U. S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA

REPLACE GROUND VEHICLE FUELING FACILITY FORT BELVOIR, VA
DOUBLE-WALL OIL/WATER SEPARATOR DETAILS

SHEET IDENTIFICATION NUMBER CU403



US ARMY CORPS OF ENGINEERS OMAHA DISTRICT

MARK	DATE	APPR.	DESCRIPTION

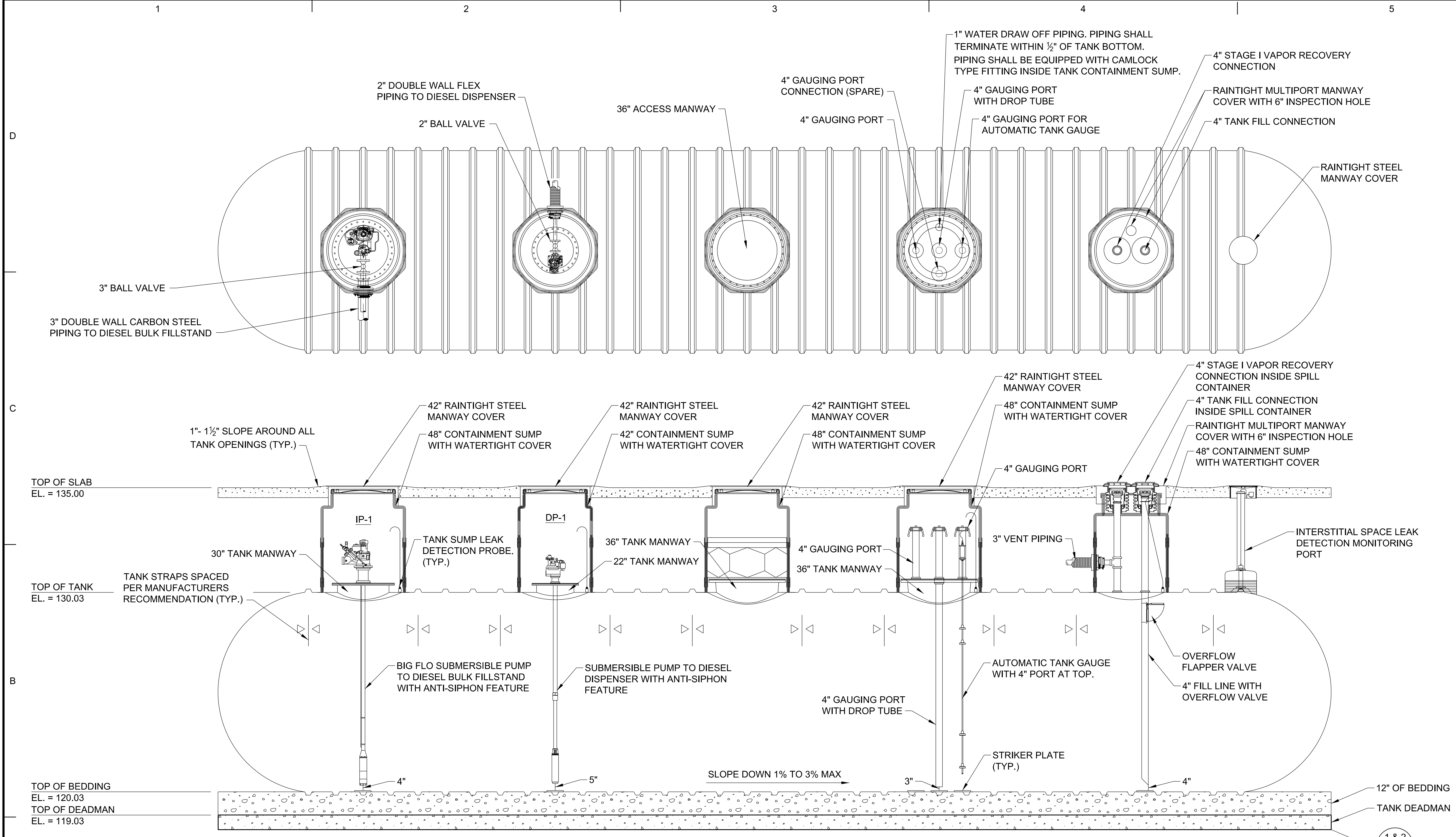
DESIGNED BY: Matthew M. Peterson	CHECKED BY: C.R.M.	DATE: MAY 2017
DRAWN BY: M.M.P.	FILE NUMBER: 331322	SCALE: 1"=3'-0"
SUBMITTED BY: Michael T. Smith, PE	DATE: 5/2/2017	
PROJECT NAME: 331322		
CONTRACT NO.:W912DR17-5-010		
SOLICITATION NO.:W912DR17-5-010		

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

REPLACE GROUND VEHICLE FUELING FACILITY
FORT BELVOIR, VA

30,000 GALLON DIESEL UST DETAILS

SHEET IDENTIFICATION NUMBER
MS508



30,000 GALLON DOUBLE WALL FIBERGLASS UNDERGROUND STORAGE TANK FOR DIESEL

SCALE: NO SCALE

NOTES:

1. ALL PIPING SHALL SLOPE 1" PER 100'-0" OF PIPING TOWARD TANK.
2. UNDERGROUND STORAGE TANKS (USTs) SHALL BE DOUBLE WALL FIBERGLASS.
3. ALL TANK CONNECTIONS AND PIPING CONNECTIONS TO MANWAYS SHALL BE NPT FITTINGS.
4. STAGE I VAPOR RECOVERY CONNECTION IS NOT NEEDED FOR DIESEL BUT SHALL BE INSTALLED FOR POSSIBLE FUTURE PRODUCT CHANGE. PIPE COVER SHALL BE LOCKED.
5. VAPOR RECOVERY AND TANK FILL SPILL BUCKETS SHALL BE 5 GALLONS.
6. ALL TANK CONTAINMENT SUMPS SHALL BE EQUIPPED WITH A LEAK DETECTION PROBE EXCEPT THE CONTAINMENT SUMP THAT CONTAINS THE 36" ACCESS MANWAY.
7. ALL GAUGING PORTS SHALL BE EQUIPPED WITH ALUMINUM CAMLOCK TYPE FITTING.
8. ELEVATIONS SHOWN MAY CHANGE DEPENDING ON TANK MANUFACTURER.

TANK INFORMATION				
TANK MATERIAL	TANK CONSTRUCTION	TANK LENGTH	TANK SHELL DIAMETER	TANK SHELL DIAMETER W/ RIBS
FIBERGLASS	DOUBLE WALL	55'-9 3/4"	10'-0"	10'-4"

*TANK DIMENSIONS MAY CHANGE BASED ON MANUFACTURER
*TANK HISOV SHALL BE LOCATED BETWEEN THE HIGH LEVEL ALARM AND HIGH-HIGH LEVEL ALARM

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US ARMY CORPS OF ENGINEERS OMAHA DISTRICT

MARK	DATE	APPR	DESCRIPTION

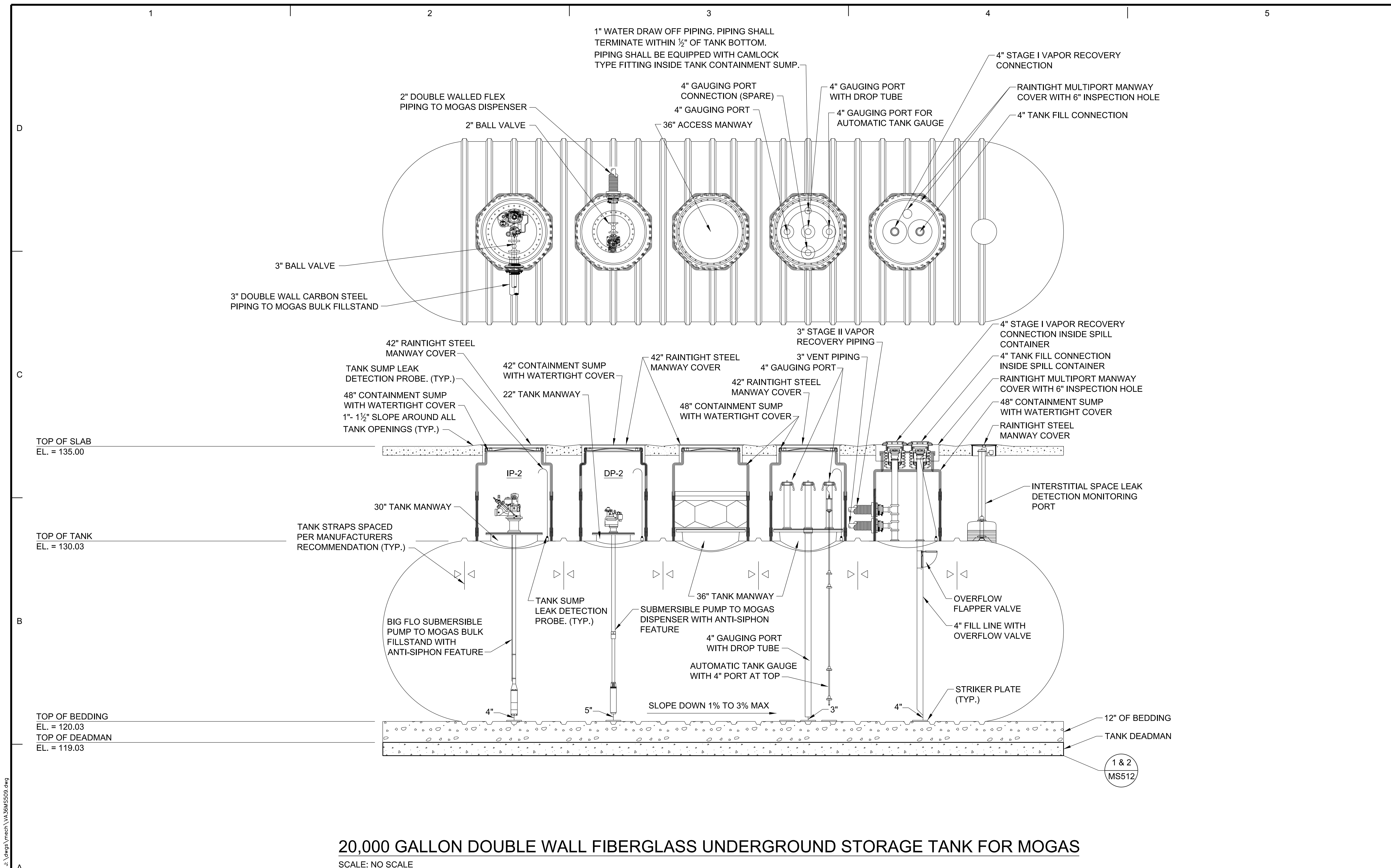
DESIGNED BY: Matthew M. Peterson	DATE: MAY 2017
DWN BY: C.R.M.	SOLICITATION NO.:W912DR17B0010
SUBMITTED BY: Michael T. Smith, PE	CONTRACT NO.:W912DF04C00XX
FILE NAME: 17-0505.dwg	FILE NUMBER:1753
SHEET NO.:33/1322	FLOOR SCALE: 1/4" = 0'-0"
	DATE: 5/2/2017

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

REPLACE GROUND VEHICLE FUELING FACILITY
FORT BELVOIR, VA

20,000 GALLON MOGAS UST DETAILS

SHEET IDENTIFICATION NUMBER
MS509



20,000 GALLON DOUBLE WALL FIBERGLASS UNDERGROUND STORAGE TANK FOR MOGAS

1 & 2
MS512

- NOTES:**
1. ALL PIPING SHALL SLOPE 1" PER 100'-0" OF PIPING TOWARD TANK.
 2. UNDERGROUND STORAGE TANKS (USTs) SHALL BE DOUBLE WALL FIBERGLASS.
 3. ALL TANK CONNECTIONS AND PIPING CONNECTIONS TO MANWAYS SHALL BE NPT FITTINGS.
 4. VAPOR RECOVERY AND TANK FILL SPILL BUCKETS SHALL BE 5 GALLONS.
 5. ALL TANK CONTAINMENT SUMPS SHALL BE EQUIPPED WITH A LEAK DETECTION PROBE EXCEPT THE CONTAINMENT SUMP THAT CONTAINS THE 36" ACCESS MANWAY.
 6. ALL GAUGING PORTS SHALL BE EQUIPPED WITH ALUMINUM CAMLOCK TYPE FITTING.
 7. VENT AND STAGE II VAPOR RECOVERY PIPING CAN TIE INTO A COMMON EXTRACTOR VENT VALVE INSTEAD OF HAVING TWO 'T' CONNECTIONS INTO THE STAGE I VAPOR RECOVERY PIPING.
 8. ELEVATIONS SHOWN MAY CHANGE DEPENDING ON TANK MANUFACTURER.

TANK INFORMATION				
TANK MATERIAL	TANK CONSTRUCTION	TANK LENGTH	TANK SHELL DIAMETER	TANK SHELL DIAMETER W/ RIBS
FIBERGLASS	DOUBLE WALL	37'-8 3/4"	10'-0"	10'-4"

*TANK DIMENSIONS MAY CHANGE BASED ON MANUFACTURER
*TANK HEIGHT SHALL BE LOCATED BETWEEN THE HIGH LEVEL ALARM AND HIGH-HIGH LEVEL ALARM

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US ARMY CORPS OF ENGINEERS OMAHA DISTRICT

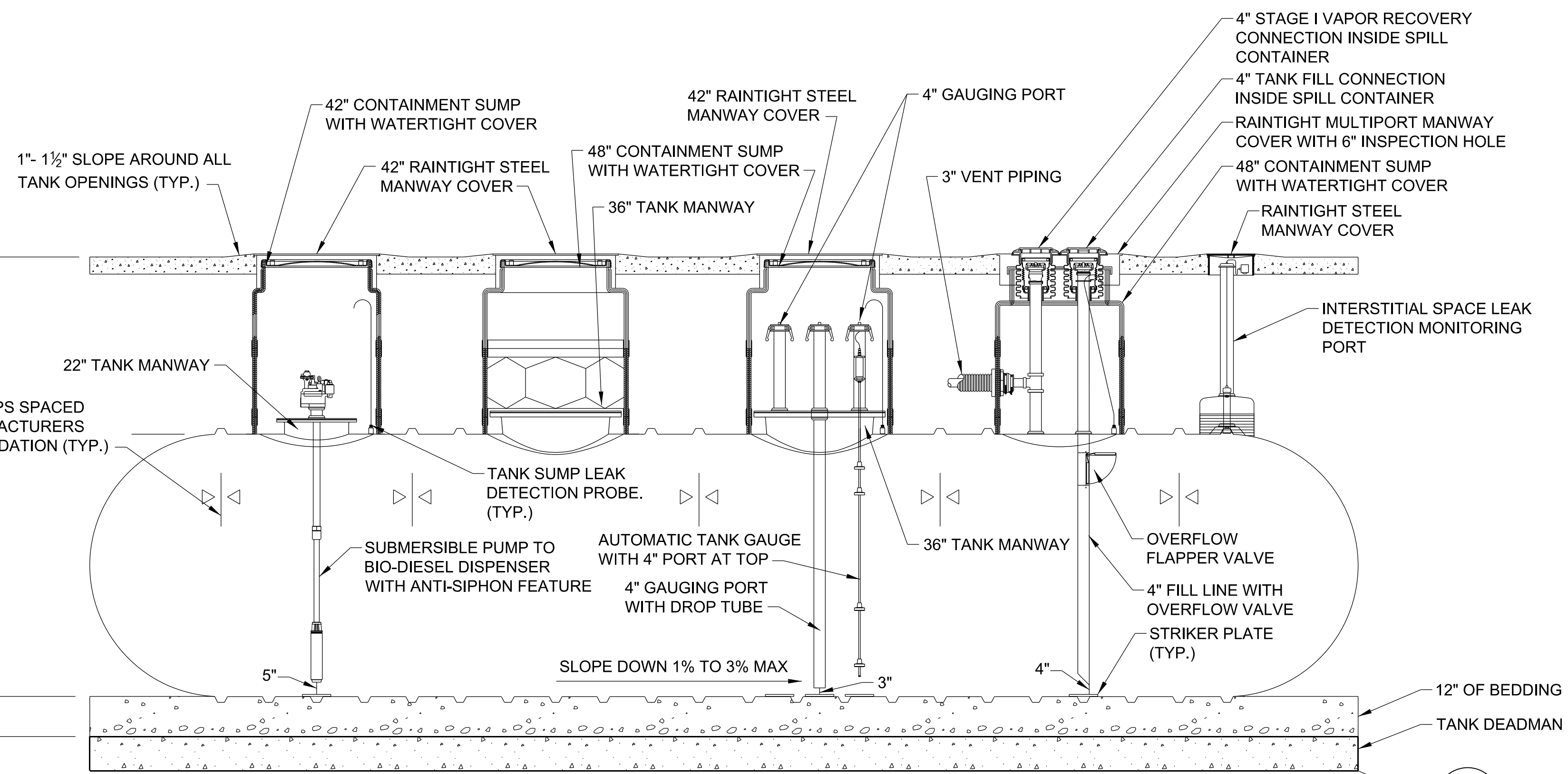
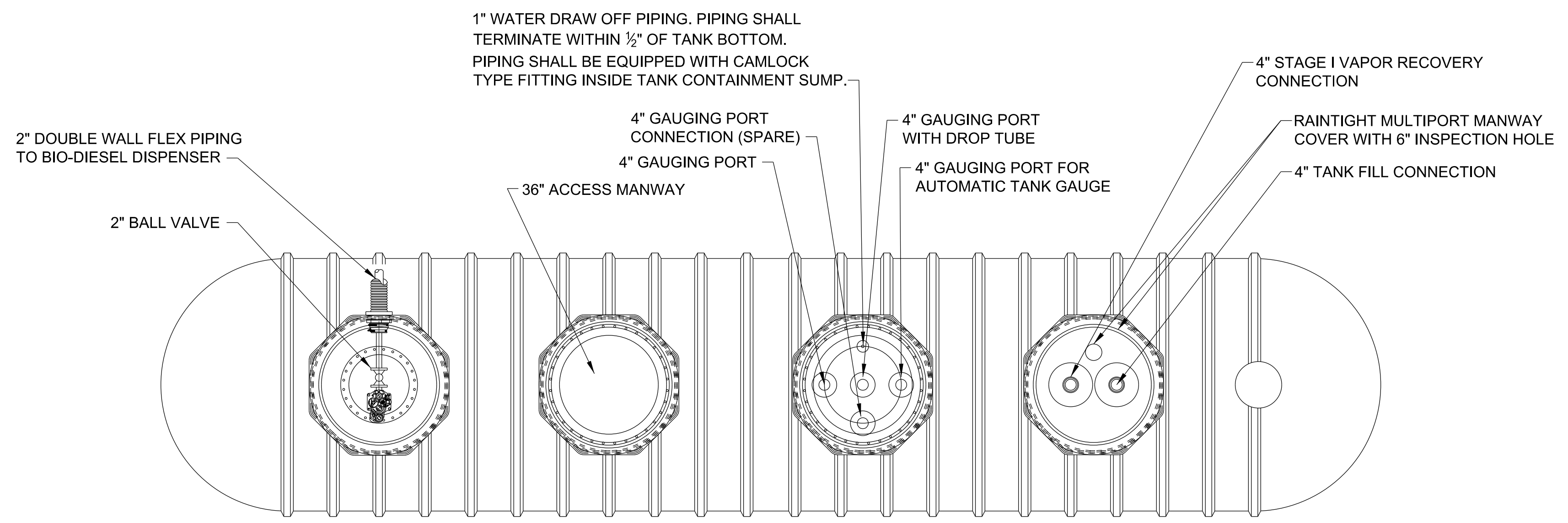
MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: Matthew M. Peterson	DATE: MAY 2017
DWN BY: M.M.P.	SOLICITATION NO.:W912DR17B0010
SUBMITTED BY: Michael T. Smith, PE	CONTRACT NO.:W912DR17B0010
FILE NAME: UST.dwg	FILE NUMBER:11531
SCALE: 1 1/4" = 1'-0"	DATE: 5/22/2017

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA

REPLACE GROUND VEHICLE FUELING FACILITY FORT BELVOIR, VA
12,000 GALLON BIO-DIESEL UST DETAILS

SHEET IDENTIFICATION NUMBER
MS511



12,000 GALLON DOUBLE WALL FIBERGLASS UNDERGROUND STORAGE TANK FOR BIO-DIESEL

SCALE: NO SCALE

NOTES:

1. ALL PIPING SHALL SLOPE 1" PER 100'-0" OF PIPING TOWARD TANK.
2. UNDERGROUND STORAGE TANKS (USTs) SHALL BE DOUBLE WALL FIBERGLASS.
3. ALL TANK CONNECTIONS AND PIPING CONNECTIONS TO MANWAYS SHALL BE NPT FITTINGS.
4. STAGE I VAPOR RECOVERY CONNECTION IS NOT NEEDED FOR DIESEL BUT SHALL BE INSTALLED FOR POSSIBLE FUTURE PRODUCT CHANGE. PIPE COVER SHALL BE LOCKED.
5. VAPOR RECOVERY AND TANK FILL SPILL BUCKETS SHALL BE 5 GALLONS.
6. ALL TANK CONTAINMENT SUMPS SHALL BE EQUIPPED WITH A LEAK DETECTION PROBE EXCEPT THE CONTAINMENT SUMP THAT CONTAINS THE 36" ACCESS MANWAY.
7. ALL GAUGING PORTS SHALL BE EQUIPPED WITH ALUMINUM CAMLOCK TYPE FITTING.
8. ELEVATIONS SHOWN MAY CHANGE DEPENDING ON TANK MANUFACTURER.

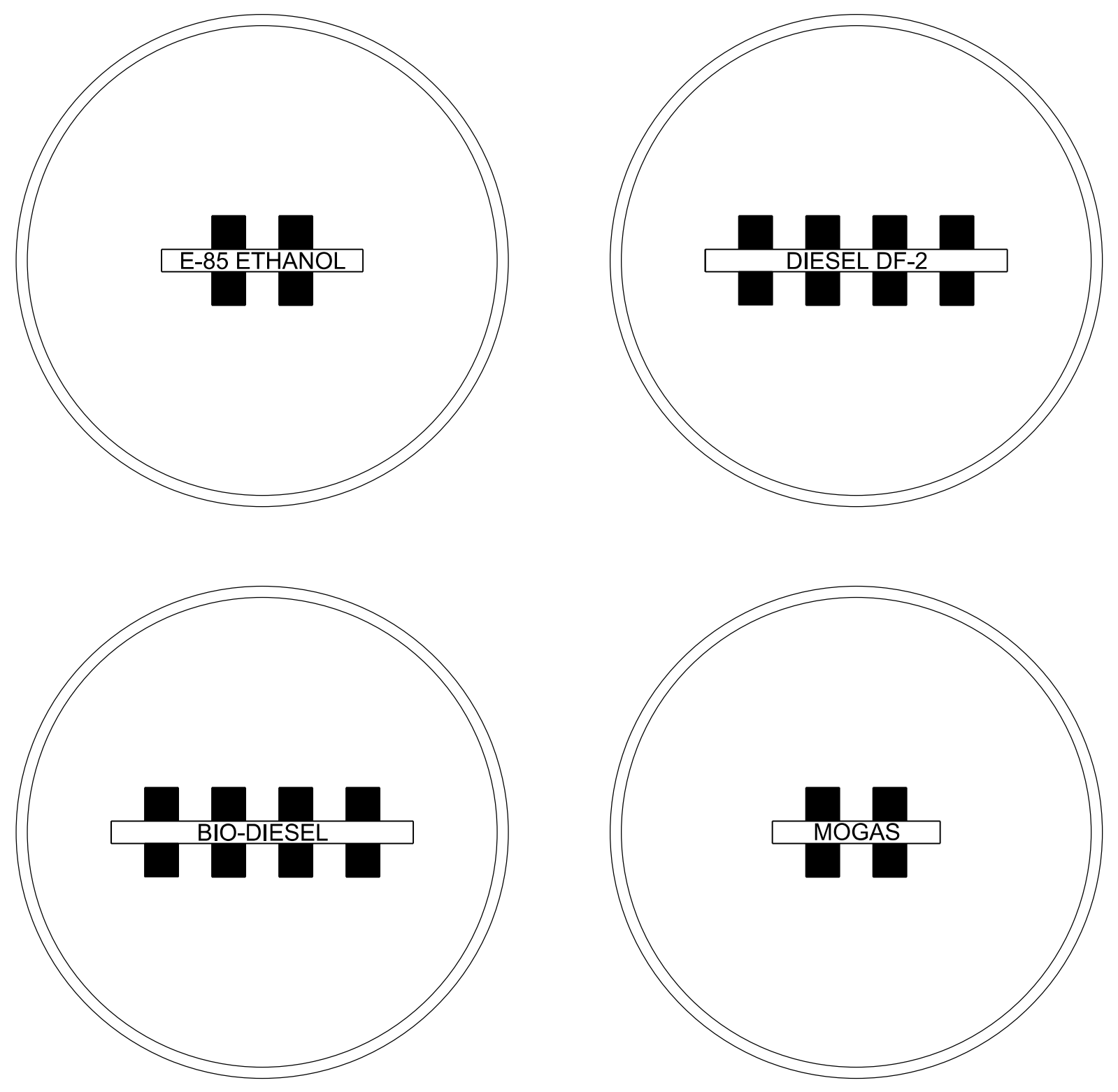
TANK INFORMATION				
TANK MATERIAL	TANK CONSTRUCTION	TANK LENGTH	TANK SHELL DIAMETER	TANK SHELL DIAMETER W/ RIBS
FIBERGLASS	DOUBLE WALL	37'-0 1/2"	7'-8"	8'-0"

*TANK DIMENSIONS MAY CHANGE BASED ON MANUFACTURER
*TANK HHSOV SHALL BE LOCATED BETWEEN THE HIGH LEVEL ALARM AND HIGH-HIGH LEVEL ALARM

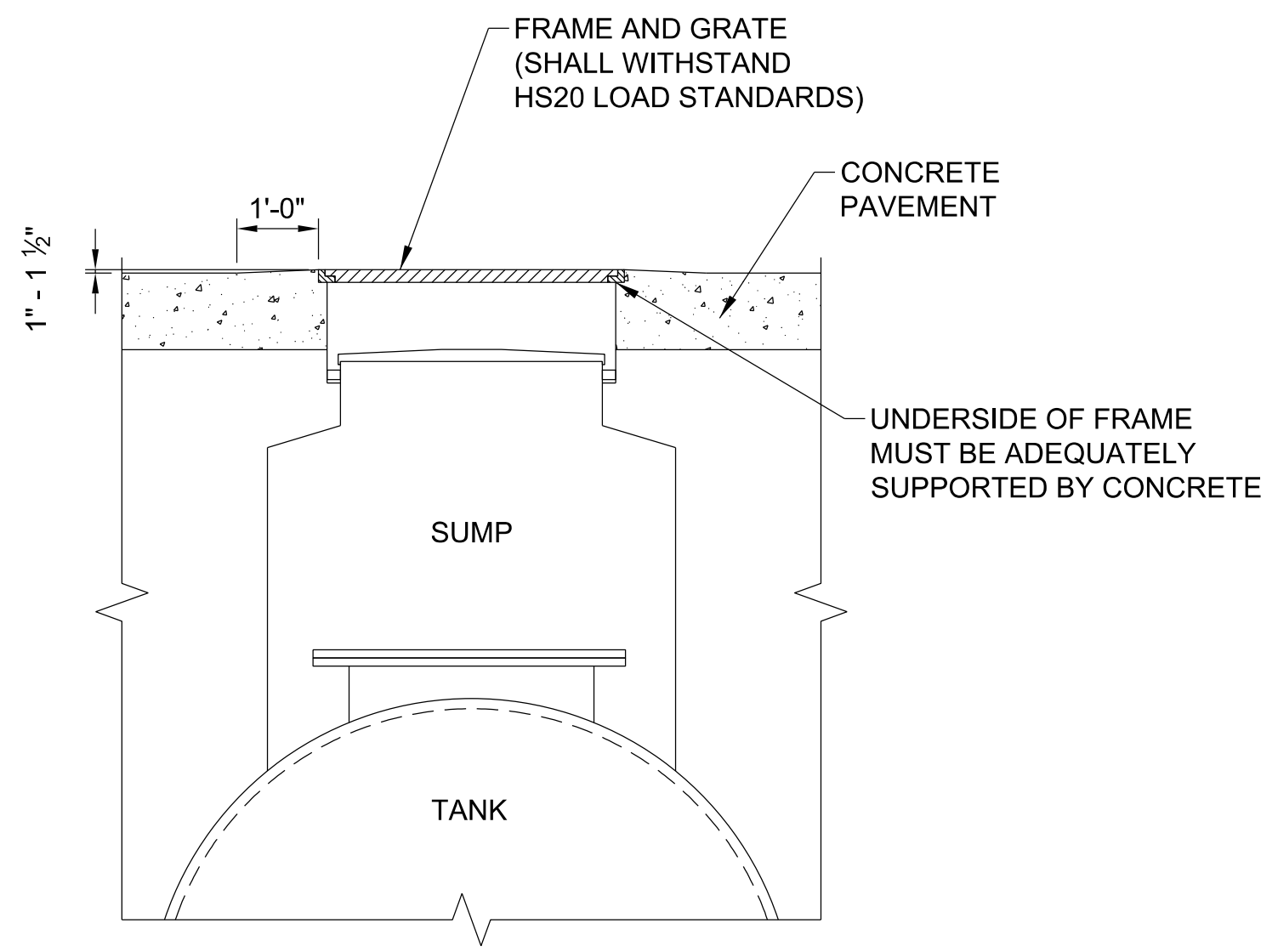
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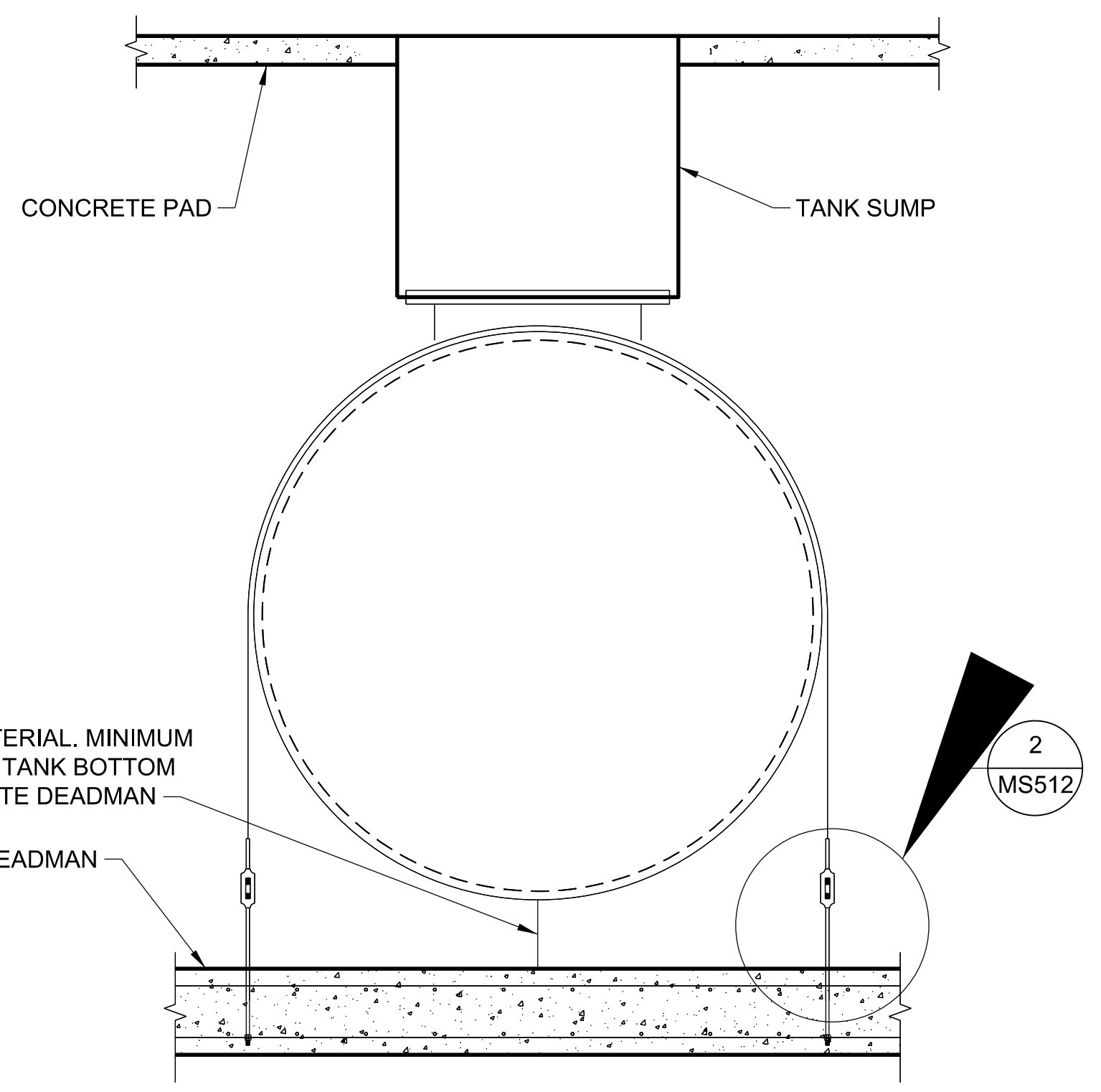
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TANK MANWAY LABELING
SCALE: NO SCALE
NOTE:
1. THE TANK LABEL SHALL RESIDE ON THE 36" ACCESS
MANWAY ON EACH TANK.

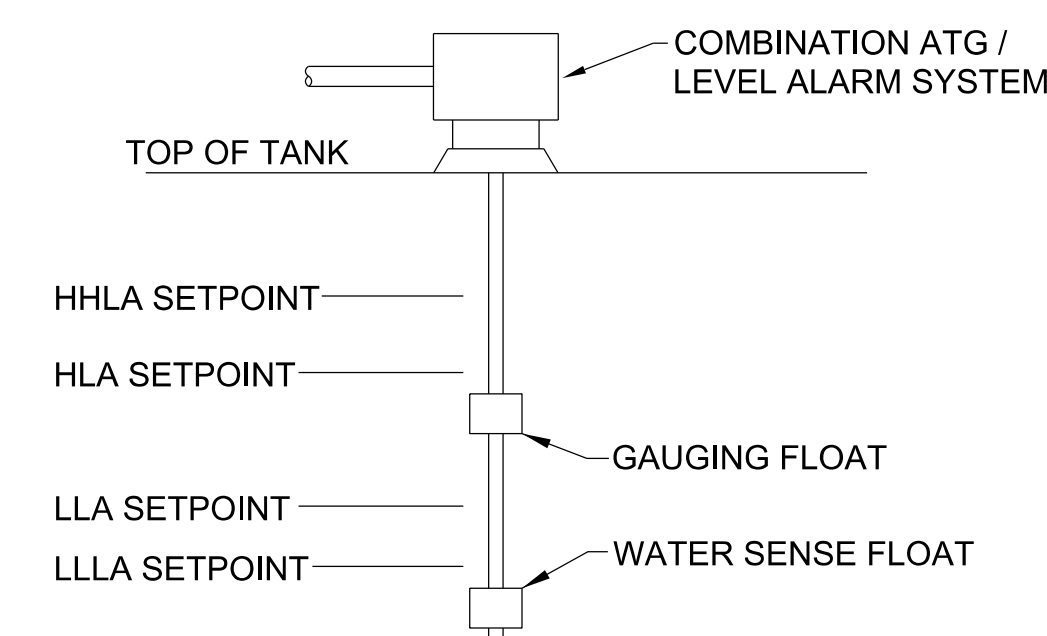


TANK SUMP INSTALLATION
SCALE: NO SCALE



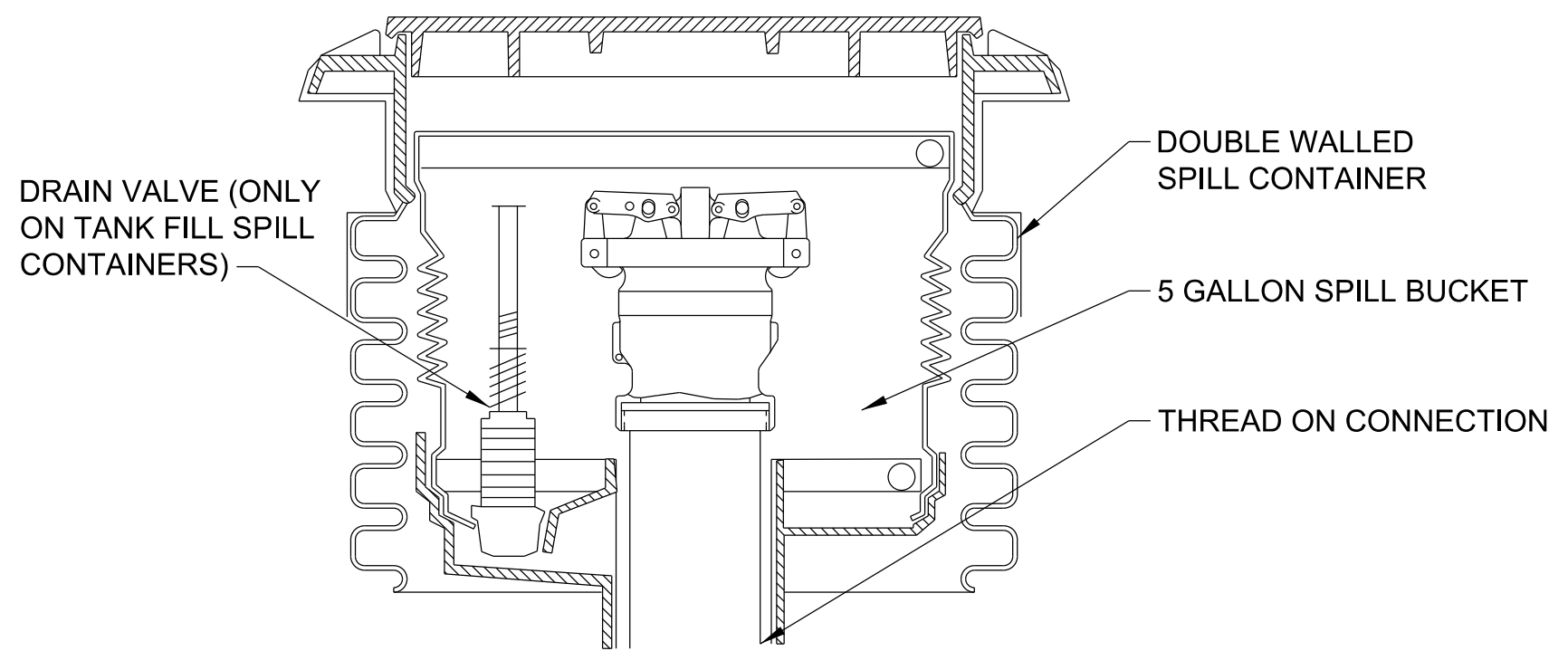
TANK STRAP INSTALLATION DETAIL
SCALE: NO SCALE
NOTE:
1. HOLD-DOWN STRAP, TURN BUCKLE AND
ANCHOR ROD SHALL BE NON-CORROSIVE OR
COATED FOR CORROSION PROTECTION.

MS508
MS509
MS510
MS511

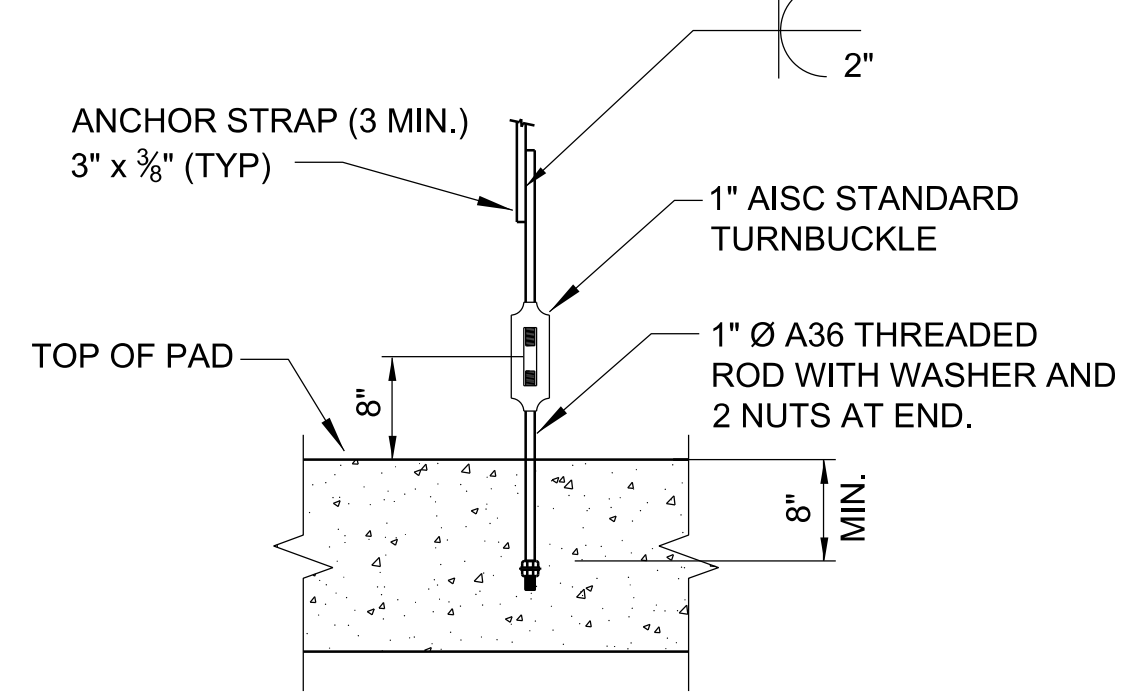


LEVEL ALARM HEIGHT				
	RISING LEVEL ACTUATOR POINT		FALLING LEVEL ACTUATOR POINT	
	HLA	HHLA	LLA	LLLA
ALL TANKS	90% VOLUME	95% VOLUME	15% VOLUME	AT MINIMUM PUMP SUBMERGENCE LEVEL
SYSTEM RESPONSE	ACTIVATES AUDIBLE AND VISUAL ALARM	ACTIVATES AUDIBLE AND VISUAL ALARM	ACTIVATES AUDIBLE AND VISUAL ALARM	SHUTS DOWN DISPENSER PUMP AND THE TRUCK FILLSTAND PUMP

TANK LEVEL ALARM
SCALE: NO SCALE



SPILL CONTAINER DETAIL
SCALE: NO SCALE



TANK STRAP DETAIL
SCALE: NO SCALE
MS508
MS509
MS510
MS511

UNDERGROUND STORAGE TANK DETAILS
SCALE: NO SCALE

- NOTES:**
1. TANK MANUFACTURER RECOMMENDATIONS FOR INSTALLATION SHALL TAKE PRECEDENCE OVER DETAILS SHOWN ON THIS SHEET.
 2. UNDERGROUND STORAGE TANKS OCCASIONALLY RELY ON BACKFILL AND TOP SLAB TO HOLD THE TANK IN PLACE IN ADDITION TO THE HOLD DOWN STRAPS AND CONCRETE DEADMAN. WHEN USTs ARE EXPOSED, THE CONTRACTOR SHALL TAKE STEPS TO ENSURE THE TANK REMAINS SAFELY IN PLACE WITHOUT DAMAGE. MANUFACTURE'S RECOMMENDATIONS FOR INSTALLATION OF NEW TANKS SHALL BE FOLLOWED (BALLAST ADDED TO THE TANK ETC.) UNTIL THE TANK IS SAFE FROM DAMAGE DUE TO A SUDDEN OR SLOW INFLUX OF WATER ETC.
 3. SEE SHEET SS202 FOR TANK DEADMAN DETAILS.
 4. TANK HLSOV SHALL BE LOCATED BETWEEN THE HIGH LEVEL ALARM AND HIGH-HIGH LEVEL ALARM

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: Matthew M. Peterson	DATE: MAY 2017
DWN BY: C.R.M.	SOLICITATION NO.:W913DR17E0010
SUBMITTED BY: Michael T. Smith, PE	CONTRACT NO.:W913DR17E0010
FILE NAME: MS511.dwg	FILE NUMBER: 11-000
DATE PLOTTED: 3/1/22	PLOT SCALE: 1/4" = 0'-0" / 11 in.
	DATE: 5/2/2017

REPLACE GROUND VEHICLE FUELING FACILITY
FORT BELVOIR, VA

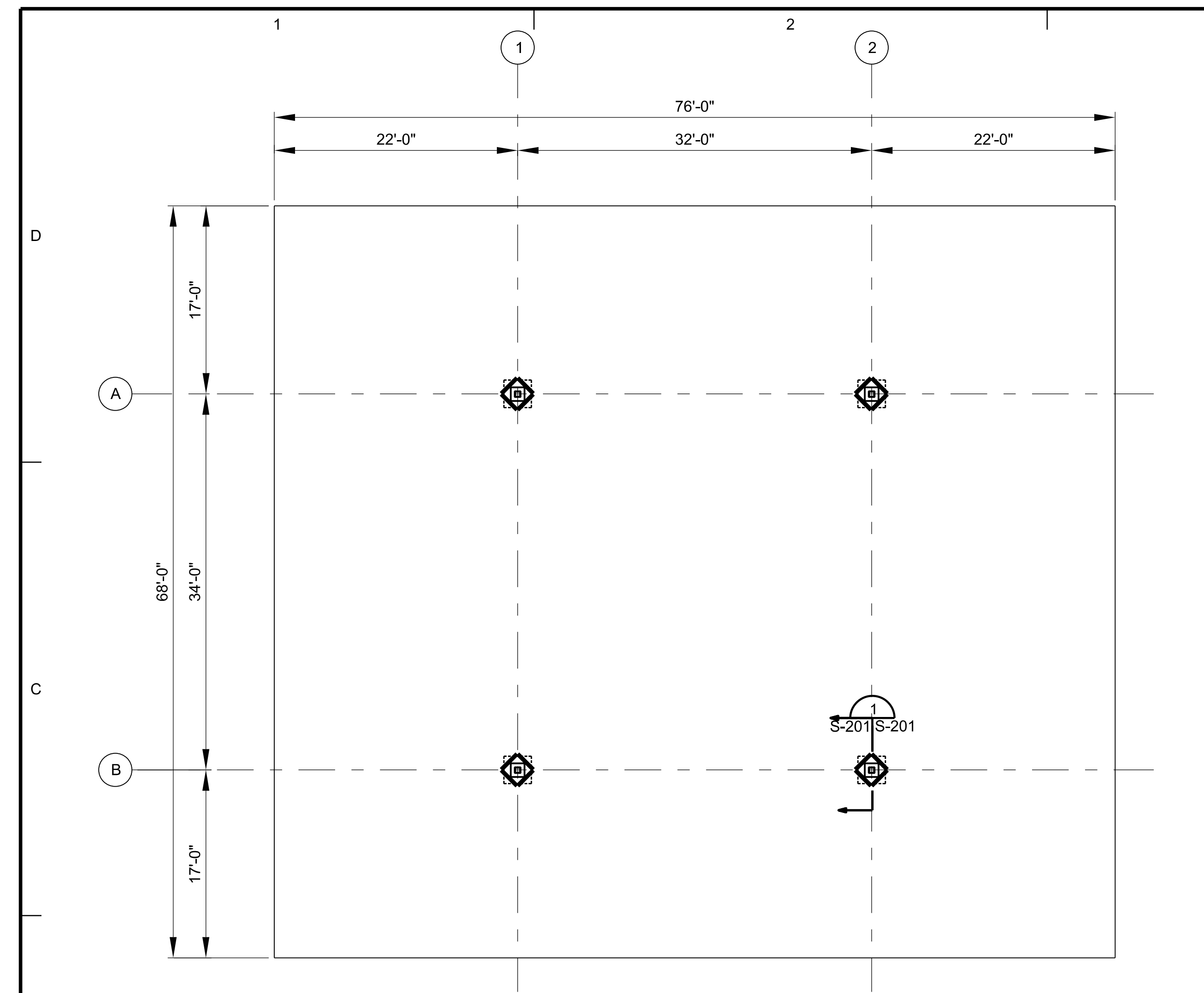
UNDERGROUND STORAGE TANK DETAILS



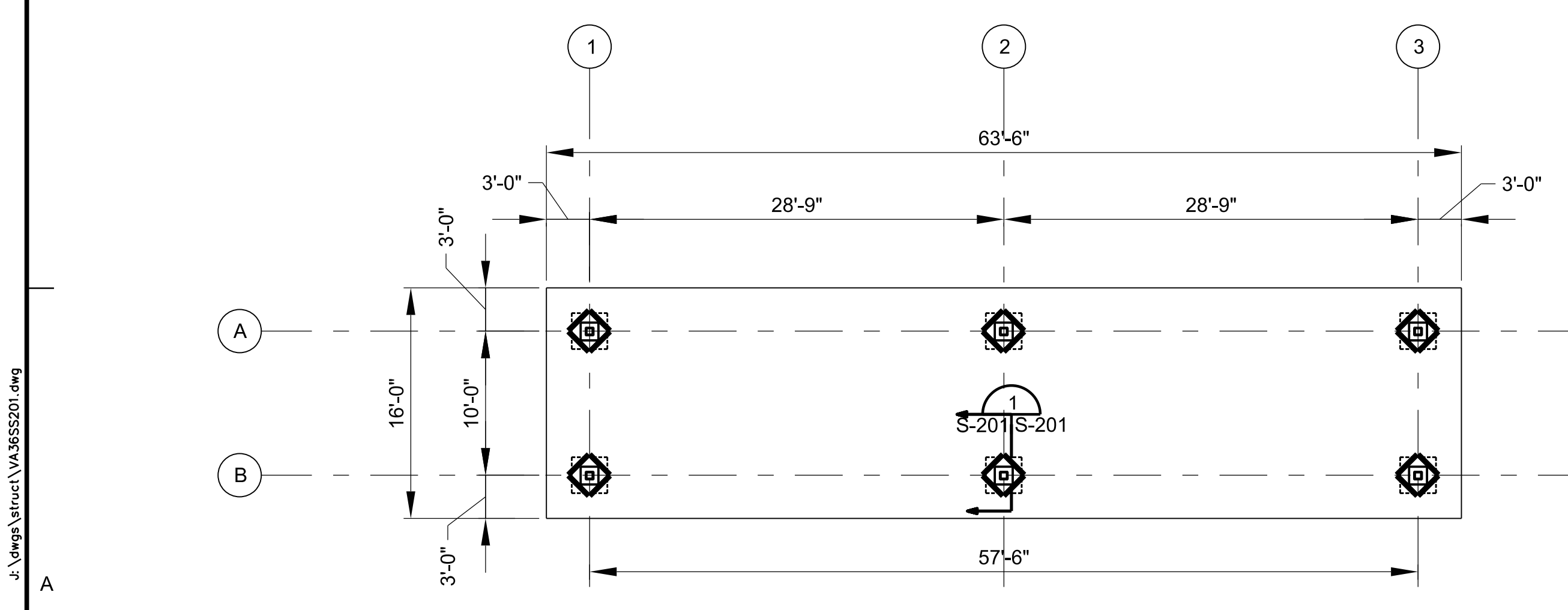
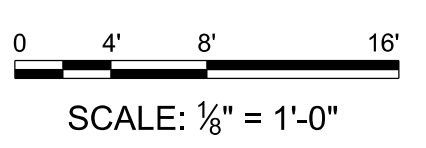
US ARMY CORPS
OF ENGINEERS
OMAHA DISTRICT

PRE-ENGINEERED METAL BUILDING NOTES:

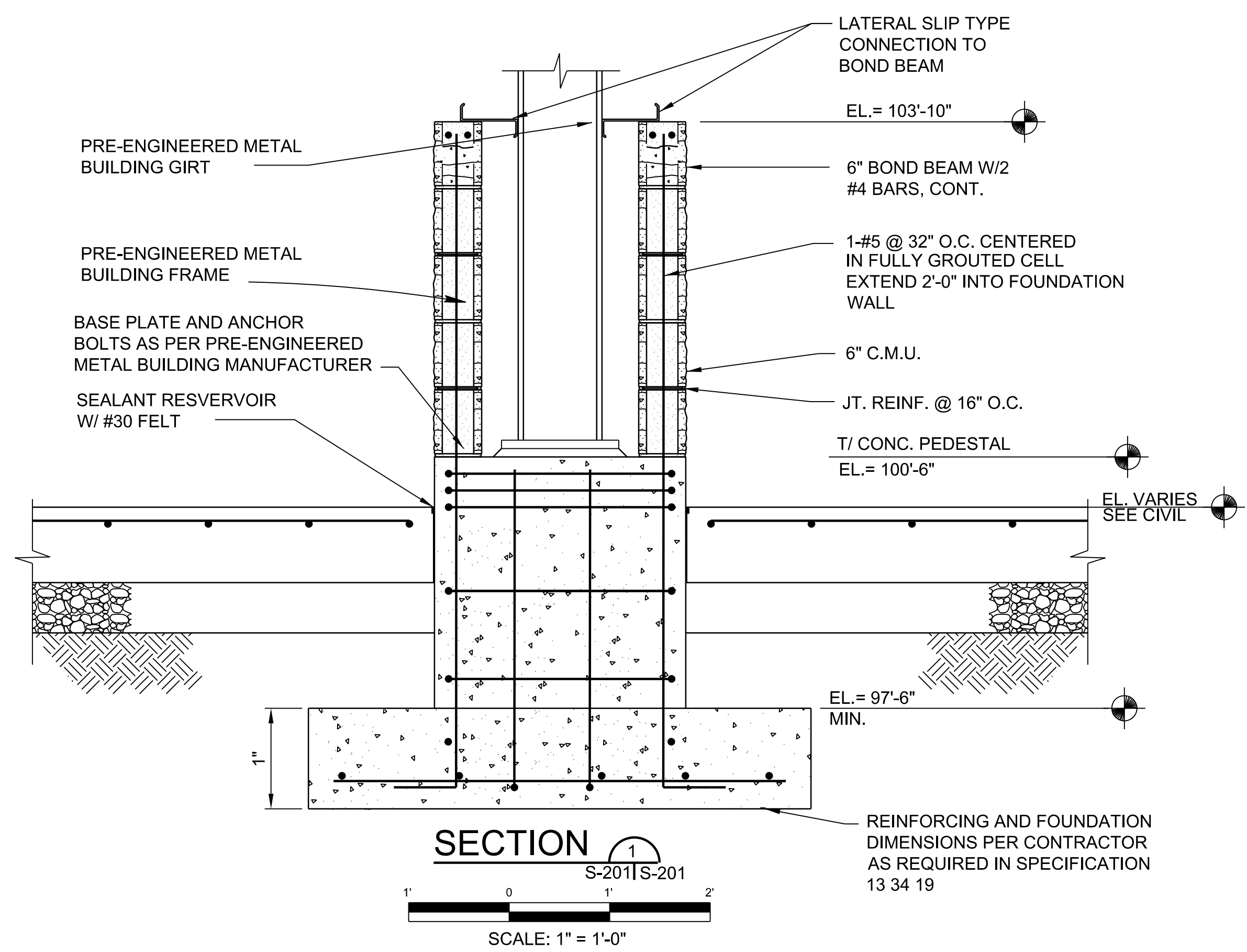
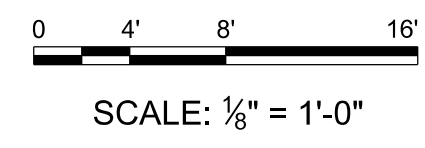
1. PRE-ENGINEERED METAL BUILDING SHALL BE DESIGNED ACCORDING TO SPECIFICATION SECTION 13 34 20 AND THE LISTED DESIGN LOADS ON SHEET S-001.
2. MINOR VARIATIONS IN THE BUILDINGS'S DIMENSIONS (DENOTED BY AN ASTERISK, *) MAY BE SUBMITTED FOR REVIEW AND POSSIBLE APPROVAL IF REQUIRED TO CONFORM TO AN INDIVIDUAL BUILDING SUPPLIER'S STANDARDS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE COMPLETE BUILDING FOUNDATION. THE FOUNDATION DETAILS SHOWN ON THE SHEETS ARE INTENDED TO BE USED ONLY FOR GUIDANCE. THEY ARE NOT INTENDED TO BE USED FOR CONSTRUCTION.
4. ANCHOR BOLT DESIGN AND REQUIREMENTS SHALL BE COORDINATED BETWEEN THE PRE-ENGINEERED METAL BUILDING SUPPLIER AND THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT DESIGNS ALONG WITH THE COMPLETE FOUNDATION DESIGN FOR REVIEW AND APPROVAL.
5. BUILDING OVERVIEW -THE BUILDING FOUNDATION DESIGN WILL BE BASED UPON THE FOLLOWING CRITERIA CONCERNING THE PRE-ENGINEERED METAL BUILDING SUPERSTRUCTURE:
 - a. FUTURE EXPANSIONS OR ADDITIONS TO THIS BUILDING ARE NOT CONSIDERATIONS.
 - b. NOT USED
 - c. HORIZONTAL COLUMN REACTIONS SHALL NOT BE RESISTED BY USE OF HAIRPIN TYPE CONNECTIONS. CONTINUOUS TIE BEAMS OR LARGER FOOTINGS FOR RESISTING SLIDING OR OVERTURING SHALL ONLY BE CONSIDERED.
 - d. PORTAL FRAMES OR X-BRACING ARE BOTH ACCEPTABLE FOR PROVIDING THE LATERAL STABILITY PERPENDICULAR TO THE RIGID FRAMES.
 - e. ROOF WILL BE X-BRACED AS REQUIRED FOR LATERAL STABILITY.



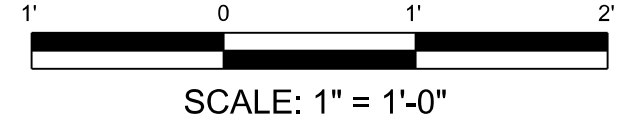
FOUNDATION PLAN



FOUNDATION PLAN



SECTION 1
S-201/S-201



NOTE:
LOADING FROM PRE-ENGINEERED BUILDING INCLUDING FRAME MOVEMENT AND WIND FROM METAL PANELS SHALL NOT BE TRANSFERRED FROM GIRT CONNECTION TO 6" CMU WALL

DATE	DESCRIPTION	MARK	DATE	APPR.

DESIGNED BY: D.J.F.	CHECKED BY: W.R.B.	DATE: MAY 2017	SOLICITATION NO.: W913DR17E0010
SUBMITTED BY: WAYNE R. BOECK, P.E.	FILE NAME: 133422.dwg	CONTRACT NO.: W913DR17E0010	FILE NUMBER: 133422
U. S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	PROJECT SCALE: 1" = 1'-0"	PROJECT DATE: 5/2/2017	PROJECT NUMBER: 133422

REPLACE GROUND VEHICLE FUELING FACILITY
FORT BELVOIR, VA
CANOPY DETAILS

SHEET
IDENTIFICATION
NUMBER
SS201

u:\dwg\struct\VA\13342201.dwg
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DIVISION 33 - UTILITIES

SECTION 33 56 10

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01/08

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SECTION 33 56 10

FACTORY-FABRICATED FUEL STORAGE TANKS
01/08

PART 1 GENERAL

1.1 SUMMARY

This section defines the requirements for factory-fabricated fuel storage tanks.

1.1.1 Related Sections

1.1.1.1 Earthwork

Excavation and backfilling for tanks shall be as specified in Section 31 00 00 EARTHWORK .

1.1.1.2 Leak Detection

Leak detection shall be as specified in Section 33 58 00 LEAK DETECTION FOR FUELING SYSTEMS.

1.2 REFERENCES

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

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

AASHTO HB-17 (2002; Errata 2003; Errata 2005, 17th Edition) Standard Specifications for Highway Bridges

AMERICAN PETROLEUM INSTITUTE (API)

API RP 1615 (2011) Installation of Underground Petroleum Storage Systems

API RP 2003 (2008; 7th Ed) Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents

API RP 540 (1999; R 2004) Electrical Installations in Petroleum Processing Plants

ASTM INTERNATIONAL (ASTM)

ASTM A193/A193M (2012a) Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service and Other Special Purpose Applications

UNDERWRITERS LABORATORIES (UL)

UL 1316 (1994; Reprint May 2006)
Glass-Fiber-Reinforced Plastic Underground
Storage Tanks for Petroleum Products,
Alcohols, and Alcohol-Gasoline Mixtures

UL 1316 (1994; Reprint May 2006)
Glass-Fiber-Reinforced Plastic Underground
Storage Tanks for Petroleum Products,
Alcohols, and Alcohol-Gasoline Mixtures

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Grounding and Bonding

SD-03 Product Data

Underground Storage Tank; G-OMA

Automatic Level Alarm System; G-OMA

Tank Gauges; G-OMA

Manway Containment Sump; G-OMA

SD-06 Test Reports

Underground Storage Tank Tightness Tests; G-RO

Tank Manufacturer's Tests; G-RO

Tank Fill Tests; G-RO

SD-07 Certificates

Contractor Qualifications; G-RO

Permitting; G-RO

Registration; G-RO

Licensed Personnel; G-RO

Demonstrations; G-RO

SD-08 Manufacturer's Instructions

Underground Storage Tank

Automatic Level Alarm System

Tank Gauges

SD-10 Operation and Maintenance Data

Underground Storage Tank
Automatic Level Alarm System
Tank Gauges

1.4 QUALITY ASSURANCE

1.4.1 Contractor Qualifications

Each installation Contractor shall have successfully completed at least 3 projects of the same scope, and the same size or larger within the last 6 years, and demonstrated specific installation experience in regard to the specific system installation to be performed. Each installation Contractor shall have taken, if applicable, manufacturer's training courses on the installation of storage tanks and shall meet all applicable licensing requirements in the state. Submit a letter listing prior projects, the date of construction, a point of contact for each prior project, the scope of work of each prior project, and a detailed list of work performed. The letter shall also provide evidence of prior manufacturer's training, state licensing, and other related information.

1.4.2 Regulatory Requirements

1.4.2.1 Permitting

Obtain necessary permits in conjunction with the installation of underground storage tanks as required by federal, state, or local authority.

1.4.2.2 Registration

Obtain and complete all required tank registration forms required by federal, state, and local authorities. Submit all tank registration forms within 30 days after contract award. The Contracting Officer will submit the forms to the proper regulatory agencies.

1.4.2.3 Licensed Personnel

Tank installers shall be licensed/certified by the state when the state requires licensed installers.

1.5 DELIVERY, STORAGE, AND HANDLING

Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.6 PROJECT/SITE CONDITIONS

Exposed moving parts, parts that produce high operating temperatures and pressures, parts that may be electrically energized, and parts that may be a hazard to operating personnel shall be insulated, fully enclosed, guarded, or fitted with other types of safety devices. Install safety devices so that proper operation of equipment is not impaired.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 General

Provide materials and equipment that are standard products of a manufacturer regularly engaged in the manufacturing of such products, that are of a similar material, design and workmanship. Provide materials and equipment that have been in satisfactory commercial or industrial use for a minimum 2 years prior to bid opening. The 2 year period shall include applications of the equipment and materials under similar circumstances and of similar size. Provide materials and equipment that have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

2.1.2 Nameplates

Attach nameplates to all specified equipment defined herein. List on each nameplate the manufacturer's name, address, component type or style, model or serial number, catalog number, capacity or size, and the system that is controlled. Construct plates of stainless steel. Install nameplates in prominent locations with nonferrous screws, nonferrous bolts, or permanent adhesive. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be the normal block style with a minimum 0.25 inch height. Accurately align all lettering on nameplates.

2.2 MATERIALS

Internal parts and components of equipment, piping, piping components, and valves that could be exposed to fuel during system operation shall not be constructed of zinc coated (galvanized) metal, brass, bronze, or other copper bearing alloys. Do not install cast iron bodied valves in piping systems that could be exposed to fuel during system operation.

2.3 ELECTRICAL WORK

Provide controllers, integral disconnects, contactors, controls, and control wiring with their respective pieces of equipment. Provide electrical equipment, including motors and wiring, as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Provide switches and devices necessary for controlling and protecting electrical equipment. Controllers and contactors shall have a maximum of 120-volt control circuits and shall have auxiliary contacts for use with the controls provided.

2.3.1 Underground Wiring

Enclose underground electrical wiring in PVC coated conduit. Dielectrically isolate conduit at any steel storage tank connection.

2.3.2 Grounding and Bonding

Grounding and bonding shall be in accordance with NFPA 70, NFPA 77, NFPA 407, NFPA 780, API RP 540, API RP 2003, IEEE 142, and IEEE 1100. Provide jumpers to overcome the insulating effects of gaskets, paints, or nonmetallic components.

2.4 UNDERGROUND STORAGE TANK

Provide a factory-fabricated, double-walled type storage tank that conforms to NFPA 30 and NFPA 30A. Tank shall be designed and manufactured for an underground, horizontal installation. The exterior tank walls shall be separated from the interior tank walls by standoffs; thus creating an open or interstitial space (Type II). The entire interstitial space shall be monitorable for leaks. For tanks requiring concrete anchor pads or concrete deadmen, provide holddown straps and accessories as recommended by the tank manufacturer. Use filler strips between the tank shell and any metal holddown straps that conform to the tank manufacturer's requirements.

2.4.1 Double-Walled FRP Tank

Tank shall be constructed of fiberglass reinforced plastic (FRP) and shall conform to UL 1316. The UL 1316 label shall be affixed to the exterior surface of the tank.

2.5 TANK COMPONENTS

2.5.1 Tank Manway

Tank manways shall have an internal diameter of 22, 30 or 36 inches depending on what the drawings indicate. Provide each manway with a matching flanged watertight manway cover. Manway covers shall be UL listed, be constructed of pressed or mild steel, and include a UL listed gasket. Frame and cover assembly shall be rated to withstand H-20 highway loading as defined by AASHTO HB-17. The Diesel tank shall have one 30 inch manway where the bulk issue pump shall reside, one 22 inch manway where the dispenser pump shall reside and two 36 inch manways as indicated on the drawings. The Mogas tank shall have one 30 inch manway where the bulk issue pump shall reside, one 22 inch manway where the dispenser pump shall reside and two 36 inch manways as indicated on the drawings. The E-85 tank shall have one 22 inch manway where the dispenser pump shall reside and two 36 inch manways as indicated on the drawings. The Bio-Diesel tank shall have one 22 inch manway where the dispenser pump shall reside and two 36 inch manways as indicated on the drawings.

2.5.2 Tank Piping Penetrations

Provide a welded-in-place double tapered National Pipe Thread (NPT) coupling for each tank piping connection.

2.5.3 Tank Striker/Impact Plates

Provide an interior striker/impact plate under each tank manway and pipe connection. Each plate shall be a minimum of 1/4 inch in thickness, be larger in diameter than the tank penetration, fit the curvature of the tank bottom, and be completely coated in the same fashion as the interior tank bottom coating. Each plate shall be welded to the tank bottom at the factory (full circumference connection).

2.5.4 Tank Cleanout and Gauge Assembly

Provide a combination cleanout and gauge assembly. The assembly shall include a bronze top-seal type adapter with a corresponding locking type cap (adapter and cap both externally-mounted to the top of the tank) and a steel or aluminum pipe mounted internal to the tank. The pipe shall be a minimum 2 inches in size and extend downward through the top of the tank to

within 3 inches of the tank bottom. Provide the entire length of pipe inside the tank with 1/2 inch wide by 12 inches long slots at alternate locations. Coat the pipe in accordance with 33 52 10 SERVICE PIPING, FUEL SYSTEMS. Piping within E-85 tanks shall not be coated.

2.6 AUTOMATIC LEVEL ALARM SYSTEM

Provide a system that will monitor 4 programmable liquid level setpoints. The system shall delineate between each individual setpoint as well as each individual tank. The system shall produce an audible and visible alarm in the event of monitoring an alarm condition. Mechanically-actuated float assemblies shall be field adjustable. The system shall be totally independent of the tank gauging system.

2.6.1 Setpoints

Configure the alarm system's 4 setpoints in accordance with the following.

- a. High Level Setpoint. Produce an alarm condition when a tank's liquid level rises above 90 percent capacity.
- b. High-High Level Setpoint. Produce an alarm condition when a tank's liquid level rises above 95 percent capacity.
- c. Low Level Setpoint. Produce an alarm condition when a tank's liquid level drops below 15 percent capacity.
- d. Low-Low Level Setpoint. Produce an alarm condition when a tank's liquid level is at the minimum pump submergence level. The Low-Low setpoint shall shut down power to the issue pump(s) on the tank.

2.6.2 Control Panel

Install the control panel for the alarm system in a NEMA 4 rated enclosure in accordance with NEMA 250 . Panel doors shall swing left or right.

2.6.2.1 Audible Alarm

Panel shall have internal speakers that produce a buzzer sound of 70 decibels or greater in the event of a detected alarm condition.

2.6.2.2 Visual Alarm

Panel shall have a visual alarm that illuminates in the event of a detected alarm condition. The visual alarm shall include either individual lights for each alarm condition or shall include a single light and a liquid crystal display (LCD) panel that displaces information regarding each alarm condition.

2.6.2.3 Acknowledge Switch

Panel shall have a manual acknowledge switch that will deactivate the audible alarm. The acknowledge switch shall not deactivate subsequent audible alarms unless depressed manually again for each occurrence. Under no circumstance shall this acknowledgement switch extinguish the visual alarms until the alarm condition has been corrected. The acknowledge switch shall be an integral component located on the front of the control panel. The switch shall be either a key switch or push button.

2.7 TANK GAUGES

2.7.1 Stick Gauge

For each tank, provide 2 wooden stick gauges. Gauge length shall allow the measurement of the entire level of fuel in the corresponding tank. Gauges shall be compatible with the fuel to be measured (no swelling or damage from fuel contact). Provide gauge with non-sparking caps on each end. Mark gauges in feet and inches. The smallest unit of measure on the gauge shall be 1/16 inch.

2.7.2 Tank Strapping Table

Furnish 2 certified strapping tables (calibration charts) for each tank. Tables shall indicate the liquid contents in gallons for each 1/16 inch of tank depth. For each tank, provide an electronic media file of each strapping table.

2.7.3 Digital Tank Gauge System

Gauge system shall be the mechanically or electronically actuated type that can continuously monitor a tank's usable liquid level storage capacity. The system shall provide a digital readout of a tank's liquid level in terms of inches and gallons. The system shall be accurate to plus or minus 1/16 inch. The system shall measure water accumulation in inches from 3/4 to 5 inches off the bottom of a storage tank. Construct system components to be chemically compatible with the fuel to be handled. For each tank monitored, provide a sending unit that transmits the digital readout from a tank to the automatic tank gauging (ATG) system.

2.8 MANWAY CONTAINMENT SUMP

Sump shall be the factory-fabricated, direct-buried type that provides a watertight connection directly to the exterior of the tank. Sump shall be constructed of either fiberglass reinforced plastic or molded polyethylene, shall be flat sided and fusion bonded to the tank. Sump construction shall be chemically compatible with the type of products being handled within the connecting tank. Sump shall allow access to a tank manway cover without disturbing surrounding backfill. Sump shall be larger in diameter than the connecting tank manway. Sump shall be designed to withstand the underground burial loads. Sump assembly shall prevent the influx of rainfall drainage or ground water.

2.8.1 Piping Penetrations

Sump sides shall allow the penetration of carrier pipes, exterior containment pipes, conduits, and vapor pipes as required. Sump penetrations shall be booted or sealed to ensure that liquid will not escape from the sump in the event that the liquid level within the sump rises above the pipe penetration. Boots and seals used shall be compatible with the fuel to be handled. Boots and seals shall be water resistant to the influx of water from outside the sump. Boots and seals shall be designed and installed to accommodate the anticipated amount of thermal expansion and contraction in the piping system.

2.8.2 Access Cover

Where indicated, the entire top of a containment sump shall be capped with a watertight access cover. Cover shall be constructed of the same

material as the sump. Cover shall have a larger diameter than the tank manway cover below.

2.9 INSPECTION WELL

Inspection well shall be constructed of Schedule 40 PVC pipe that is 6 inches in diameter. Pipe shall be factory slotted from the bottom to within 12 inches of grade. With the pipe installed vertically, slots shall be horizontal and have a width of 0.02 inch with not less than 30 slots per ft. Slots shall encompass at least 80 percent of the pipe's 360 degree perimeter with the pipe maintaining its structural integrity. Slots shall allow fluid within the soil to infiltrate into the pipe without allowing sediment to fill the pipe. Each well shall extend down 2 ft below the deepest buried storage tank. Well shall have a permanently fixed bottom cap. Well shall have a removable top cap that is protected from traffic with a watertight street manway and cover as indicated. Well shall have a 3/8 inch vent hole located directly below the top cap to vent the well. The top cap of each well shall be accessible from the surface through a 12 inches diameter manhole. The manhole ring shall be constructed of steel, cast iron, or fiberglass, have a cast iron cover, be a minimum of 12 inches deep, and withstand H-20 highway loading as defined by AASHTO HB-17. Each manhole cover shall have the words "DO NOT FILL - INSPECTION WELL" cast permanently into the top. The letters shall be a minimum of 1/2 inch in size. Each manhole cover shall have a white circle with a black triangle painted on the surface.

2.10 ACCESSORIES

2.10.1 Concrete Anchor Bolts

Concrete anchors shall conform to ASTM A307, Grade C, hot-dipped galvanized.

2.10.2 Bolts and Studs

Carbon steel bolts and studs shall conform to ASTM A307, Grade B, hot-dipped galvanized. Stainless steel bolts and studs that conform to ASTM A193/A193M, Grade 8.

2.10.3 Nuts

Carbon steel nuts shall conform to ASTM A563, Grade A, hex style, hot-dipped galvanized. Stainless steel nuts shall conform to ASTM A194/A194M, Grade 8.

2.10.4 Washers

Provide flat circular washers under each bolt head and each nut. Washer materials shall be the same as the connecting bolt and nut. Carbon steel washers shall conform to ASTM F844, hot-dipped galvanized. Stainless steel washers shall conform to ASTM A194/A194M, Grade 8.

2.10.5 Polytetrafluoroethylene (PTFE) Tape

Tape shall conform to ASTM D3308.

2.10.6 Street Manway Assembly

Round street manhole frames and covers shall be the straight traffic type. Frames and covers shall be constructed of cast steel in accordance with

ASTM A27/A27M, grade 60-30 as a minimum cast iron in accordance with ASTM A48/A48M . Covers shall form a watertight seal with the manhole frame to prevent surface water inflow. Frame and cover assembly shall be rated to withstand H-20 highway loading as defined by AASHTO HB-17.

2.11 FINISHES

2.11.1 Factory Coating

Unless otherwise specified, provide equipment and components fabricated from ferrous metal with the manufacturer's standard factory finish. For equipment and component surfaces subject to temperatures above 120 degrees F, the factory coating shall be appropriately designed for the temperature service.

PART 3 EXECUTION

3.1 INSTALLATION

Install work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Handle storage tanks with extreme care to prevent damage during placement and install in accordance with the manufacturer's installation instructions and NFPA 30 or NFPA 30A, as applicable. Inspect the exterior surface of each tank for obvious visual damage prior to and during the placement of each storage tank. Repair surface damage to a storage tank according to manufacturer's requirements before proceeding with the system installation. Provide the termination of fill lines within a tank with an antisplash deflector. Provide nylon dielectric bushings on pipe connections to a steel tank.

3.1.1 Underground Storage Tank

Install underground storage tanks in accordance with API RP 1615 except as modified herein. Place tank on a 1/8 inch per foot slope with the fill point at the low end and the vent connection at the high end. Locate tank so that the fuel discharge pipes slope up uniformly toward the fuel outlet. Install containment sumps prior to any backfill being added above the storage tanks.

3.1.1.1 FRP Tank Handling

Handle tank with extreme care to prevent damage during installation and transportation to the site. Any damaged tank shall be replaced or repaired and tested under direct supervision and advice of the tank manufacturer, using the manufacturer's written procedures.

3.1.1.2 FRP Tank Installation Procedures

Anchor tank to a reinforced concrete anchor pad as indicated through the use of manufacturer's supplied holddown straps. Separate tank from an anchor pad by a minimum of 12 inches of backfill material.

3.1.2 Equipment

Properly level, align, and secure equipment in place in accordance with manufacturer's instructions. Provide supports for equipment, appurtenances, and pipe as required. Install anchors, bolts, nuts, washers, and screws where required for securing the work in place. Sizes, types, and spacings of anchors and bolts not indicated or specified shall

be as required for proper installation.

3.2 FIELD QUALITY CONTROL

3.2.1 Underground Storage Tank Tightness Tests

Perform a tightness test on each underground storage tank on-site just prior to their placement into the ground. Pneumatically pressurize each storage tank's primary chamber to 5 psig and monitor for a drop in pressure over a 2-hour period during which there shall be no drop in pressure in the tank greater than that allowed for thermal expansion and contraction. Following the successful completion of the primary chamber test, bleed the pressure from the primary chamber into the interstitial space. Maintain this pressure while applying soapsuds or equivalent material over the exterior of the tank. While applying the soapsuds, visually inspect the entire tank, including the bottom surfaces, for leaks (bubble formations). Inspection of the bottom surfaces of a tank may be performed by rotating the tank; however a tank shall only be rotated in strict accordance with the manufacturer's recommendations. Do not rotate a tank more than 90 degrees from the upright position. During testing, install a pressure relief device that relieves at the tank manufacturer's suggested pneumatic pressure limit. Gauges used in pneumatic tests shall have a scale with a maximum limit of 10 psig.

3.2.1.1 Brine Level Test

In lieu of the pneumatic testing procedures described above, a brine level test may be performed on the interstitial space of double-walled FRP tanks (not applicable to steel tanks). For a brine level test, completely fill a FRP tank's interstitial space with a brine solution. Connect a riser pipe to the interstitial space that will allow the solution to rise up within the riser at least 12 inches. After filling the interstitial space, the tank shall set approximately 3 hours. Following the 3-hour period, measure and record the level of solution within the riser. After a subsequent 4-hour period, again measure and record the level of solution within the riser. If the level of solution within the interstitial decreases anytime during the test, the tank is considered leaking and therefore fails the test.

3.2.1.2 Repairs

Repair leaks discovered in either the primary chamber or the interstitial space in accordance with the tank manufacturer's instructions. Following any tank repairs, re-test the tank until the tank successfully passes the testing requirements defined herein.

3.2.2 Tank Manufacturer's Tests

In addition to the tests required herein, perform any additional tests (i.e., leak tests, etc.) on each storage test that is required by the tank manufacturer's written test procedures. Manufacturer's tests that are redundant to tests already required by this specification will only be performed once per tank. Repair all leaks discovered during the tests in accordance with manufacturer's instructions. Following tank repairs, re-test the tank until the tank successfully passes the manufacturer's testing requirements.

3.2.3 System Commissioning

System commissioning shall conform to Section 33 08 55 COMMISSIONING OF FUEL FACILITY SYSTEMS.

3.3 DEMONSTRATIONS

Conduct a training session for designated Government personnel in the operation and maintenance procedures related to the equipment/systems specified herein. Include pertinent safety operational procedures in the session as well as physical demonstrations of the routine maintenance operations. Furnish instructors who are familiar with the installation/equipment/systems, both operational and practical theories, and associated routine maintenance procedures. The training session shall consist of a total of 4 hours of normal working time and shall start after the system is functionally completed, but prior to final system acceptance. Submit a letter, at least 14 working days prior to the proposed training date, scheduling a proposed date for conducting the onsite training.

3.4 Tank Fill Tests

Tank fill tests shall not be performed until after the flushing, cleaning, and adjusting requirements defined in Section 33 08 55 COMMISSIONING OF FUEL FACILITY SYSTEMS. For the tank fill tests, initially fill each storage tank with fuel in order to verify the tank level alarm system operates properly and the tank overfill protection device functions as designed. Stop filling each tank immediately once the overfill devices operates. Do not overfill any storage tank more than the 98 percent level. Drain the system below the low liquid level setpoint to verify operation of the low level alarm. Correct and retest any problems with the level alarm system or the overfill device until each operate as specified herein. During the tests, verify that all tank gauges are calibrated and operating appropriately.

3.5 FIELD PAINTING

Painting required for surfaces not otherwise specified shall be field painted as specified in Section 33 52 10 SERVICE PIPING, FUEL SYSTEMS. Do not paint stainless steel and aluminum surfaces. Do not coat equipment or components provided with a complete factory coating. Prior to any field painting, clean surfaces to remove dust, dirt, rust, oil, and grease.

-- End of Section --

- 2.9.2.5 Bolts, Screws and Nuts
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- 3.2 SYSTEM COMMISSIONING
- 3.3 DEMONSTRATIONS

valves that could be exposed to fuel during system operation shall not be constructed of zinc coated (galvanized) metal, brass, bronze, or other copper bearing alloys. Do not install cast iron bodied valves in piping systems that could be exposed to fuel during system operation.

2.1.1 Nitrile Butadiene (Buna-N)

Provide Buna-N material that conforms to SAE AMS3275.

2.1.2 Acrylonitrile Butadiene Rubber (NBR)

Provide NBR material that conforms to SAE AMS3275.

2.2 ELECTRICAL WORK

2.2.1 General

Provide motors, motor starters, controllers, integral disconnects, contactors, controls, and control wiring with their respective pieces of equipment, except controllers indicated as part of motor control centers. Provide electrical equipment, including motors and wiring, as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Provide switches and devices necessary for controlling and protecting electrical equipment. Provide motor starters complete with thermal overload protection and other necessary appurtenances. Controllers and contactors shall have a maximum of 120-volt control circuits and shall have auxiliary contacts for use with the controls provided. For packaged equipment, the manufacturer shall provide controllers including the required monitors and timed restart.

2.2.2 Motors

Provide motors in accordance with NEMA MG 1 and of sufficient size to drive the load at the specified capacity without exceeding the nameplate rating of the motor when operating at proper electrical system voltage. Provide high efficiency type, single-phase, fractional-horsepower alternating-current motors, including motors that are part of a system, in accordance with NEMA MG 11. Provide polyphase, squirrel-cage medium induction motors, including motors that are part of a system, that meet the efficiency ratings for premium efficiency motors in accordance with NEMA MG 1. Motors shall be rated for continuous duty with the enclosure specified. Motor duty requirements shall allow for maximum frequency start-stop operation and minimum encountered interval between start and stop. Motor torque shall be capable of accelerating the connected load within 20 seconds with 80 percent of the rated voltage maintained at motor terminals during one starting period. Motor bearings shall be fitted with grease supply fittings and grease relief to outside of the enclosure.

2.2.3 Underground Wiring

Enclose underground electrical wiring in PVC coated conduit. Dielectrically isolate conduit at any steel storage tank connection.

2.2.4 Grounding and Bonding

Grounding and bonding shall be in accordance with NFPA 70, NFPA 77, NFPA 407, NFPA 780, API RP 540, API RP 2003, IEEE 142, and IEEE 1100. Provide jumpers to overcome the insulating effects of gaskets, paints, or nonmetallic components.

connection. Under a differential pressure of 30 psi, leakage past the piston shall not exceed 120 drops per minute. Construction of the gauge shall be such that a 3-valve manifold is not necessary.

2.9 CONTROL STATIONS

Electrical supply and electrical control equipment shall be suitable for Class I, Division 1, Group D locations, be intrinsically safe, be weather resistant and be in accordance with UL 913, NEMA 250, and NFPA 70. Mounting hardware shall be corrosion resistant.

2.9.1 Pump Control System

Provide a system that is furnished by a single systems' supplier. System shall include all required hardware and software in an integrated system. System shall include the operator's interface computer and all required transmitters. System shall monitor and control the following as a minimum.

- a. Control valves
- b. Not Used
- c. Tank truck loading station
- d. Tank truck fuel unloading station
- e. Tank truck overfill and grounding system
- f. Vehicle dispensing system

2.9.1.1 Pump Control Start/Stop Station

Station shall be an 18 gauge galvanized steel NEMA 250, Type 4 enclosure. Station shall have with a start pushbutton, a stop pushbutton, and a green indicating light. Mounting hardware shall be corrosion resistant. During activation, the start pushbutton shall maintain contact until deactivated by the stop pushbutton. The stop pushbutton shall maintain contact until deactivated by the start pushbutton.

2.9.1.2 Pump Control Panel

Panel shall include on and off indication lights for each pump. Panel shall contain an adjustable control logic for pump operation in accordance with the indicated operation. The panel shall also have a manual override switch for each pump to allow for the activation or deactivation of each pump.

2.9.2 CONTROL VALVES

Control valves shall be single-seated globe type, diaphragm actuated, hydraulically operated valves. Valves shall consist of 3 major components: the valve body, valve cover, and diaphragm assembly. The diaphragm assembly shall be the only moving part. In the event of diaphragm failure, valve shall fail closed against flow, unless otherwise indicated. The main valve shall be drip-tight when closed. Each valve shall have an external indicator to show the position of the valve disc at all times. Control valves shall be shipped from the factory as a complete assembly with all pilot controls and pilot auxiliary piping properly installed on the main valve. Materials which come in contact with the fuel

2.9.6 Deadman Control

Deadman control shall be the hand-held, hydraulically actuated type. Deadman handle and trigger shall be constructed of aluminum with a smoothly polished finish. Fuel flow through the associated receiving/dispensing application shall not be capable unless the deadman trigger is fully depressed. Deadman control shall be provided with a self winding reel and 25 feet of fuel sensing hose. Fuel sensing hose shall be the dual type with Buna-N or Viton tube, vertically braided textile body, fuel resistant neoprene cover, and stainless steel fittings. .

2.9.7 Tank Truck Grounding Unit

2.9.7.1 Automatic Ground Verification System

System shall include grounding plug, grounding cable, and monitoring and control module. System shall automatically and continually monitor and verify a low-resistance static dissipation path (less than 10 Ohms) between connecting tanker and the designated ground point. Grounding plug shall conform to MIL-DTL-83413 and MIL-DTL-83413/4. . Grounding cable shall be corrosion resistant steel strands sheathed in a Hytrel jacket. Cable shall be the spiral, self-retracting type. Cable shall be a minimum 30 feet in length. Monitoring and control module shall be rated for an explosion-proof environment in accordance with NFPA 70 for Class I, Division I, Group D locations. Module shall include status lights (red for no ground verification and green for positive ground verification) and a lockable bypass switch. Module shall include a switch contact to allow interlock functions.

2.9.8 Tank Truck Overfill Protection System

System shall include connection plug, control cable, and monitoring and control module. System shall be the self-checking type that automatically and continually monitors the liquid-level within a tank truck's storage compartment during fueling. System shall be rated for an explosion-proof environment in accordance with NFPA 70 for Class I, Division I, Group D locations. Module shall include status lights and a switch contact to allow interlock functions. Control cable shall be the spiral, self-retracting type. Cable shall be a minimum 30 feet in length.

2.9.9 Emergency Fuel Shut-Off (EFSO) Station

Station housing shall be a galvanized steel enclosure with a hinged glass front and an open bottom. Paint the enclosure red. Mounting hardware shall be corrosion resistant. Mount an emergency pushbutton inside the station housing. Pushbutton shall be accessible through the hinged front. Pushbutton shall be a single unit with a jumbo mushroom operator, 1-NC and 1-NO contact. During activation, the pushbutton shall maintain contact until deactivated by a key release. Mount a caution sign beside the emergency shutdown station, with red 2 inch letters stating "EMERGENCY SHUTDOWN". The sign shall have white background and be of noncorrosive construction.

2.10 GROUND VEHICLE FUELING EQUIPMENT

2.10.1 Product Dispensing Unit

Unit and unit hardware shall be the factory fabricated type that conforms

latch-open device. Nozzles shall have full hand insulator to prevent splash-back. Nozzles shall have a multi-plane swivel where the nozzle and fueling hose connect. All E-85 components shall be compatible with E-85.

2.10.1.7 Breakaway device

Provide each product hose with UL listed emergency breakaway device designed to retain liquid on both sides of breakaway point. Breakaway device shall have pressure balancing chamber to override line pressure to prevent nuisance breaks caused by a restriction in delivery hose diameter.

2.10.1.8 Emergency Shutoff Valve

Provide valve that conforms to UL 842. Valve shall provide complete shutoff of a fuel line in the event a dispenser is dislocated or overturned due to a sudden impact. Valve shall include a secondary poppet to limit spillage from the dispenser after a knockdown or during installation.

2.10.1.9 Dispenser Sump

Provide a sump under each dispensing unit. Each sump shall provide convenient service access to piping components enclosed in the sump. Sump shall be constructed of fiberglass-reinforced plastic. Sump shall be chemically compatible with the fuel to be handled by the dispensing unit and any connecting piping. Sump shall prevent fuel from escaping to the soil and ground water from entering the sump. Sump shall provide a liquidtight termination point for secondary containment piping that allows for the anticipated expansion and contraction of the piping system. Sump shall withstand maximum burial loads. Sump shall mount directly to the bottom of the dispensing unit with a centering ring or stabilizer bar to assure proper shearing action for the emergency shutoff valve. Each dispensing sump shall be equipped with leak detection. All sump penetrations shall have boot seals to ensure no water infiltration into the sump and that liquid will not escape from the sump in the event that the liquid level within the sump rises above the pipe penetrations. Provide boot seals that are chemically compatible with the fuel to be handled and that are water resistant to the influx of ground water.

2.10.1.10 Accessories

Equip each assembly with accessories such as built-in air eliminators, line check valves, and lockable housing.

2.10.2 Management Control System

Provide management control system that furnishes computerized control of station fuel dispensing system including operational, control, and management functions from a central control console with displays and separately mounted electronics and data cabinets. Provide functions to provide receipt and report printout types.

2.10.2.1 Operating Functions

System shall operate up to 4 fueling positions with up to 4 different products. System shall operate prepay on preset volume or dollar operation. System shall display grade, dispenser number, volume, and sales amount in one sequence. Provide audible signals and flashing indicators to alert operator to customer needs and dispenser status. Provide functions to calculate change if tank is too full to accept prepaid amount.

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DOUBLE-WALL COALESCING OIL-WATER SEPARATORS

02/11

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1.2 SYSTEM DESCRIPTION

1.2.1 Applications

The double-wall separator shall remove free oil, diesel fuel, bio-diesel, mogas and E-85 from oil-in-water mixtures of freshwater originating from refueler truck parking area. The influent oil-in-water mixture will flow by gravity to the unit which will not be located in an area with a corrosive atmosphere.

1.2.2 Influent Characteristics

Provide oil-water separator designed for a maximum flow of 35 gallons per minute. Operating temperatures of the influent oil-in-water mixture will range from 40 to 80 degrees F. The specific gravities of the oils at operating oil-water temperatures will range from 0.68 to 0.95. The specific gravity of the freshwater at operating temperatures will range from 1.00 to 1.03.

1.2.3 Performance Requirements

The petroleum hydrocarbon concentration in the effluent from the oil-water separator shall not exceed 10 mg/l.

To achieve this goal, it will be necessary to remove all free oil droplets equal to or greater than 20 microns.

1.2.4 Structural Calculations for Oil Water Separator Accessways

Rectangular accessways shall be designed using a lateral earth pressure coefficient of 0.75 and a maximum moist unit weight of soil of 125 pcf. Deflections of the accessway walls shall be limited to ensure the access doors remain operable.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Separator; G-OMA

Accessory equipment; G-OMA

Submit shop drawings for separator and accessory equipment including principal dimensions, location of fittings and unit foundation. Include data to verify center of gravity with the unit empty and filled with water.

SD-05 Design Data

Separator; G-OMA

Accessory equipment; G-OMA

Submit analysis, signed by a registered professional engineer, which indicates that at the calculated overflow rate, the separator will be provided with the required square feet of projected plate separation area to achieve the specified performance under laminar flow (i.e. Reynolds number of less than 500) conditions. Calculations shall take into account the rate of flow, potential surge flow, influent concentrations, particle characteristics, fluid temperature, fluid specific gravities, and pH.

Structural Calculations for Oil Water Separator Accessways; G-OMA

SD-06 Test Reports

Shop hydrostatic test; G-RO,

Submit results of hydrostatic and dynamic testing.

Inspection

Field hydrostatic test

Preoperational test

In-service test

SD-07 Certificates

Separator corrosion protection; G-RO

Submit written verification on the fabricator's letterhead that surface preparation and coating application were performed in accordance with the manufacturer's printed recommendations for the coating system.

SD-08 Manufacturer's Instructions

Separator system; G-RO,

SD-10 Operation and Maintenance Data

Separator system, Data Package 3; G-RO,

Accessory equipment, Data Package 3; G-RO,

Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Delivery and Storage

Inspect materials delivered to site for damage; unload and store with minimum handling. Store materials on-site in enclosures or under protective coverings. Protect materials not suitable for outdoor storage to prevent damage during periods of inclement weather, such as subfreezing temperatures, precipitation, and high winds. Store materials susceptible to deterioration by direct sunlight under cover and avoid damage due to high temperatures. Do not store materials directly on ground. If special

2.4.3 Supports

Brace and support individual plates or plate packs to withstand loads associated with transportation and operation of units, including inplace cleaning. Equip each plate pack with lifting lugs or other attachments for handling and installation. Each lug shall carry total weight of plate pack. Provide adequate structural supports to facilitate inplace cleaning of plate pack bundles.

2.4.4 Baffles

Provide oil retention baffle and stationary underflow baffle. Position underflow baffle to prevent resuspension of solids that have accumulated in secondary solids hopper.

2.5 OUTLET COMPARTMENT

Provide outlet compartment, a sampling port, and nozzles.

2.6 ACCESSORIES AND ACCESSORY EQUIPMENT

Provide bolts, stiffeners, washers, nuts, screws, pins, gaskets, and fittings as required for separator covers and parallel plate packs. Provide separator covers with a vapor proof seal for vapor control with gas vents and accessways to each separator compartment.

2.7 FABRICATION

Provide shop fabricated, skid mounted oil-water separator, or other shop fabricated unit approved by the Contracting Officer, which is comprised of a separator containing an inlet compartment, parallel plate oil coalescing compartment, outlet compartment and the following accessories:

- Separator Cover with vapor proof seal
- Interface/level sensor
- High oil level alarm
- Control panel
- Interstitial leak detection alarm

2.7.1 Shop Hydrostatic Test

Prior to applying coatings, perform hydrostatic test at atmospheric pressure by filling separator with water in the shop for a minimum of 4 hours. Testing shall be conducted after all seams have been cleaned and all welds have been inspected in accordance with ASTM E165/E165M. Acceptance criteria, for the hydrostatic test, is no leakage after 4 hours using a thorough visual inspection for the leaks.

2.7.2 Reduction of Solids

Inlet compartment shall reduce suspended solids to nonclogging level for parallel plates and provide a uniform oily wastewater hydraulic loading across inlet face of oil coalescing compartment, under laminar flow conditions. Equip compartment with an inlet nozzle with wastewater sampling port, nonclogging flow distributor and energy dissipator device.

2.7.3 Oil Coalescing Compartment

Equip oil coalescing compartment with easily removable and reinstallable, parallel, corrugated plates arranged to optimize separation of free oil from liquid carrier. Use parallel plates that are easily removable without dismantling packs and without confined space entry. Provide oil outlet nozzle and stationary underflow baffle, oil retention baffle positioned to prevent discharge of free oil that has been separated from the carrier liquid in inlet and oil coalescing compartments. Provide access to each plate pack from top. Each bundle shall be equipped with handles or lifting rings. Plate designs that permit cleaning of plate packs in place are not acceptable.

2.7.4 Wastewater Sampling Port

Equip inlet and outlet compartments, and wastewater outlet nozzle with wastewater sampling ports permitting easy access for obtaining isokinetic influent and effluent samples.

2.7.5 Connections

Connect the separator at the inlet and outlet pipe invert elevations indicated.

2.7.6 Storage

Provide oil and suspended solids collection and storage as an integral part of proposed oil-water separator system. As a minimum, the separator oil storage compartment shall have a capacity of not less than 40 percent of the total separator volume.

PART 3 EXECUTION

3.1 INSPECTION

Inspect each component of separator for compliance with requirements specified in PART 2 PRODUCTS. Redesign or modification of equipment to comply with specified requirements, or necessary redesign or modification following failure to meet specified requirements, shall receive particular attention for adequacy and suitability. This element of inspection shall encompass visual examinations and dimensional measurements. Noncompliance with specified requirements, or presence of one or more defects preventing or lessening maximum efficiency of separator operation, shall constitute cause for rejection.

3.2 INSTALLATION

Lift separator as required without parallel plate packs in place onto level foundation using lifting mechanism provided. Level separator and bolt to supports to prevent hydrostatic uplift and ensure unit stability. Use a lifting bar through lugs to insert plate packs into separator and place on supports. Caulk around packs and pack supports with sealing compound conforming to ASTM C990 to prevent hydraulic short-circuiting. Avoid abrupt contact between the packs and the separator walls and pack supports to avoid damage. Separator system installation shall be conducted in accordance with manufacturer's recommendations.