

Underground
Storage Tank
Catalog

(573) 317-9620 www.fgtsolutions.com

147 Camdenton Oppertunity Road, Camdenton, MO 65020



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Fiberglass Tank Solutions builds underground storage tanks for the municipal, industrial, and commercial markets. Our underground tanks are built to exceed industry standards, while providing more custom features. FTS delivers tanks to the markets we serve with realistic delivery dates, at competitive prices.

100% WATERTIGHT • LIGHTWEIGHT • CORROSION RESISTANT

WHY WORK WITH FIBERGLASS TANK SOLUTIONS

There is a reason why the word "Solutions" is in our name.

Every underground tank that we build has it's own set of unique conditions, features, and specifications to meet the applications. FTS builds "Custom" underground tanks with market specific accesories, piping, and in-house kit up to add value and performance to the tanks function in each market we serve.

From your initial contact with our knowledgable sales team, to manufacturing by our experienced workforce, through the final tank delivery, we promise that as our **customer**, you will get the **personal attention required** to provide your project's successful underground tank installation.

MARKETS WE SERVE

Municipal | Industrial | Commercial

TANK APPLICATIONS WE BUILD

- Decentralized / On-site Wastewater
- Municipal Wastewater
- Fire Suppression
- Rainwater Harvesting
- Potable Water
- Hazardous Liquid Collection
- Grease / Oil / Sand Interceptors
- Oil / Water Seperators

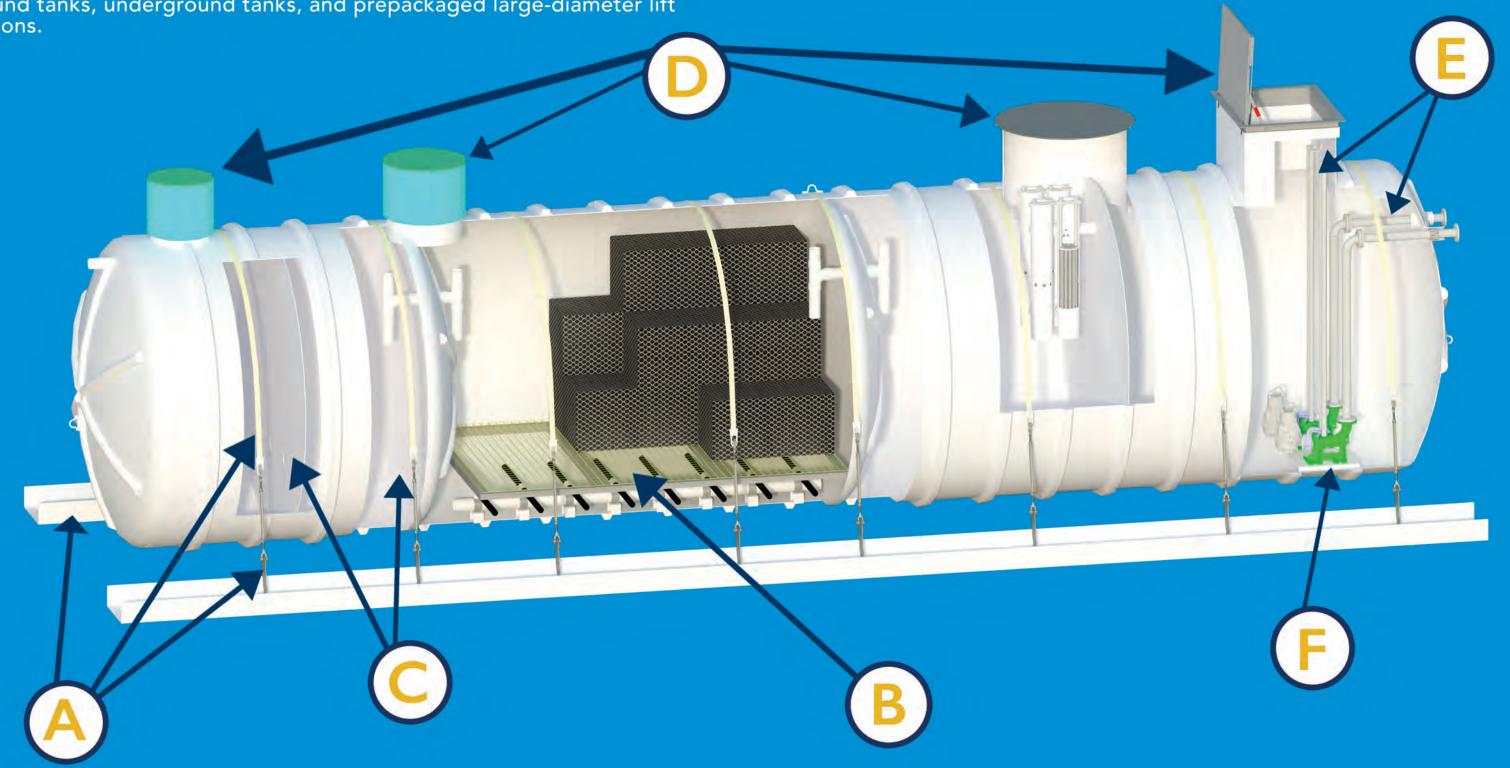
- Knowlegable Inside Sales Staff
- Conclusive Submittals / CAD / FEA Analysis
- Quality Management Plan
- Certified Mechanical Engineers
- State of the Art Tooling & Modern Facility

- 4' 12' Diameter
- Single Tank Up To 50,000 Gallons
- Single & Double Wall Designs
- Deep Bury
- H-20 Load Rated

PREPACKAGING PAYS

Unlike concrete or steel tanks, fiberglass is lightweight and extremely strong, allowing us to build and prepackage the system in a quality-controlled manufacturing facility. Prepackaging also limits labor cost and confined space entry risk in the field. The result is finished products that are unmatched in quality, fit, and performance when compared to any other similar products in the industry. From our sales team to our engineers, laminators, fitters, and welders, each segment of our workforce is experienced in providing the most custom features to our fiberglass above ground tanks, underground tanks, and prepackaged large-diameter lift stations.

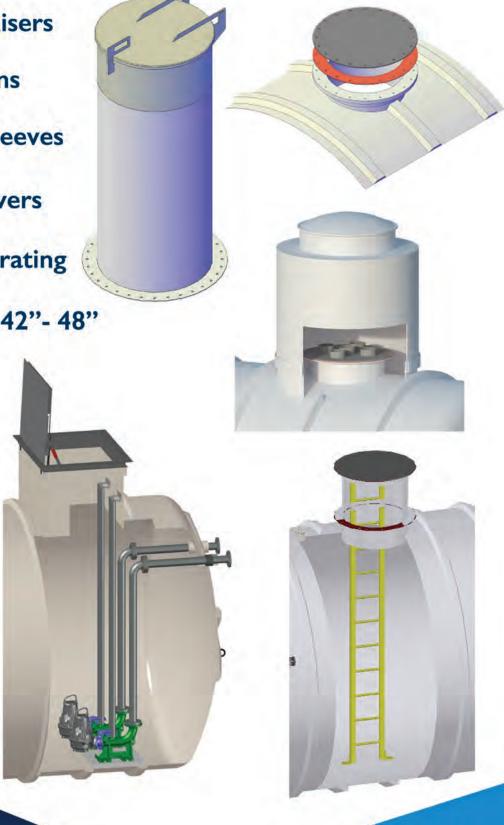
- A. Engineered Anti-Floatation System
- B. Internal Piping & Equipment Kit-Up
- C. Flow Through & Watertight Baffles
- D. Multiple Access Opening, Riser, and Manway Options
- E. Prepackaged Pump Systems
- F. Pump Platforms





Fiberglass Tank ACCESSORIES WE BUILD

- Hinged & Lockable Risers
- Manways & Extensions
- Flanges / Nozzles / Sleeves
- H-20 Steel & C.I. Covers
- Media Platforms & Grating
- Containment Sumps 42"- 48"
- Pump Platforms
- Flex Connections
- Straps / Turnbuckles
- Interior Piping
- **Baffle Walls**
- Pump Vaults



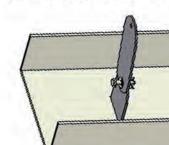


TANK ANCHORING SYSTEMS

Engineered Fiberglass Deadman System (EFD)

Our engineered fiberglass deadman system includes structural fiberglass deadmen, along with the proper turnbuckles and straps for each tank size we build.



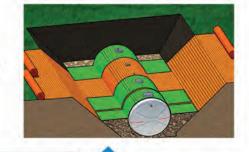


TankAnchor® - The "Geo-Composite Option"

Our TankAnchor® system provides an engineered geo-composite that utilizes the soil loads to offset buoyancy. The TankAnchor® allows for shallower bury applications with higher safety factors, as compared to conventional deadmen systems. TankAnchor® can be utilized for single or double tank installations in open cut trench excavations utilizing a 34°, 45°, or 54° angle.



Both anchoring systems are fully supported with engineering buoyancy calculations, utilizing industry accepted safety factors.



OTHER PRODUCTS WE BUILD

- Fiberglass Lift Stations
 Above Ground Tanks
- OEM Manufacturing



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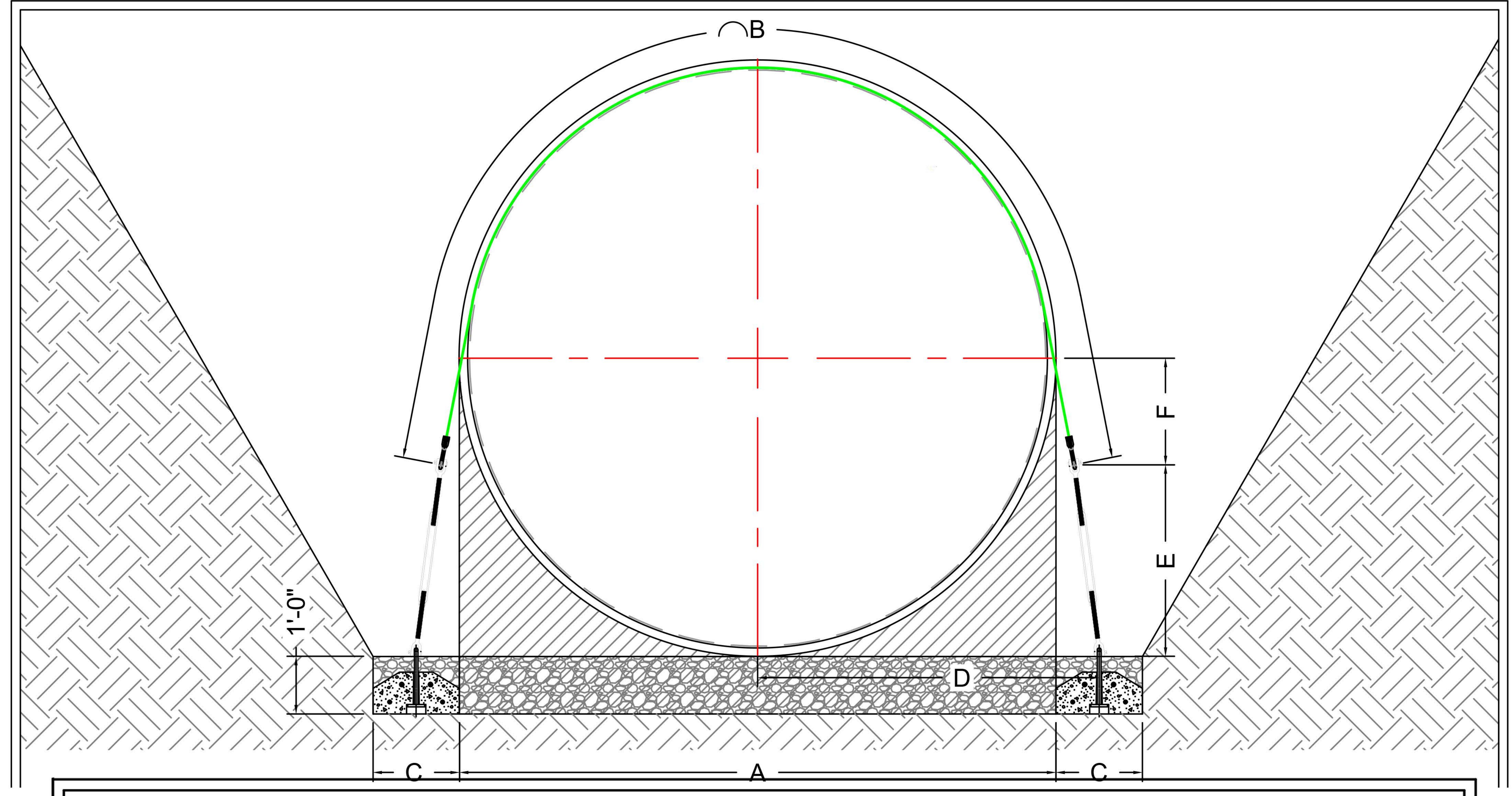








Engineered Concrete Deadman Systems



| ANCHORING DIMENSIONS | | | | | | | |
|----------------------|--------|--------|-----|--------|--------|--------|--|
| TANK DIA. | "A" | "B" | "C" | "D" | JUEJU | VVF-VV | |
| 4' | 4'-4" | 85" | 12" | 2'-8" | 1'-10" | 0'-4" | |
| 5' | 5'-4" | 111.5" | 12" | 3'-2" | 2'-1" | 0'-7" | |
| 6' | 6'-4" | 145" | 12" | 3'-8" | 2'-0" | 1'-3" | |
| 8' | 8'-4" | 181" | 18" | 4'-8" | 3'-0" | 1'-2" | |
| 10' | 10'-4" | 236" | 18" | 5'-11" | 3'-4" | 1'-10" | |
| 12' | 12'-9" | 300" | 18" | 7'-1" | 3'-5" | 2'-11" | |

- ENGINEERED DESIGN
- •INDUSTRY STANDARD
- FULL LINE OF ACCESSORIES



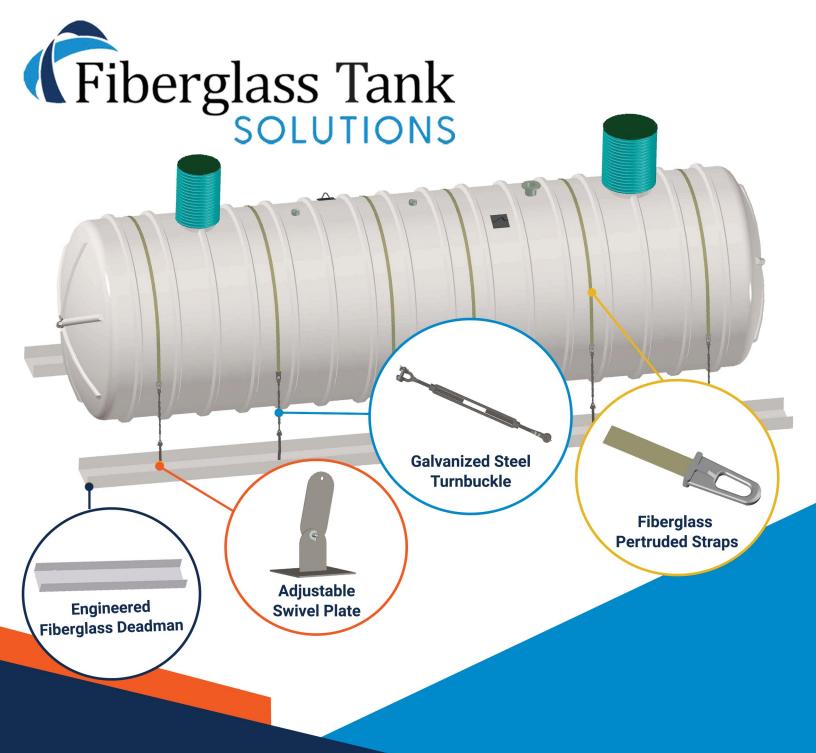






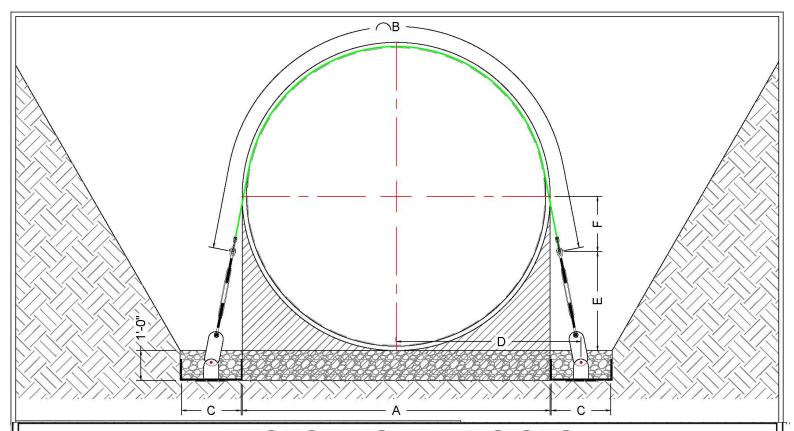






Engineered Fiberglass Deadman System

LIGHTWEIGHT - ENGINEERED STRENGTH



ANCHORING DIMENSIONS TANK DIA. "B" "C" "D" "E" "F" "A" 4' 85" 12" 2'-8 1/2" 1'-10 1/4" 4'-4" 0'-4" 5'-4 1/4" 5' 111.5" 12" 3'-2 3/4" 2'-1 1/4" 0'-7" 1'-11 1/2" 3'-8 3/4" 6' 6'-4 1/4" 145" 12" 1'-2 3/4" 8' 8'-4 1/4" 181" 18" 4'-11 3/4" 3'-0 1/2" 1'-1 3/4" 1'-10 1/4" 10' 10'-4 1/4" 236" 24" 6'-3 3/4" 3'-4" 2'-5 1/2" 3'-8 3/4" 12'-4 1/4" 288" 7'-2 3/4" 12' 24"

- NO EXTRA FREIGHT COSTS
- LIGHTWEIGHT
- FLEXIBLE DESIGN



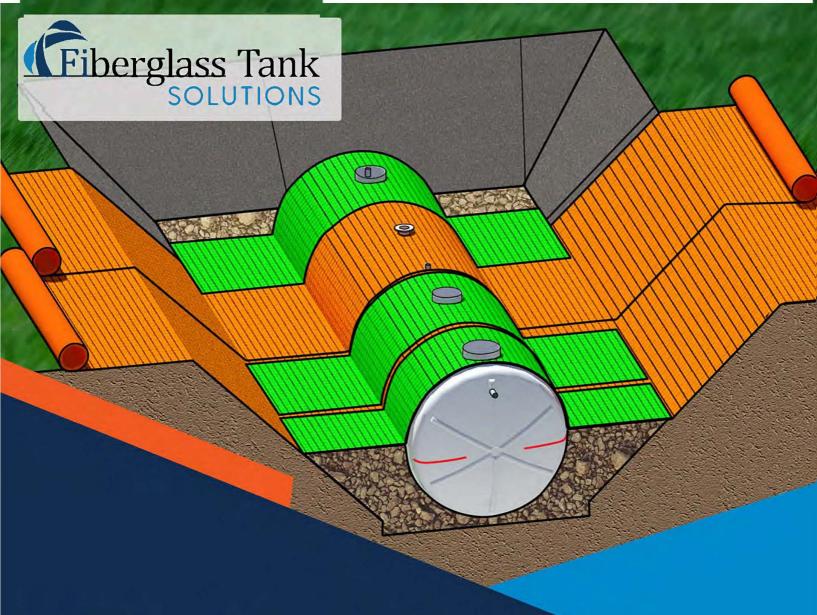












TankAnchor™

TankAnchor[™] is an alternative to the traditional concrete deadmen, straps, and turnbuckles.

Benefits as compared to Concrete:

- Reduces total tank installation costs
- Less bury depths with higher safety factors
- Reduced freight costs
- Non-Biodegradable
- Unaffected by freezing or thawing



ANTI-FLOTATION SYSTEMS

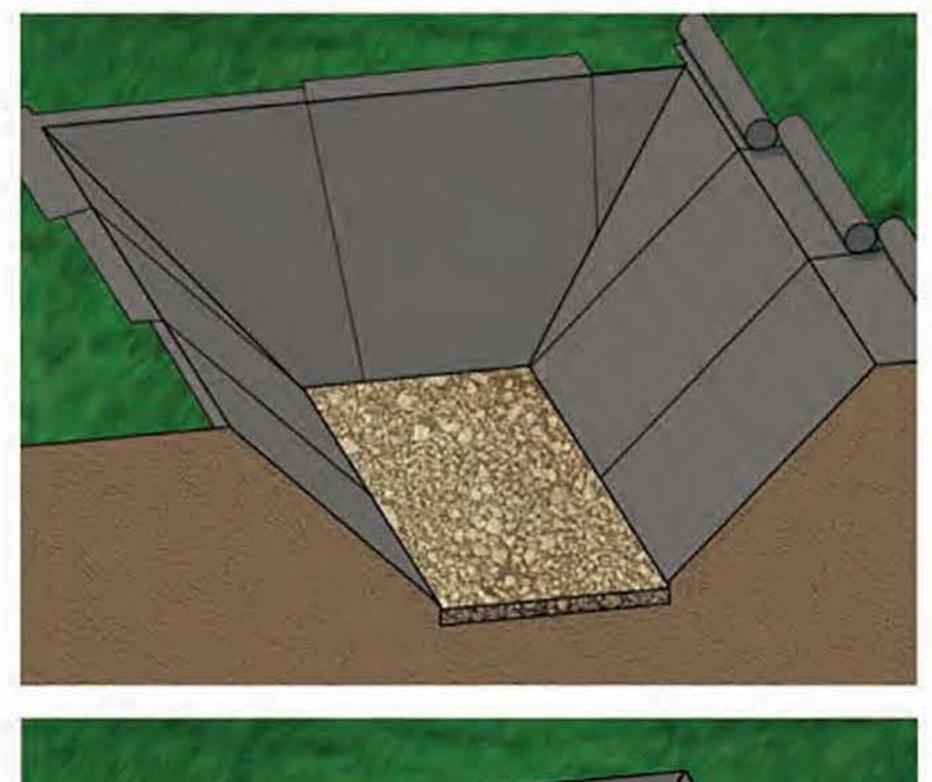
TankAnchor™ is a geocomposite comprised of a coated high strength polyester geogrid bonded to a polyester nonwoven geotextile, designed for superior anti-buoyancy resistance for installations of underground storage tanks.

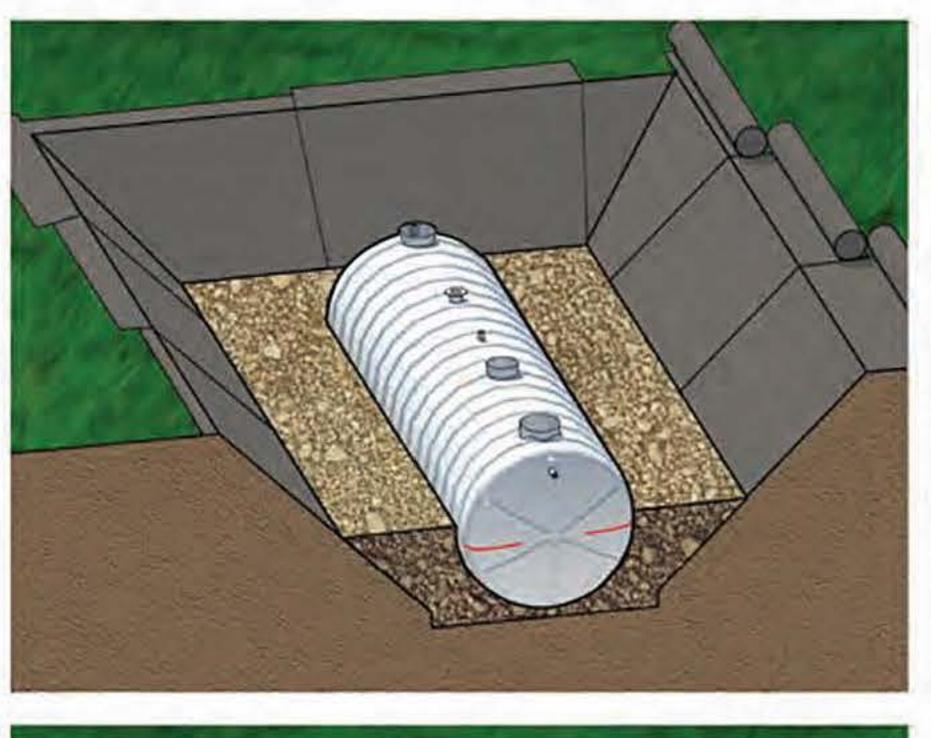
- Easy to install
- Light weight
- P.E. stamped calculations
- No special tools required for installation
- Single or double tank applications

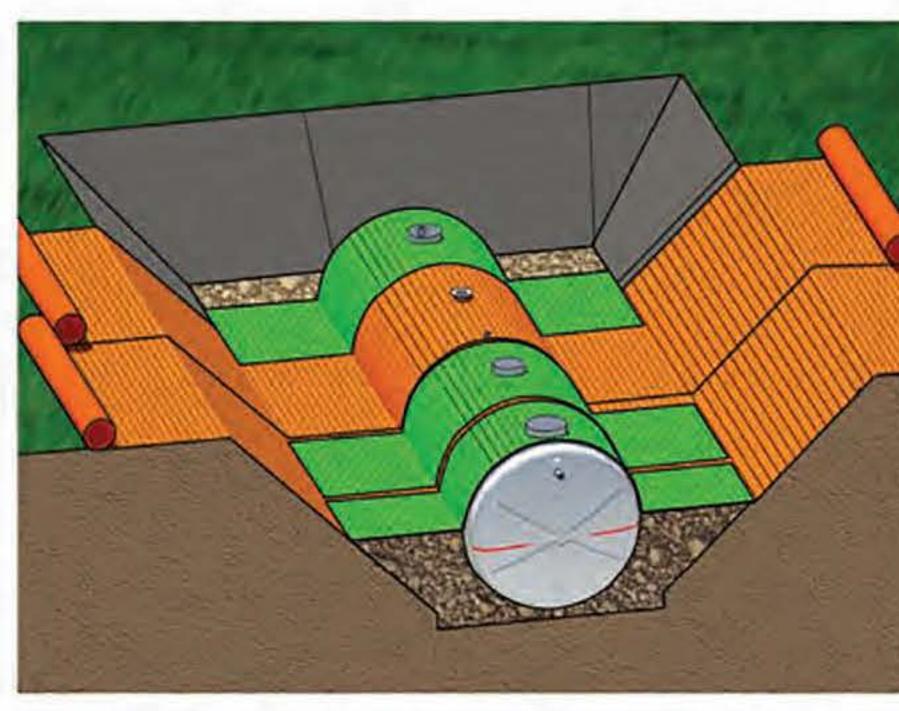
VISIT OUR WEBSITE:

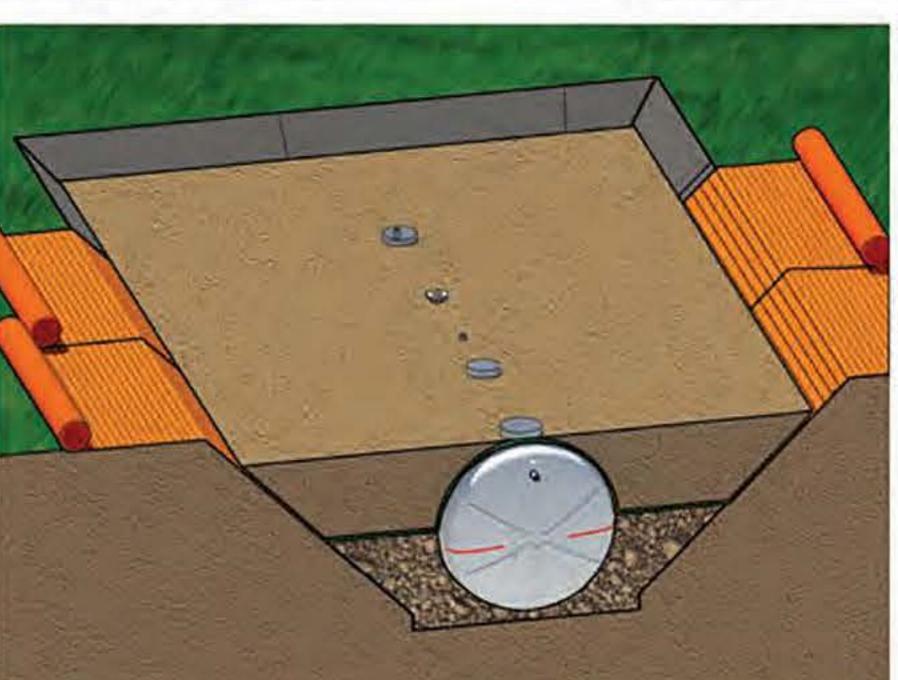
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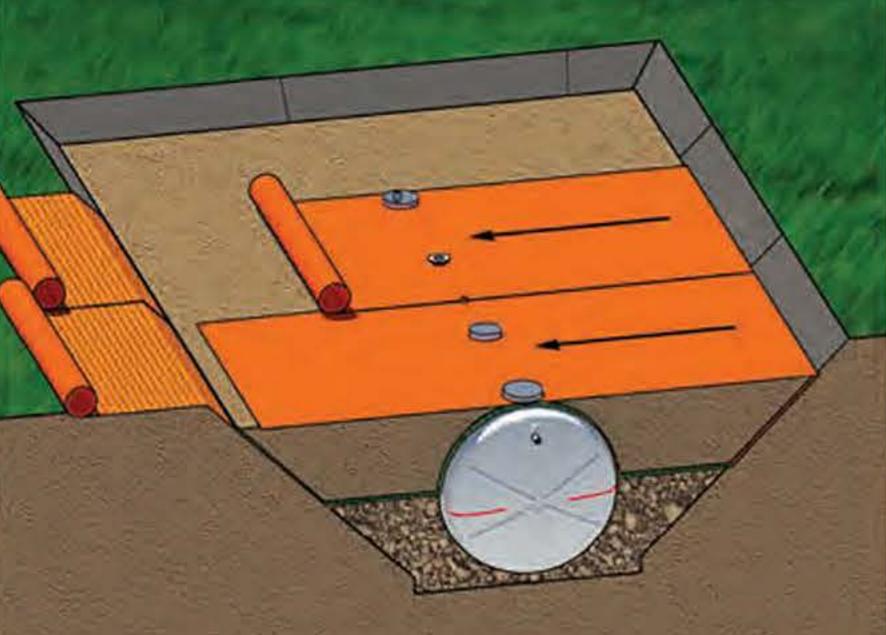
For a complete Install Guide

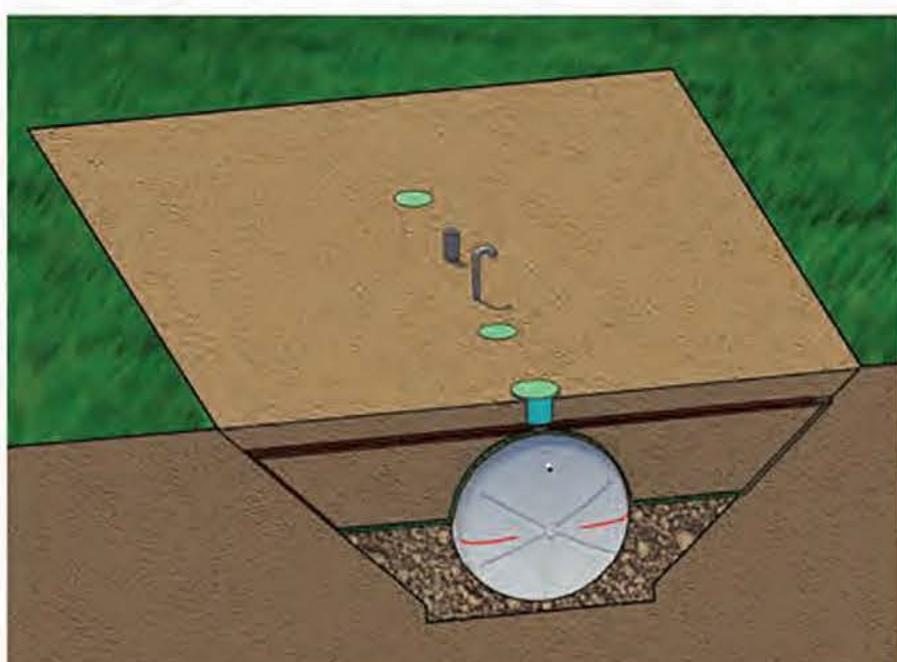












OTHER PRODUCTS WE BUILD

Fiberglass Lift Stations
 Above Ground Tanks
 OEM Manufacturing



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Project Profiles





Name: Pensacola DW Tanks

Location: Milton, FL

Application: Hazardous Liquid Collection

Product: Underground Storage Tank

Size: (x2) 10' dia x 35'-11-7/8" long UST, 42" Containment Sump/ 72" tall

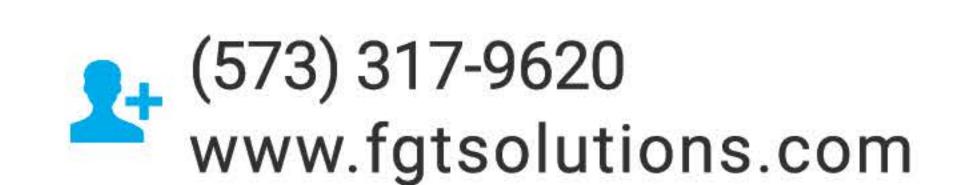
These Aqueous Film Forming Foam (AFFF) hazardous liquid collection tanks serve a military hanger location in Milton, Florida. The two tanks share volume with a common side pipe, are (DW) Double Wall, with 30" manways, sumps, and misc. threaded fittings. Each tank is fitted with interstitial monitoring sensors for assured reliability. For anti-flotation, an engineered concrete slab under tank was utilized for these shallow bury collection tanks. FTS is proud to confirm that these tanks were delivered on schedule, and under budget, as promised!

Why work with us?

Turnkey Prepackaged Systems

Reduced Construction Costs

Superior Quality



Fiberglass Tank SOLUTIONS

PROJECT PROFILE







Features

- -20,000 Gallon Storage
- -Double Wall Design
- -Interstitial Monitoring
- -Oversized Share Pipe
- -Logistics to Job Site
- -Under Tank Slab Anti-Flotation
- "On-Time & Under Budget"







Name: Seminole Fire Suppression

Location: Seminole, OK

Application: Fire Suppression

Product: Underground Storage Tank

Size: (10' Dia. x 56' 3,1/4" Long-Tank) (4' Dia x 19' 1,1/2" Long-Pump Vault)

This Fiberglass Tank Solutions fire suppression tank services an office building in Seminole, OK. Due to the rural water districts inadequate flow and pressure in the utility water mains to meet fire suppression requirements, a standby fiberglass underground storage tank utilizing a vertical turbine pump in a separate fiberglass pump vault solved this challenging site condition. To offset any buoyancy issues, an FTS manufactured, pre-engineered, concrete deadman system including straps and turnbuckles was supplied to offset any buoyancy concerns as part of this tank package. The tank was installed by Smith & Pickle Construction, Inc., an Oklahoma based firm specializing in commercial office building construction. Site conditions did include some rock excavation. This tank system was manufactured and delivered on time, under budget, with a steady stream of technical communication regarding installation and logistics to Smith & Pickle staff, insuring a quality and profitable installation.

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Reduced Construction Costs

Superior Quality

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Fiberglass Tank SOLUTIONS

PROJECT PROFILE





Features

- -35,000 Gallon Storage
- -Durable Single Wall Design
- -Exterior Pump Vault
- -Oversized Share Pipe
- -Logistics to Job Site
- -Anti-Flotation Concrete Deadmen
- "On-Time & Under Budget"



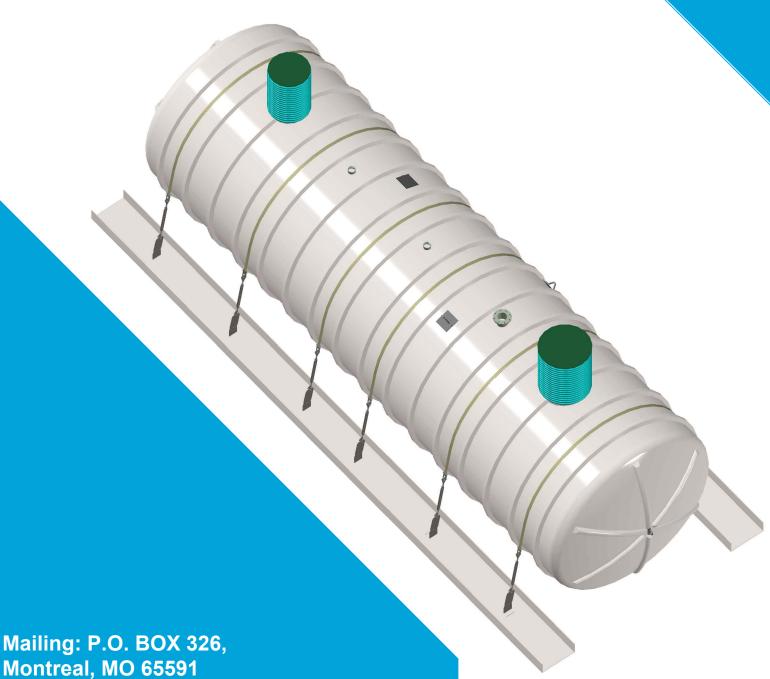


Tank Shell Drawings & Charts





Underground Storage Tank Size Chart



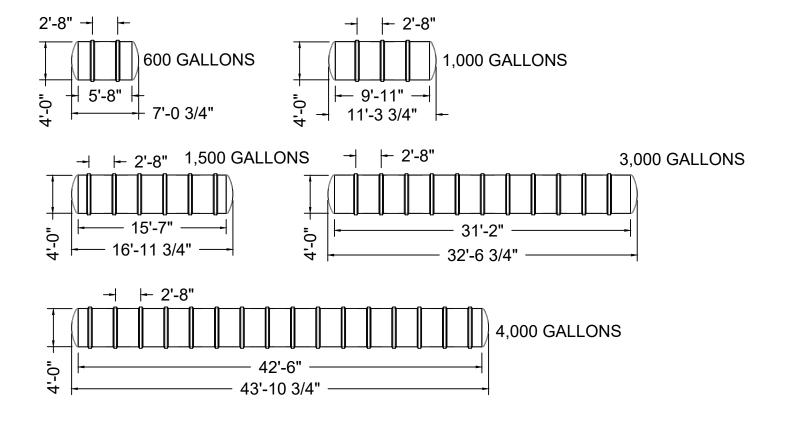
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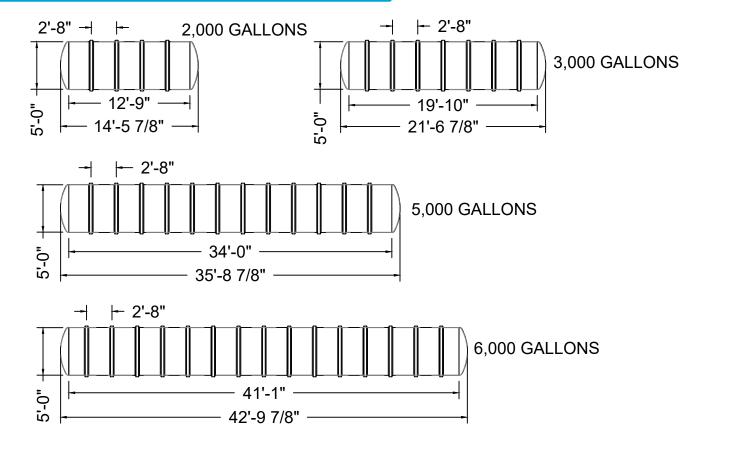
MFG: 147 Camdenton Bus. Prk. Dr.,

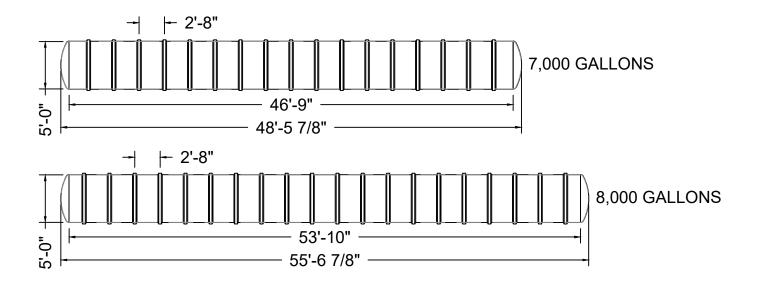
Camdenton, MO 65020

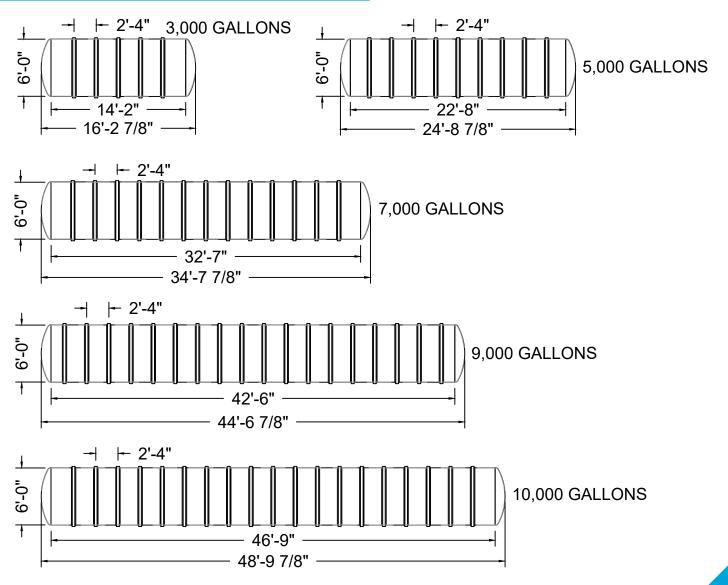
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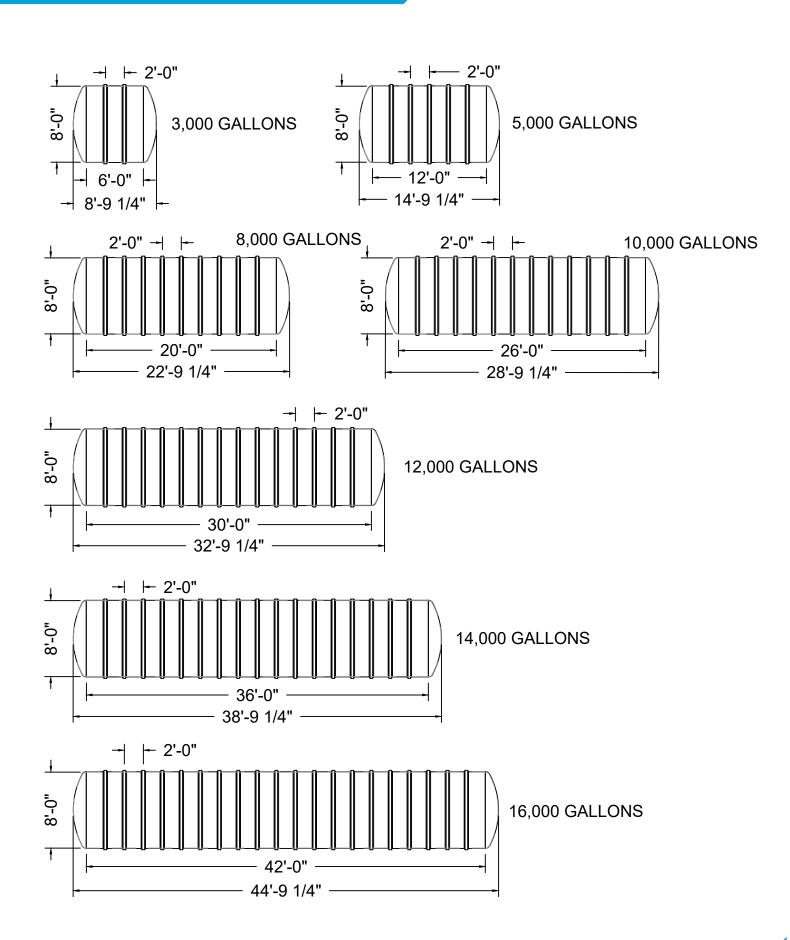
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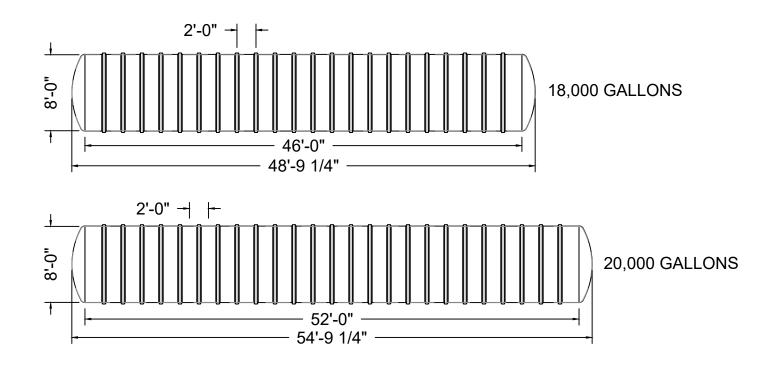


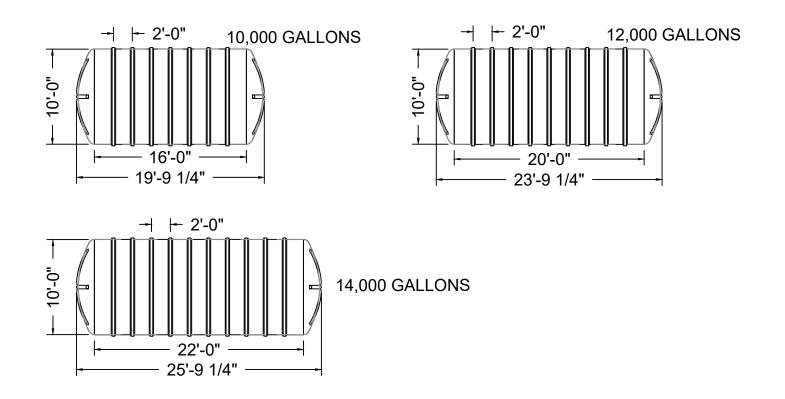


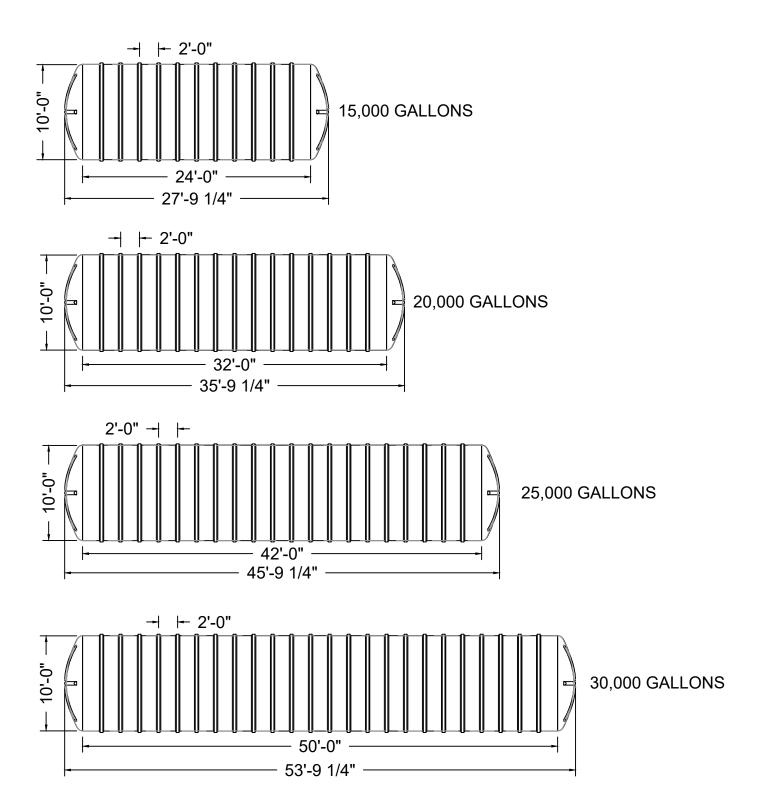


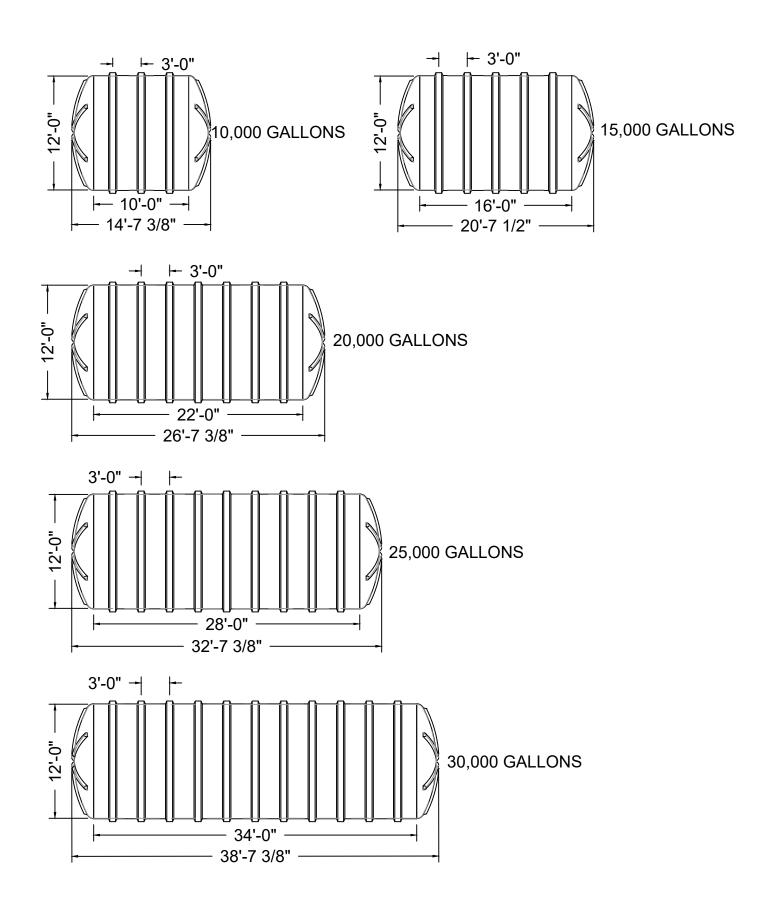


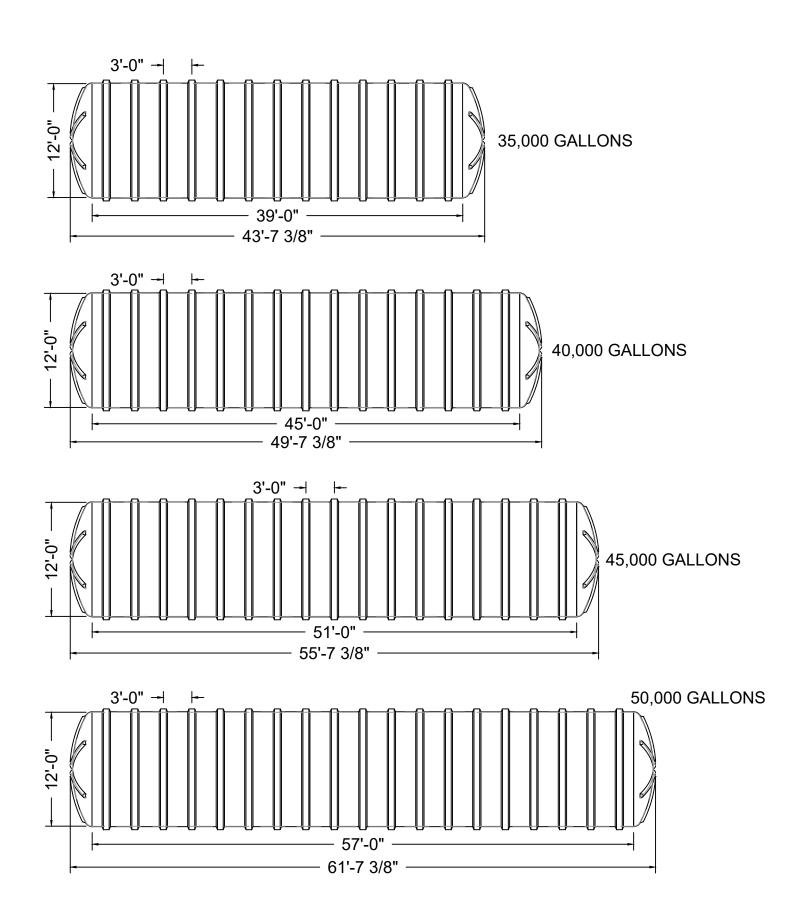














Information Chart Single Wall Underground Storage Tanks

| Tank Diameter | | | St. Wall Length | Overall Length | Estimated | |
|----------------------|-----------------|------------------------|-------------------|--------------------|--------------|-----------|
| (Ft.) | Capacity (Gal.) | Actual Capacity (Gal.) | (Ft./ In.) | (Ft./ In.) | Weight (LBS) | Strap Qty |
| (Ft.) | 600 | 610 | 5'-8" | 7'-2" | 298 | 2 |
| | | | 9'-11" | 7 -2 11'-5" | | 2 |
| | 1,000 | 1,010 | 9-11 15'-7" | 11 -5 17'-1" | 436 | |
| | 1,500 | 1,542 | | | 641 | 2 |
| 4 Ft. | 2,000 | 2,075 | 21'-3" | 22'-8" | 846 | 4 |
| 4 Ft. | 2,500 | 2,608 | 26'-11" | 28'-4" | 1,072 | 4 |
| | 3,000 | 3,007 | 31'-2" | 32'-7" | 1,190 | 4 |
| | 3,500 | 3,540 | 36'-10" | 38'-3" | 1,395 | 6 |
| | 4,000 | 4,073 | 42'-6" | 43'-11" | 1,600 | 6 |
| | | | | | | |
| | 1,500 | 1,608 | 9'-11" | 11'-8" | 565 | 2 |
| | 2,000 | 2,024 | 12' - 9" | 14'-6" | 693 | 2 |
| | 2,500 | 2,648 | 17'-0" | 18'-9" | 905 | 2 |
| | 3,000 | 3,065 | 19'-10" | 21'-7" | 1,033 | 2 |
| | 3,500 | 3,689 | 24'-1" | 25'-10" | 1,245 | 4 |
| | 4,000 | 4,105 | 26'-11" | 28'-8" | 1,373 | 4 |
| 5 Ft. | 4,500 | 4,521 | 29'-9" | 31'-6" | 1,502 | 4 |
| 316. | 5,000 | 5,145 | 34'-0" | 35'-9" | 1,674 | 4 |
| | 5,500 | 5,562 | 36'-10" | 38'-7" | 1,803 | 6 |
| | 6,000 | 6,186 | 41'-1" | 42'-10" | 2,014 | 6 |
| | 6,500 | 6,602 | 43'-11" | 45'-8" | 2,143 | 6 |
| | 7,000 | 7,018 | 46'-9" | 48'-6" | 2,271 | 6 |
| | 7,500 | 7,642 | 51'-0" | 52'-9" | 2,508 | 6 |
| | 8,000 | 8,059 | 53'-10" | 55'-7" | 2,636 | 8 |
| | | | | | | |
| | 1,500 | 1,759 | 7'-1" | 9'-5" | 668 | 2 |
| | 2,000 | 2,059 | 8'-6" | 10'-10" | 748 | 2 |
| | 3,000 | 3,257 | 14'-2" | 16'-6" | 1,071 | 2 |
| | 4,000 | 4,156 | 18'-5" | 20'-9" | 1,313 | 2 |
| C 51 | 5,000 | 5,055 | 22'-8" | 25'-0" | 1,555 | 4 |
| 6 Ft. | 6,000 | 6,253 | 28'-4" | 30'-8" | 1,878 | 4 |
| | 7,000 | 7,152 | 32'-7" | 34'-11" | 2,119 | 4 |
| | 8,000 | 8,051 | 36'-10" | 39'-2" | 2,362 | 4 |
| | 9,000 | 9,250 | 42'-6" | 44'-10" | 2,685 | 6 |
| | 10,000 | 10,149 | 46'-9" | 49'-1" | 2,926 | 6 |
| | , | , | | | • | |
| | 3,000 | 2,876 | 6'-0" | 8'-9" | 1,141 | 2 |
| | 4,000 | 4,380 | 10'-0" | 12'-9" | 1,627 | 2 |
| | 5,000 | 5,132 | 12'-0" | 14'-9" | 1,870 | 2 |
| 8 Ft. | 6,000 | 5,884 | 14'-0" | 16'-9" | 2,112 | 2 |
| 016. | 7,000 | 7,388 | 18'-0" | 20'-9" | 2,598 | 4 |
| | 8,000 | 8,140 | 20'-0" | 22'-9" | 2,841 | 4 |
| | 9,000 | 8,892 | 22'-0" | 24'-9" | 3,084 | 4 |
| | 3,000 | 0,032 | 22 - U | 2 4 - 3 | 3,004 | 4 |

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Information Chart

Single Wall Underground Storage Tanks

| Tank Diameter | Nominal | Actual Capacity | St. Wall Length | Overall Length | Estimated | Strap Qty |
|----------------------|-----------------|------------------------|-----------------|----------------|--------------|-----------|
| (Ft.) | Capacity (Gal.) | (Gal.) | (Ft./ In.) | (Ft./ In.) | Weight (LBS) | |
| | 10,000 | 10,396 | 26'-0" | 28'-9" | 3,570 | 4 |
| | 11,000 | 11,148 | 28'-0" | 30'-9" | 3,813 | 4 |
| | 12,000 | 11,900 | 30'-0" | 32'-9" | 4,131 | 4 |
| | 13,000 | 13,404 | 34'-0" | 36'-9" | 4,617 | 6 |
| | 14,000 | 14,156 | 36'-0" | 38'-9" | 4,860 | 6 |
| 8 Ft. | 15,000 | 14,908 | 38'-0" | 40'-9" | 5,103 | 6 |
| | 16,000 | 16,412 | 42'-0" | 44'-9" | 5,664 | 6 |
| | 17,000 | 17,164 | 44'-0" | 46'-9" | 5,907 | 6 |
| | 18,000 | 17,917 | 46'-0" | 48'-9" | 6,150 | 6 |
| | 19,000 | 19,421 | 50'-0" | 42'-9" | 6,636 | 6 |
| | 20,000 | 20,173 | 52'-0" | 54'-9" | 6,879 | 6 |
| | | | | | | |
| | 7,000 | 7,087 | 10'-0" | 13'-9" | 2,376 | 4 |
| | 8,000 | 8,262 | 12'-0" | 15'-9" | 2,682 | 4 |
| | 9,000 | 9,437 | 14'-0" | 17'-9" | 2,988 | 4 |
| | 10,000 | 10,612 | 16'-0" | 19'-9" | 3,295 | 4 |
| | 11,000 | 11,787 | 18'-0" | 21'-9" | 3,601 | 4 |
| | 12,000 | 12,962 | 20'-0" | 23'-9" | 3,907 | 4 |
| 10 Ft. | 13,000 | 12,962 | 20'-0" | 23'-9" | 3,907 | 4 |
| 1011. | 14,000 | 14,137 | 22'-0" | 25'-9" | 4,331 | 4 |
| | 15,000 | 15,312 | 24'-0" | 27'-9" | 4,519 | 4 |
| | 20,000 | 20,012 | 32'-0" | 35'-9" | 5,744 | 6 |
| | 25,000 | 25,887 | 42'-0" | 45'-9" | 7,275 | 8 |
| | 30,000 | 30,587 | 50'-0" | 53'-9" | 8,593 | 10 |
| | 35,000 | 35,288 | 58'-0" | 61'-9" | 9,818 | 12 |
| | 40,000 | 39,988 | 66'-0" | 69'-9" | 11,043 | 14 |
| | | | | | | |
| | 10,000 | 10,543 | 10'-0" | 14'-7" | 4,198 | 4 |
| | 11,000 | 11,377 | 11'-0" | 15'-7" | 4,635 | 4 |
| | 12,000 | 12,222 | 12'-0" | 16'-7" | 4,786 | 4 |
| | 13,000 | 13,066 | 13'-0" | 17'-7" | 4,937 | 4 |
| | 14,000 | 14,755 | 15'-0" | 19'-7" | 5,525 | 4 |
| | 15,000 | 15,600 | 16'-0" | 20'-7" | 5,675 | 6 |
| | 16,000 | 16,444 | 17'-0" | 21'-7" | 6,112 | 6 |
| 12 Ft. | 17,000 | 17,289 | 18'-0" | 22'-7" | 6,263 | 6 |
| | 18,000 | 18,133 | 19'-0" | 23'-7" | 6,414 | 6 |
| | 19,000 | 19,822 | 21'-0" | 25'-7" | 7,002 | 6 |
| | 20,000 | 20,666 | 22'-0" | 26'-7" | 7,152 | 6 |
| | 21,000 | 21,511 | 23'-0" | 27'-7" | 7,589 | 6 |
| | 22,000 | 22,355 | 24'-0" | 28'-7" | 7,740 | 6 |
| | 23,000 | 23,200 | 25'-0" | 29'-7" | 7,891 | 8 |
| | 24,000 | 24,044 | 26'-0" | 30'-7" | 8,328 | 8 |

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Information Chart Single Wall Underground Storage Tanks

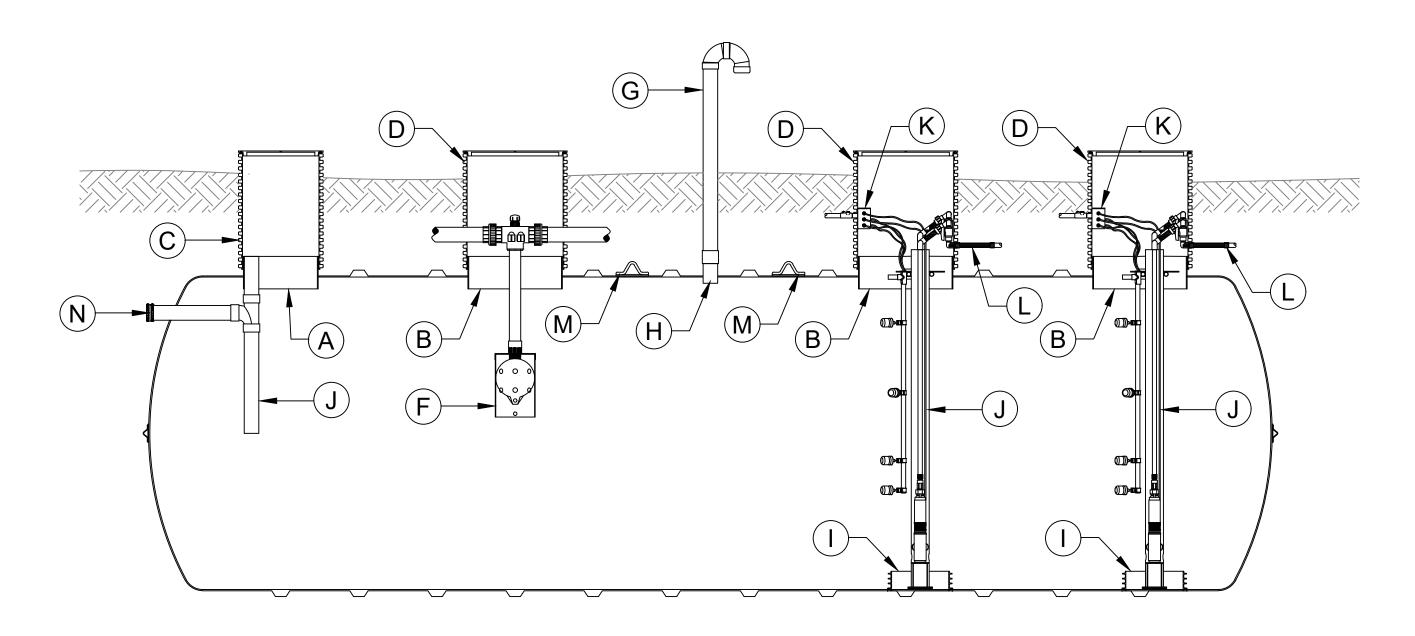
| Tank Diameter | Nominal | Actual Capacity | St. Wall Length | Overall Length | Estimated | |
|---------------|-----------------|-----------------|-----------------|----------------|--------------|------------|
| (Ft.) | Capacity (Gal.) | (Gal.) | (Ft./ In.) | (Ft./ In.) | Weight (LBS) | Strap Qty. |
| | 25,000 | 25,733 | 28'-0" | 32'-7" | 8,780 | 8 |
| | 26,000 | 26,578 | 29'-0" | 33'-7" | 9,217 | 8 |
| | 27,000 | 27,422 | 30'-0" | 34'-7" | 9,368 | 8 |
| | 28,000 | 28,267 | 31'-0" | 35'-7" | 9,519 | 10 |
| | 29,000 | 29,111 | 32'-0" | 36'-7" | 9,956 | 10 |
| | 30,000 | 30,800 | 34'-0" | 38'-7" | 10,257 | 10 |
| | 31,000 | 31,644 | 35'-0" | 39'-7" | 10,694 | 10 |
| | 32,000 | 32,489 | 36'-0" | 40'-7" | 10,845 | 10 |
| | 33,000 | 33,333 | 37'-0" | 41'-7" | 10,996 | 10 |
| | 34,000 | 34,178 | 38'-0" | 42'-7" | 11,433 | 10 |
| | 35,000 | 35,022 | 39'-0" | 43'-7" | 11,583 | 12 |
| | 36,000 | 36,711 | 41'-0" | 45'-7" | 12,322 | 12 |
| 12 ft. | 37,000 | 37,556 | 42'-0" | 46'-7" | 12,473 | 12 |
| 12 11. | 38,000 | 38,400 | 43'-0" | 47'-7" | 12,623 | 12 |
| | 39,000 | 39,245 | 44'-0" | 48'-7" | 13,061 | 12 |
| | 40,000 | 40,089 | 45'-0" | 49'-7" | 13,211 | 12 |
| | 41,000 | 41,778 | 47'-0" | 51'-7" | 13,799 | 12 |
| | 42,000 | 42,622 | 48'-0" | 52'-7" | 13,950 | 12 |
| | 43,000 | 43,467 | 49'-0" | 53'-7" | 14,101 | 14 |
| | 44,000 | 44,311 | 50'-0" | 54'-7" | 14,538 | 14 |
| | 45,000 | 45,156 | 51'-0" | 55'-7" | 14,688 | 14 |
| | 46,000 | 46,845 | 53'-0" | 57'-7" | 15,276 | 14 |
| | 47,000 | 47,689 | 54'-0" | 58'-7" | 15,578 | 14 |
| | 48,000 | 48,534 | 55'-0" | 59'-7" | 15,728 | 18 |
| | 49,000 | 49,378 | 56'-0" | 60'-7" | 16,165 | 18 |
| | 50,000 | 50,223 | 57'-0" | 61'-7" | 16,316 | 18 |

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Tank Application Drawings





SINGLE COMPARTMENT RECIRC TANK W/ TWO FLOW INDUCER TOWERS

* CUSTOMER SUPPLIED ITEM NOTE:

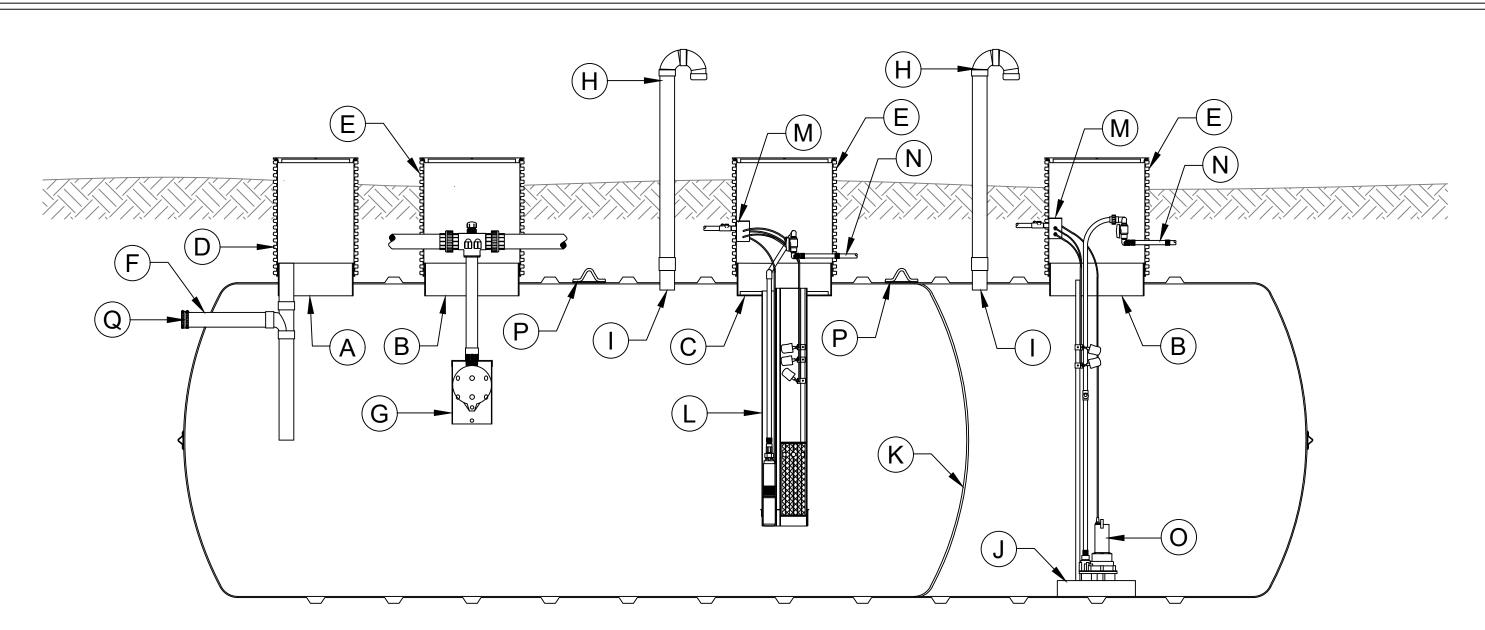
| NOTE: COSTOMEROUT EIED TEM | | | | | | |
|----------------------------|--|------|---|--|--|--|
| BILL OF MATERIALS | | | | | | |
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | |
| Α | Ø24" ACCESS OPENING | Н | 4" PVC SCH40 PIPE STUB | | | |
| В | Ø30" ACCESS OPENINGS | I | Ø18" VAULT BASIN | | | |
| С | Ø24" PVC RISER W/ BOLT ON LID | J* | FLOW INDUCER TOWER W/ SUBMERSIBLE EFFLUENT PUMP | | | |
| D | Ø30" PVC RISER W/ BOLT ON LID | K* | PVC SPLICE BOX W/ CORD GRIPS | | | |
| E | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | L* | EFFLUENT DISCHARGE LINE | | | |
| F* | RECIRCULATION SPLITTER VAVLE | М | STEEL LIFTING LUGS | | | |
| G | 4" PVC SCH40 GOOSENECK VENT ASSEMBLY | N | 4" SS SHIELDED FLEXIBLE COUPLING | | | |



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TWO COMPARTMENT RECIRC TANK W/PUMP VAULT AND DOSING TANK W/BASE MOUNT PUMP

NOTE: * CUSTOMER SUPPLIED ITEM

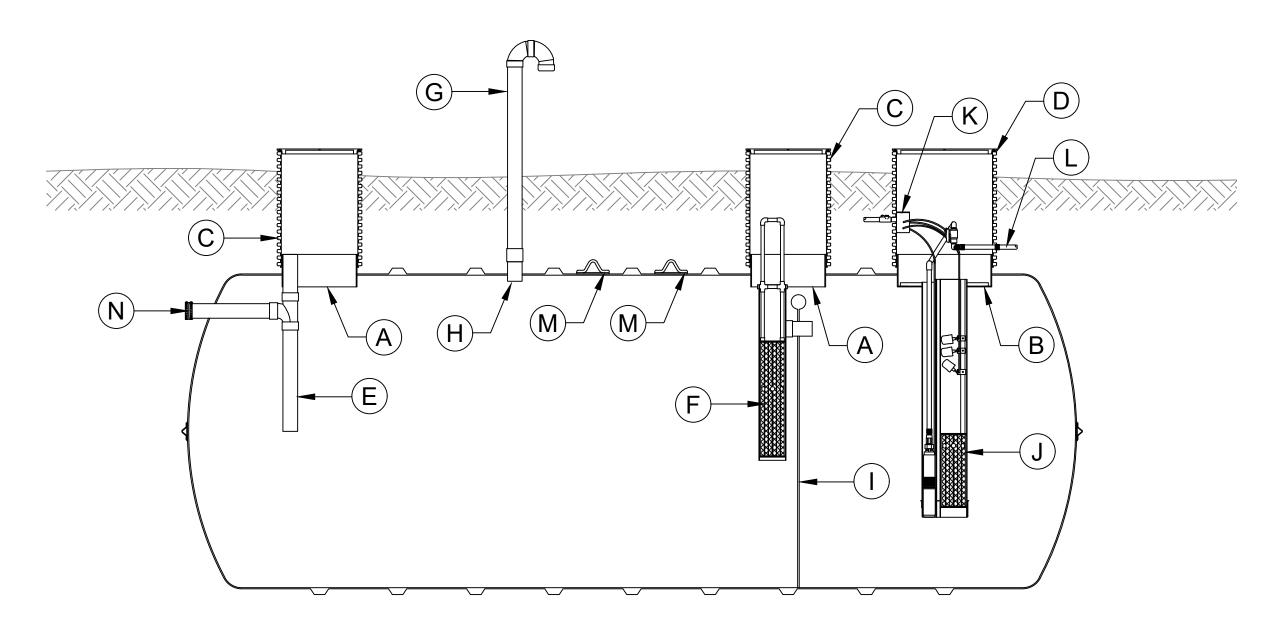
| | BILL OF MATERIALS | | | | | | |
|------|--|------|--|--|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | | |
| Α | Ø24" ACCESS OPENING | J | PUMP PLATFORM | | | | |
| В | Ø30" ACCESS OPENING | K | FULL WATERTIGHT FRP ASME DOME BAFFLE WALL | | | | |
| С | Ø30" ACCESS OPENING W/ INTERNAL FLANGE | L* | EFFLUENT PUMP VAULT W/ FILTER & FLOAT ASSEMBLY | | | | |
| D | Ø24" PVC RISER W/ BOLT ON LID | M* | PVC SPLICE BOX W/ CORD GRIPS | | | | |
| E | Ø30" PVC RISER W/ BOLT ON LID | N* | EFFLUENT DISCHARGE LINE | | | | |
| F | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | O* | BASE MOUNT SUBMERSIBLE PUMP W/ FLOATS | | | | |
| G* | RECIRCULATION SPLITTER VAVLE | Р | STEEL LIFTING LUGS | | | | |
| Н | 4" PVC SCH40 GOOSENECK VENT ASSEMBLY | Q | 4" SS SHIELDED FLEXIBLE COUPLING | | | | |
| I | 4" PVC SCH40 PIPE STUB | | | | | | |



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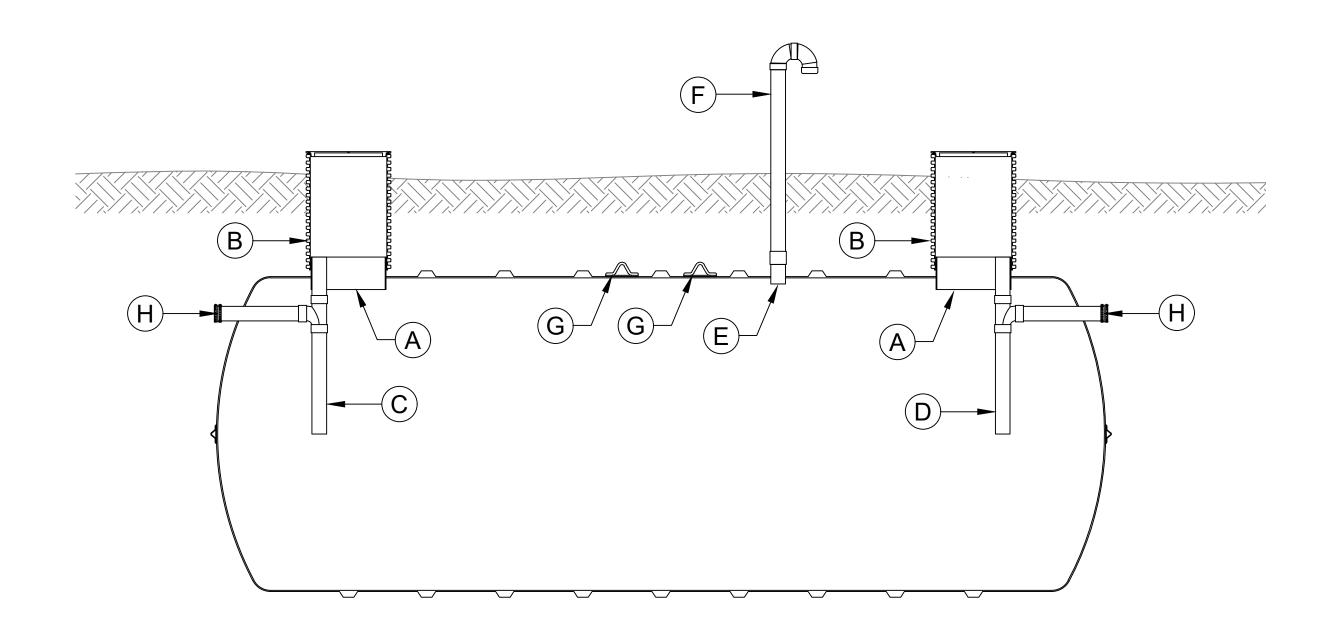
TWO COMPARTMENT STEP TANK W/ PUMP VAULT & EFFLUENT FILTER

NOTE: * CUSTOMER SUPPLIED ITEM

| 11012 | NOTE: COCTOMER COTTERED TEM | | | | |
|-------|--|------|--|--|--|
| | BILL OF MATERIALS | | | | |
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø24" ACCESS OPENING | Н | 4" PVC SCH40 PIPE STUB | | |
| В | Ø30" ACCESS OPENING W/ INTERNAL FLANGE | I | 7/8 WATERTIGHT FRP FLAT BAFFLE WALL | | |
| С | Ø24" PVC RISER W/ BOLT ON LID | J* | EFFLUENT PUMP VAULT W/ FILTER & FLOAT ASSEMBLY | | |
| D | Ø30" PVC RISER W/ BOLT ON LID | K* | PVC SPLICE BOX W/ CORD GRIPS | | |
| E | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | L* | EFFLUENT DISCHARGE LINE | | |
| F* | EFFLUENT FILTER BAFFLE WALL CROSSOVER | М | STEEL LIFTING LUGS | | |
| G | 4" PVC SCH40 GOOSENECK VENT ASSEMBLY | N | 4" SS SHIELDED FLEXIBLE COUPLING | | |



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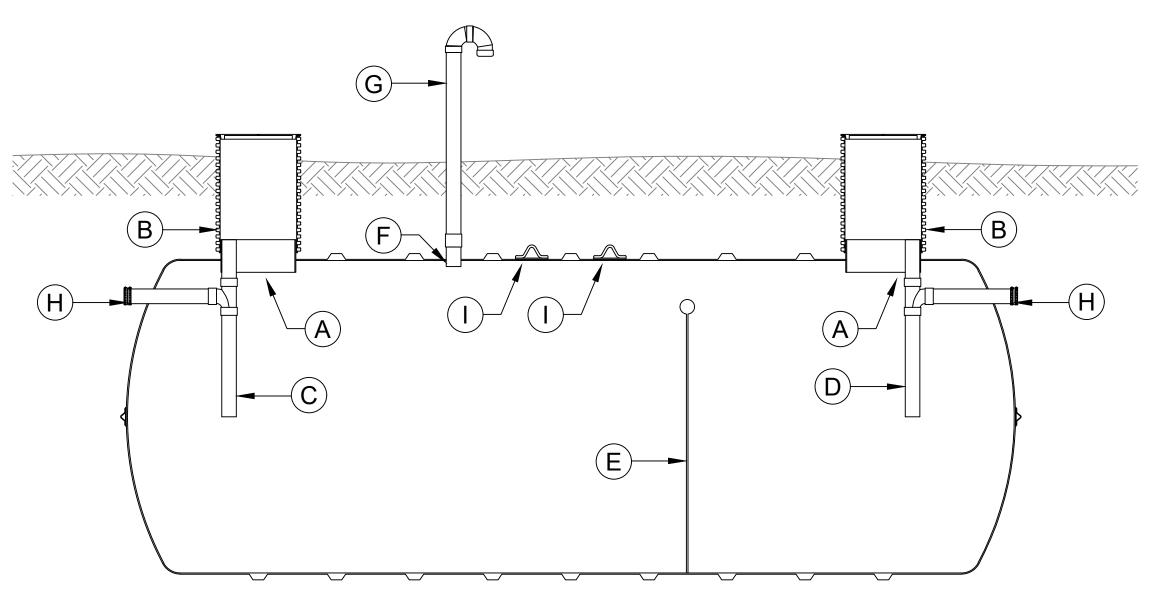


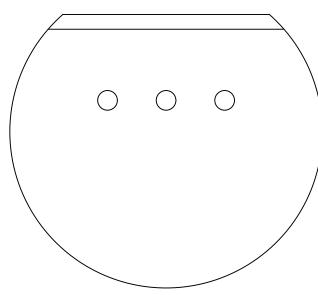
BASIC SINGLE COMPARTMENT SEPTIC TANK

| | BILL OF MATERIALS | | | | |
|------|---|---|--------------------------------------|--|--|
| ITEM | ITEM DESCRIPTION ITEM DESCRIPTION | | | | |
| Α | Ø24" ACCESS OPENING | E | 4" PVC SCH40 PIPE STUB | | |
| В | Ø24" PVC RISER W/ BOLT ON LID | F | 4" PVC SCH40 GOOSENECK VENT ASSEMBLY | | |
| С | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | G | STEEL LIFTING LUGS | | |
| D | 4" PVC SCH40 OUTLET PIPE W/ SANITARY TEE ASSEMBLY | Н | 4" SS SHIELDED FLEXIBLE COUPLING | | |



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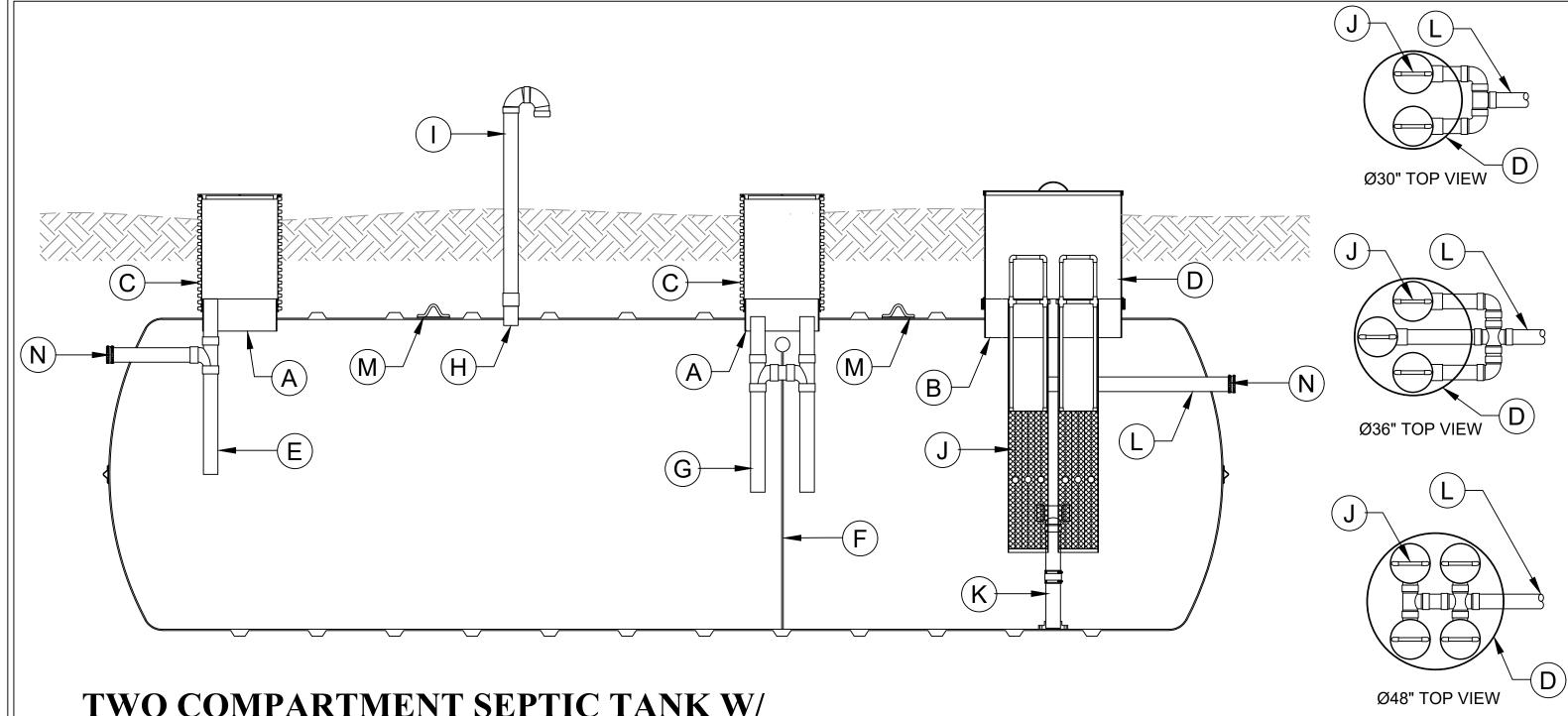
BAFFLE WALL "E" DETAIL

BASIC TWO COMPARTMENT SEPTIC TANK

| | BILL OF MATERIALS | | | | |
|------|---|------|--------------------------------------|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø24" ACCESS OPENING | F | 4" PVC SCH40 PIPE STUB | | |
| В | Ø24" PVC RISER W/ BOLT ON LID | G | 4" PVC SCH40 GOOSENECK VENT ASSEMBLY | | |
| С | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | Н | 4" SS SHIELDED FLEXIBLE COUPLING | | |
| D | 4" PVC SCH40 OUTLET PIPE W/ SANITARY TEE ASSEMBLY | I | STEEL LIFTING LUGS | | |
| E | 7/8 FLAT BAFFLE WALL W/ (3) FLOW THROUGH HOLES | | | | |



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TWO COMPARTMENT SEPTIC TANK W/ EFFLUENT FILTER ASSEMBLY

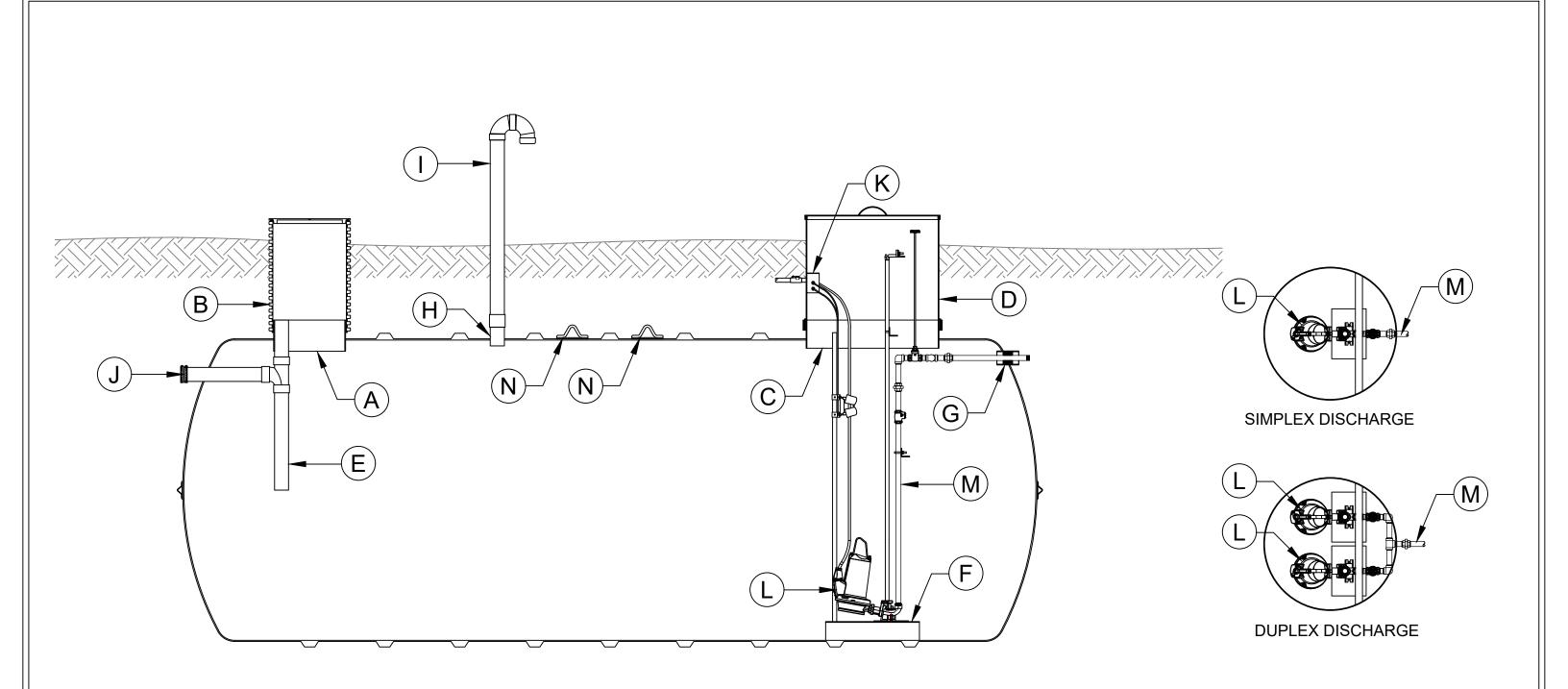
* CUSTOMER SUPPLIED ITEM NOTE:

| | BILL OF MATERIALS | | | | |
|------|--|------|--------------------------------------|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø24" ACCESS OPENINGS | Н | 4" PVC SCH40 PIPE STUB | | |
| В | Ø42" ACCESS OPENING W/ EPOXY SOCKET | I | 4" PVC SCH40 GOOSENECK VENT ASSEMBLY | | |
| С | Ø24" PVC RISER W/ BOLT ON LID | J* | QUAD EFFLUENT FILTER ASSEMBLY | | |
| D | Ø30", Ø36", OR Ø42" FRP RISER W/ FRP LID | K | 4" PVC SCH40 EFFLUENT SUPPORT PIPING | | |
| E | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | L | 4" PVC SCH40 OUTLET PIPE | | |
| F | 7/8 BAFFLE WALL | М | STEEL LIFTING LUGS | | |
| G | 4" PVC SCH40 DOUBLE CROSSOVER TEE ASSEMBLY | N | 4" SS SHIELDED FLEXIBLE COUPLING | | |



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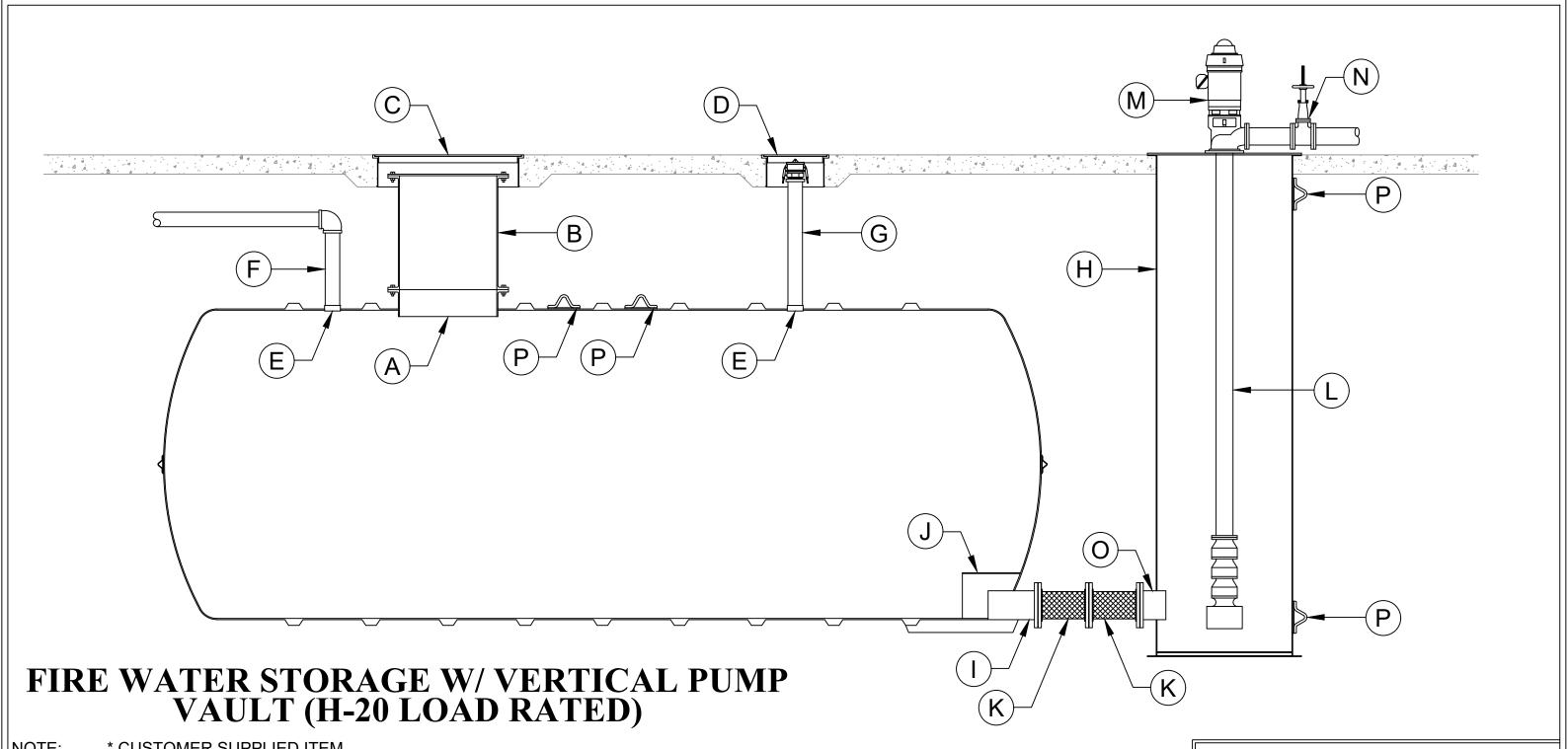
DOSING TANK

* CUSTOMER SUPPLIED ITEM ||NOTE:

| NOTE: COSTOMEROST FIED TEM | | | | | |
|----------------------------|--|------|---|--|--|
| | BILL OF MATERIALS | | | | |
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø24" ACCESS OPENING | Н | 4" PVC SCH40 PIPE STUB | | |
| В | Ø24" PVC RISER W/ BOLT ON LID | I | 4" PVC SCH40 GOOSENECK VENT ASSEMBLY | | |
| С | Ø42" ACCESS OPENING W/ EPOXY SOCKET | J | 4" SS SHIELDED FLEXIBLE COUPLING | | |
| D | Ø42" FRP RISER W/ LID | K* | PVC SPLICE BOX W/ CORD GRIPS | | |
| E | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | L* | BASE MOUNT SUBMERSIBLE PUMP W/ FLOATS | | |
| F | 30" X 30" FRP PUMP PLATFORM | М | 1 1/2" SS316 HORIZONTAL DISCHARGE PIPE ASSEMBLY | | |
| G | 4" FRP SLEEVE W/ LINK SEALS | N | STEEL LIFTING LUGS | | |



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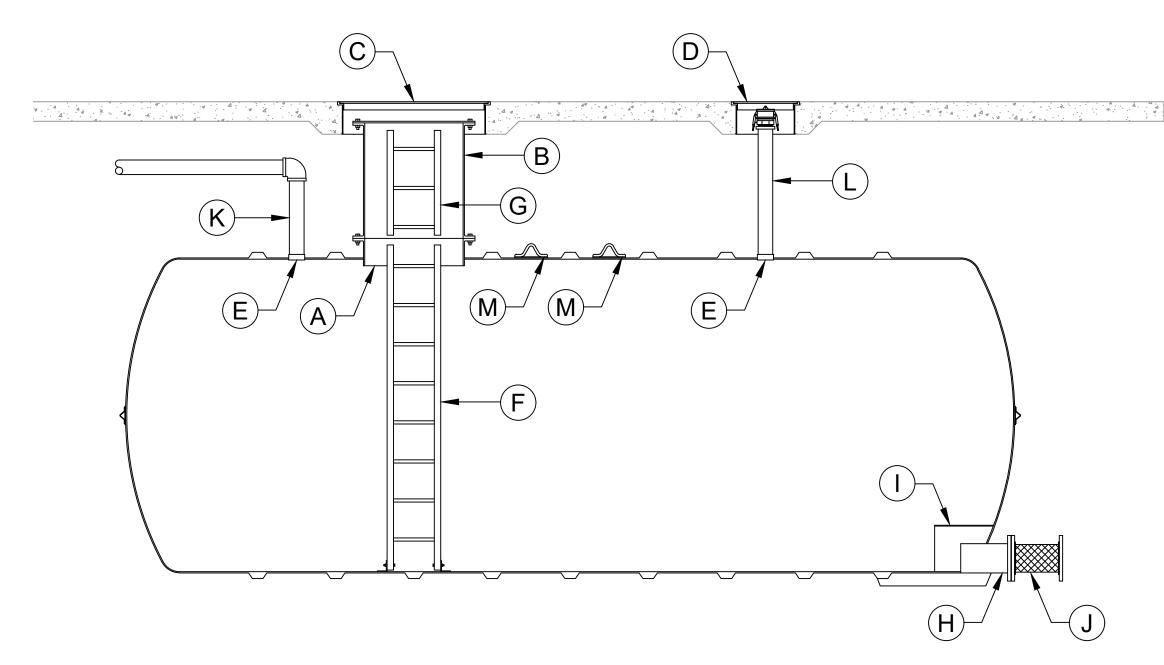
* CUSTOMER SUPPLIED ITEM NOTE:

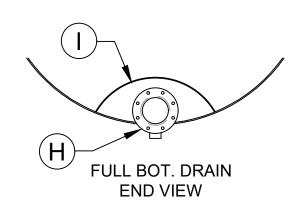
| | BILL OF MATERIALS | | | | |
|------|---|------|---|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø30" MANWAY W/ STEEL COVER | I | 8" FLANGE NOZZLE W/ FULL BOT. DRAIN REINFORCEMENT | | |
| В | Ø30" MANWAY EXTENSION W/ GASKET & HARDWARE | J | ANTI-VORTEX PLATE | | |
| С | Ø42" H-20 RATED STEEL MANHOLE RING & COVER | K | 8" FLANGE X FLANGE FLEXIBLE CONNECTOR | | |
| D | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | L* | 6" VERTICAL PUMP SHAFT HOUSING W/ BOWL & STRAINER | | |
| E | 4" HALF COUPLING, NPT | M* | VERTICAL SUCTION PUMP W/ MOUNTING PLATE | | |
| F | 4" VENT LINE | N* | DISCHARGE VALVE & PIPING | | |
| G | 4" FILL ASSEMBLY W/ CAM-LOCK QUICK CONNECT | 0 | 8" FLANGE NOZZLE | | |
| Н | Ø42" VERTICAL PUMP VAULT W/ ANTI-FLOAT FLANGE | Р | STEEL LIFTING LUGS | | |



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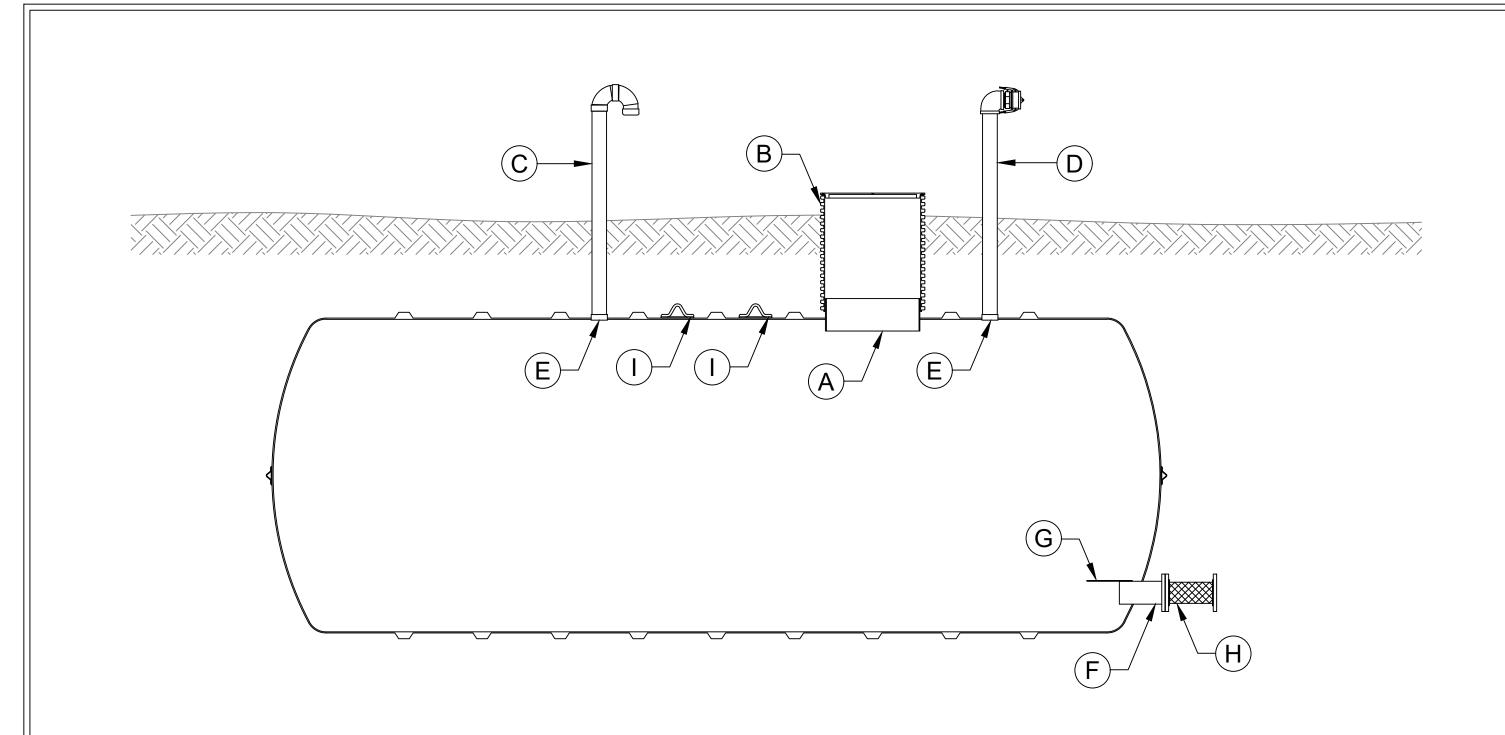
FIRE WATER STORAGE W/ FULL BOTTOM DRAIN (H-20 LOAD RATED)

| | BILL OF MATERIALS | | | | |
|------|--|------|---|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø30" MANWAY W/ STEEL COVER | Н | 8" FLANGE NOZZLE W/ FULL BOT. DRAIN REINFORCEMENT | | |
| В | Ø30" MANWAY EXTENSION W/ GASKET & HARDWARE | | ANTI-VORTEX PLATE | | |
| С | Ø42" H-20 RATED STEEL MANHOLE RING & COVER | J | 8" FLANGE X FLANGE FLEXIBLE CONNECTOR | | |
| D | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | K | 4" VENT LINE | | |
| E | 4" HALF COUPLING, NPT | L | 4" FILL ASSEMBLY W/ CAM-LOCK QUICK CONNECT | | |
| F | 16" WIDE FIBERGLASS LADDER | М | STEEL LIFTING LUGS | | |
| G | 16" WIDE FIBERGLASS LADDER EXTENSION | | | | |



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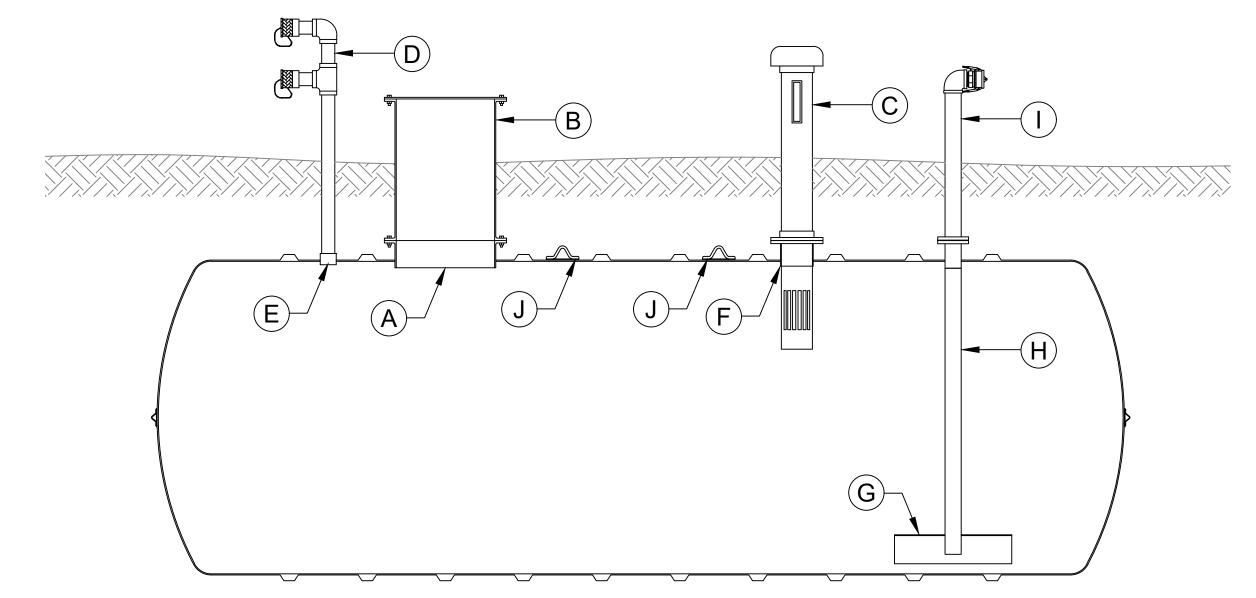


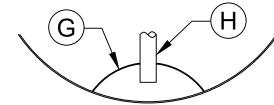
FIRE WATER STORAGE W/ HORIZONTAL DRAIN

| | BILL OF MATERIALS | | | | | |
|------|---|---|---------------------------------------|--|--|--|
| ITEM | ITEM DESCRIPTION ITEM DESCRIPTION | | | | | |
| Α | Ø30" ACCESS OPENING | F | 8" FLANGE NOZZLE | | | |
| В | Ø30" PVC RISER PIPE W/ BOLT ON LID | G | ANTI-VORTEX PLATE | | | |
| С | 4" PVC GOOSNECK VENT ASSEMBLY W/ BUG SCREEN | Н | 8" FLANGE X FLANGE FLEXIBLE CONNECTOR | | | |
| D | 4" FILL ASSEMBLY W/ CAM-LOCK QUICK CONNECT | I | STEEL LIFTING LUGS | | | |
| E | 4" HALF COUPLING, NPT | | | | | |



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ANTI-VORTEX PLATE END VIEW

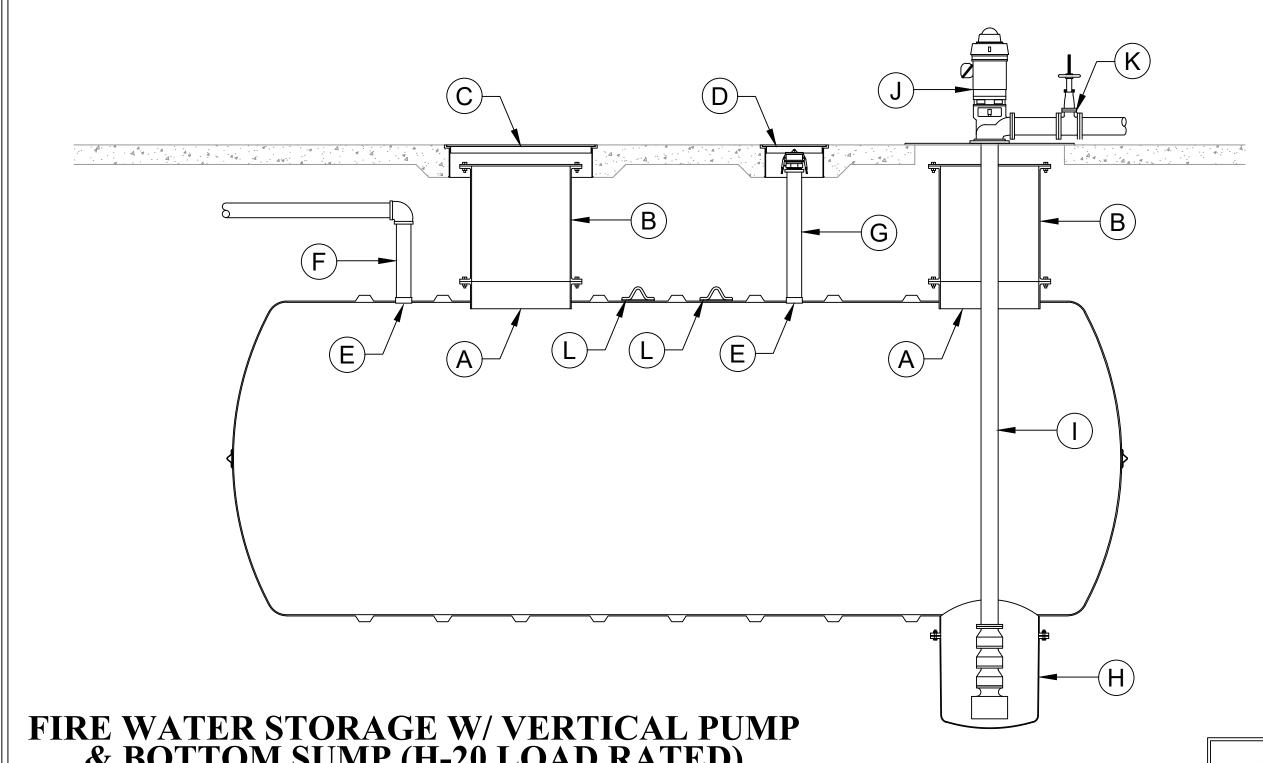
FIRE WATER STORAGE W/ HORIZONTAL DRAIN

| BILL OF MATERIALS | | | | | |
|-------------------|--|------|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø30" MANWAY W/ STEEL COVER | F | 10" FLANGE NOZZLE | | |
| В | Ø30" MANWAY EXTENSION W/ GASKET & HARDWARE | G | ANTI-VORTEX PLATE | | |
| С | 8" PVC VENT/ LEVEL INDICATOR ASSEMBLY | Н | 4" FLANGE NOZZLE W/ FRP DROP PIPE | | |
| D | 4" DUAL NST FILL OR RECIRCULATING POINTS | I | 4" SUCTION LINE ASSEMBLY W/ CAM-LOCK QUICK CONNECT | | |
| E | 4" HALF COUPLING, NPT | J | STEEL LIFTING LUGS | | |



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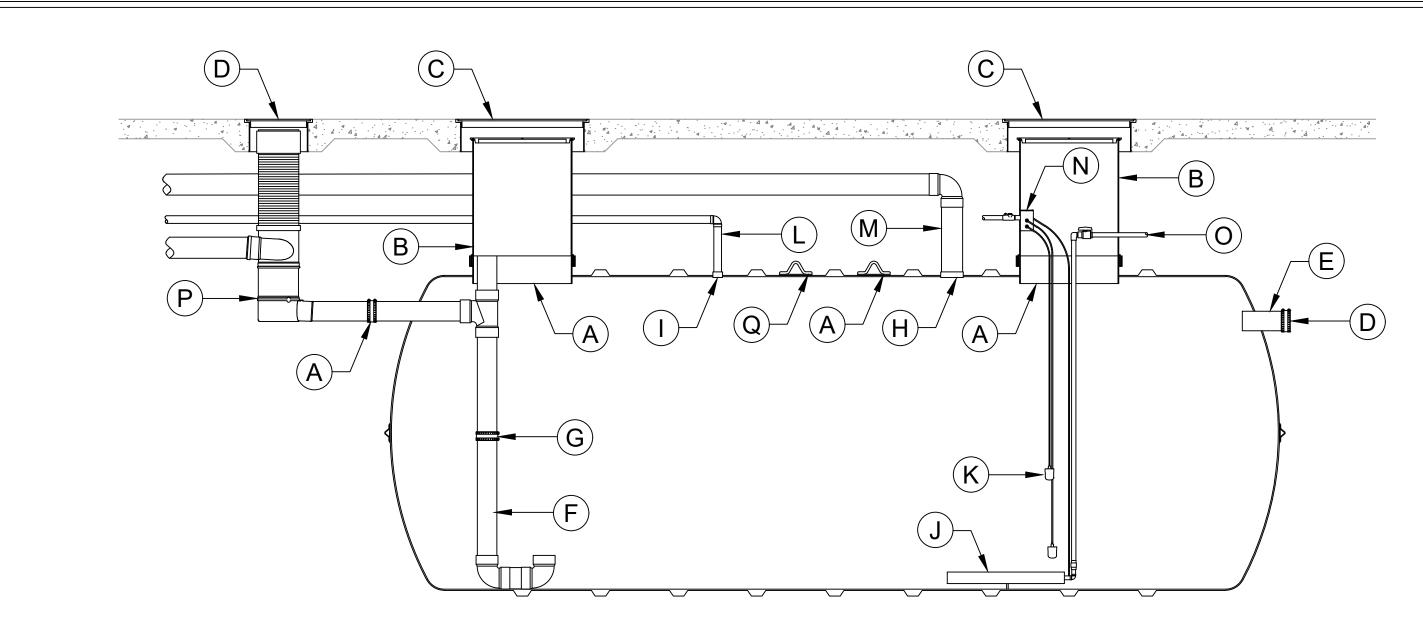
& BOTTOM SUMP (H-20 LOAD RATED)

* CUSTOMER SUPPLIED ITEM NOTE:

| | BILL OF MATERIALS | | | | |
|------|--|------------|---|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø30" MANWAY W/ STEEL COVER | G | 4" FILL ASSEMBLY W/ CAM-LOCK QUICK CONNECT | | |
| В | Ø30" MANWAY EXTENSION W/ GASKET & HARDWARE | Н | Ø30" FLANGED BOTTOM SUMP | | |
| С | Ø42" H-20 RATED STEEL MANHOLE RING & COVER | * | 6" VERTICAL PUMP SHAFT HOUSING W/ BOWL & STRAINER | | |
| D | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | J* | VERTICAL SUCTION PUMP W/ MOUNTING PLATE | | |
| E | 4" HALF COUPLING, NPT | K* | DISCHARGE VALVE & PIPING | | |
| F | 4" VENT LINE | L | STEEL LIFTING LUGS | | |



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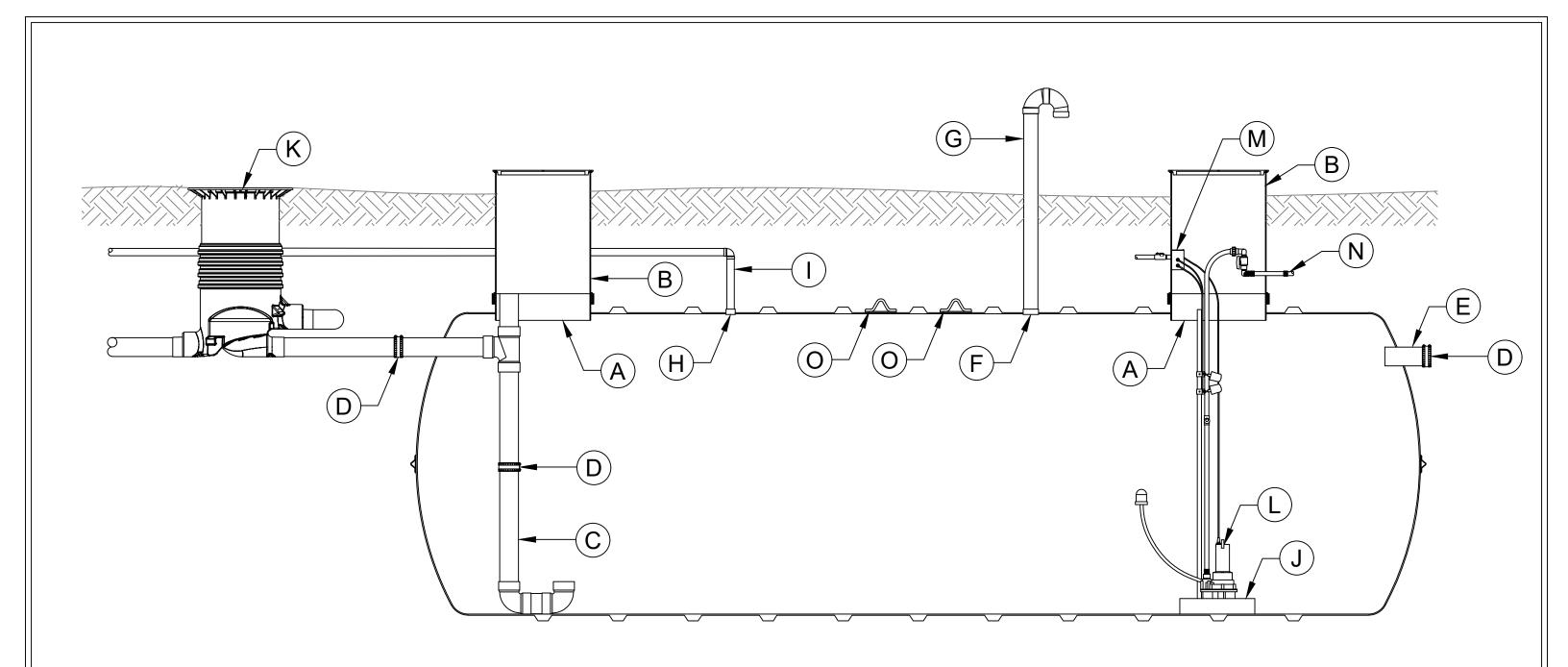
RAINWATER COLLECTION TANK W/ SUBMERSIBLE PUMP OUT (H-20 LOAD RATED)

* CUSTOMER SUPPLIED ITEM NOTE:

| | BILL OF MATERIALS | | | | |
|------|--|------|------------------------------|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø30" ACCESS OPENING W/ EPOXY SOCKET | J* | DISCHARGE PUMP | | |
| В | Ø30" FRP RISER W/ BOLT ON LID | K* | PUMP FLOATS | | |
| С | Ø36" H-20 RATED STEEL MANHOLE RING & COVER | L* | 2" DOMESTIC WATER SUPPLY | | |
| D | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | M* | 6" VENT LINE | | |
| E | 6" PVC PIPE STUB (OVERFLOW) | N* | PVC SPLICE BOX W/ CORD GRIPS | | |
| F | 6" PVC CALMING INLET ASSEMBLY | O* | RAINWATER DISCHARGE | | |
| G | 6" SS SHIELDED FLEXIBLE COUPLING | P* | WISY FILTER | | |
| Н | 6" HALF COUPLING, NPT | Q | STEEL LIFTING LUGS | | |
| | 2" HALF COUPLING, NPT | | | | |



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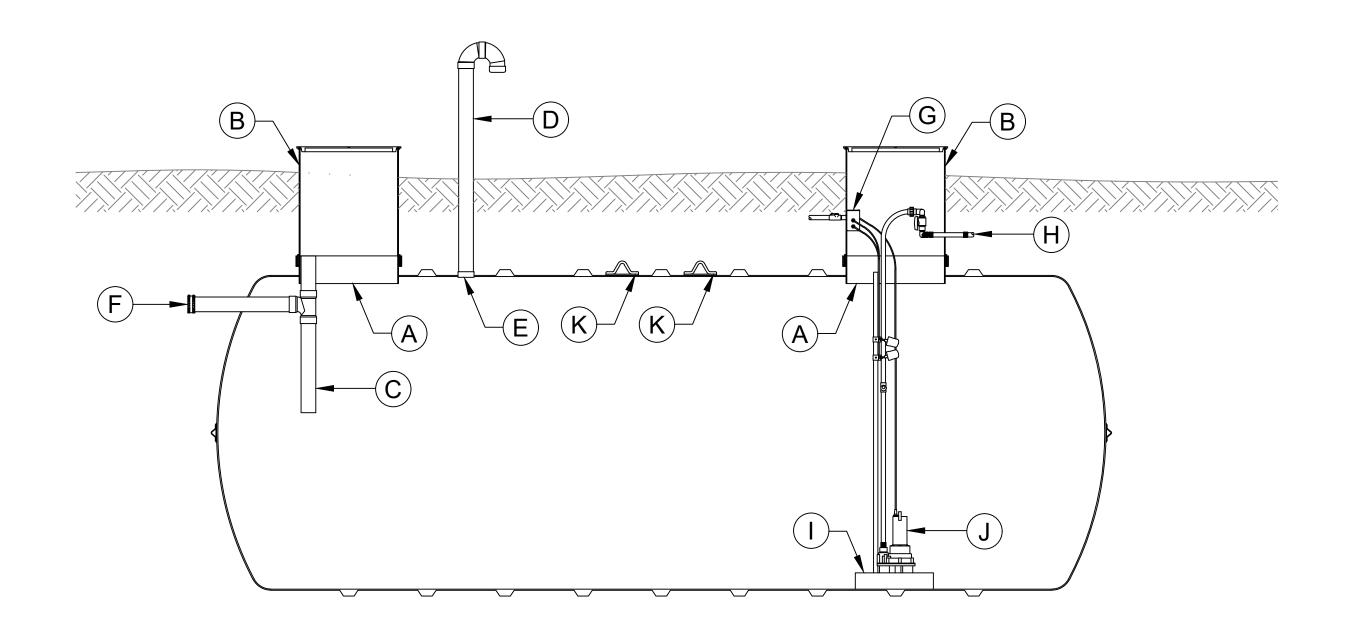
RAINWATER COLLECTION TANK W/ FLOATING FILTER PUMP OUT

NOTE: * CUSTOMER SUPPLIED ITEM

| | 101E. GOOTOMER CONTINUED TEM | | | | |
|------|-------------------------------------|------|---------------------------------------|--|--|
| | BILL OF MATERIALS | | | | |
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | |
| Α | Ø30" ACCESS OPENING W/ EPOXY SOCKET | * | 2" DOMESTIC WATER SUPPLY LINE | | |
| В | Ø30" FRP RISER W/ BOLT ON LID | J | 24" X 24" FRP PUMP PLATFORM | | |
| С | 6" PVC CALMING INLET ASSEMBLY | K* | GRAF FILTER | | |
| D | 6" SS SHIELDED FLEXIBLE COUPLING | L* | BASE MOUNTED PUMP W/ FLOATING SUCTION | | |
| E | 6" PIPE STUB (OVERFLOW) | M* | PVC SPLICE BOX W/ CORD GRIPS | | |
| F | 4" HALF COUPLING, NPT | N* | RAINWATER DISCHARGE | | |
| G | 4" PVC GOOSNECK VENT W/ BUG SCREEN | 0 | STEEL LIFTING LUGS | | |
| Н | 2" HALF COUPLING, NPT | | | | |



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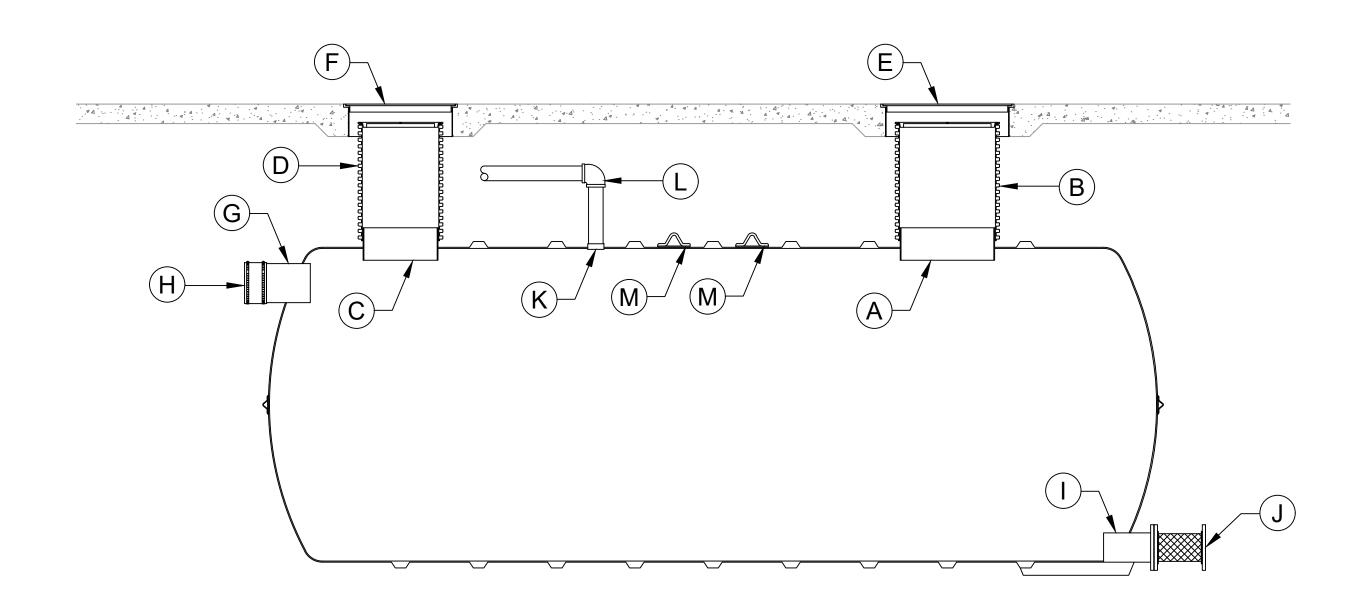
RAINWATER COLLECTION TANK W/ BASE MOUNTED PUMP

NOTE: * CUSTOMER SUPPLIED ITEM

| | BILL OF MATERIALS | | | | | | |
|------|--|------|---|--|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | | |
| Α | Ø30" ACCESS OPENING W/ EPOXY SOCKET | G* | PVC SPLICE BOX W/ CORD GRIPS | | | | |
| В | Ø30" FRP RISER W/ BOLT ON LID | H* | EFFLUENT DISCHARGE | | | | |
| С | 4" PVC SANITARY INLET PIPE ASSEMBLY | I | 24" X 24" FRP PUMP PLATFORM | | | | |
| D | 4" PVC GOOSENECK VENT ASSEMBLY W/ BUG SCREEN | J* | BASE MOUNTED PUMP W/ LEVEL CONTROL FLOATS | | | | |
| E | 4" HALF COUPLING, NPT | K | STEEL LIFTING LUGS | | | | |
| F | 4" SS SHIELDED FLEXIBLE COUPLING | | | | | | |



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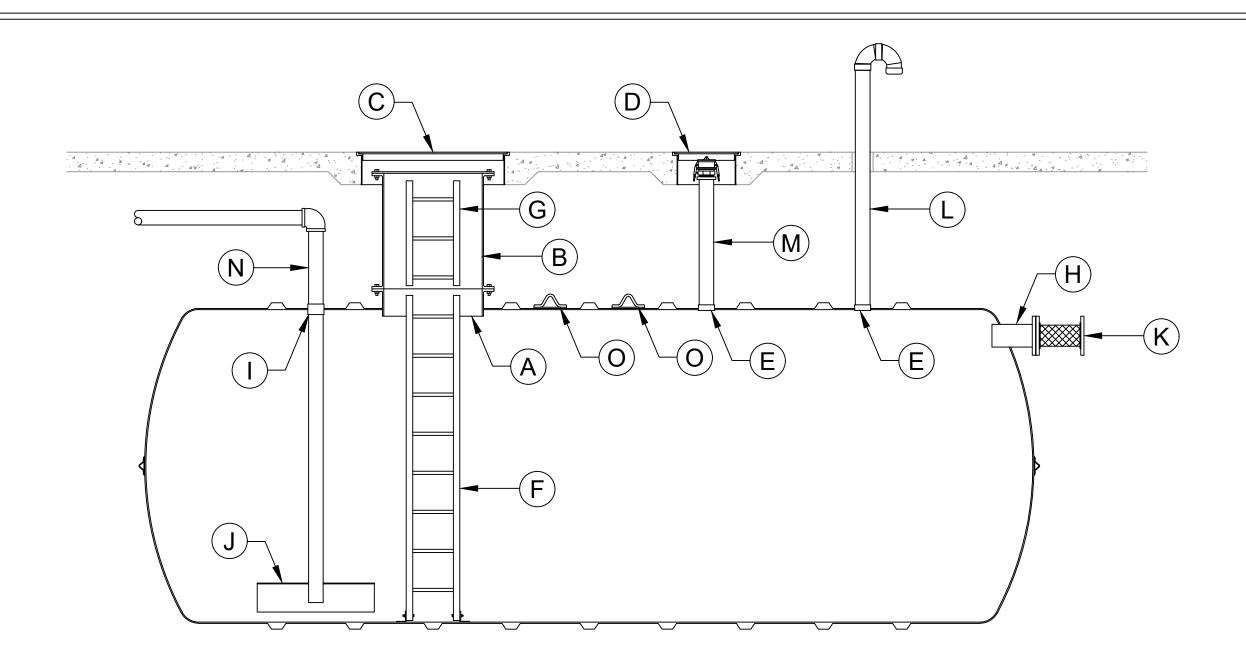
STORMWATER DETENTION TANK (H-20 LOAD RATED)

NOTE: * CUSTOMER SUPPLIED ITEM

| | BILL OF MATERIALS | | | | | |
|------|--|------|---|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | |
| Α | Ø30" ACCESS OPENING | Н | 12" SS SHIELDED FLEXIBLE COUPLING | | | |
| В | Ø30" PVC RISER PIPE W/ BOLT ON LID | I | 8" FLANGE NOZZLE W/ FULL BOT. REINFORCEMENT | | | |
| С | Ø24" ACCESS OPENING | J | 8" FLANGED SS BRAIDED FLEXIBLE CONNECTOR | | | |
| D | Ø24" PVC RISER PIPE W/ BOLT ON LID | K | 4" HALF COUPLING, NPT | | | |
| E | Ø36" H-20 RATED STEEL MANHOLE RING & COVER | L* | 4" VENT LINE | | | |
| F | Ø30" H-20 RATED STEEL MANHOLE RING & COVER | М | STEEL LIFTING LUGS | | | |
| G | 12" FRP INLET PIPE | | | | | |



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POTABLE WATER STORAGE W/ VERTICAL SUCTION

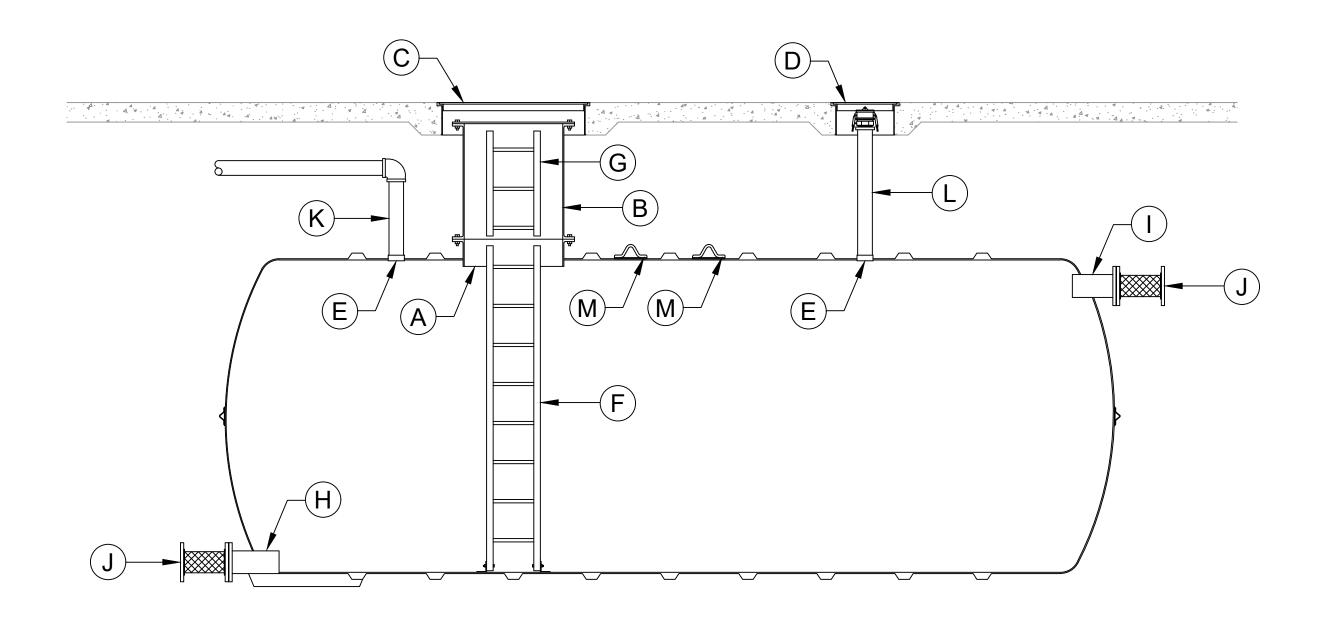
NOTE: * CUSTOMER SUPPLIED ITEM

| | BILL OF MATERIALS | | | | | | |
|------|--|----|--|--|--|--|--|
| ITEM | ITEM DESCRIPTION ITEM DESCRIPTION | | | | | | |
| A | Ø30" MANWAY W/ STEEL COVER | I | 4" FULL COUPLING W/ DROP PIPE | | | | |
| В | Ø30" MANWAY EXTENSION W/ GASKET & HARDWARE | J | ANTI-VORTEX PLATE | | | | |
| С | Ø42" H-20 RATED STEEL MANHOLE RING & COVER | K | 6" FLANGE X FLANGE FLEXIBLE CONNECTOR | | | | |
| D | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | L | 4" GOOSENECK VENT W/ BUG SCREEN | | | | |
| E | 4" HALF COUPLING, NPT | М | 4" FILL ASSEMBLY W/ CAM-LOCK QUICK CONNECT | | | | |
| F | 16" WIDE FIBERGLASS LADDER | N* | 4" SUPPLY LINE | | | | |
| G | 16" WIDE FIBERGLASS LADDER EXTENSION | 0 | STEEL LIFTING LUGS | | | | |
| Н | 6" FLANGE NOZZLE (INLET) | | | | | | |



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POTABLE WATER STORAGE TANK W/ HORIZONTAL OUTLET

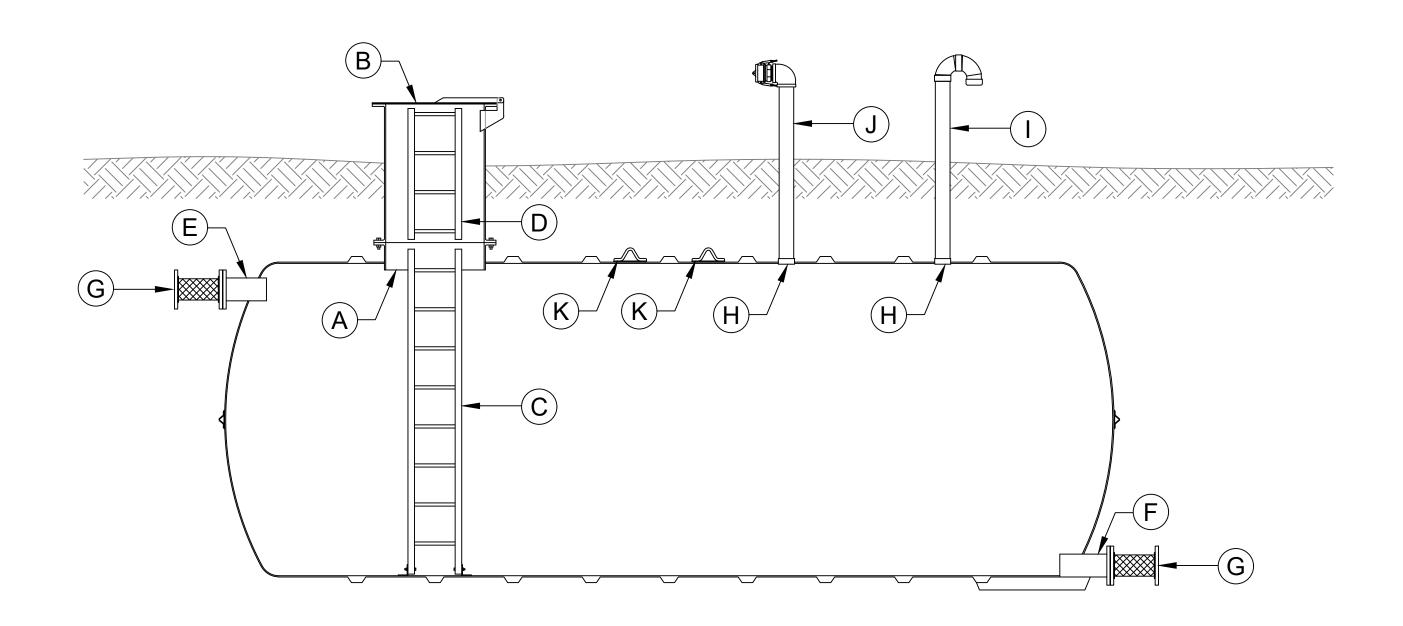
NOTE: * CUSTOMER SUPPLIED ITEM

| TOTE. GOTTOMER GOTTELED TIEM | | | | | | |
|------------------------------|--|------|---|--|--|--|
| | BILL OF MATERIALS | | | | | |
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | |
| Α | Ø30" MANWAY W/ STEEL COVER | Н | 6" FLANGE NOZZLE W/ FULL BOT. DRAIN REINFORCEMENT | | | |
| В | Ø30" MANWAY EXTENSION W/ GASKET & HARDWARE | ı | 6" FLANGE NOZZLE (INLET) | | | |
| С | Ø42" H-20 RATED STEEL MANHOLE RING & COVER | J | 6" FLANGE X FLANGE FLEXIBLE CONNECTOR | | | |
| D | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | K* | 4" VENT LINE | | | |
| E | 4" HALF COUPLING, NPT | L | 4" FILL ASSEMBLY W/ CAM-LOCK QUICK CONNECT | | | |
| F | 16" WIDE FIBERGLASS LADDER | М | STEEL LIFTING LUGS | | | |
| G | 16" WIDE FIBERGLASS LADDER EXTENSION | | | | | |



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POTABLE WATER STORAGE TANK W/ HORIZONTAL OUTLET

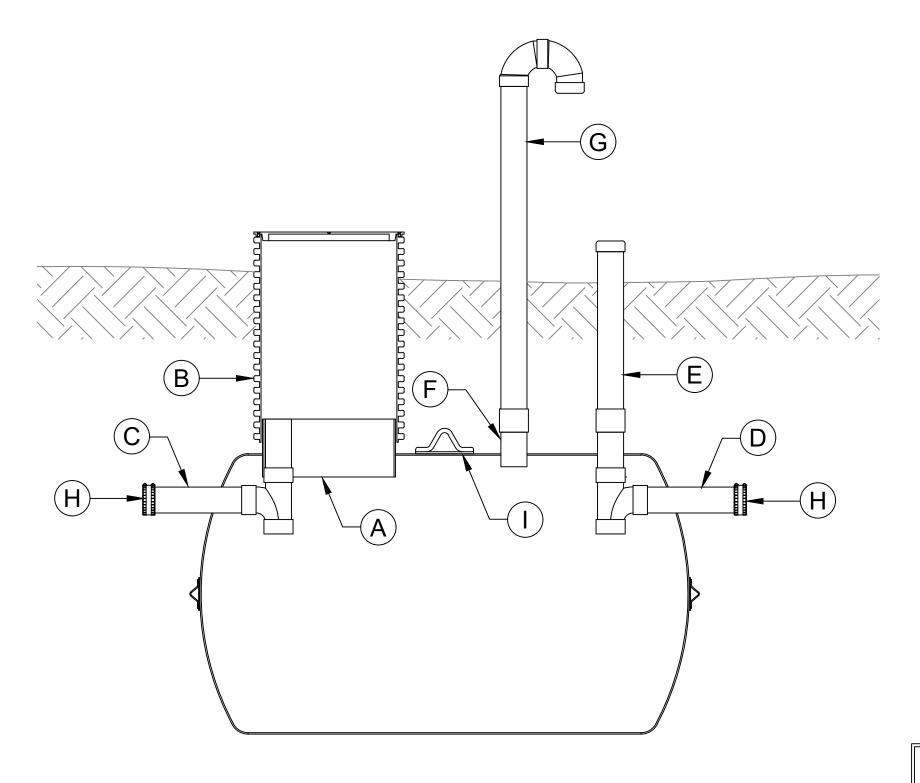
| | BILL OF MATERIALS | | | | | | | |
|------|---|------|--|--|--|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | | | |
| Α | Ø30" MANWAY W/ GASKET & HARDWARE | G | 6" FLANGE X FLANGE FLEXIBLE CONNECTOR | | | | | |
| В | Ø30" FRP HINGED & LOCKABLE RISER | Н | 4" HALF COUPLING, NPT | | | | | |
| С | 16" WIDE FIBERGLASS LADDER | I | 4" GOOSENECK VENT W/ BUG SCREEN | | | | | |
| D | 16" WIDE FIBERGLASS LADDER EXTENSION | J | 4" FILL ASSEMBLY W/ CAM-LOCK QUICK CONNECT | | | | | |
| E | 6" FLANGE NOZZLE (INLET) | K | STEEL LIFTING LUGS | | | | | |
| F | 6" FLANGE NOZZLE W/ FULL BOT. DRAIN REINFORCEMENT | | | | | | | |



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SAND/ SOLIDS INTERCEPTOR

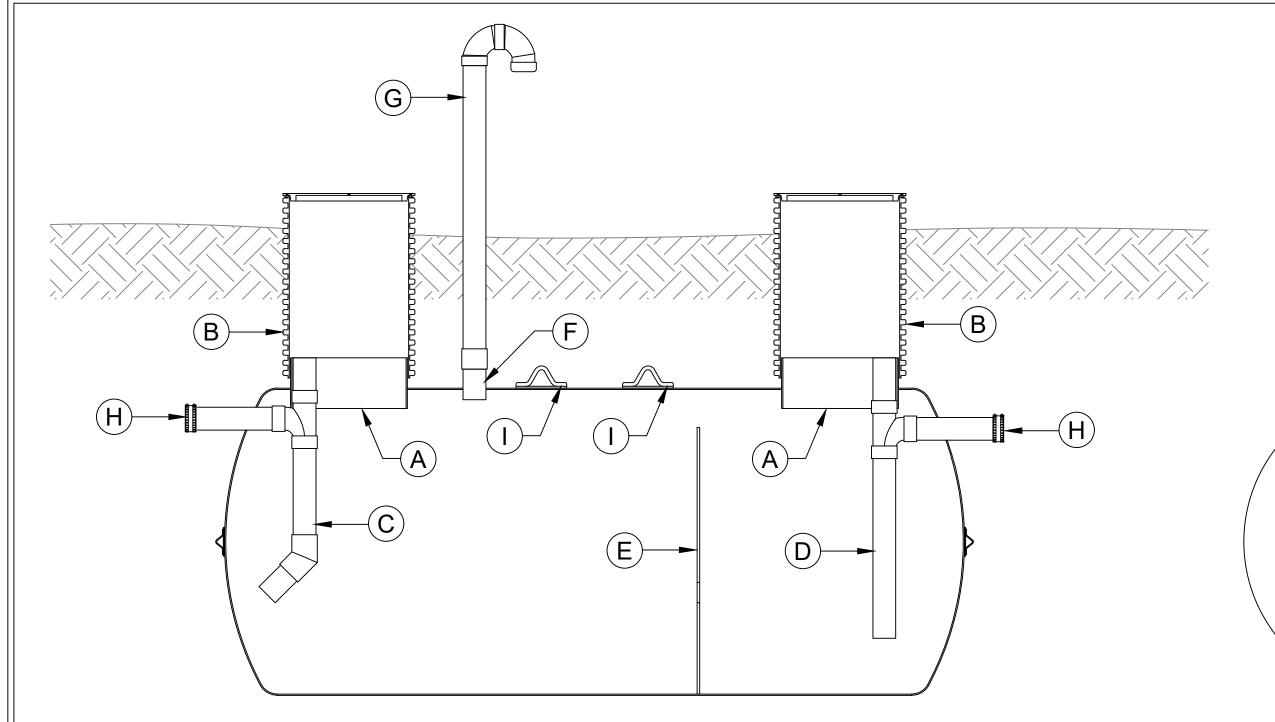
| | BILL OF MATERIALS | | | | | |
|------|--|------|----------------------------------|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | |
| Α | Ø24" ACCESS OPENING | F | 4" PVC SCH40 PIPE STUB | | | |
| В | Ø24" PVC RISER W/ BOLT ON LID | G | 4" GOOSENECK VENT W/ BUG SCREEN | | | |
| С | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE | Н | 4" SS SHIELDED FLEXIBLE COUPLING | | | |
| D | 4" PVC SCH40 OUTLET PIPE W/ SANITARY TEE | I | STEEL LIFTING LUG | | | |
| E | 4" CLEAN OUT W/ CAP | | | | | |

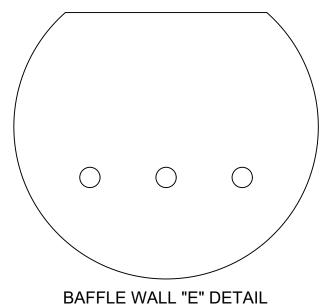


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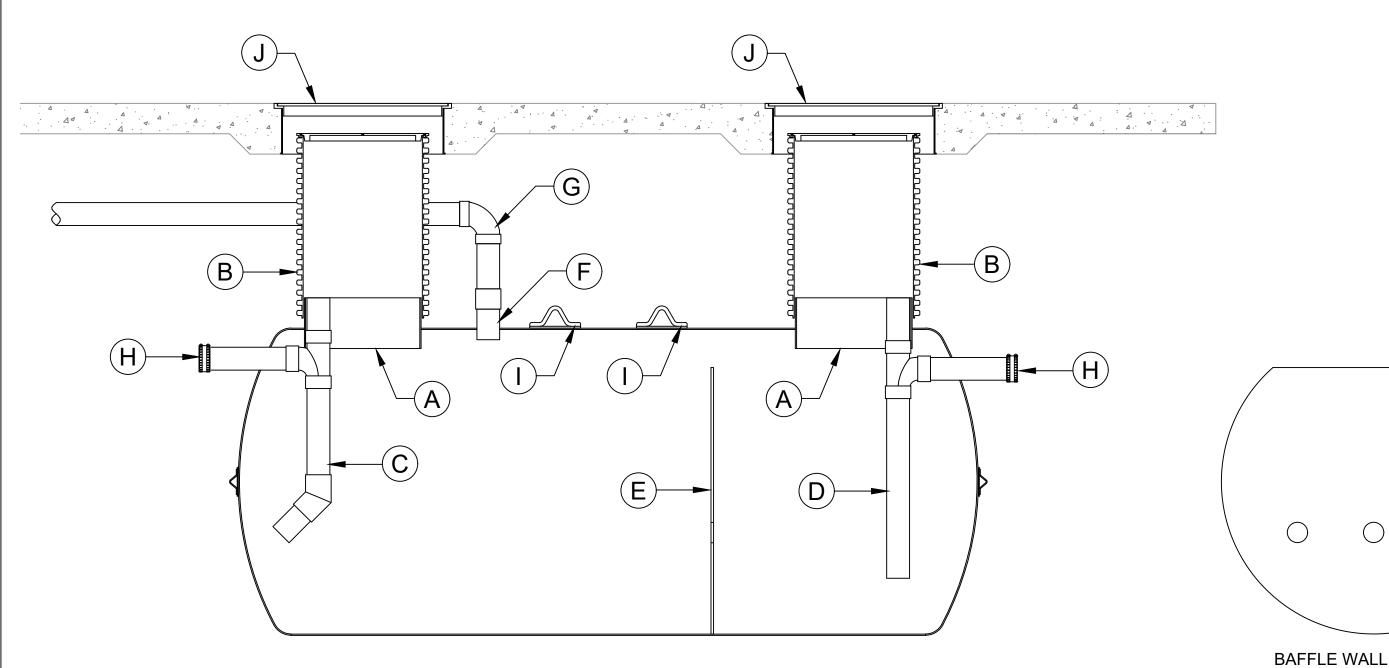
GREASE INTERCEPTOR

| | BILL OF MATERIALS | | | | | | |
|------|---|------|--------------------------------------|--|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | | |
| Α | Ø24" ACCESS OPENING | F | 4" PVC SCH40 PIPE STUB | | | | |
| В | Ø24" PVC RISER W/ BOLT ON LID | G | 4" PVC SCH40 GOOSENECK VENT ASSEMBLY | | | | |
| С | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | Н | 4" SS SHIELDED FLEXIBLE COUPLING | | | | |
| D | 4" PVC SCH40 OUTLET PIPE W/ SANITARY TEE ASSEMBLY | I | STEEL LIFTING LUGS | | | | |
| E | 7/8 FLAT BAFFLE WALL W/ (3) FLOW THROUGH HOLES | | | | | | |



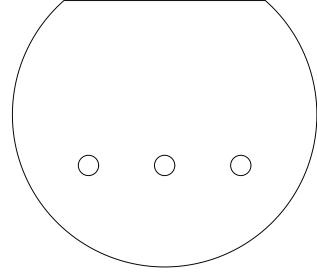
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OIL INTERCEPTOR

| 1 | | | | | | | | |
|-----|---|------|---|--|--|--|--|--|
| | BILL OF MATERIALS | | | | | | | |
| Ш | | | | | | | | |
| ITE | M DESCRIPTION | ITEM | DESCRIPTION | | | | | |
| | Ø24" ACCESS OPENING | F | 4" PVC SCH40 PIPE STUB | | | | | |
| | Ø24" PVC RISER W/ BOLT ON LID | G | 4" VENT LINE | | | | | |
| | 4" PVC SCH40 INLET PIPE W/ SANITARY TEE ASSEMBLY | Н | 4" SS SHIELDED FLEXIBLE COUPLING | | | | | |
| | 4" PVC SCH40 OUTLET PIPE W/ SANITARY TEE ASSEMBLY | 1 | STEEL LIFTING LUGS | | | | | |
| | 7/8 FLAT BAFFLE WALL W/ (3) FLOW THROUGH HOLES | J | Ø30" H-20 LOAD RATED MANHOLE RING & COVER | | | | | |

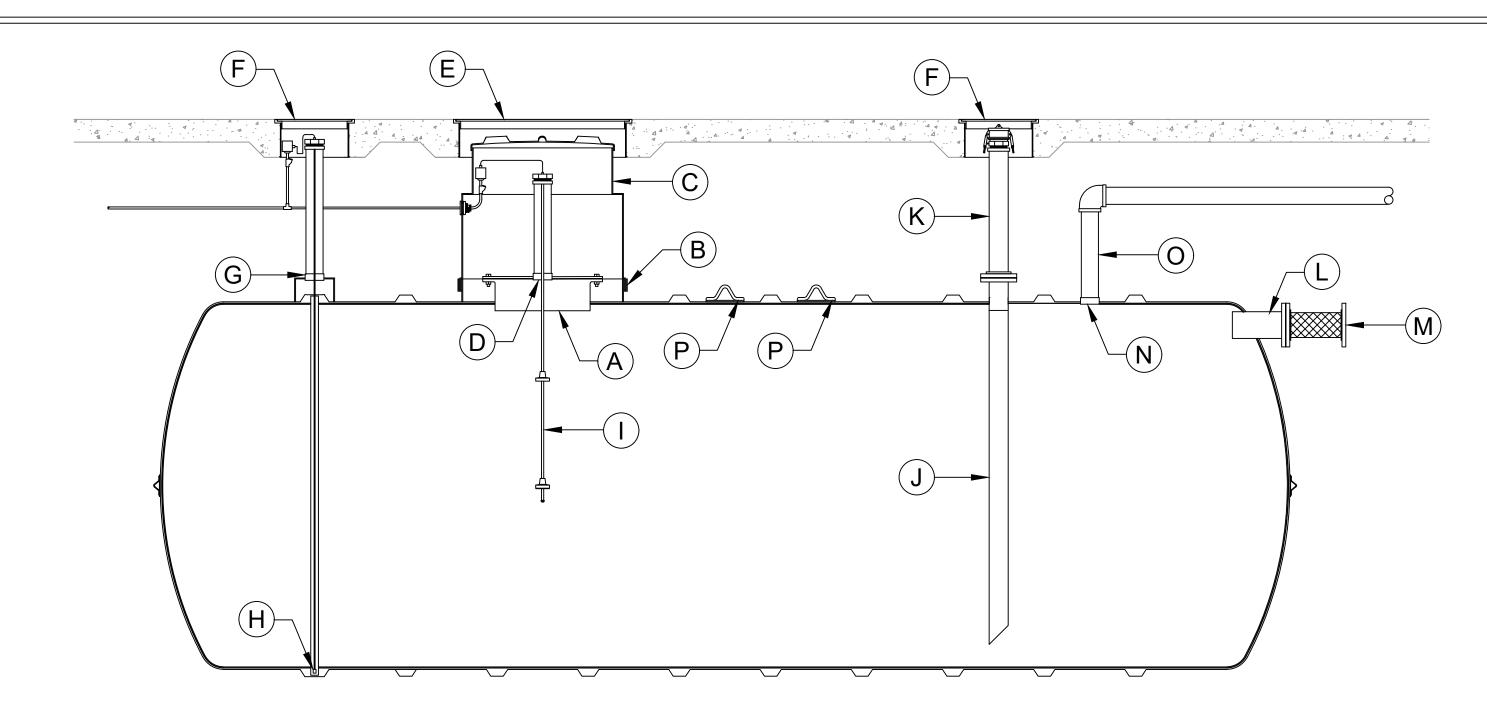


BAFFLE WALL "E" DETAIL



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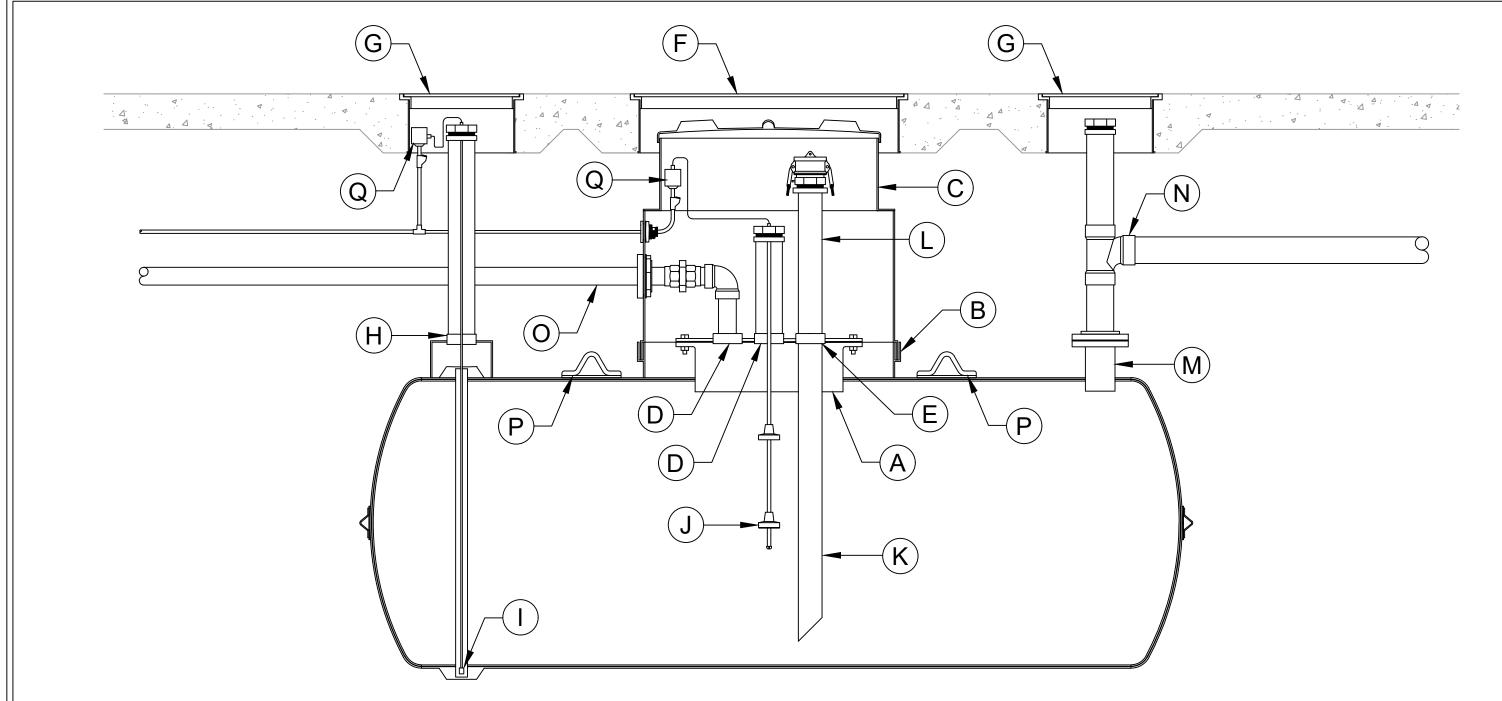
INDUSTRIAL WASTEWATER/ CHEMICAL WASH DOWN TANK (DOUBLE WALL TANK)

| | BILL OF MATERIALS | | | | | | |
|------|--|------|--|--|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | | |
| Α | Ø24" MANWAY W/ STEEL COVER | I | LEVEL SENSORS | | | | |
| В | Ø42" CONTAINMENT COLLAR W/ EPOXY SOCKET | J | 4" FLANGE NOZZLE W/ FIBERGLASS DROP PIPE | | | | |
| С | Ø42" CONT. SUMP W/ Ø37" WATERTIGHT TWIST LOCK LID | K | 4" PUMP OUT CONNECTION W/ CAM-LOCK QUICK CONNECT | | | | |
| D | 4" HALF COUPLING, NPT MANWAY COVER FITTING | L | 6" FLANGE NOZZLE INLET | | | | |
| E | Ø42" H-20 RATED STEEL MANHOLE RING & COVER | М | 6" FLANGE X FLANGE FLEXIBLE CONNECTOR | | | | |
| F | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | N | 4" HALF COUPLING, NPT | | | | |
| G | 4" HALF COUPLING, NPT INTERSTITIAL MONITOR FITTING | 0 | 4" VENT LINE | | | | |
| Н | LEAK DETECTION SENSOR | Р | STEEL LIFTING LUGS | | | | |



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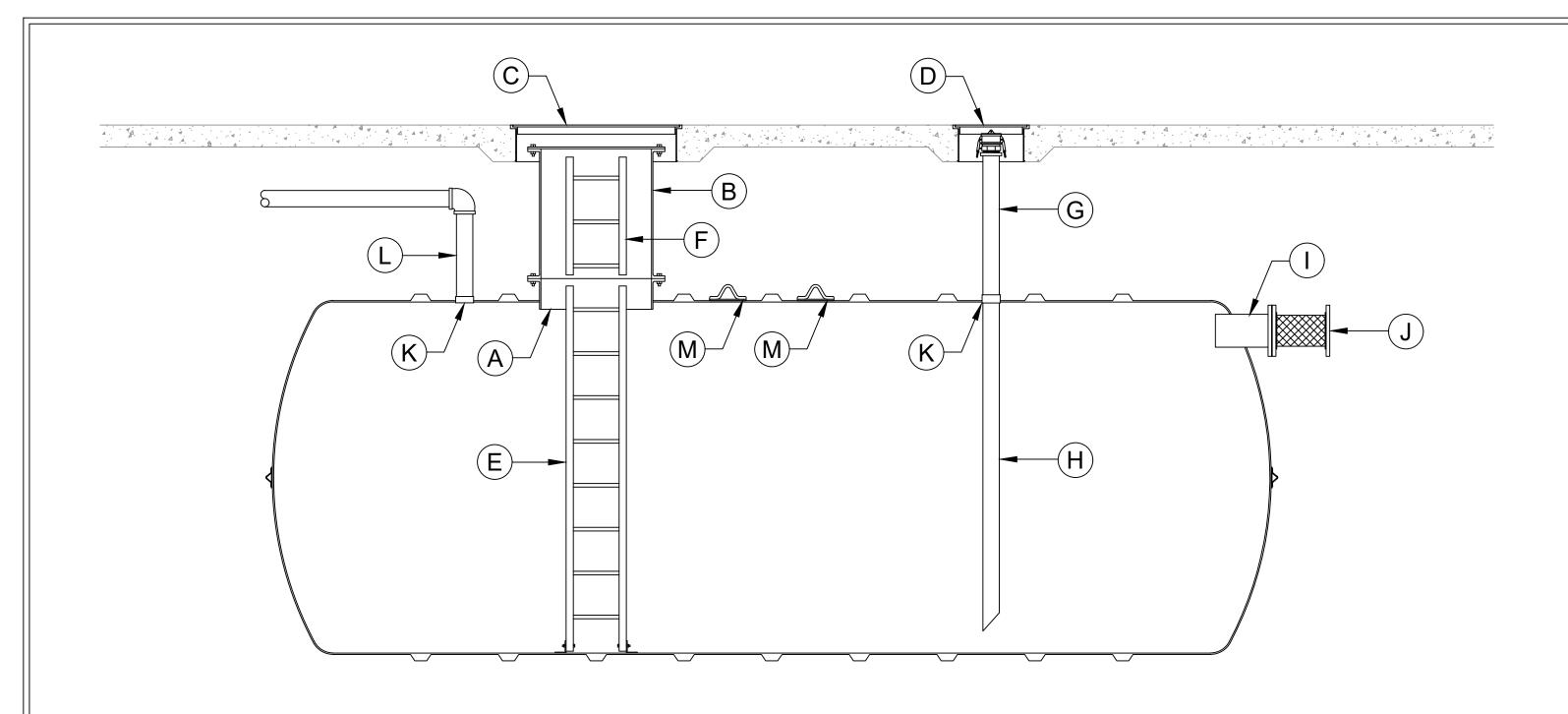
MEDICAL DECONTAMINATION TANK (DOUBLE WALL TANK)

| | DUL OF MATERIALO | | | | | | |
|-------------------|--|------|--|--|--|--|--|
| BILL OF MATERIALS | | | | | | | |
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | | |
| Α | Ø24" MANWAY W/ STEEL COVER | J | LEVEL SENSORS | | | | |
| В | Ø42" CONTAINMENT COLLAR W/ EPOXY SOCKET | K | 4" FIBERGLASS DROP PIPE | | | | |
| С | Ø42" CONT. SUMP W/ Ø37" WATERTIGHT TWIST LOCK LID | L | 4" PUMP OUT CONNECTION W/ CAM-LOCK QUICK CONNECT | | | | |
| D | 4" HALF COUPLING, NPT MANWAY COVER FITTING | М | 6" FLANGE NOZZLE INLET | | | | |
| E | 4" FULL COUPLING, NPT MANWAY COVER FITTING | N | INLET PIPING W/ TEE, CLEAN OUT, AND CAP | | | | |
| F | Ø42" H-20 RATED STEEL MANHOLE RING & COVER | 0 | VENT LINE | | | | |
| G | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | Р | STEEL LIFTING LUGS | | | | |
| Н | 4" HALF COUPLING, NPT INTERSTITIAL MONITOR FITTING | Q | ELECTRICAL SPLICE BOX | | | | |
| | LEAK DETECTION SENSOR | | | | | | |



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AQUEOUS FILM FORMING FOAM COLLECTION TANK

| | BILL OF MATERIALS | | | | | | |
|------|--|------|---------------------------------------|--|--|--|--|
| ITEM | DESCRIPTION | ITEM | DESCRIPTION | | | | |
| Α | Ø30" MANWAY W/ STEEL COVER | Н | FIBERGLASS DROP PIPE | | | | |
| В | Ø30" MANWAY EXTENSION W/ GASKET & HARDWARE | I | 8" FLANGE NOZZLE INLET | | | | |
| С | Ø42" H-20 RATED STEEL MANHOLE RING & COVER | J | 8" FLANGE X FLANGE FLEXIBLE CONNECTOR | | | | |
| D | Ø16" H-20 RATED STEEL MANHOLE RING & COVER | K | 4" HALF COUPLING, NPT | | | | |
| E | 16" WIDE FIBERGLASS LADDER | L | 4" VENT LINE | | | | |
| F | 16" WIDE FIBERGLASS LADDER EXTENSION | М | STEEL LIFTING LUGS | | | | |
| G | 4" PUMP OUT CONNECTION W/ CAM-LOCK QUICK CONNECT | | | | | | |

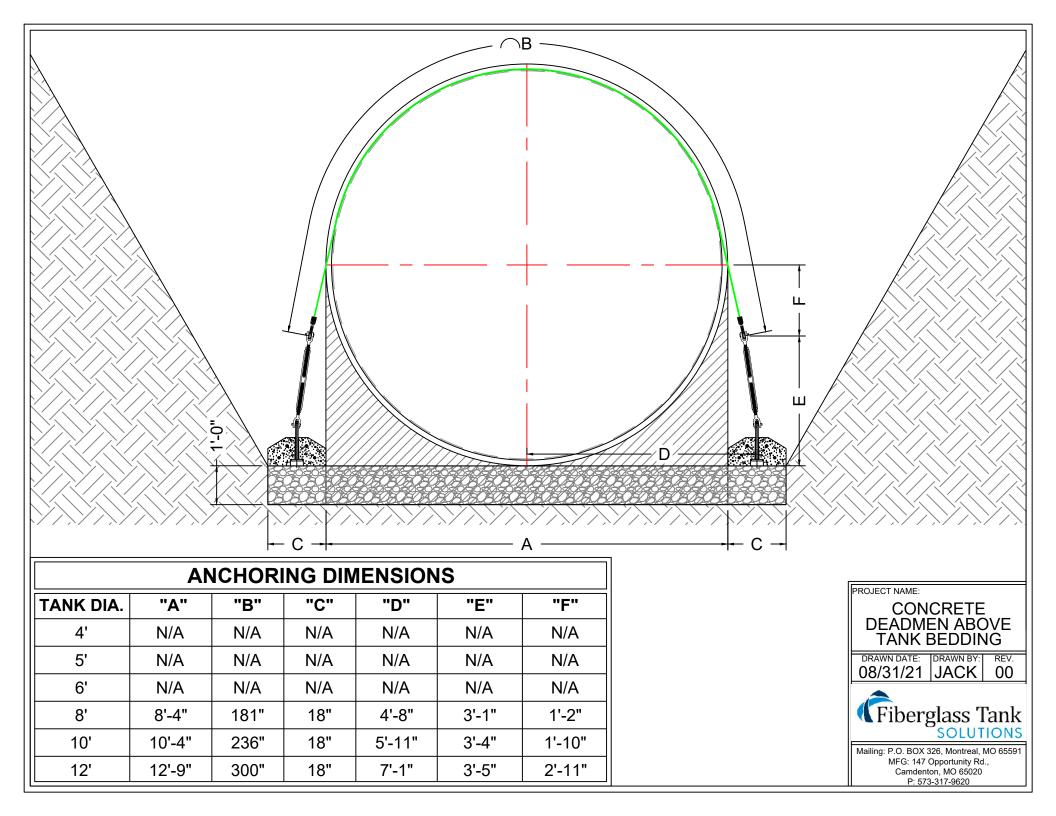


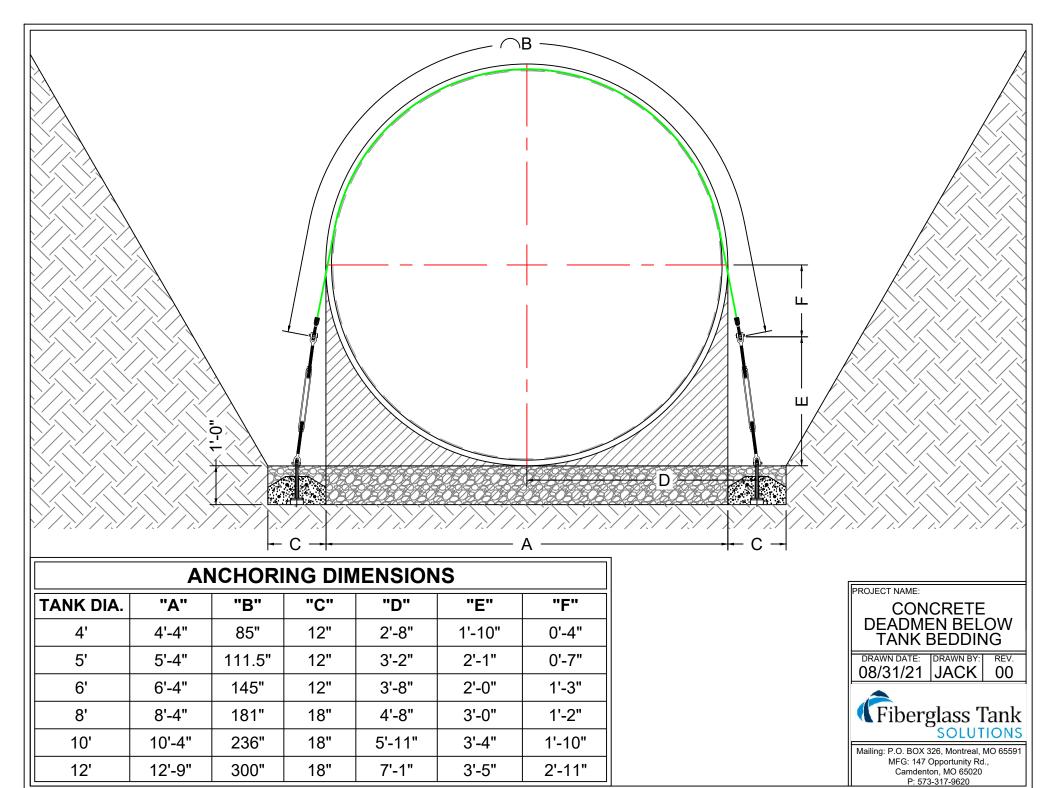
www.fgtsolutions.com Phone: 573-317-9620

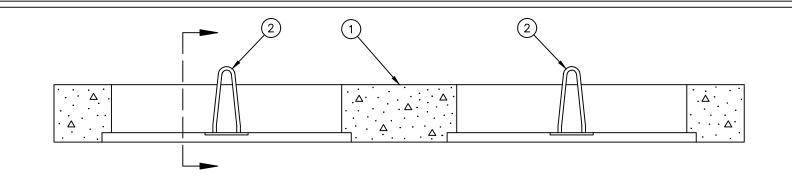
MFG: 147 Opportunity Rd., Camdenton, MO 65020

Tank Anchoring Systems

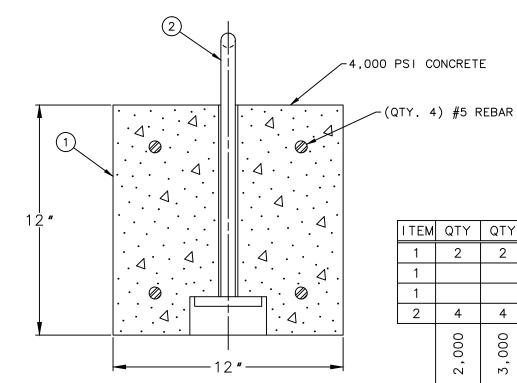








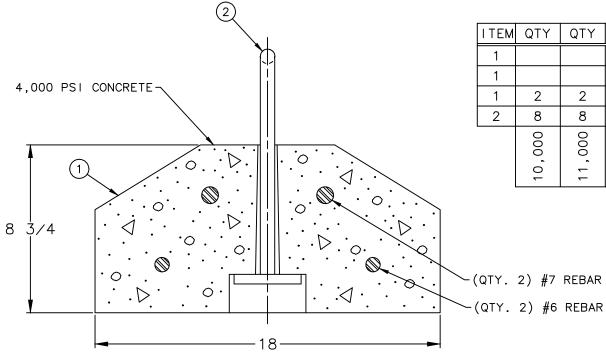
| ITEM | QTY | QTY | QTY | UNIT | DESCRIPTION |
|------|-----|-------|-------|------|-------------------------|
| 1 | 2 | 2 | | EA | DEADMAN, 12"x12"x12' |
| 1 | | | 2 | EA | DEADMAN, 12"x12"x16' |
| 2 | 4 | 4 | 4 | EA | GALVANIZED ANCHOR POINT |
| | 600 | 1,000 | 1,500 | | 4' TANKS |



| ITEM | QTY | UNIT | DESCRIPTION |
|------|-------|-------|-------|-------|-------|-------|-------|------|-------------------------|
| 1 | 2 | 2 | | | 4 | | | EA | DEADMAN, 12"x12"x12' |
| 1 | | | 2 | | | 4 | | EA | DEADMAN, 12"x12"x16' |
| 1 | | | | 2 | | | 4 | EA | DEADMAN, 12"x12"x18' |
| 2 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | EA | GALVANIZED ANCHOR POINT |
| | 1,500 | 2,000 | 3,000 | 4,000 | 5,000 | 6,000 | 8,000 | | 6' TANKS |

| ITEN | QTY | QTY | QTY | QTY | QTY | QTY | UNIT | DESCRIPTION |
|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|------|-----------------------|
| 1 | 2 | 2 | 2 | | | 4 | 4 | 2 | | | | 4 | 2 | | EA | DEADMAN, 12"x12"x12' |
| 1 | | | | 2 | | | | 2 | 4 | 4 | | 2 | 4 | 6 | EA | DEADMAN, 12"x12"x16' |
| 1 | | | | | 2 | | | | | | 4 | | | | EA | DEADMAN, 12"x12"x18' |
| 2 | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 12 | EA | GALVANIZED ANCHOR POI |
| | 2,000 | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 000'6 | 10,000 | 11,000 | 12,000 | 13,000 | 14,000 | 15,000 | | 8' TANKS |

GALVANIZED ANCHOR POINT



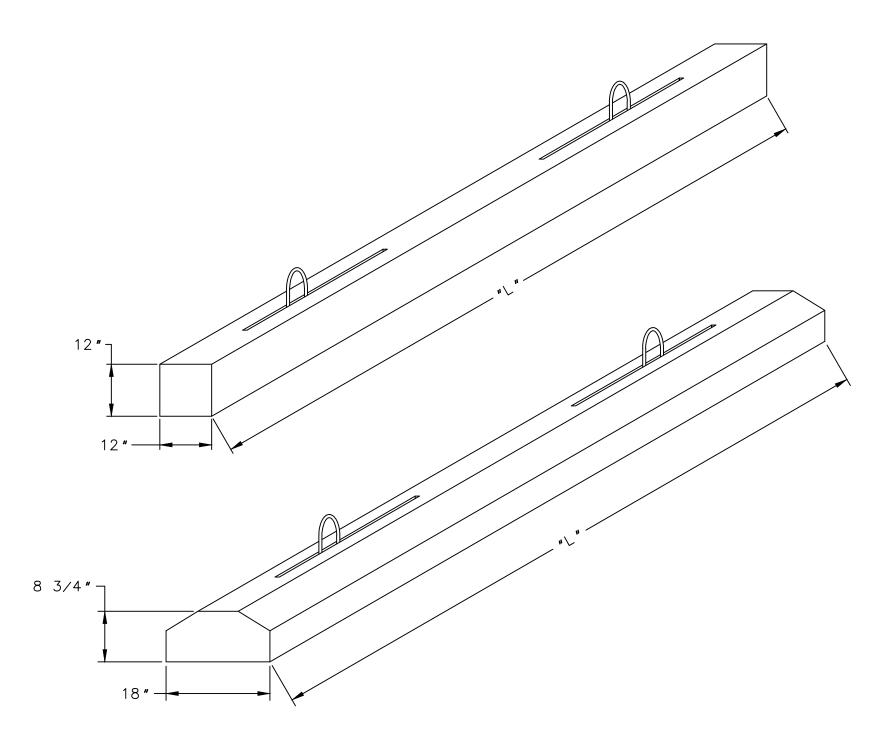
| ITEM | QTY | QTY | QTY | QTY | QTY | QTY | UNIT | DESCRIPTION |
|------|-------|-------|-------|-------|-------|-------|--------|--------|-------|--------|--------|--------|-----------|-------------------------|
| 1 | | | | 4 | 4 | 4 | | | 4 | | | | EA | DEADMAN, 8 3/4"x18"x14' |
| 1 | | | | | | | 4 | | 2 | 6 | 2 | 8 | EA | DEADMAN, 8 3/4"x18"x18' |
| 1 | 2 | 2 | 2 | | | | | 4 | | | 4 | | EA | DEADMAN, 8 3/4"x18"x22' |
| 2 | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 16 | 16 | 20 | 24 | 28 | EA | GALVANIZED ANCHOR POINT |
| | 0,000 | 1,000 | 2,000 | 3,000 | 4,000 | 5,000 | 20,000 | 22,000 | 5,000 | 000,00 | 55,000 | 000,01 | 10' TANKS | |
| | _ | _ | | l — | _ | _ | 7 | 7 | 2 | N N | N 1 | 4 | 1 | SHEET TITLE: |

ANCHOR POINT ASSEMBLY SPECIFICATIONS

DRAWN DATE: | DRAWN BY: | REV. | 10/28/21 | JACK | 00



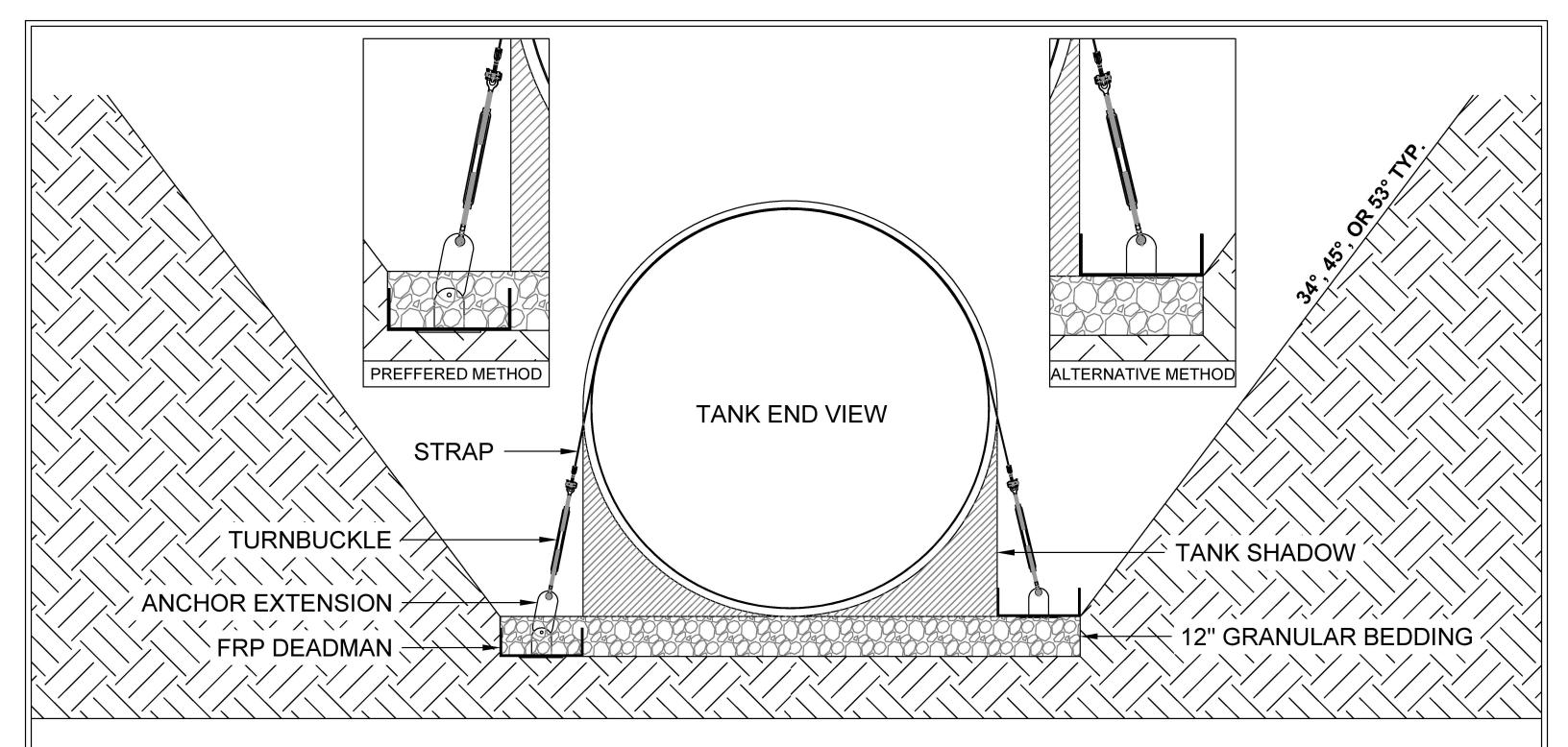
| FTS | FTS DEADMEN | | | | | | | |
|----------------------|-------------|-------------|---------------------------|--|--|--|--|--|
| TANK SIZE GALLONS | QTY | ″∟″ | APPROX. WEIGHT EACH | | | | | |
| 4′-600 | 2 | 12′ | 1,800 LBS | | | | | |
| 4'-1,000 | 2 | 12′ | 1,800 LBS | | | | | |
| 4'-1,500 | 2 | 16 <i>′</i> | 2,400 LBS | | | | | |
| 6'-1,500 | 2 | 12′ | 1,800 LBS | | | | | |
| 6'-2,000 | 2 | 12′ | 1,800 LBS | | | | | |
| 6'-3,000 | 2 | 16′ | 2,400 LBS | | | | | |
| 6'-4,000 | 2 | 18′ | 2,700 LBS | | | | | |
| 6'-5,000 | 4 | 12′ | 1,800 LBS | | | | | |
| 6'-6,000 | 4 | 16 <i>′</i> | 2,400 LBS | | | | | |
| 6′-8,000 | 4 | 18 <i>′</i> | 2,700 LBS | | | | | |
| 8'-2,000 | 2 | 12 <i>'</i> | 1,800 LBS | | | | | |
| 8′-3,000 | 2 | 12 <i>'</i> | 1,800 LBS | | | | | |
| 8′-4,000 | 2 | 12 <i>'</i> | 1,800 LBS | | | | | |
| 8'-5,000 | 2 | 16 <i>′</i> | 2,400 LBS | | | | | |
| 8'-6,000 | 2 | 18′ | 2,700 LBS | | | | | |
| 8′-7,000 | 4 | 12 <i>′</i> | 1,800 LBS | | | | | |
| 8′-8,000 | 4 | 12′ | 1,800 LBS | | | | | |
| 8, 0, 000 | 2 | 12′ | 1,800 LBS | | | | | |
| 8'-9,000 | 2 | 16 <i>′</i> | 2,400 LBS | | | | | |
| 8′-10,000 | 4 | 16 <i>′</i> | 2,400 LBS | | | | | |
| 8′-11,000 | 4 | 16 <i>′</i> | 2,700 LBS | | | | | |
| 8'-12,000 | 4 | 18 <i>′</i> | 2,700 LBS | | | | | |
| 8'-13,000 | 4 | 12′ | 1,800 LBS | | | | | |
| 0 13,000 | 2 | 16 <i>′</i> | 2,400 LBS | | | | | |
| 8'-14,000 | 2 | 12′ | 1,800 LBS | | | | | |
| | 4 | 16′ | 2,400 LBS | | | | | |
| 8'-15,000 | 6 | 16 <i>′</i> | 2,400 LBS | | | | | |
| 10'-10,000 | 2 | 22′ | 3,000 LBS | | | | | |
| 10'-11,000 | 2 | 22 <i>'</i> | 3,000 LBS | | | | | |
| 10'-12,000 | 2 | 22 <i>'</i> | 3,000 LBS | | | | | |
| 10'-13,000 | 4 | 14′ | 1,900 LBS | | | | | |
| 10'-14,000 | 4 | 14′ | 1,900 LBS | | | | | |
| 10'-15,000 | 4 | 14′ | 1,900 LBS | | | | | |
| 10'-20,000 | 4 | 18′ | 2,400 LBS | | | | | |
| 10'-22,000 | 4 | 22′ | 3,000 LBS | | | | | |
| 10'-25,000 | 4 | 14′ | 1,900 LBS | | | | | |
| 20,000 | 2 | 18′ | 2,400 LBS | | | | | |
| 10'-30,000 | 6 | 18′ | 2,400 LBS | | | | | |
| 10'-35,000 | 2 | 18′ | 2,400 LBS | | | | | |
| | 4 | 22′ | 3,000 LBS | | | | | |
| 10'-40,000 | 8 | 18 <i>′</i> | 2,400 LBS | | | | | |



FIBERGLASS TANK SOLUTIONS PRECAST DEADMEN

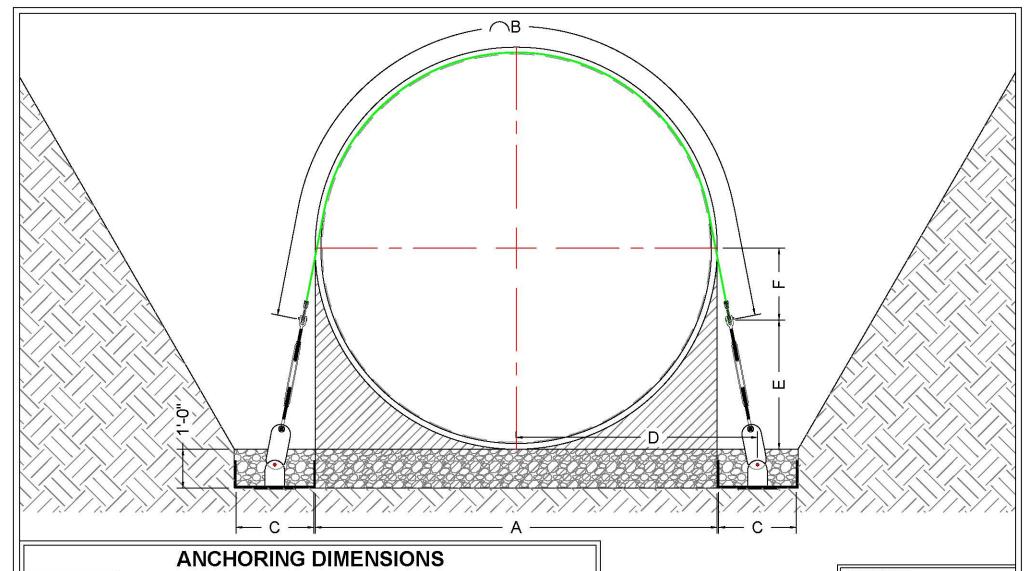
- FTS DEADMEN ARE ENGINEERED AND DESIGNED TO BE USED WITH FTS TANKS.
- IN MULTIPLE TANK INSTALLATIONS EACH TANK REQUIRS ITS OWN SET OF DEADMEN.
- FOR CAST IN PLACE OR DEADMEN CONSTRUCTED OFF SITE, REFER TO FTS INSTALLATION MANUAL AND OPERATING GUIDELINES FOR PROPER SIZING AND ANCHOR POINT SPECIFICATIONS.





- The preffered anchoring method, shown on the left side, is to add the 12" granular bedding over the FRP deadmen and utilize the anchor extension.
- The alternative anchoring method is to set the FRP deadmen on top of the 12" bedding, which may affect buoyancy design. Contractor to remove the anchor extensions when using this method.
- FRP deadmen must be outside of the tank shadow in order to maximize the soil column directly above the deadmen.
- FRP deadmen can be used with open cut trench excavation or shored hole excavation.
- The FRP deadmen are 12" wide for 4',5', and 6' diameter tanks, 18" wide for 8' diameter tanks, and 24" wide for 10' and 12' diameter tanks.





| ANCHORING DIMENSIONS | | | | | | | | | |
|----------------------|------------|--------|-----|------------|------------|------------|--|--|--|
| TANK DIA. | "A" | "B" | "C" | "D" | "E" | "F" | | | |
| 4' | 4'-4" | 85" | 12" | 2'-8 1/2" | 1'-10 1/4" | 0'-4" | | | |
| 5' | 5'-4 1/4" | 111.5" | 12" | 3'-2 3/4" | 2'-1 1/4" | 0'-7" | | | |
| 6' | 6'-4 1/4" | 145" | 12" | 3'-8 3/4" | 1'-11 1/2" | 1'-2 3/4" | | | |
| 8' | 8'-4 1/4" | 181" | 18" | 4'-11 3/4" | 3'-0 1/2" | 1'-1 3/4" | | | |
| 10' | 10'-4 1/4" | 236" | 24" | 6'-3 3/4" | 3'-4" | 1'-10 1/4" | | | |
| 12' | 12'-4 1/4" | 288" | 24" | 7'-2 3/4" | 3'-8 3/4" | 2'-5 1/2" | | | |

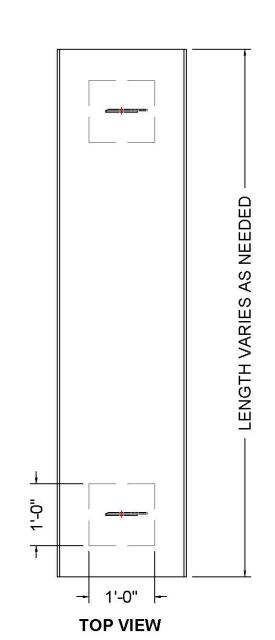
PROJECT NAME:

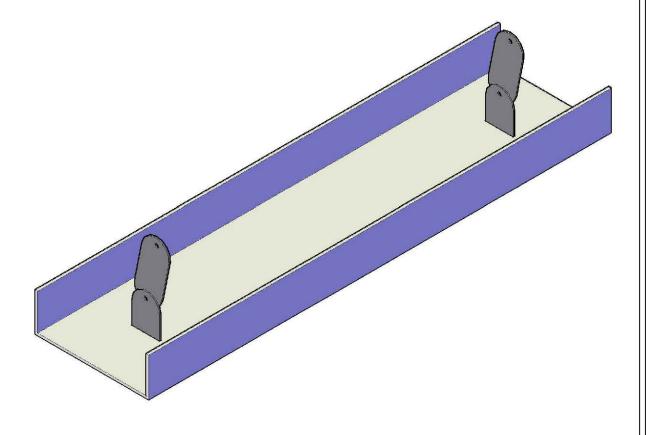
FRP DEADMEN LAYOUT W/ ANCHOR EXTENSIONS

DRAWN DATE: | DRAWN BY: | REV. | 12/10/20 | JACK | 00

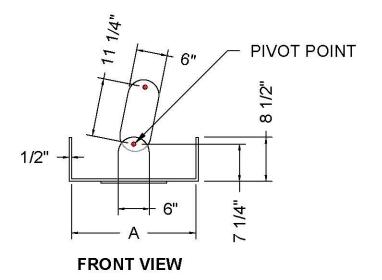


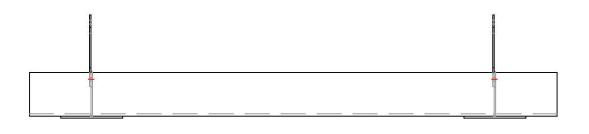
Mailing: P.O. BOX 326, Montreal, MO 65591 MFG: 147 Camdenton Bus. Prk. Dr., Camdenton, MO 65020 P: 573-317-9620





ISOMETRIC VIEW

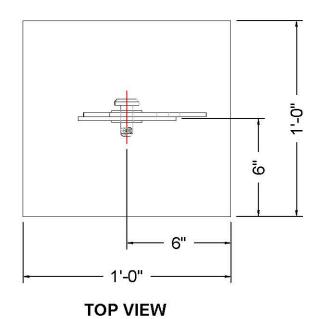


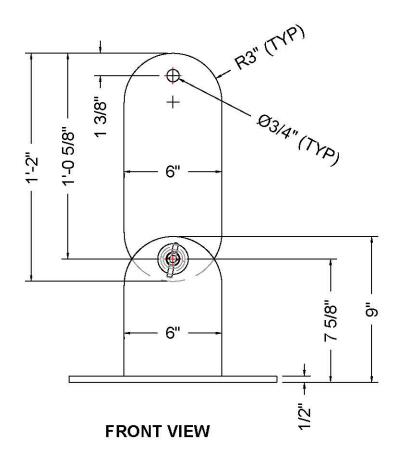


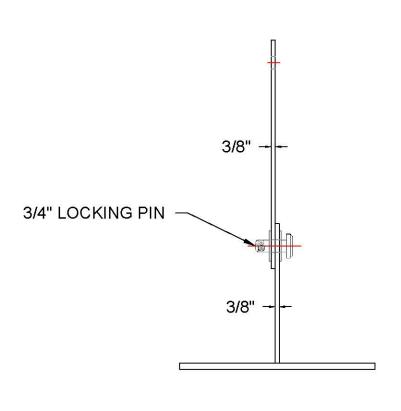
RIGHT SIDE VIEW

| DEADMEN WIDTH | | | | | | |
|---------------|----------|--|--|--|--|--|
| TANK Ø | DIM. "A" | | | | | |
| 5'-0" | 1'-0" | | | | | |
| 6'-0" | 1'-0" | | | | | |
| 8'-0" | 1'-6" | | | | | |
| 10'-0" | 2'-0" | | | | | |
| 12'-0" | 2'-0" | | | | | |

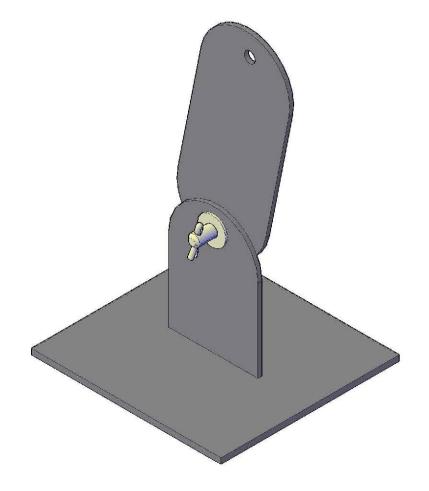
| DEADMAN | | | | | |
|--|----|--|--|--|--|
| PROJECT NUMBER:: | | | | | |
| PROJECT NAME: FIBERGLASS DEADMEN | | | | | |
| 10/13/20 JACK 00 | | | | | |
| Fiberglass Tank | | | | | |
| Mailing: P.O. BOX 326, Montreal, MO 655 MFG: 147 Camdenton Bus. Prk. Dr., Camdenton, MO 65020 P: 573-317-9620 | 91 | | | | |



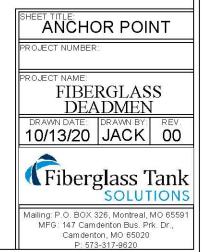


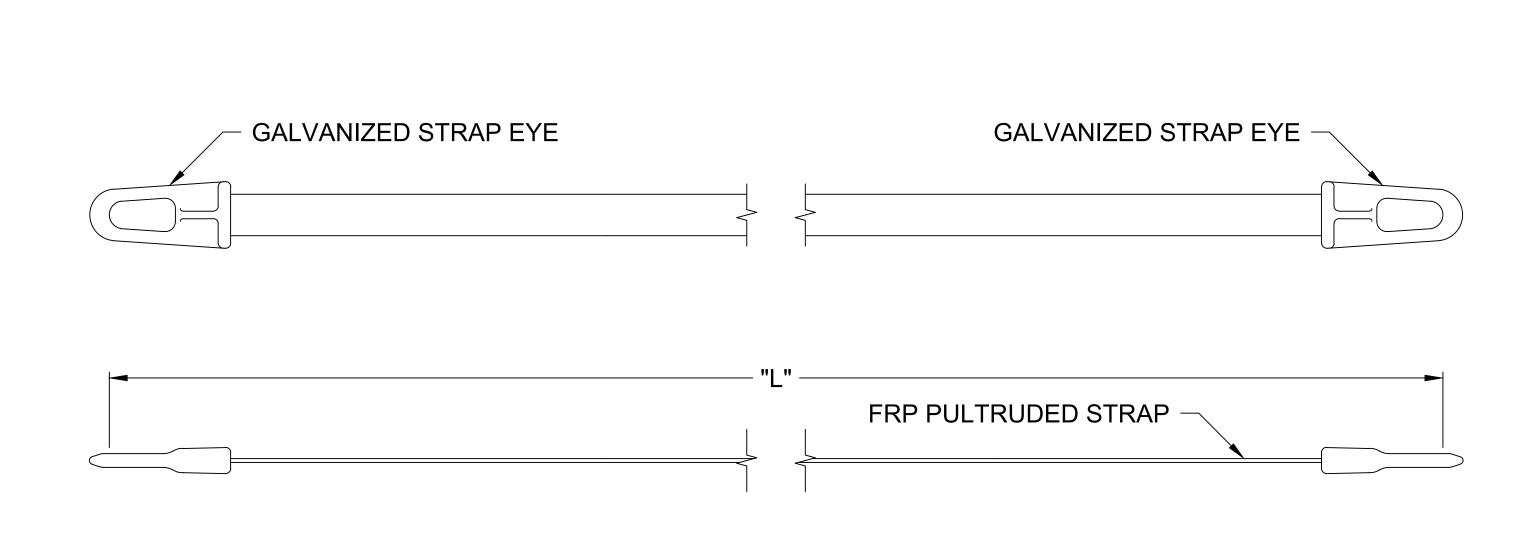


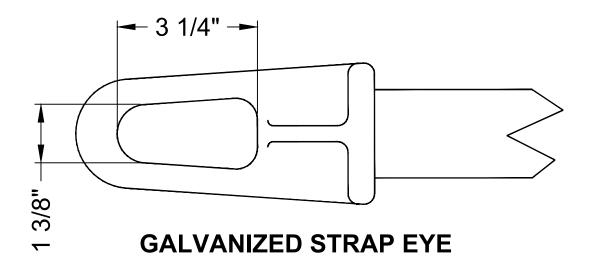
RIGHT SIDE VIEW



ISOMETRIC VIEW

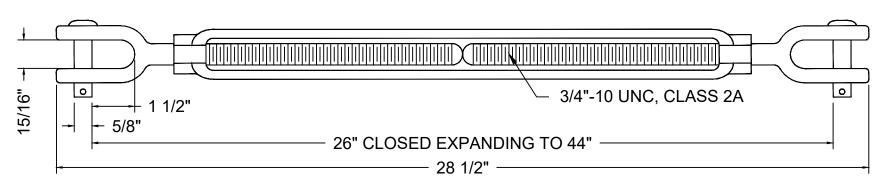




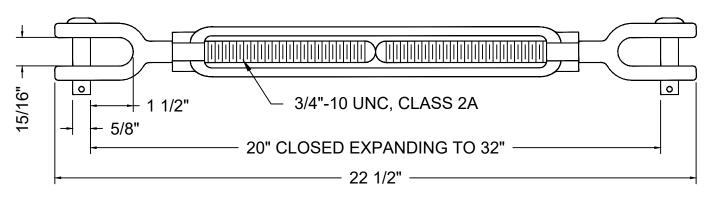


| HOLD-DOWN STRAPS | | | | | | |
|------------------|------------------|--|--|--|--|--|
| TANK SIZE | STRAP LENGTH "L" | | | | | |
| 4' DIA. | 85" | | | | | |
| 5' DIA. | 111.5" | | | | | |
| 6' DIA. | 145" | | | | | |
| 8' DIA. | 181" | | | | | |
| 10' DIA. | 236" | | | | | |
| 12' DIA. | 300" | | | | | |

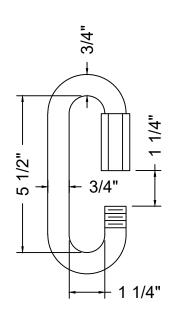




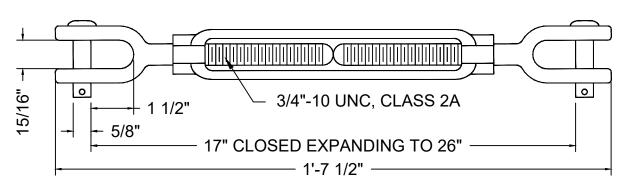
3/4" X 18" JAW TO JAW TURNBUCKLE



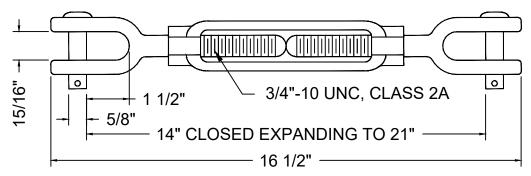
3/4" X 12" JAW TO JAW TURNBUCKLE



3/4" CONNECTING LINK



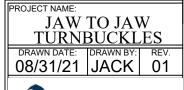
3/4" X 9" JAW TO JAW TURNBUCKLE



3/4" X 6" JAW TO JAW TURNBUCKLE

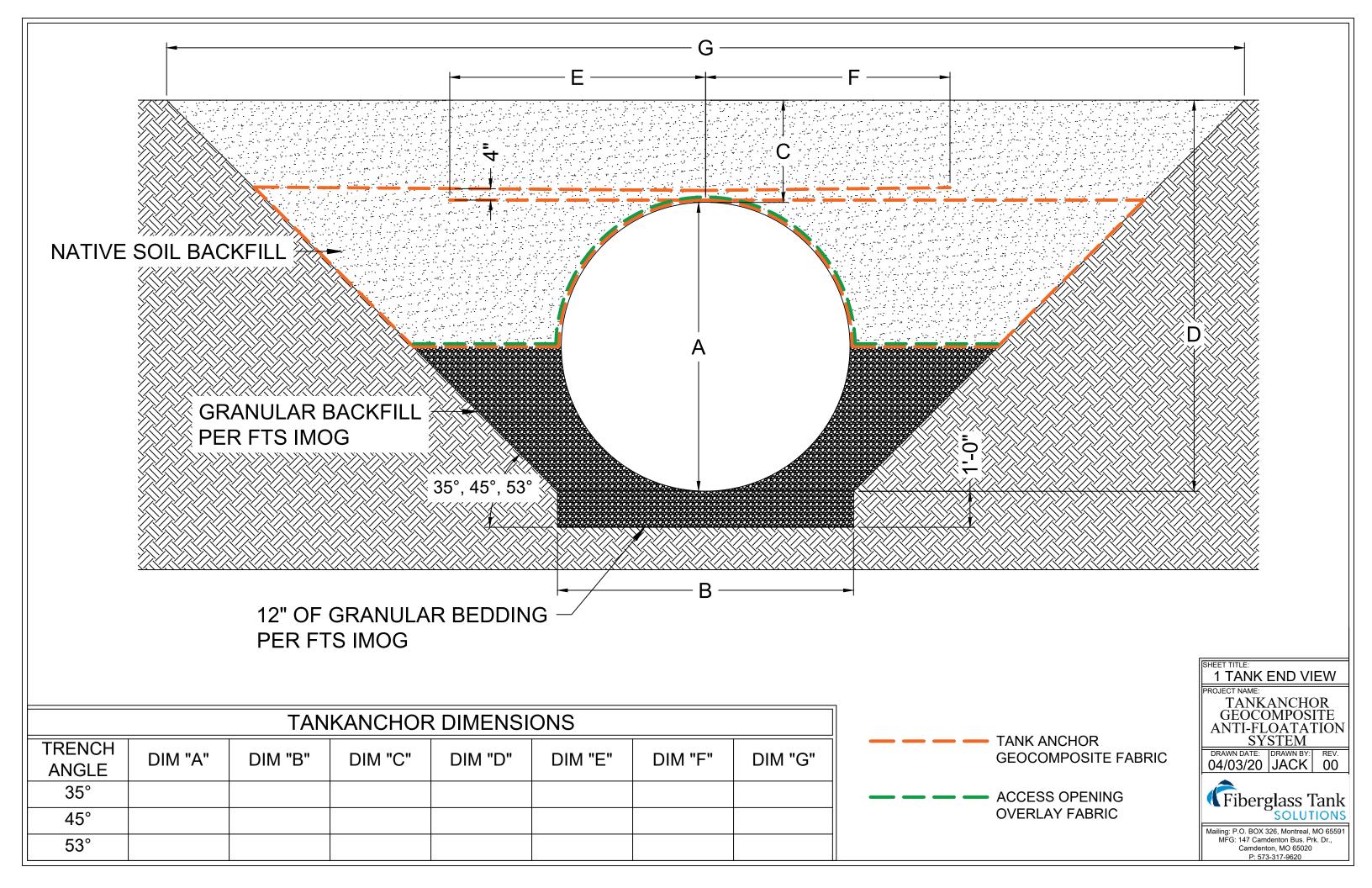
TURNBUCKLE SELECTION GUIDE TANK SIZE & APPLICATION TURNBUCKLE SIZE

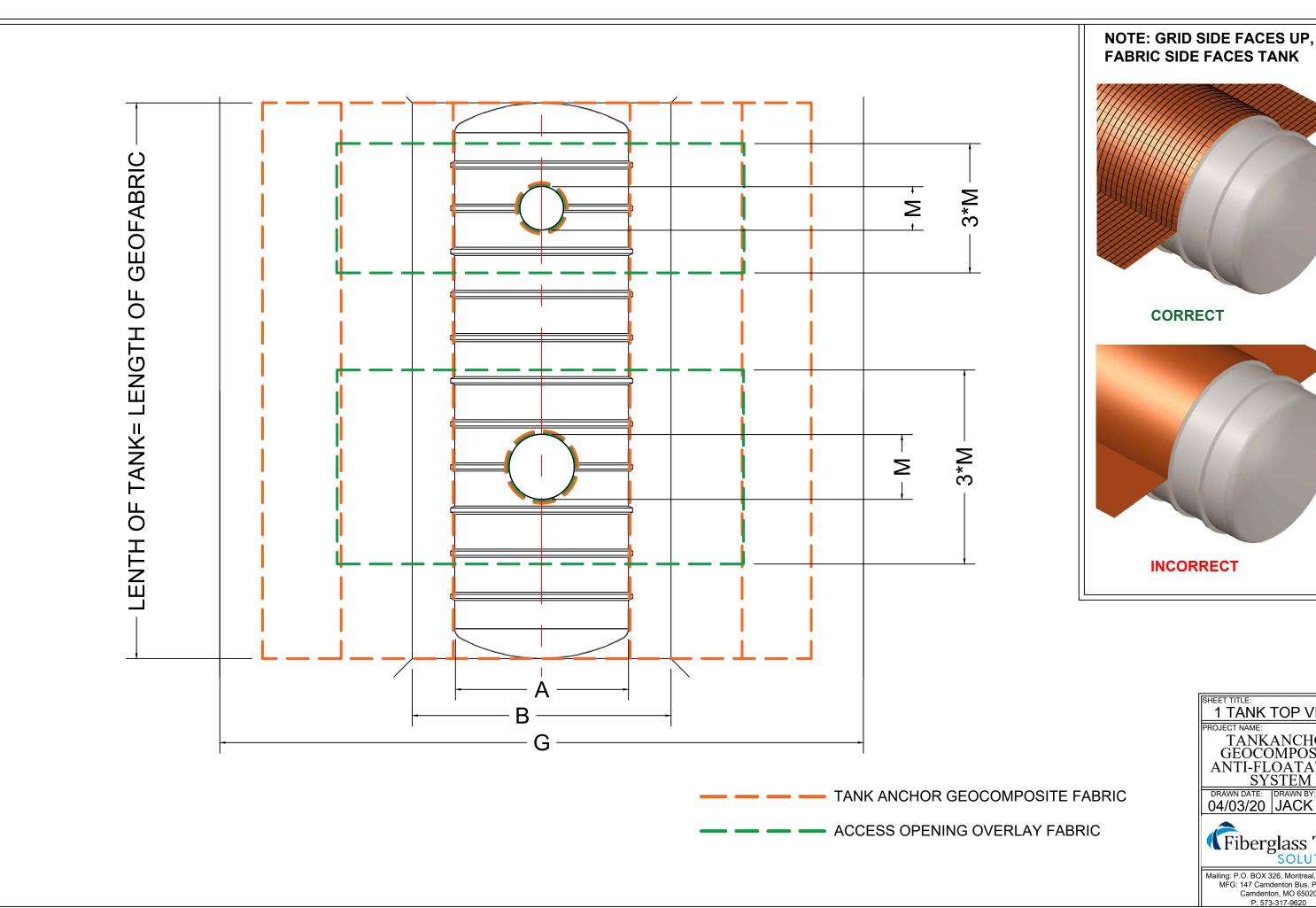
| TANK SIZE & APPLICATION | TURNBUCKLE SIZE |
|--|---------------------------------|
| Ø4' TANK W/ CONCRETE DEADMEN ABOVE BEDDING | N/A |
| Ø4' TANK W/ CONCRETE DEADMEN BELOW BEDDING | 3/4" X 9" |
| Ø4' TANK W/ FRP DEADMEN | 3/4" X 6" |
| Ø5' TANK W/ CONCRETE DEADMEN ABOVE BEDDING | N/A |
| Ø5' TANK W/ CONCRETE DEADMEN BELOW BEDDING | 3/4" X 9" |
| Ø5' TANK W/ FRP DEADMEN | 3/4" X 6" |
| Ø6' TANK W/ CONCRETE DEADMEN ABOVE BEDDING | N/A |
| Ø6' TANK W/ CONCRETE DEADMEN BELOW BEDDING | 3/4" X 9" |
| Ø6' TANK W/ FRP DEADMEN | 3/4" X 6" |
| Ø8' TANK W/ CONCRETE DEADMEN ABOVE BEDDING | 3/4" X 12" |
| Ø8' TANK W/ CONCRETE DEADMEN BELOW BEDDING | 3/4" X 12" & 3/4" CONN. LINK |
| Ø8' TANK W/ FRP DEADMEN | 3/4" X 12" |
| Ø10' TANK W/ CONCRETE DEADMEN ABOVE BEDDING | 3/4" X 18" |
| Ø10' TANK W/ CONCRETE DEADMEN BELOW BEDDING | 3/4" X 18" |
| Ø10' TANK W/ FRP DEADMEN | 3/4" X 18" |
| Ø12' TANK W/ CONCRETE DEADMEN ABOVE BEDDING | 3/4" X 18" |
| Ø12' TANK W/ CONCRETE DEADMEN BELOW BEDDING | 3/4" X 18" |
| Ø12' TANK W/ FRP DEADMEN | 3/4" X 18" |

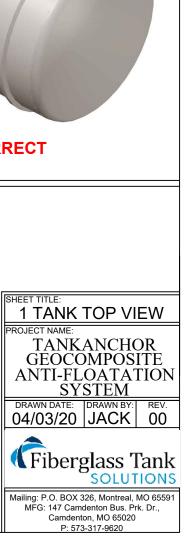


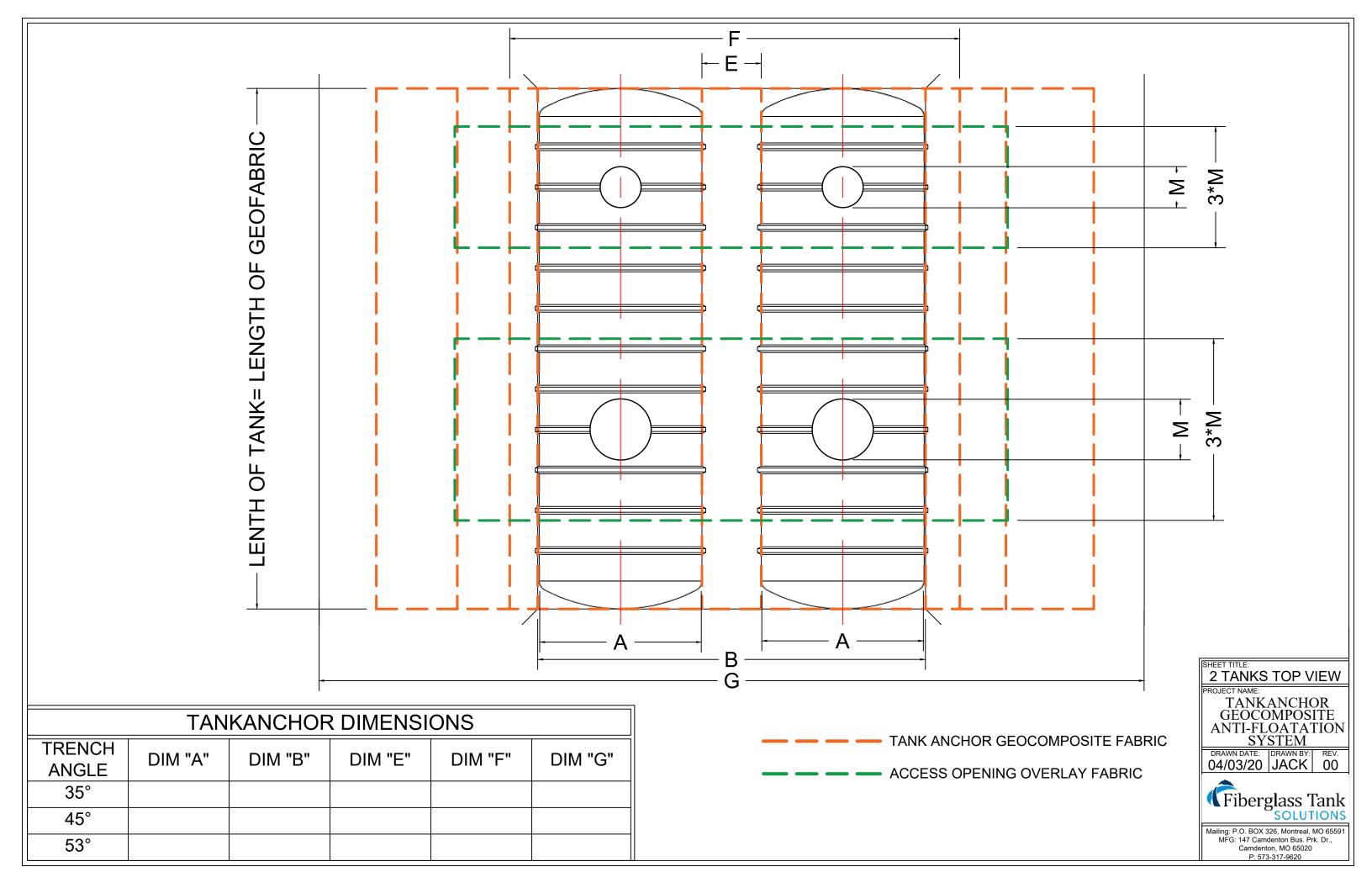


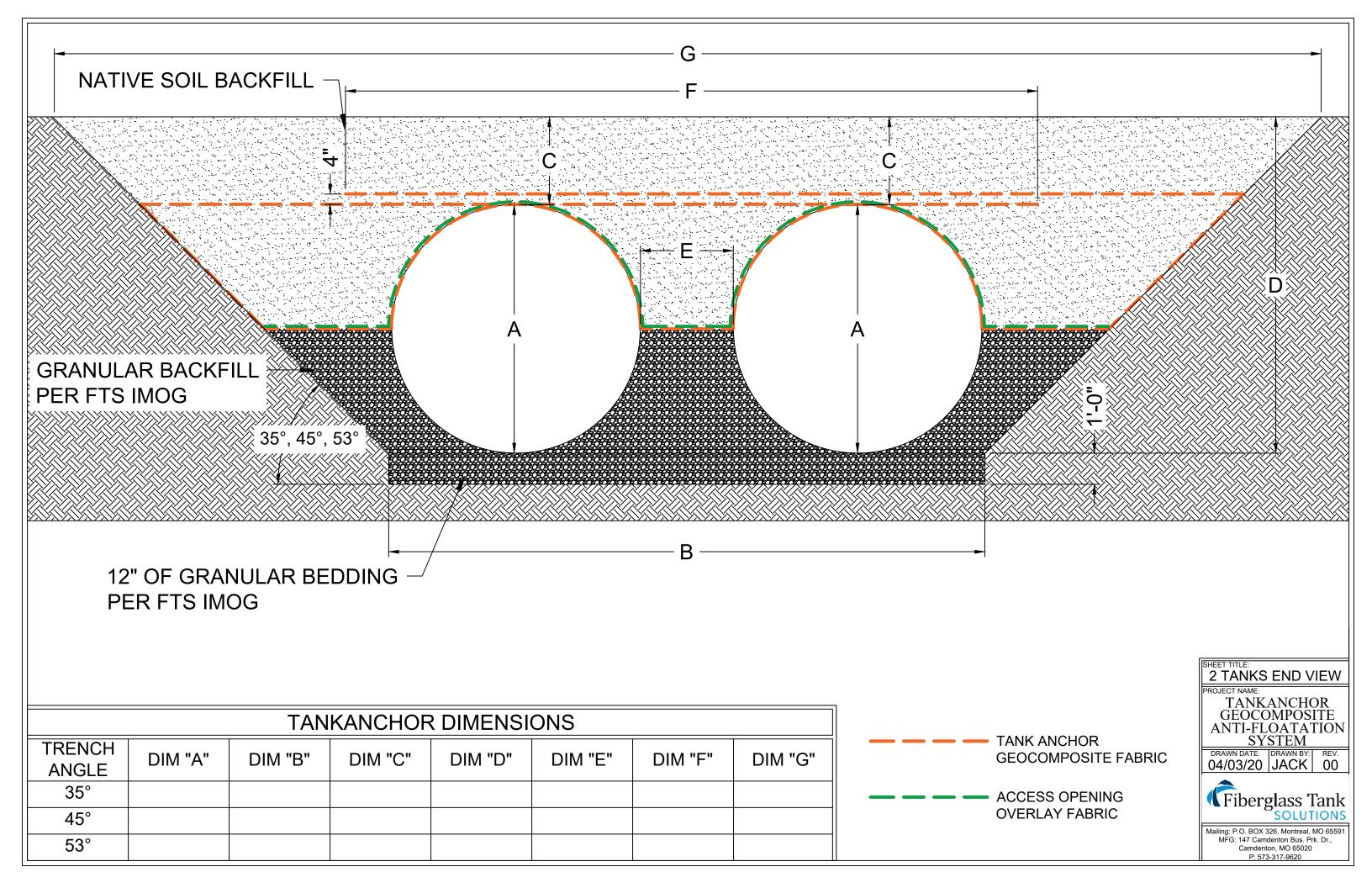
Mailing: P.O. BOX 326, Montreal, MO 65591 MFG: 147 Camdenton Bus. Prk. Dr., Camdenton, MO 65020 P: 573-317-9620





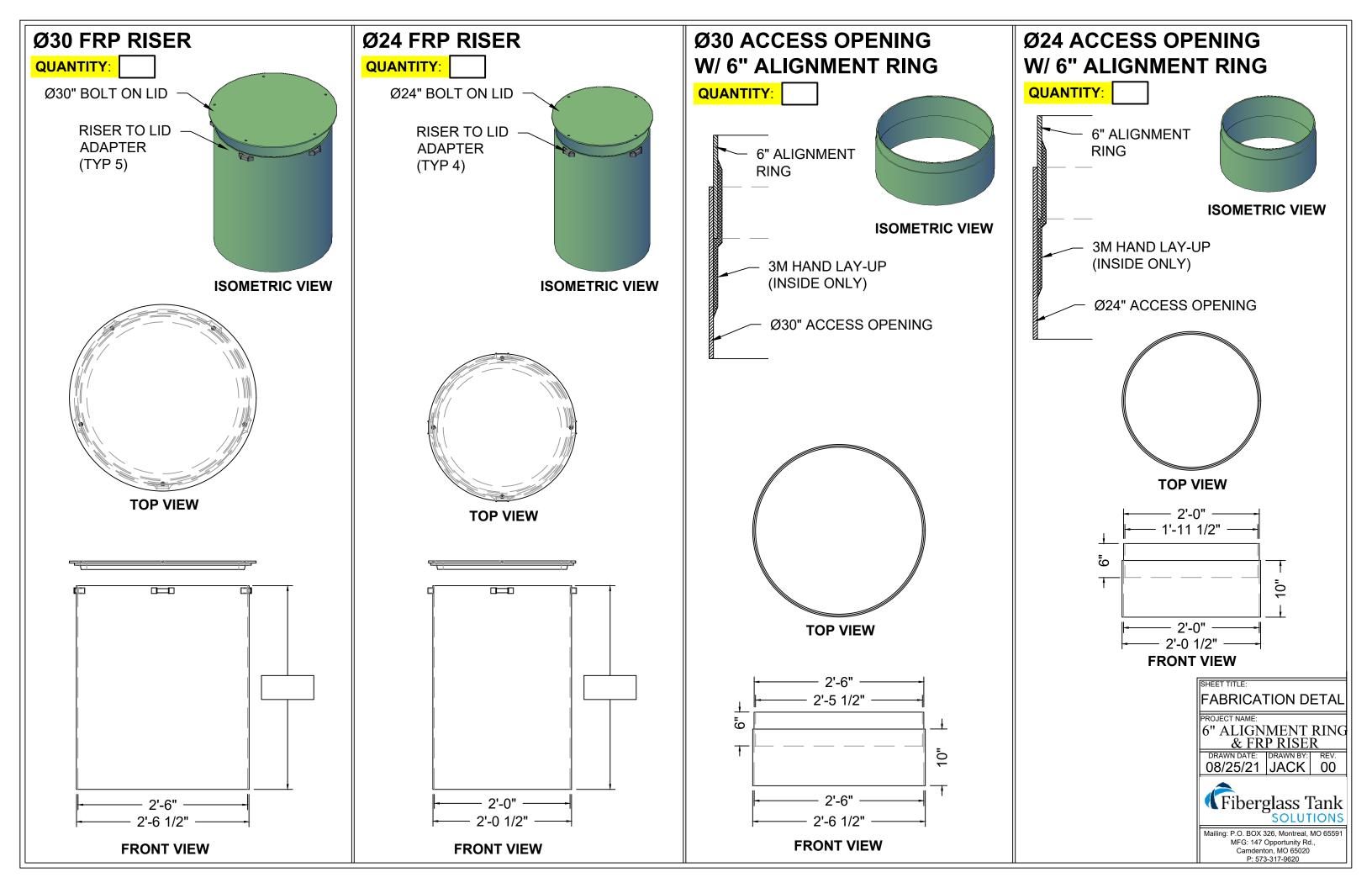


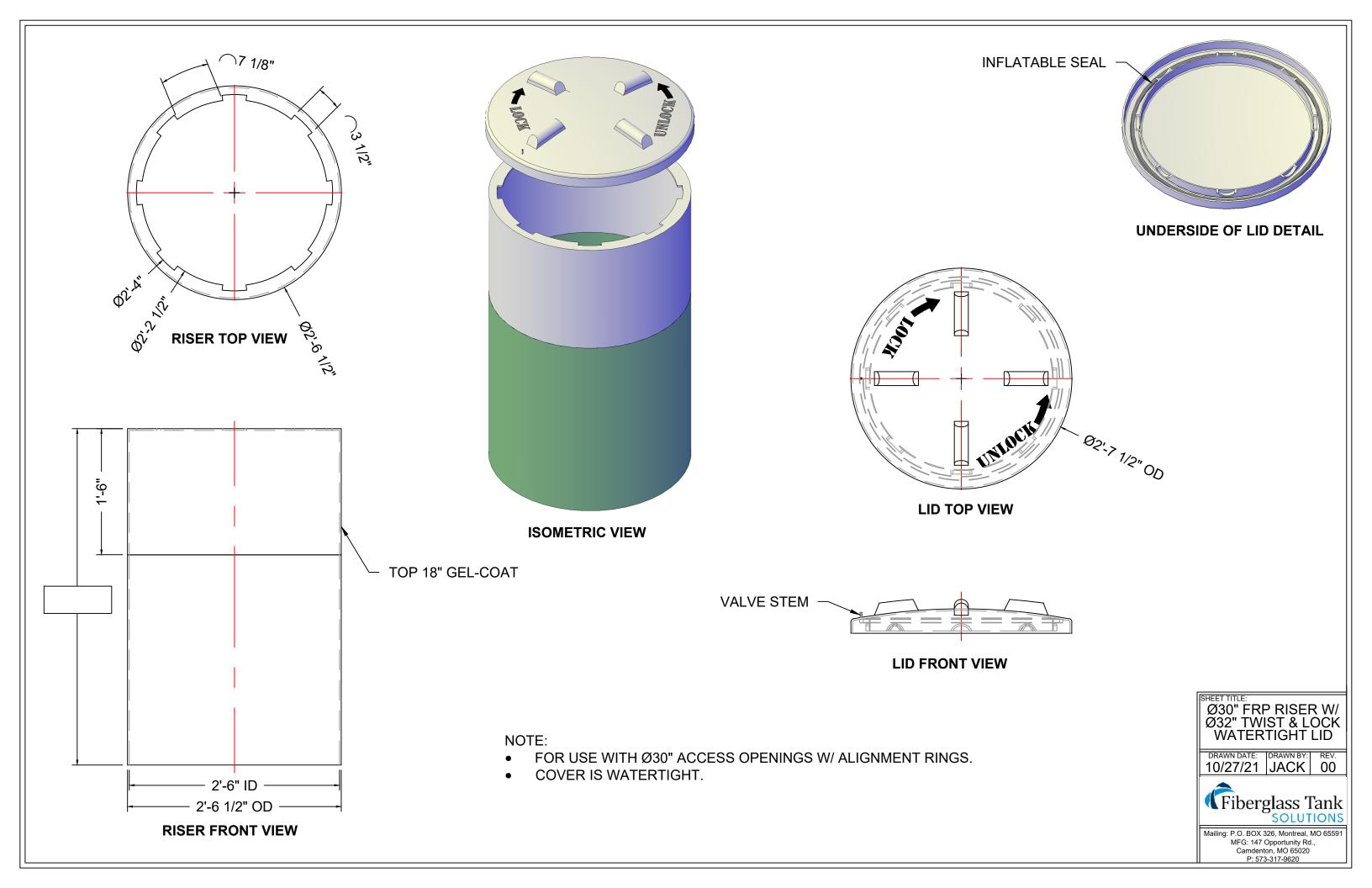


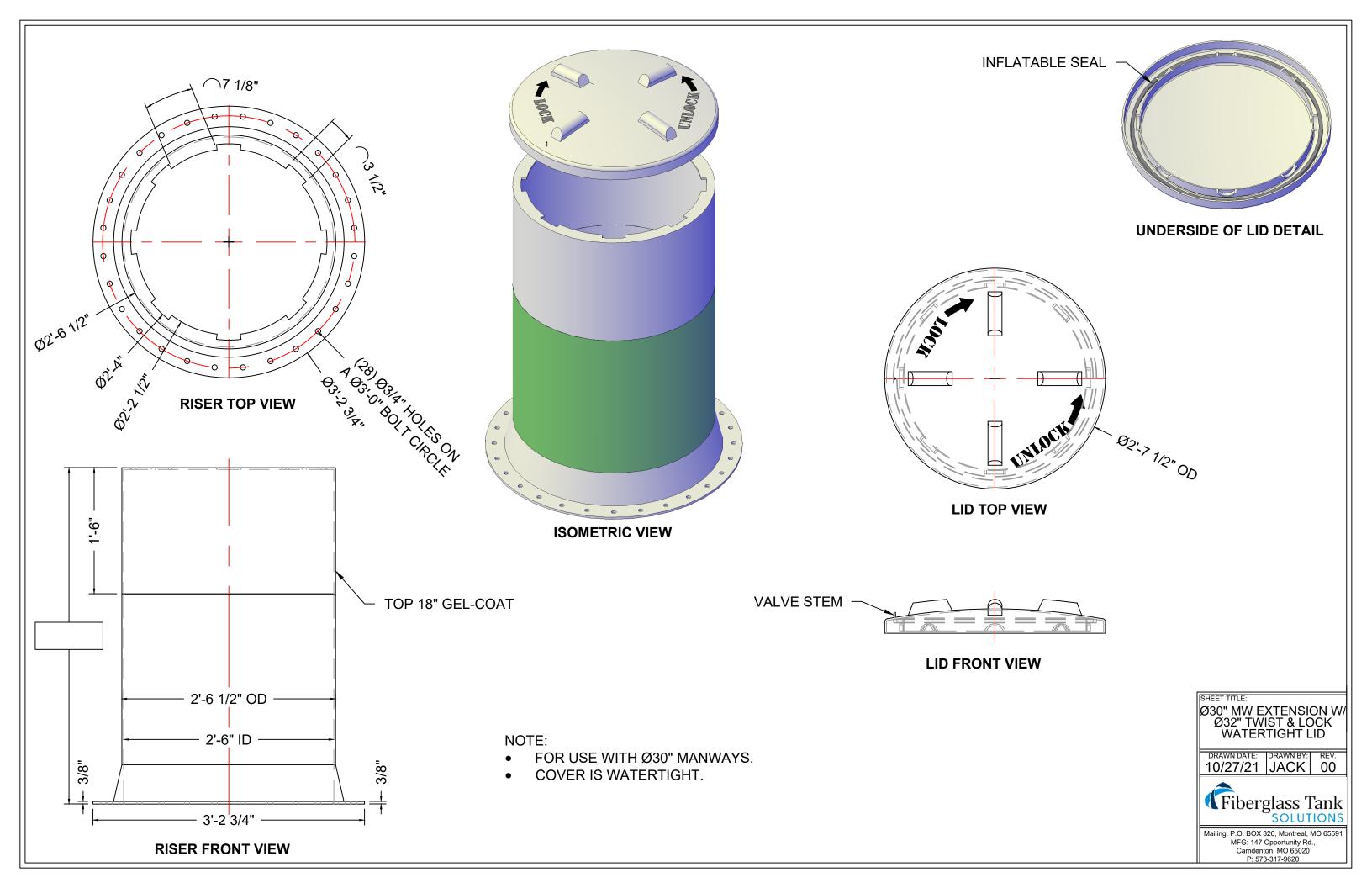


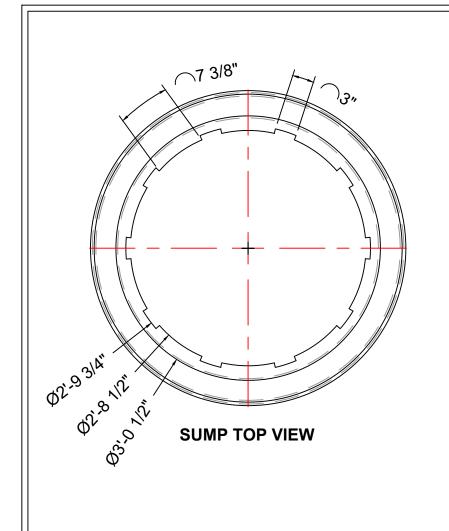
Tank Accessories

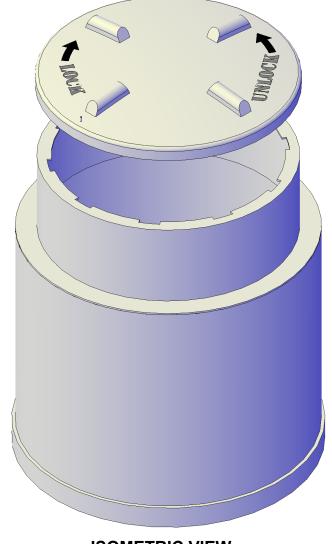


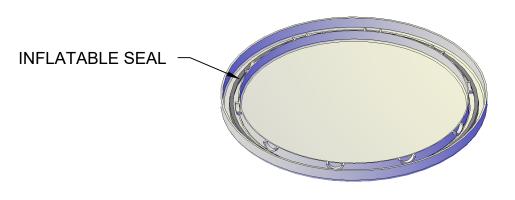




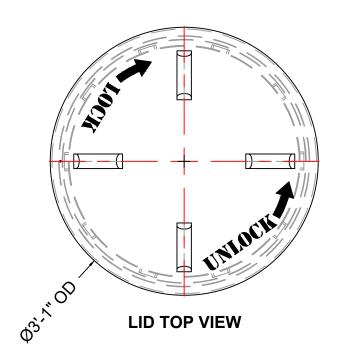


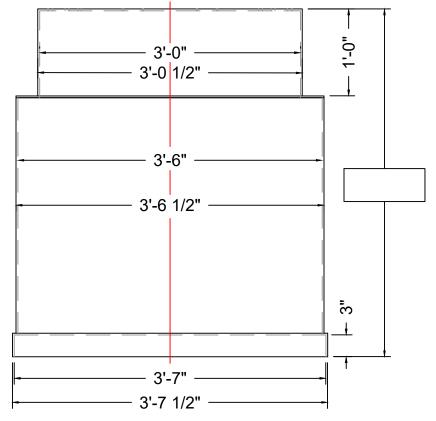






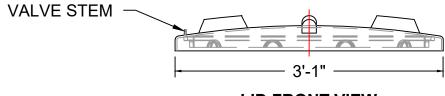
UNDERSIDE OF LID DETAIL





SUMP FRONT VIEW

ISOMETRIC VIEW



LID FRONT VIEW

NOTES:

- TWIST & LOCK LID IS WATERTIGHT.
- SUMP HAS A 3" BELL END THAT IS MEANT TO FIT ONTO A Ø42" CONTAINMENT COLLAR W/ AN EPOXY SOCKET.
- READ THE EPOXY SOCKET INSTALLATION INSTRUCTIONS BEFORE INSTALL.

SHEET TITLE:
Ø37" TWIS

Ø37" TWIST & LOCK X Ø42" SUMP

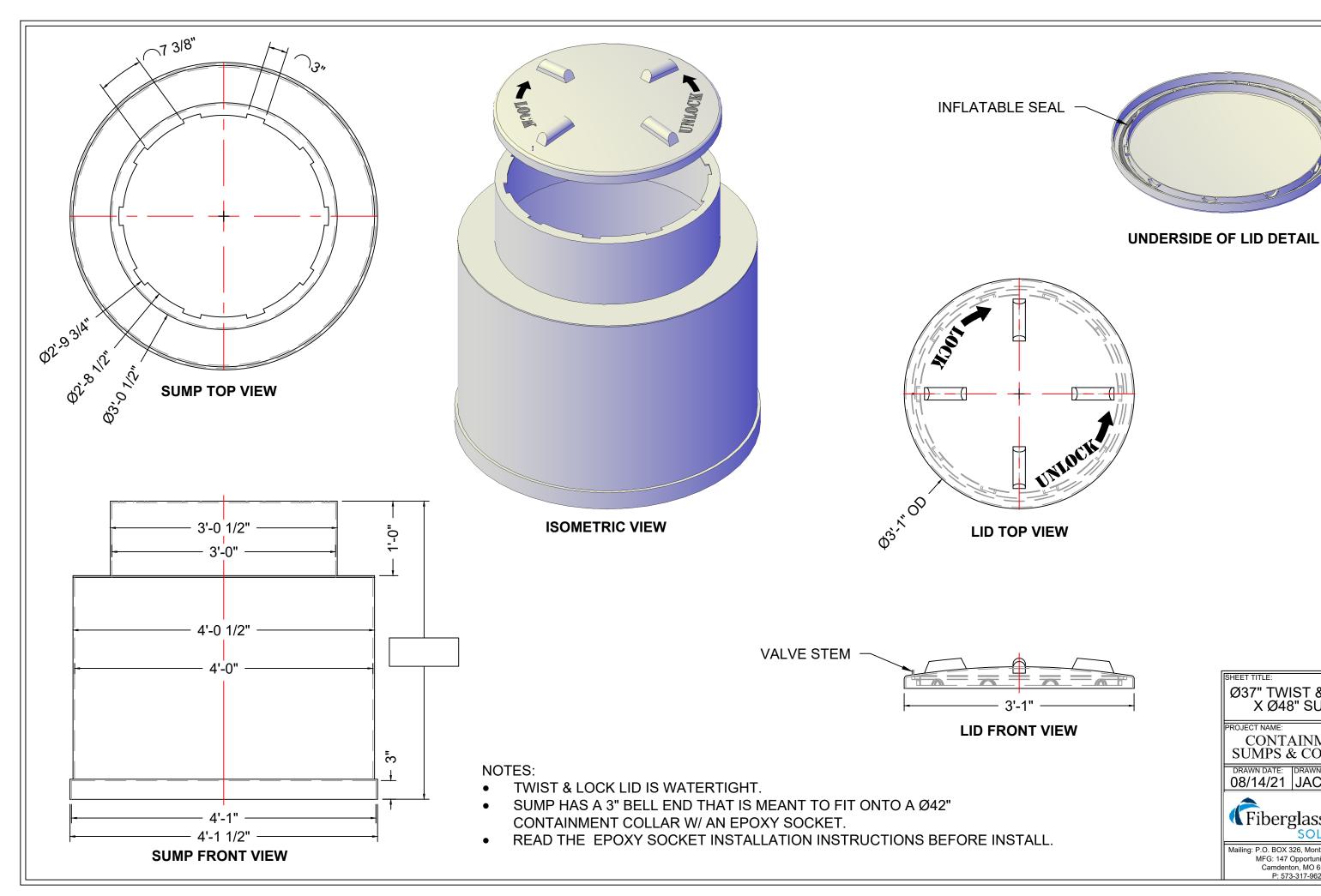
PROJECT NAME:

CONTAINMENT SUMPS & COLLARS

DRAWN DATE: | DRAWN BY: | REV. | 08/14/21 | JACK | 00



Mailing: P.O. BOX 326, Montreal, MO 65591 MFG: 147 Opportunity Rd., Camdenton, MO 65020 P: 573-317-9620



SHEET TITLE: Ø37" TWIST & LOCK X Ø48" SUMP

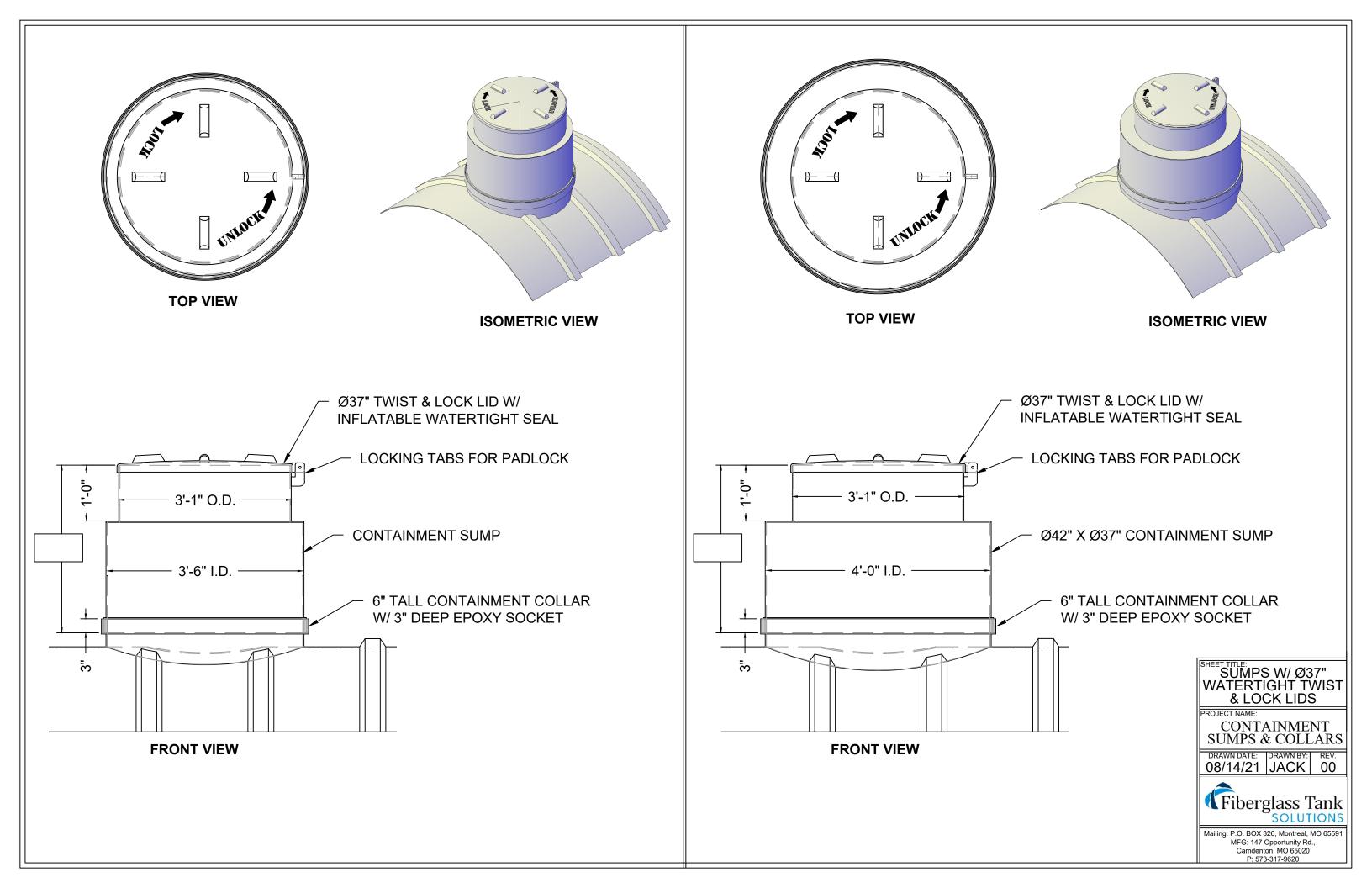
PROJECT NAME:

CONTAINMENT SUMPS & COLLARS

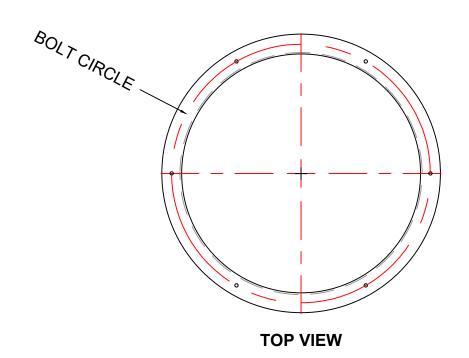
DRAWN DATE: | DRAWN BY: | REV. | 08/14/21 | JACK | 00

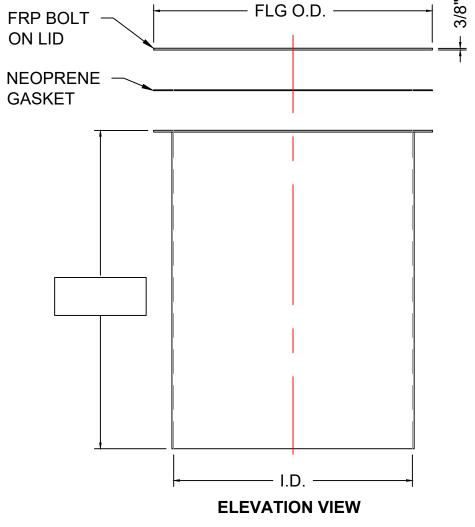


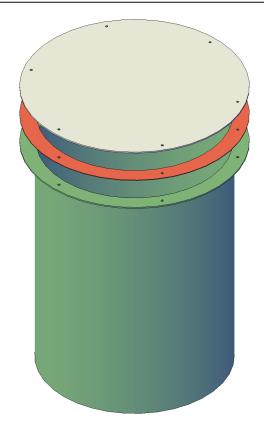
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FRP RISER W/ BOLT ON LID





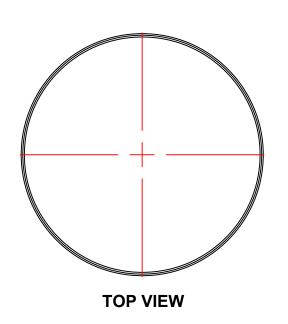


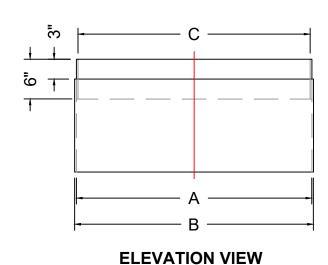
ISOMETRIC VIEW

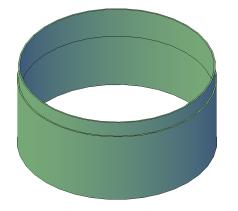
FRP RISER DIMENSIONS

| DIMENSIONS | | | | | | |
|----------------|------|------|------|--|--|--|
| SIZE | 36" | 42" | 48" | | | |
| FLG O.D. | 42" | 48" | 54" | | | |
| I.D. | 36" | 42" | 48" | | | |
| BOLT CIRCLE | 39" | 45" | 51" | | | |
| HOLE Ø | 1/2" | 1/2" | 1/2" | | | |
| HOLE QTY | 6 | 6 | 6 | | | |

ACCESS OPENING W/ ALIGNMENT RING







ISOMETRIC VIEW

ACCESS OPENING DIMENSIONS

| | Dimensions | | | | | |
|------|------------|-------|-------|--|--|--|
| DIM. | 36" | 42" | 48" | | | |
| Α | 36" | 42" | 48" | | | |
| В | 36.5" | 42.5" | 48.5" | | | |
| С | 35.5" | 41.5" | 47.5" | | | |

NOTES:

- RISERS FIT ON CORRESPONDING ACCESS OPENINGS BY SLIDING OVER THE 3" OF EXPOSED ALIGNMENT RING.
- ACCESS OPENINGS HAVE A 6" PROJECTION ON THE TANK (NOT INCLUDING THE 3" OF EXPOSED ALIGNMENT RING).

Ø36", 42", & 48" FRP RISER W/ BOLT ON LID

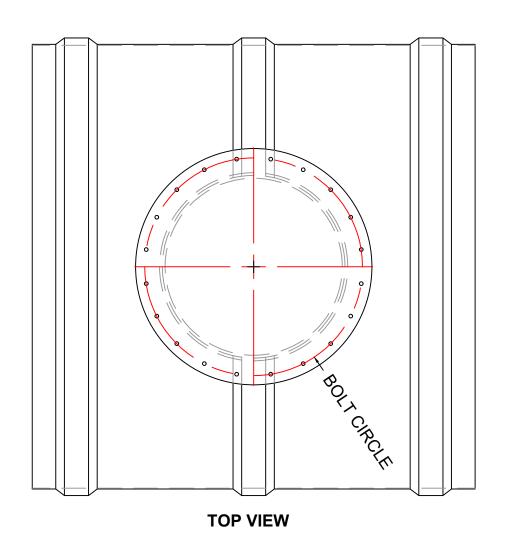
PROJECT NAME:

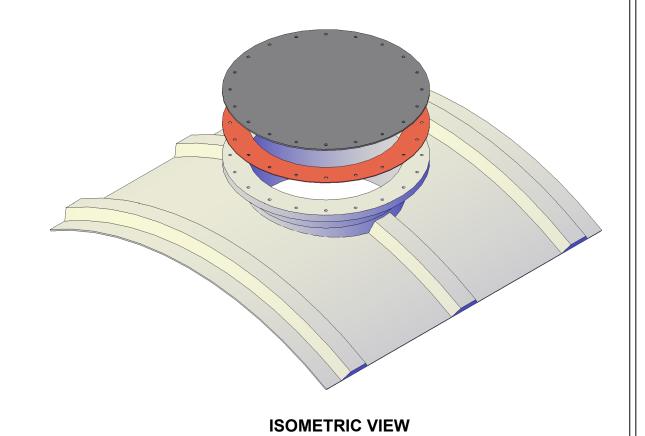
TANK ACCESSORIES

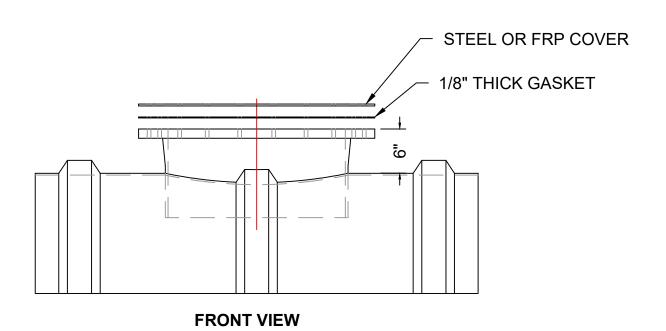
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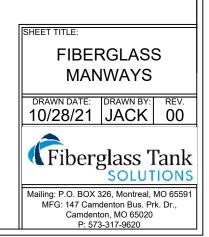
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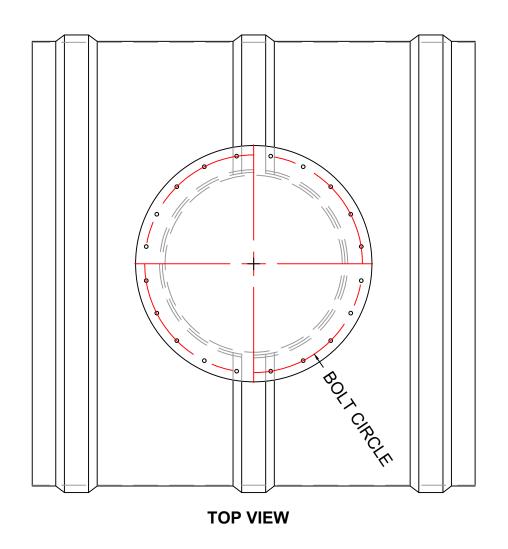


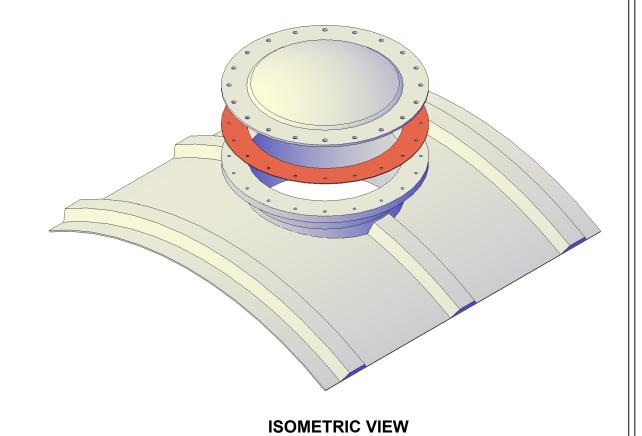


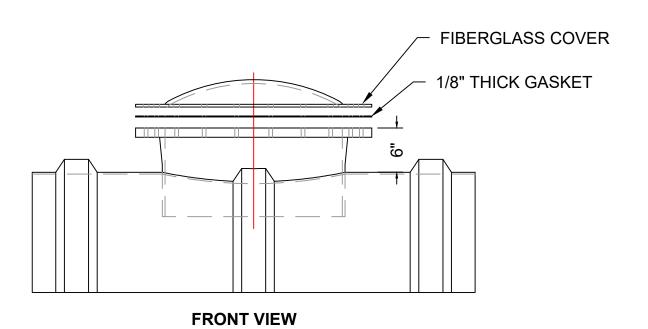


| MANWAY DIMENSIONS | | | | | |
|-------------------|---------|---------|---------|--|--|
| SIZE | 24" | 30" | 36" | | |
| O.D. | 32" | 38 3/4" | 46" | | |
| I.D. | 24" | 30" | 36" | | |
| BOLT CIRCLE | 29 1/2" | 36" | 42 3/4" | | |
| HOLE Ø | 1/2" | 3/4" | 3/4" | | |
| HOLE QTY | 20 | 28 | 32 | | |

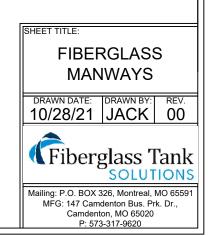


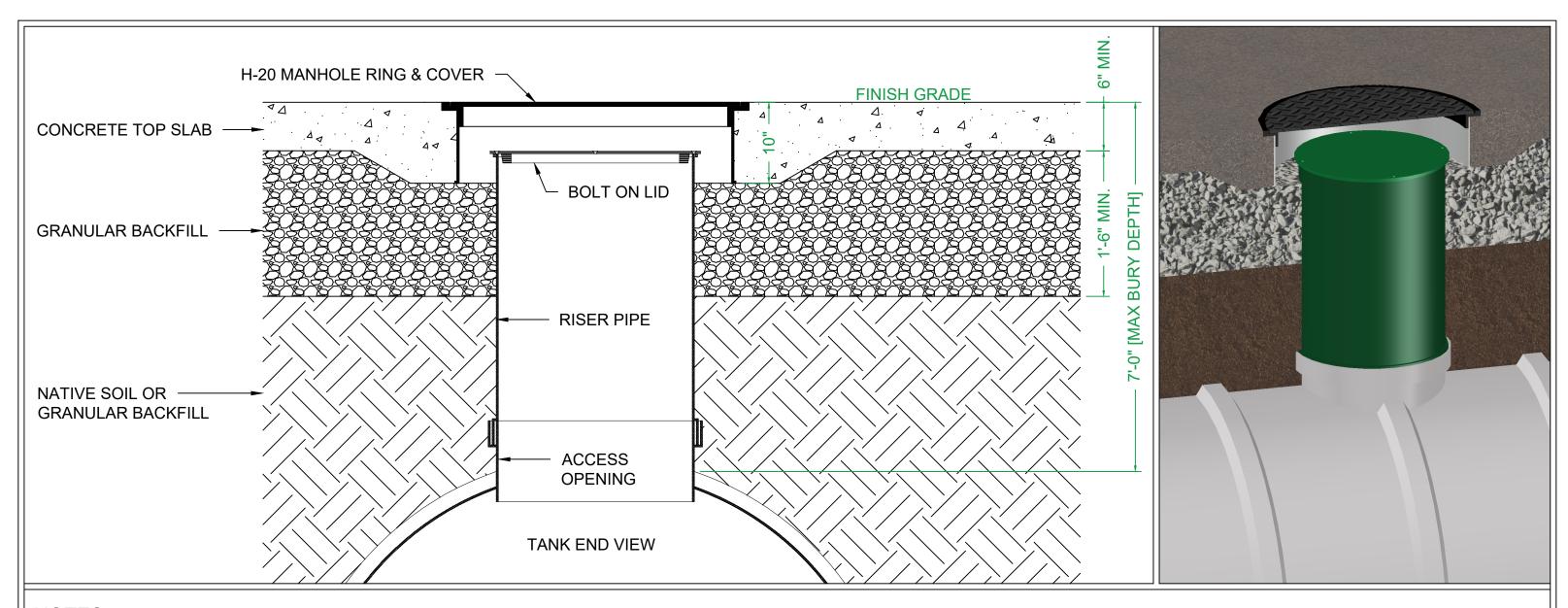






| MANWAY DIMENSIONS | | | | | |
|-------------------|---------|---------|---------|--|--|
| SIZE | 24" | 30" | 36" | | |
| O.D. | 32" | 38 3/4" | 46" | | |
| I.D. | 24" | 30" | 36" | | |
| BOLT CIRCLE | 29 1/2" | 36" | 42 3/4" | | |
| HOLE Ø | 1/2" | 3/4" | 3/4" | | |
| HOLE QTY | 20 | 28 | 32 | | |

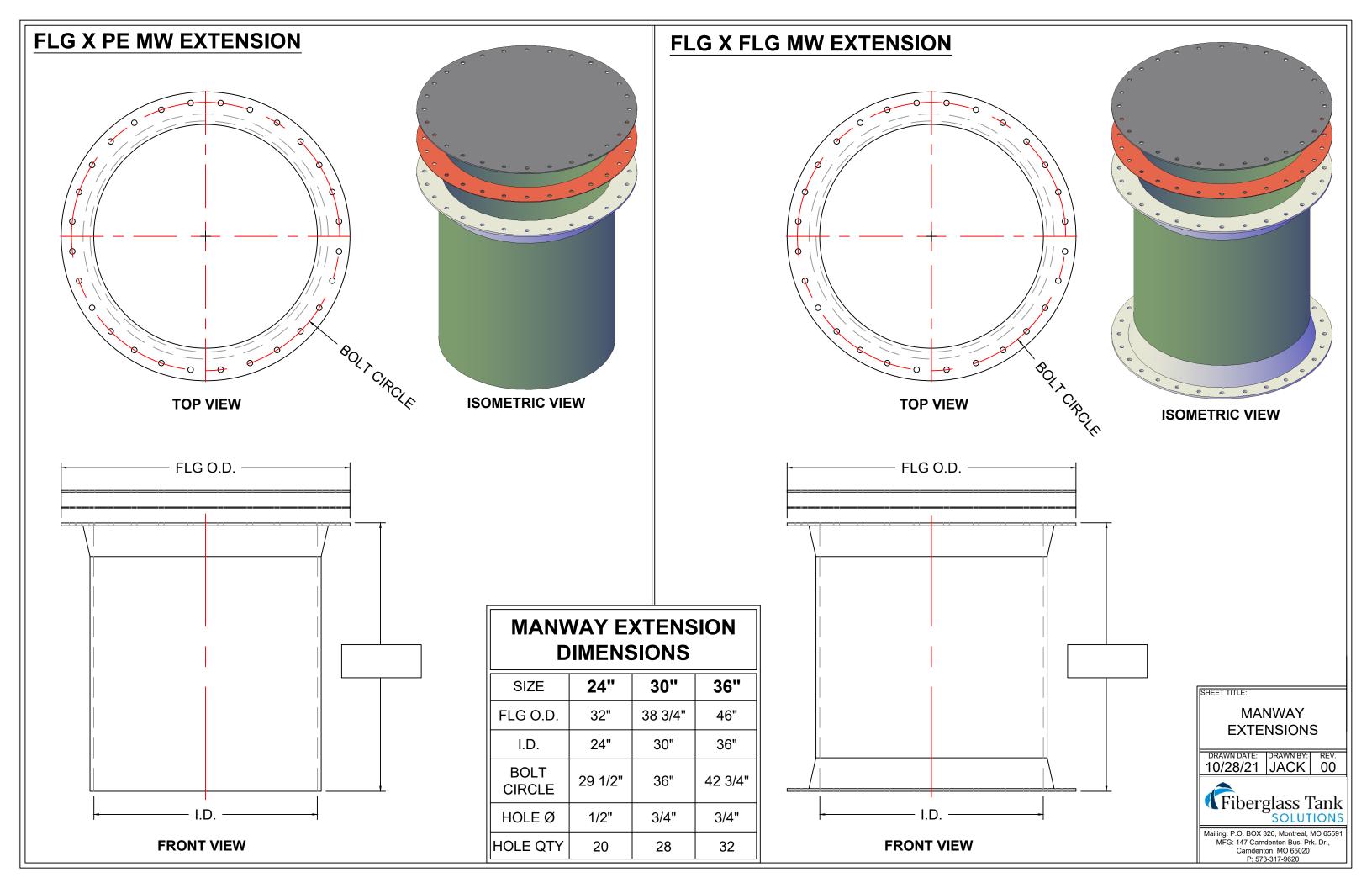


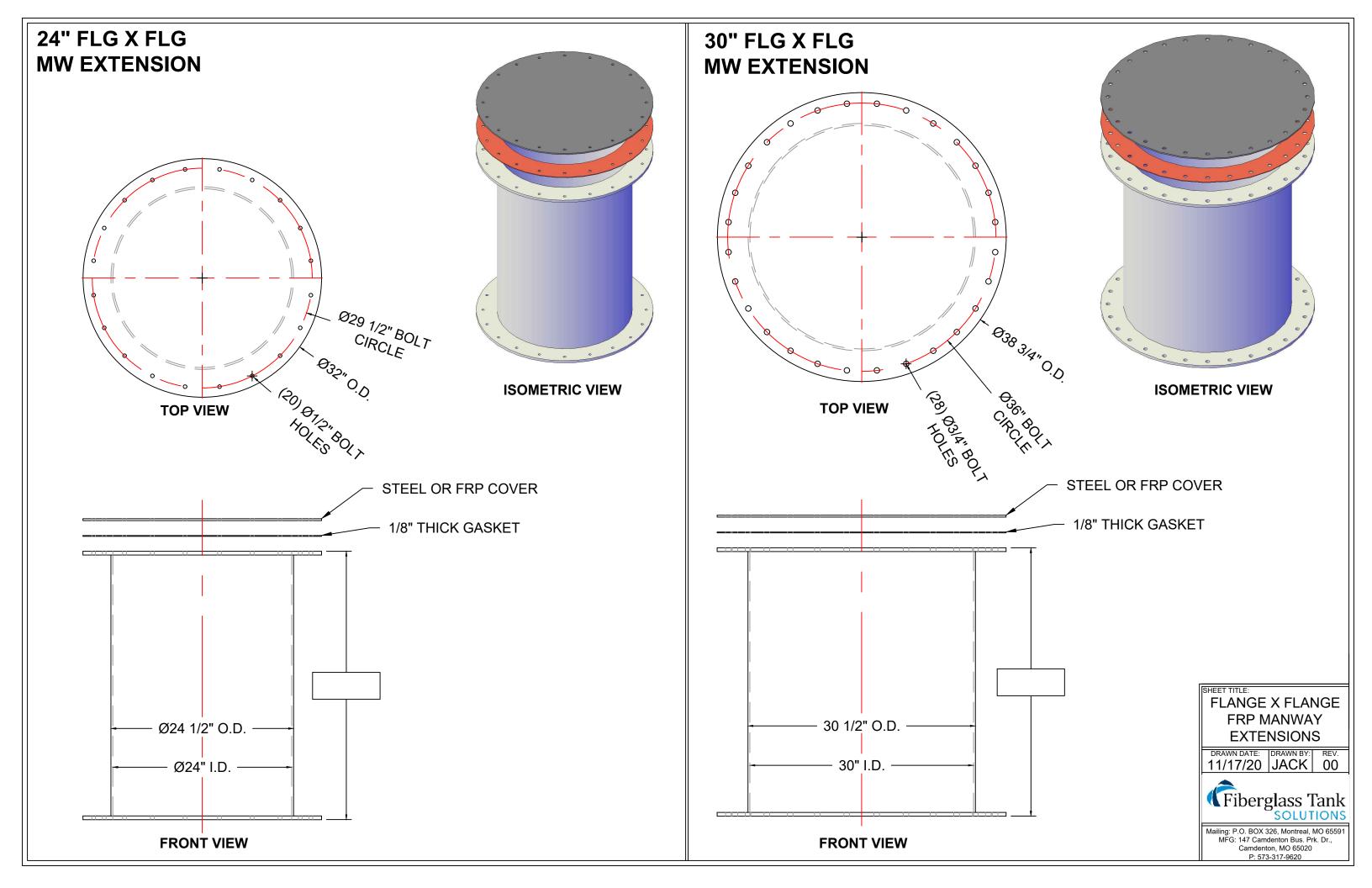


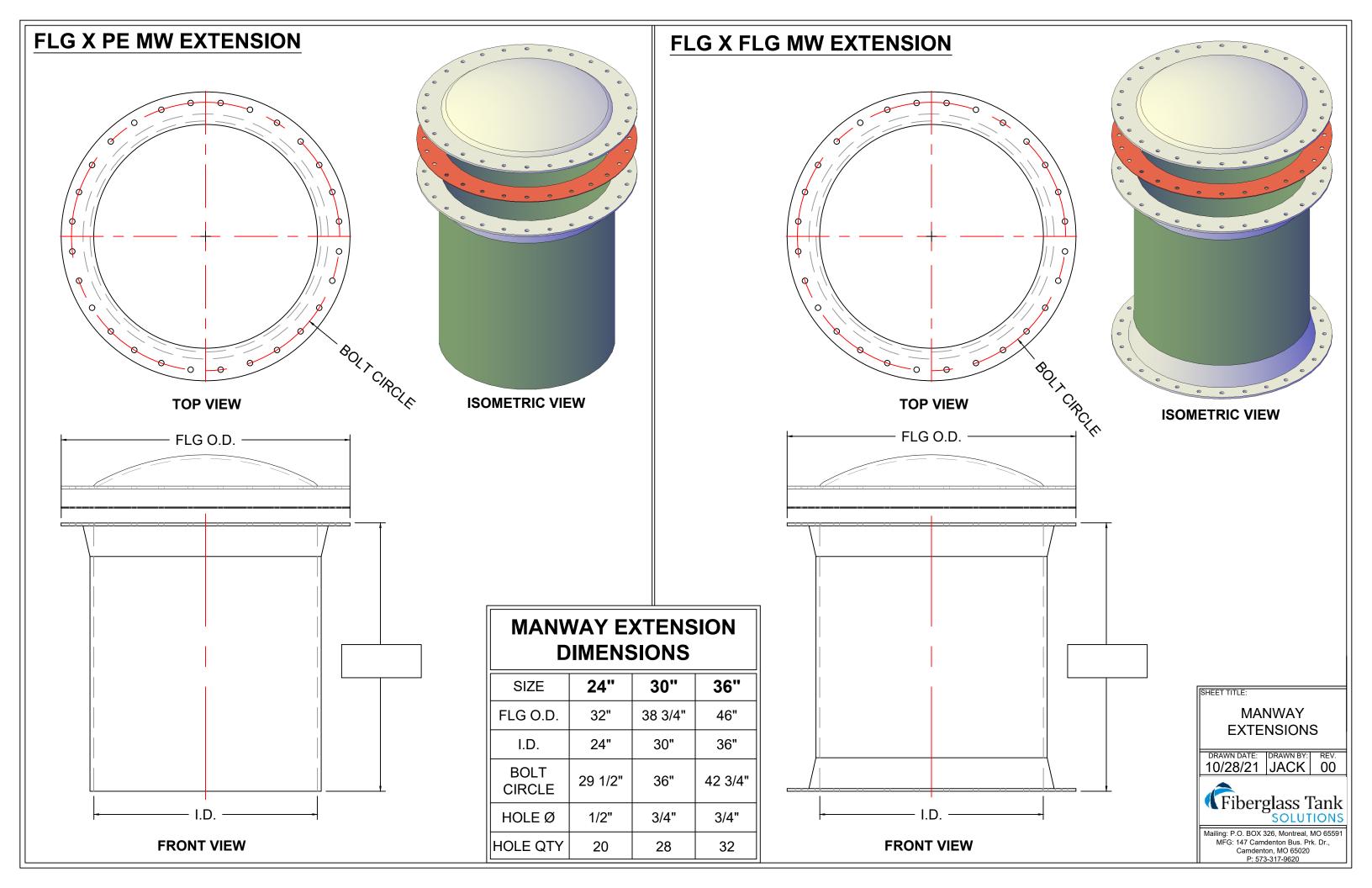
NOTES:

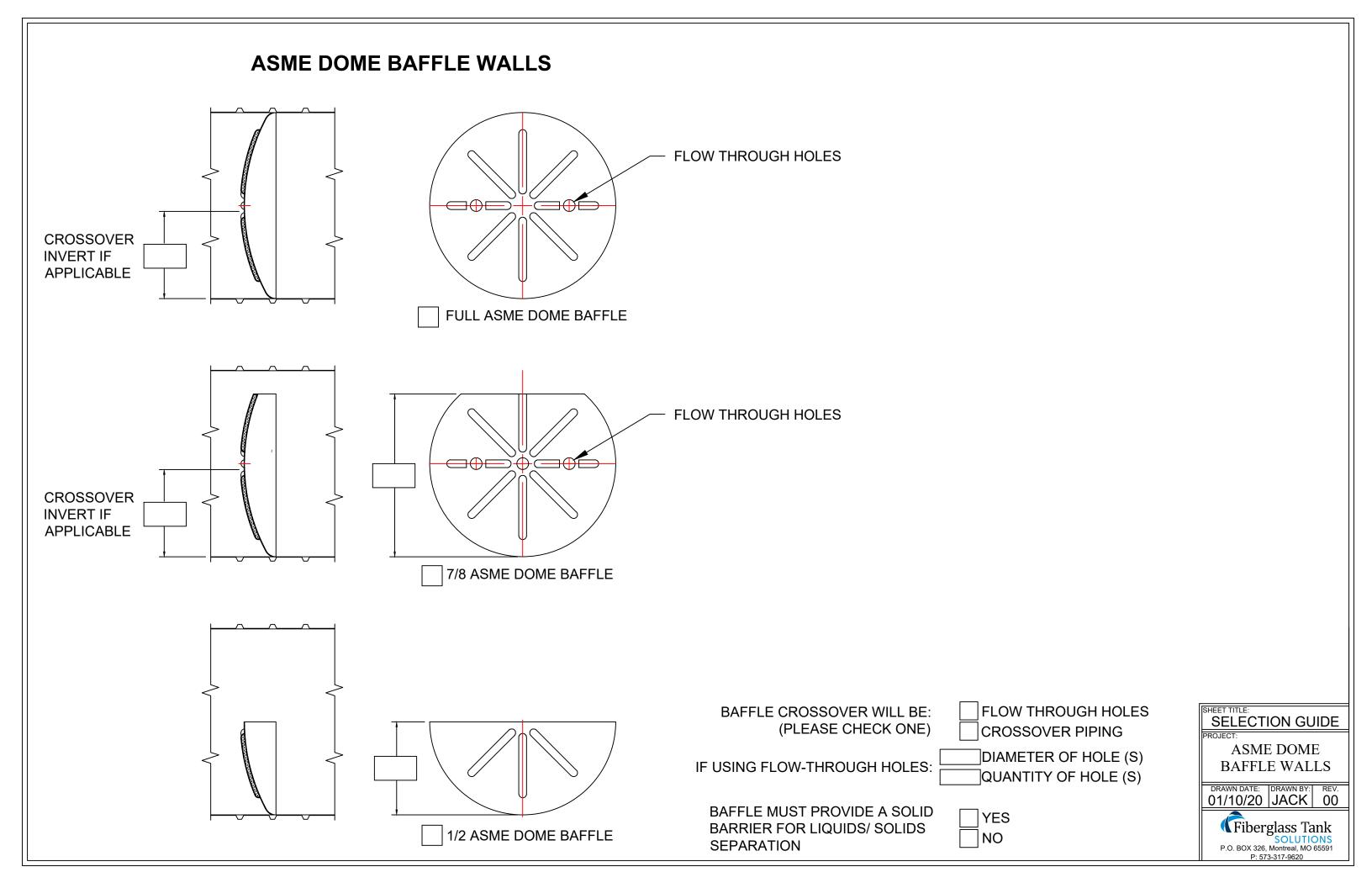
- 1. SEE UNIVERSAL VALVE TECHNICAL DATA SHEET FOR MANHOLE RING AND COVER SIZES AND MODELS.
- 2. THE STORAGE TANK AND RISER PIPES MUST BE ISOLATED FROM TRAFFIC LOADS. IF NECESSARY UTILIZE CONCRETE BACKER ROD, FORMS, OR OTHER BARRIERS TO PREVENT CONCRETE FROM TRANSFERRING LOADS TO THE TANK AND RISER PIPES.
- 3. FIBERGLASS TANK SOLUTIONS (FTS) IS NOT RESPONSIBLE FOR CONCRETE/ ASPHALT TOP SLAB DESIGN OR REBAR LAYOUT.
- 4. FOR Ø12' TANKS A MINIMUM 3'-0" OF GRANULAR BACKFILL IS REQUIRED BENEATH THE CONCRETE TOP SLAB.
- 5. UNDERGROUND STORAGE TANKS ARE DESIGNED FOR A MAXIMUM BURY DEPTH OF 7'-0", CONTACT YOUR SALES REPRESENTATIVE FOR DEEP BURY SOLUTIONS.
- 6. INSURE THERE IS ENOUGH CLEARANCE BETWEEN THE MANHOLE RING AND COVER AND THE RISER PIPE TO ALLOW THE LID TO BE CORRECTLY OPENED/ REMOVED.
- 7. WHEN INSTALLING THE TOP SLAB, ALLOW FOR ADEQUATE DRAINAGE AWAY FROM THE TANK OPENING.
- 8. SEE FTS UNDERGROUND STORAGE TANK INSTALLATION GUIDE FOR RECOMMENDED BACKFILL MATERIAL.

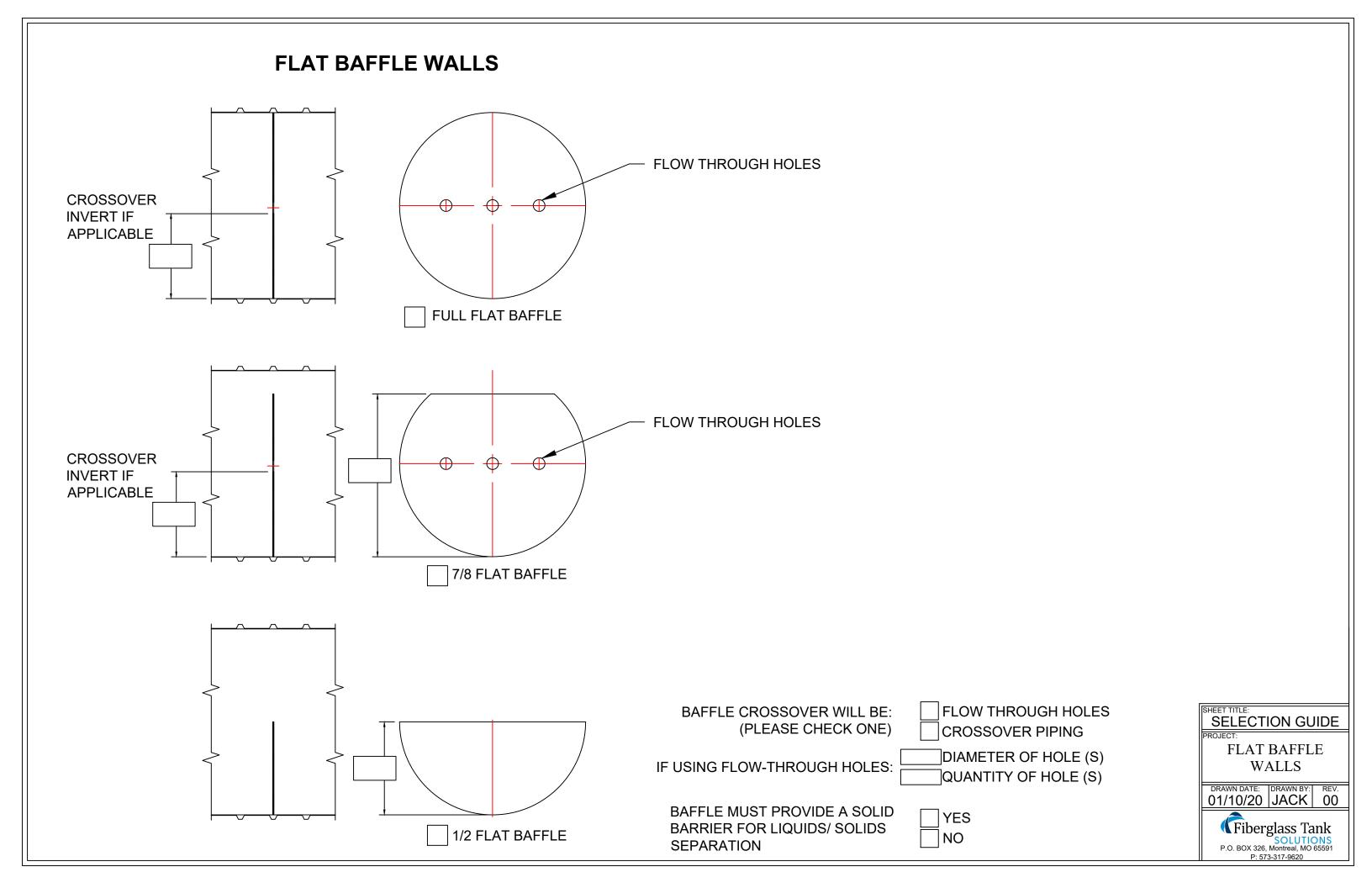


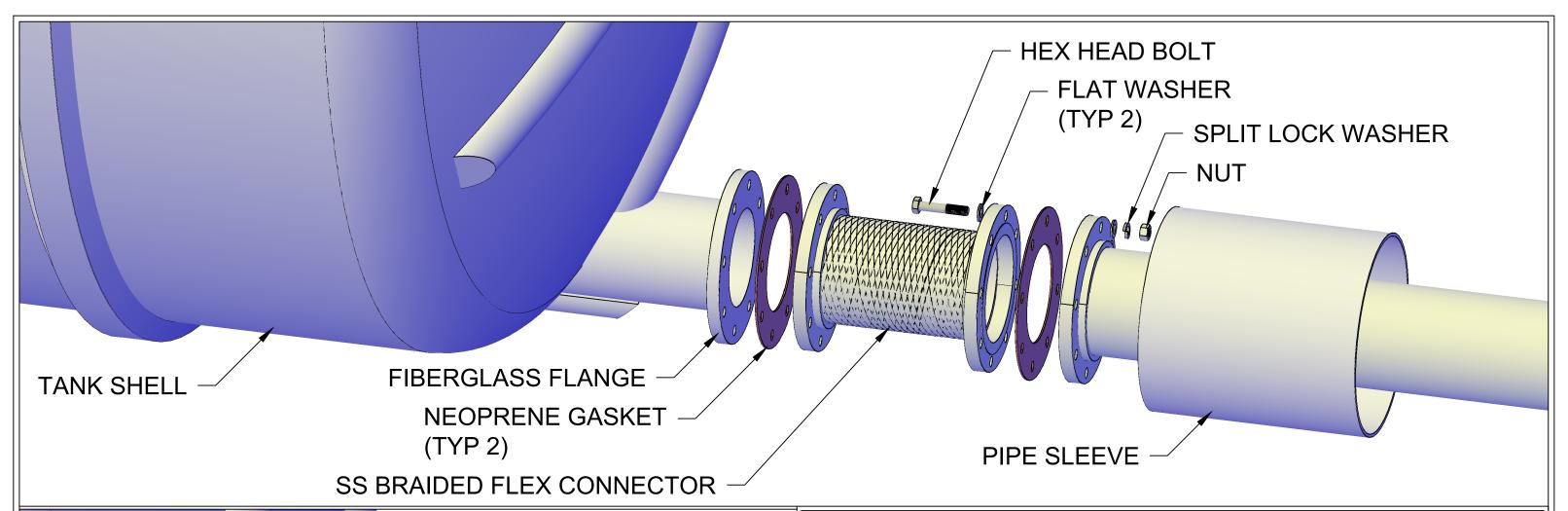


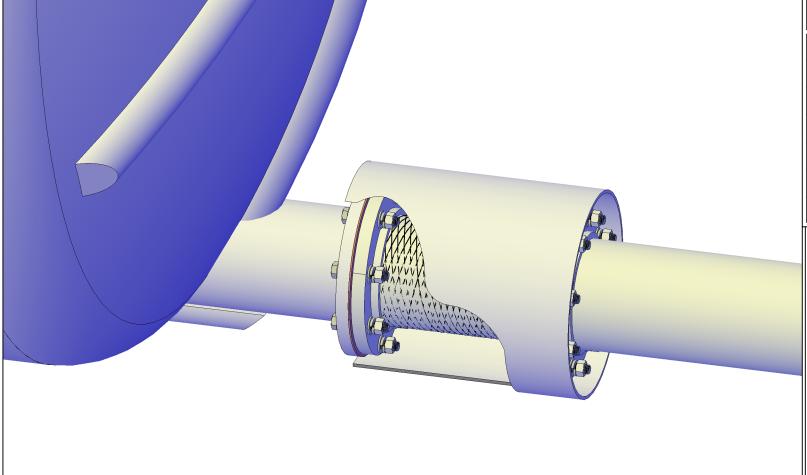












| DIMENSIONS | | | | | | | | |
|------------------|--------|------|---------|---------|---------|---------|---------|---------|
| FLANGE SIZE | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" |
| FLANGE O.D. | 6 1/2" | 8" | 9 1/2" | 11 1/2" | 14" | 16 1/2" | 19 1/2" | 21 1/2" |
| CONNECTOR LENGTH | 12" | 14" | 11 3/4" | 14 1/8" | 15 3/8" | 17 3/4" | 18 3/8" | 20" |
| BOLT DIAMETER | 5/8" | 5/8" | 5/8" | 3/4" | 3/4" | 7/8" | 7/8" | 1" |
| BOLT LENGTH | 2 1/2" | 3" | 3" | 3 1/2" | 4" | 4" | 4" | 4" |
| BOLT QUANTITY | 4 | 4 | 8 | 8 | 8 | 12 | 12 | 12 |
| SLEEVE DIAMETER | 8" | 10" | 10" | 12" | 16" | 18" | 24" | 24" |

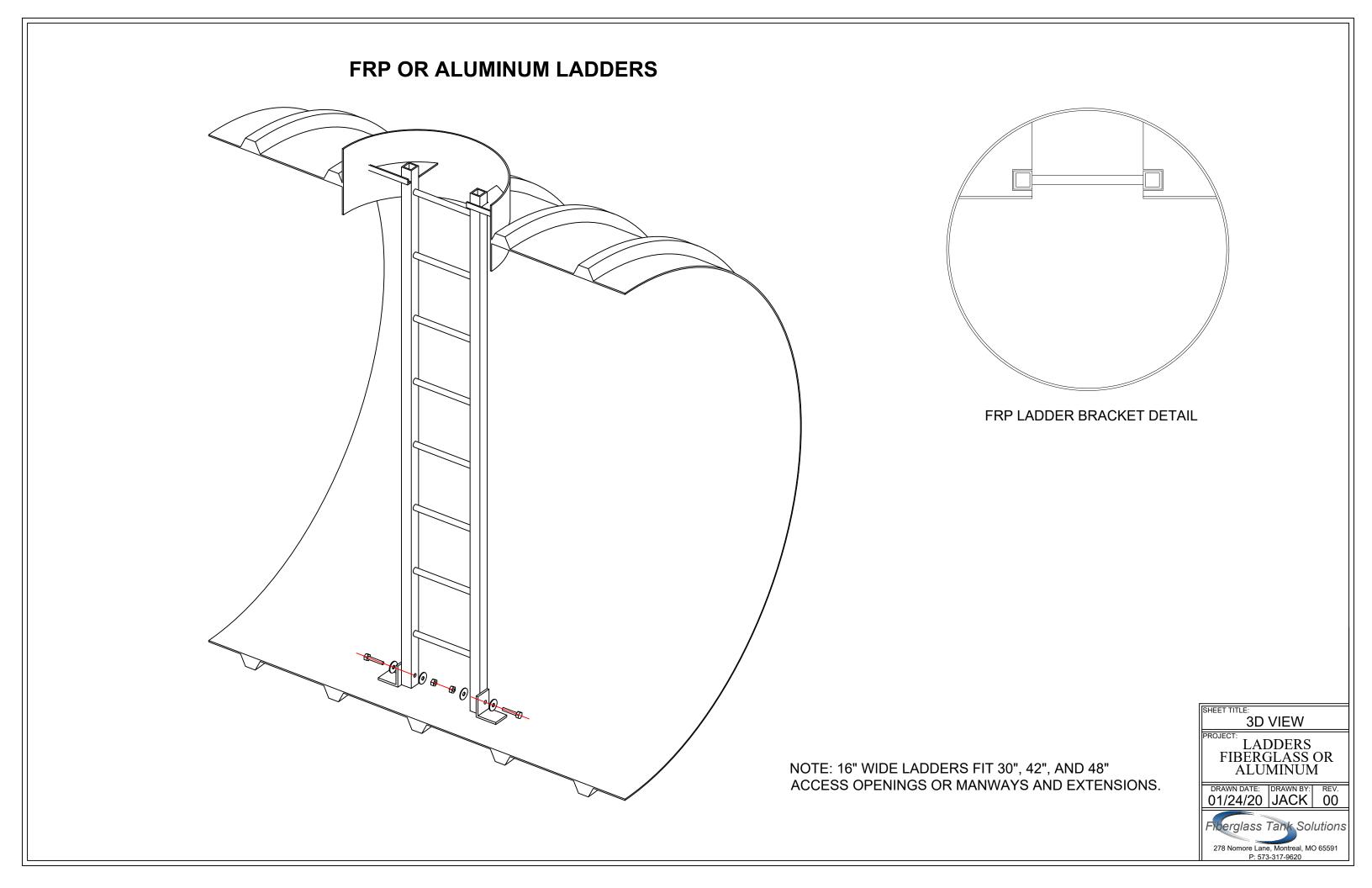
NOTES:

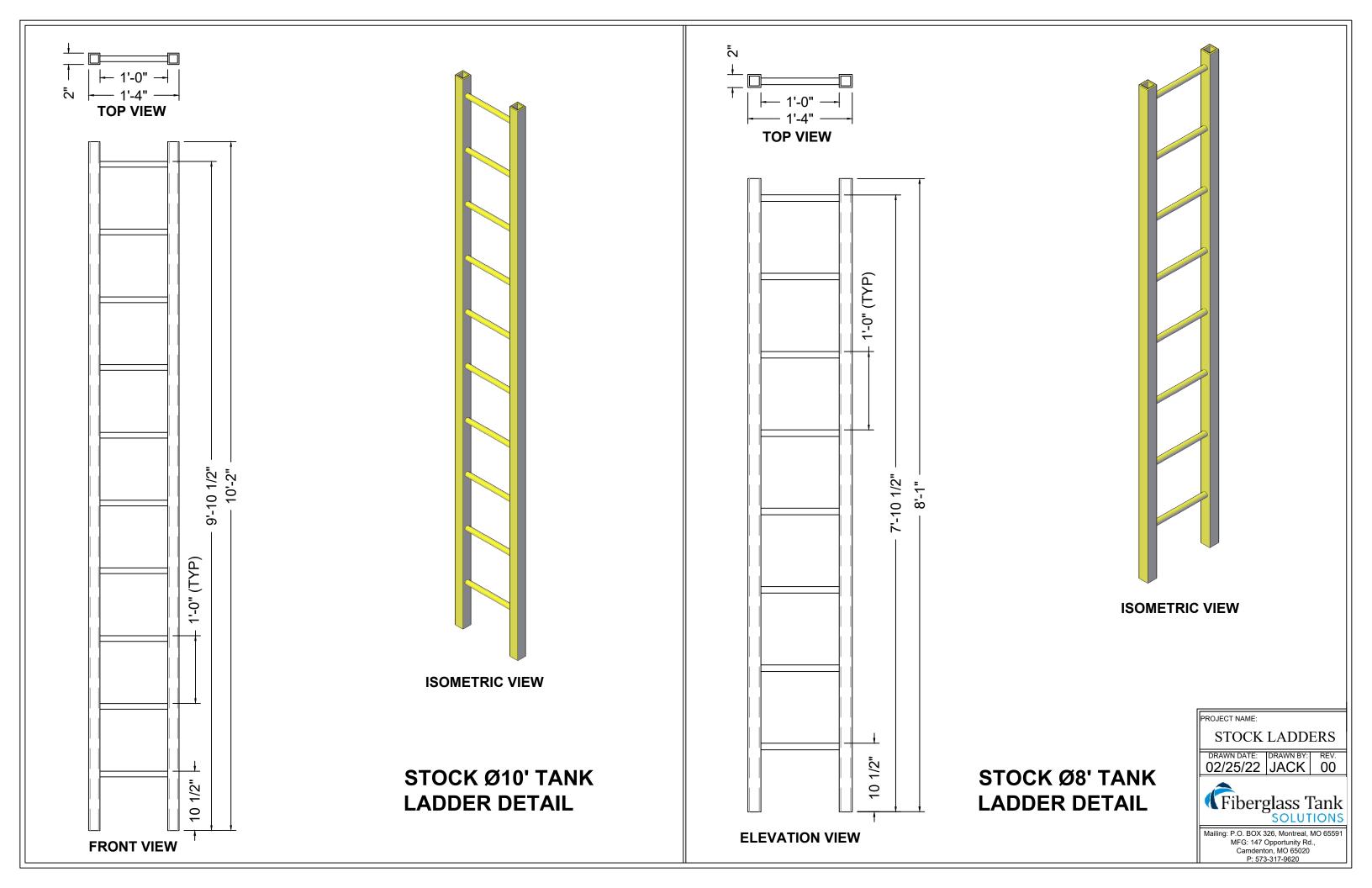
- THE PIPE SLEEVE IS MEANT TO RELIEVE PRESSURE ON THE SS BRAIDED FLEX CONNECTOR CREATED BY THE DOWNWARD FORCE OF THE BACKFILL.
- PIPE SLEEVE SHALL BE BEDDED AND BACKFILLED PER FTS IMOG.
- FIBERGLASS TANK SOLUTIONS TO SUPPLY GASKETS, HARDWARE, AND SLEEVE WITH SS BRAIDED FLEX CONNECTORS.
- PIPE SLEEVE MUST EXTEND PAST THE FLANGES.





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MFG: 147 Opportunity Rd.,
Camdenton, MO 65020
P: 573-317-9620





Installation Handbook







1. INTRODUCTION

SAFETY

The following definitions will serve as a guide when reading this manual:



WARNING

Indicates a potentially hazardous situation, which if not avoided could result in death or serious injury.



A CAUTION

Indicates a potentially hazardous situation, which if not avoided may result in minor or moderate injury.

CAUTION

A caution without the safety alert symbol indicates a potentially hazardous situation, which if not avoided may result in property damage.

- It is the responsibility of the owner, installer and operator to follow all requirements contained in these instructions and to comply with all federal, state, and local safety regulations that may apply to underground horizontal storage tank installation and operations.
- No instructions or procedures presented in this document should be interpreted so as to put as risk any person's health or safety, or to harm any property of the environment.

WARNING

Follow OSHA regulations for excavations. Collapse of excavation walls could result in death or serious injury.

- Working in and around excavations is dangerous. The Occupational Safety and Health Administration (OSHA) have specific requirements that must be followed. Prior to beginning work at the site, the installer should obtain a copy of OSHA's Standard, Part 1926 (Construction), Subpart P -Excavations. A copy of this standard is available free of charge at OSHA's Web site (www.osha.gov).
- Careless activity or reckless operation of equipment can cause death, serious injury or property damage.
- It is important to follow the procedures and instructions in this document in order to safely and properly install an FTS underground horizontal storage tank. Failure to follow these instructions will void FTS' obligations under the limited warranty and may cause product failure, serious personal injury or property damage. A copy of the relevant FTS limited warranty is found in the printed material that accompanies each tank, and on the FTS website (www.fgtsolutions.com).
- The FTS limited warranty applies only to a underground horizontal storage tank installed according to these instructions. Since FTS does not control the parameters of any installation, FTS sole responsibility in any installation is that presented in the limited warranty.
- Comply with all applicable federal, state and local construction, health, safety and environmental codes, and industry standard practices.
- For additional information, contact your state, county and city authorities having jurisdiction, including health, fire or building departments, and environmental agencies. All work must be performed according to standard industry practices and OSHA regulations.
- Federal, state and local codes and regulations always take precedence over an FTS requirement.
- FTS must authorize in writing and prior to underground horizontal storage tank installation any variation to, or deviation from, these instructions.

1

2. PREPARATION FOR INSTALLATION

- Although FTS Underground Horizontal Storage Tanks (UGT) are rugged, the UGT owner and/or the UGT owner's representative must take care so that the UGT is not dropped or damaged during delivery, unloading and handling on the jobsite.
- Before unloading the underground horizontal storage tank from the truck, the underground horizontal storage tank owner and/or the underground horizontal storage tank owner's representative must make sure that all tools or other items that may damage the underground horizontal storage tank during unloading are removed from the trailer bed.
- When unloading the underground horizontal storage tank from the truck, the underground horizontal storage tank owner and/or the underground horizontal storage tank owner's representative must make sure that the underground horizontal storage tank is secured in such a way that it does not roll off the truck.

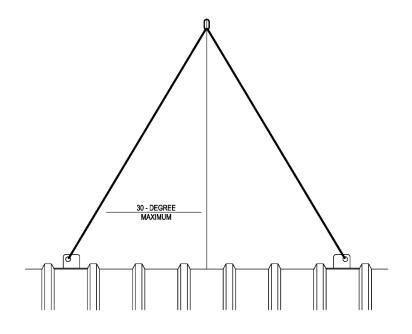
WARNING

Do not allow driver to release straps securing the underground horizontal storage tank to the truck until lifting equipment (such as a crane) is secured to the UGT lifting lug(s). Failure to do so could result in death or serious injury.

WARNING

- Always chock the underground horizontal storage tank. The underground horizontal storage tank is heavy
 and has a large surface area. The underground horizontal storage tank will roll on sloped surfaces and could
 be blown about by the wind. Movement of the underground horizontal storage tank could result in death
 or serious injury.
- Before the underground horizontal storage tank is unloaded or relocated on the jobsite, the underground horizontal storage tank owner and/or the underground horizontal storage tank owner's representative must complete the following steps:
 - Visually inspect the entire exterior surface of the underground horizontal storage tank to make sure that no shipping or handling damage has occurred. Look particularly for holes, cracks or deep scrapes. If damage is detected, do not attempt repairs. Contact FTS immediately.
 - Sign the shipping papers accepting the underground horizontal storage tank as delivered.
 - Be sure that all equipment used to lift the underground horizontal storage tank is rated to handle the load.
 - Select a solid, level area to place the underground horizontal storage tank, and clear that area of all rocks, trash and debris.
- When hoisting the underground horizontal storage tank follow these instructions: (See figures 2-1 2-2)
 - o To unload these UGT, use the lifting lugs that are situated on top of the underground horizontal storage tank in its rotated position. To install the underground horizontal storage tank, carefully rotate the underground horizontal storage tank to its upright position and then use all lifting lugs situated on top of the underground horizontal storage tank in its upright position. (See FIGURES 2-1 − 2.2)
 - o Do not wrap chain or cable around the underground horizontal storage tank.
 - Use guide ropes to guide the underground horizontal storage tank when needed.
 - o Do not roll the underground horizontal storage tank to move it.
- Whenever a underground horizontal storage tank is temporarily placed aboveground at the site, chock it in place to prevent rolling. Tie the underground horizontal storage tank down if high winds are expected. (See Figure 2-3)
- Whenever a underground horizontal storage tank is temporarily placed above the ground in a situation in which there could be freezing temperatures, always take extra care so that water does not accumulate in a way that could result in damage to the underground horizontal storage tank or any internal components.

- Excavate a hole large enough to accommodate basin, underground piping, backfill material, and adequate working space.
- When using multiple lifting lugs, the angle of the lifting sling should never exceed 30 degrees. When a situation arises that the angles will be greater than 30-degree, utilize a spreader bar to achieve an acceptable angle degree see FIGURE 2-4 & .



Top of tank in rotated position

Lifting lugs to be used when tank is in upright position

Top of tank in upright position

Lifting lugs to be used when tank is in rotated position

Lifting lugs to be used when tank is in upright position

STEP 1 FIGURE 2-1

STEP 2 FIGURE 2-2

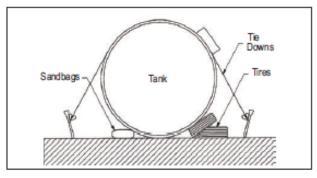


FIGURE 2-3

Step 3

Figure 2-3

3. Backfill Material

- FTS underground horizontal storage tank must be installed using pea gravel, crushed stone or select backfill as the backfill material.(See FIGURE 3-1.)
- When using rounded stone, the material is to be a mix of rounded particles, sizes between 1/8 inch and 3/4 inch. The rounded stone must conform to the specification of ASTM C-33, paragraph 9.1, sizes 6, 67 or 7.
- When using crushed stone, the material is to be mix of angular particles, sizes between 1/8 inch and 1/2 inch. The crushed stone must conform to the specifications of ASTM C-33, paragraph 9.1, sizes 7 or 8.
- If material which meets these specifications is not available, contact FTS at 573-317-9620.

TABLE 1 – Standard size of coarse aggregate meeting FTS' rounded gravel Specifications.

| Amount of material passing through each laboratory sieve given as percentage of total weight. | | | | | | | |
|---|----|-------------------|-------------------|-------------------|--------------------|--------------------------------|--------------------------------|
| | 6 | 100% | 90-100% | 20-55% | 0-15% | 0-5% | - |
| Grade Number | 67 | 100% | 90-100% | - | 20-55% | 0-10% | 0-5% |
| | 7 | - | 100% | 90-100% | 40-70% | 0-15% | 0-5% |
| Sieve Size | | | | | | | 10 |
| | | 1 inch 25.0 mm | ¾ inch 19.0 mm | ½ inch 12.5 mm | 3/8 inch 9.5 mm | 0.187 inch 4.75 mm No. 4 | 0.094 inch 2.36 mm No. 8 |

Note: Standard sizes of coarse aggregate per ASTMD-448, ASTM C-33 and AASHTO M 43.

TABLE 2 – Standard sizes of coarse aggregate meeting FTS' crushed stone specifications.

| Amount of material passing through each laboratory sieve given as percentage of total weight. | | | | | | | |
|---|---|-------------------|-------------------|-------------------|--------------------|--------------------------------|--------------------------------|
| | 7 | - | 100% | 90-100% | 40-70% | 0-15% | 0-5% |
| Grade Number | 8 | - | - | 100% | 85-100% | 10-30% | 0-10% |
| Sieve Size | | | | S | | | # |
| | | 1 inch 25.0 mm | ¾ inch 19.0 mm | ½ inch 12.5 mm | 3/8 inch 9.5 mm | 0.187 inch 4.75 mm No. 4 | 0.094 inch 2.36 mm No. 8 |

Note: Standard sizes of coarse aggregate per ASTM D-448, ASTM C-33 AND AASHTO M 43.

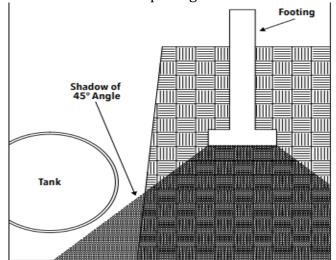
4. INSTALLATION

GENERAL EXCAVATION PARAMETERS

WARNING

Follow OSHA regulations for tank excavations. Collapse of excavation walls could result in death or serious injury.

- The installing contractor must take all precautions necessary to protect employees working in or near a tank excavation. These precautions should include but are not limited to the following.
- Locate and protect any utility installations near the excavation before opening the excavation.
- Secure the walls of the excavation.
- Protect employees from hazards associated with water accumulation in the excavation.
- Erect barricades, etc. to prevent unauthorized vehicle or pedestrian traffic
- Inspect a minimum of once a day, the excavation and surrounding area.
- For additional information on excavation, trenching and shoring safety practice, consult OSHA's Standard, Part 1926, Subpart P (Excavations), 650-652; and "Fall Protection Rules and Regulations."



EXCAVATION AND TANK LOCATION

NOTICE

Improper placement of the excavation may result in damage to the tank and/or property damage.

- FTS recommends that the tank owner seek the advice of a local foundation professional engineer to determine the proper placement of a tank excavation near any existing structure(s).
- The tank owner and/or the owner's technical representative is responsible for determining the proper placement of a tank excavation.
- In general terms, the size of the excavation is determined by:
- The number of tanks to be installed
- The size of the tanks to be installed
- The location of a tank can be affected by the location of nearby structures. When selecting a tank site, care must be taken to avoid undermining the foundations of existing structures or new buildings to be constructed. See FIGURE 4-1.
- Ensure that downward forces from loads carried by the foundations and supports of nearby structures (constructed before or after tank installation) are not transmitted to the tanks.
- Typically, the way to check the placement of the tank in relationship to a nearby structure is to do the following:
- **Step 1** Determine the depth of burial needed for the tank.
- **Step 2** Locate the footing of the structure to be considered.
- **Step 3** Determine the line that would fall into the ground from a 45-degree angle drawn downward from the corner(s) of the footing of the foundation that is closest to the tank.
- **Step 4** The tank must not fall within the "shadow" of the 45-degree-angle line drawn from the foundation's footing. See FIGURE 4-1.

- **Step 5** If the tank would fall within this "shadow," do one of the following to ensure that the tank does not fall within the "shadow":
- Move the tank away from the existing building.
- Move the foundation of the building to be constructed away from the tank.
- Deepen the footing of the planned building's foundation.

DRY-HOLE INSTALLATION

- **Step 1** Prepare a smooth, level bed, 6 inches thick, of approved backfill material, or a concrete pad designed by a project engineer.
- **Step 2** Place the underground horizontal storage tank onto the bed or concrete pad.
- **Step 3** Test base compaction to 85% density proctor and documented.

WET-HOLE INSTALLATION

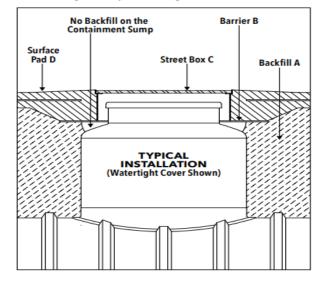
- **Step 1** Before performing Step 1 of the dry-hole installation, pump the water from the hole and continue pumping to maintain minimum water level during underground horizontal storage tank installation.
- **Step 2** Test base compaction to 85% density proctor and documented.
- Step 3 During Step 2 of the dry-hole installation, when setting the underground horizontal storage tank, partially ballast the underground horizontal storage tank until it settles firmly on the prepared bed. The ballast level in the underground horizontal storage tank must never exceed the water level in the hole by more than 1 foot until the backfill reaches the top of the underground horizontal storage tank.

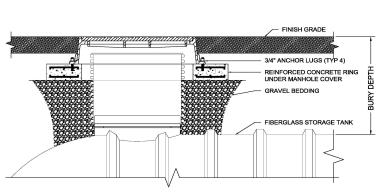
DRY-HOLE AND WET-HOLE INSTALLATION

- From the edge of the hole, bring the backfill up in the excavation. Approved backfill material must be used at least 12 inches around the entire periphery of the underground horizontal storage tank.
- FTS recommends the use of a geotextile fabric to help separate the select backfill from the in-situ soil
- For further information concerning geotextile specifications and installation procedures, consult the geotextile supplier's installation guidelines or instructions.
- Polyethylene film is not considered an effective geotextile material. It may tear or degrade while in service.
- The minimum amount of back fill around the periphery of the well is normally determined by the presence or absence of traffic at the site. (See Figure 4.3 and 4.4)

Top Slab Construction Method

The underground horizontal storage tank fiberglass top is designed to support the dead weight, including 6" of granular bedding and 6" of a wet concrete. All load-bearing weight of the concrete pad and the traffic load exerted to the pad must be distributed to the outside perimeter of the underground horizontal storage tank. The concrete pad and outside support perimeter shall be designed by the Engineer of Record.

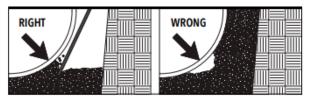




NOTICE

Overdeflection of the tank could result in damage to the tank.

- A. Install bottom fittings and bottom piping on water/wastewater tanks at this time.
- B. Place approximately 12 inches of primary backfill around bottom of the tanks between the ribs (if present and under the end domes.
- C. Use a nonmetal tamping rod long enough to reach beneath the tank to push material under the tank body and domes until solid resistance is felt. All voids must be filled and the tank must be fully supported.



NOTICE

Do not use metal probes. Failure to follow this notice could result in damage to the tank.

NOTICE

Do not strike the tank with the tamping rod. Failure to heed this notice could result in damage to the tank.

Table I-2 Depth of Cover Minimum Requirements for Tanks Other Than Fuel No Traffic Options (All Installations) 12" [30 cm] backfill Traffic Options (All installations) 36" [91 cm] backfill 18" [46 cm] backfill + 6" [15 cm] reinforced concrete 18" [46 cm] backfill + 8" [20 cm] asphalt

5. PIPING & CONNECTION

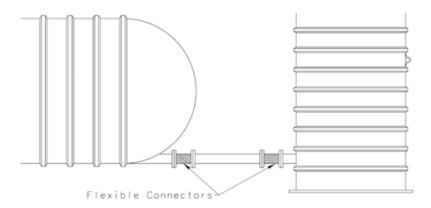
All piping must conform to all applicable codes and standards.

CAUTION

All underground tanks shall be adequately vented to prevent the development of vacuum or pressure when filling or emptying the tank. Failure to properly vent a tank or compartment could cause tank failure and result in death or serious injury and will void manufacturer's warranty

CAUTION

All connections to the underground horizontal storage tank must be flexible. Provisions must be made to accommodate movement and misalignment between the piping and the underground horizontal storage tank. Failure to do this may damage the underground horizontal storage tank and/or surrounding property and void manufacturer's warranty.



6. OPTIONAL HYDROSTATIC TEST

- Seal off influent and effluent piping with watertight caps or plugs.
- Fill the underground horizontal storage tank with water at test level openings after the hole is backfilled to top of the underground horizontal storage tank.
- Let the water stand in the underground horizontal storage tank for a minimum of 1 hour (or longer if required by applicable local codes).
- If the water level drops, check to see that plugs or caps sealing off piping are tight and then add more water to fill air voids back to the standard testing level.
- If water level does not stabilize, there may be a leak in the system. If damage is detected, do not attempt repairs. Contact the FTS by email at kevin@fgtsolutions.com, by Phone 573-317-9620

7. OPERATING GUIDELINES

- Owner must retain the underground horizontal storage tank Installation Manual and Operating Guidelines for future reference to operating guidelines.
- In addition to the underground horizontal storage tank Installation Manual and Operating Guidelines, follow all federal, state and local laws, regulations, codes and safety precautions that pertain to underground storage UGT and/or their associated systems.
- Consult the applicable limited warranty for each underground horizontal storage tank for further operating guidelines and limitations.
- An FTS underground horizontal storage tank is designed to store materials identified in the manufacturer's applicable limited warranty.

CAUTION

Storing materials other than those identified in the manufacturer's applicable limited warranty will void FTS' obligation under the warranty and may cause underground horizontal storage tank failure or property damage.

CAUTION

- Maximum temperature for wastewater products is 150 F.
- The minimum temperature for chemicals is 100 F.

WARNING

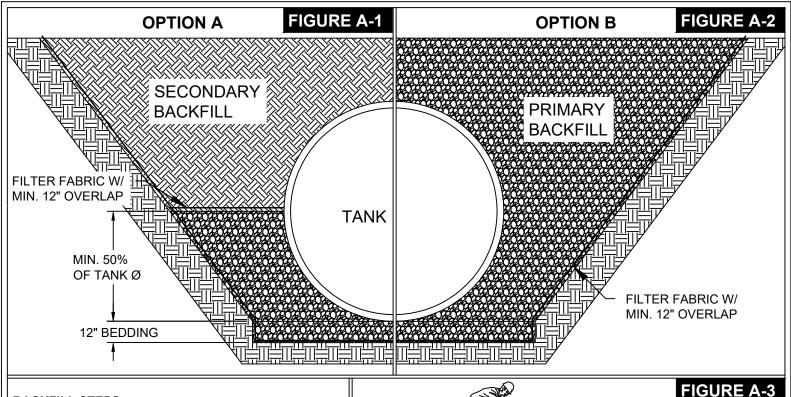
Do not allow anyone to enter the underground horizontal storage tank unless it has been properly emptied and vented, and unless the person entering the underground horizontal storage tank has been trained in confined-space entry procedures and applicable OSHA regulations.

Storing a material in a underground horizontal storage tank in excess of the allowable temperature may damage the underground horizontal storage tank. Failure to follow this caution may damage the underground horizontal storage tank and/or surrounding property and void manufacturer's warranty.

Improper underground horizontal storage tank entry could cause fire, explosion or asphyxiation and could result in death or serious injury.

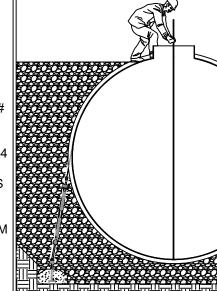
8. RETAINING INSTALLATION MANUAL AND OPERATING GUIDELINES

After installation, underground horizontal storage tank owner must retain the underground horizontal storage tank Installation Manual and Operating Guidelines for future reference to operating guidelines.



BACKFILL STEPS

- LINE EXCAVATION HOLE WITH GEOTEXTILE/ FILTER FABRIC TO STABALIZE NATIVE SOIL. FABRIC SECTIONS MUST HAVE 12" MIN. OVERLAP.
- INSTALL 12" OF TANK BEDDING. (SEE FIGURE #-# 2. FOR APPROVED BACKFILL MATERIAL)
- 3. SET TANK ONTO THE 12" OF BEDDING.
- BACKFILL IN 6"-12" LIFTS. REFER TO FIGURES A-4 & A-5 FOR APPROVED METHODS.
- BACKFILL TO THE TOP OF TANK USING OPTIONS A OR B. (FIGURES A-1 & A-2) IF OPTION A-1 IS USED A LAYER OF FILTER FABRIC IS REQUIRED TO SEPARATE THE SECONDARY BACKFILL FROM THE PRIMARY BACKFILL. SEE FIGURE #-# FOR APPROVED SECONDARY BACKFILL.



TANK DIAMETER MUST BE MEASURED FOR DEFLECTION:

- 1. BEFORE INSTALLATION
- 2. AFTER ANCHOR STRAPS ARE SECURED.
- 3. DURING THE BACKFILL PROCESS
- 4. ONCE BACKFILL IS UP TO SUBGRADE

| TANK DIA. | ALLOWABLE DEFLECTION |
|-----------|----------------------|
| 4 Ft | 1/2" [1.3 CM] |
| 5 Ft | 1/2" [1.3 CM] |
| 6 Ft | 3/4" [1.9 CM] |
| 8 Ft | 1 1/8" [2.9 CM] |
| 10 Ft | 1 1/2" [3.8 CM] |
| 12 Ft | 1 3/4" [4.5 CM] |
| 12 Ft | 1 3/4 [4.5 CM] |

DEFLECTION = DIAMETER MEASUREMENT - MEASUREMENT #1

(WITH OR WITHOUT STAND PIPE)

DO NOT STRIKE THE TANK WITH THE TAMPING ROD.

DO NOT USE A METAL TAMPING ROD.

TAMPING ROD

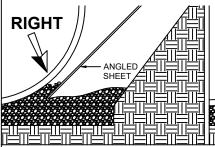
NOTICE

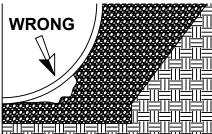
MEASUREMENTS CAN BE TAKEN WITH A TAPE MEASURE OR A DIPSTICK

IGURE A-5

FIGURE A-4

- PREVENT ANY VOIDS UNDERNEATH TANK BY WORKING THE BACKFILL UNDER THE TANK, DOME ENDS, AND BETWEEN RIBS TO INSURE THE TANK IS FULLY SUPPORTED.
- ANGLED SHEETING/ HAND SHOVELS ARE RECOMMENDED FOR CRUSHED STONE.
- TAMPING RODS ARE RECOMMENDED FOR FREE FLOWING GRAVEL AND COARSE SAND.





DRAWN DATE: 07/08/20 DRAWN BY: **JACK**

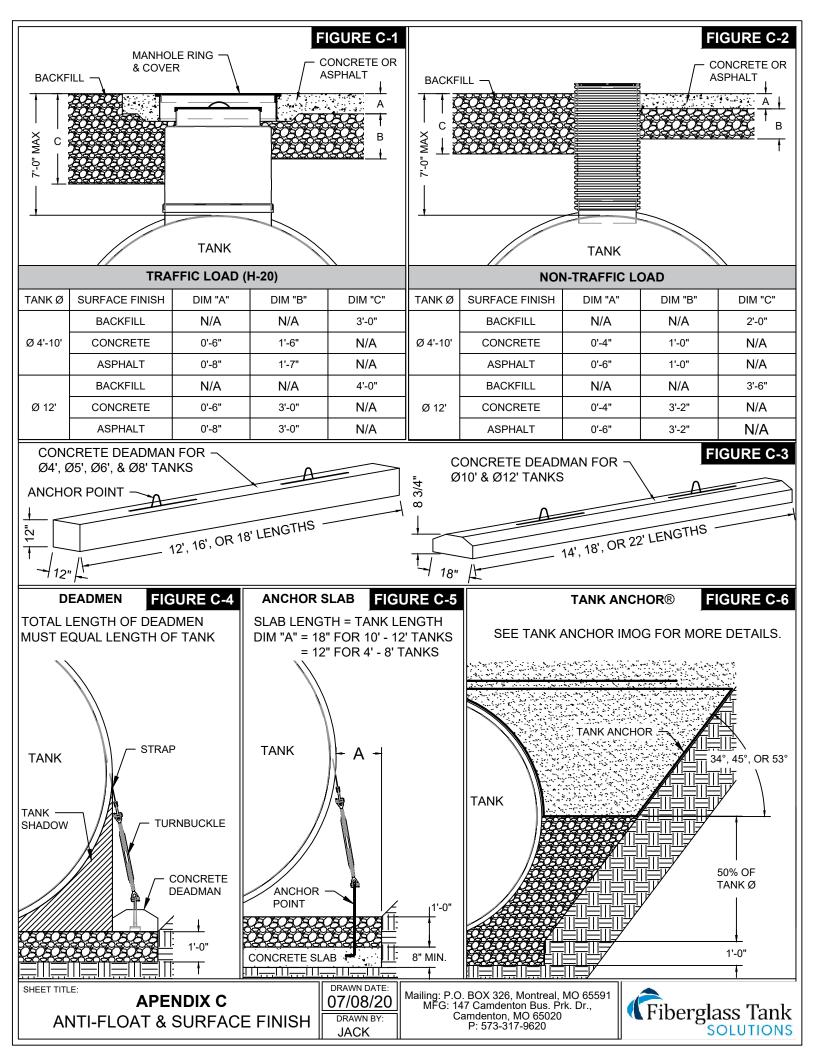
Mailing: P.O. BOX 326, Montreal, MO 65591 MFG: 147 Camdenton Bus. Prk. Dr., Camdenton, MO 65020 P: 573-317-9620

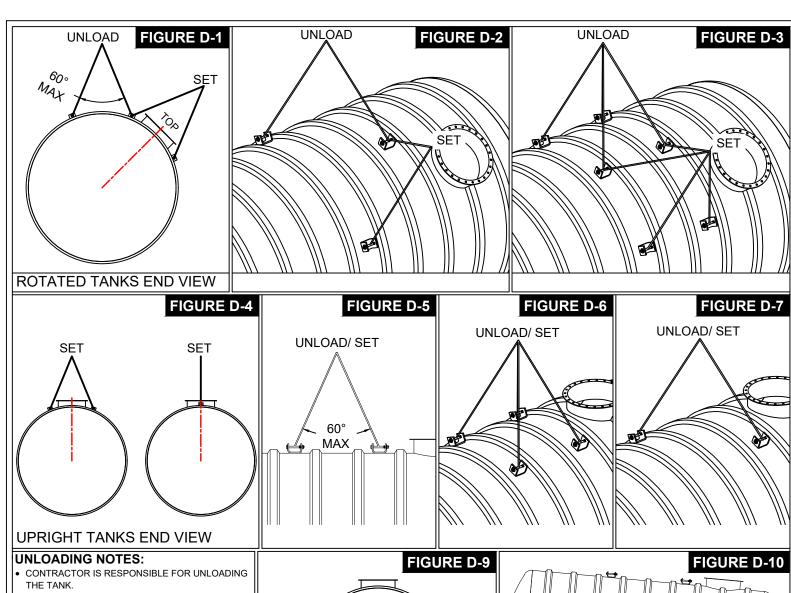


TANK



SHEET TITLE: APENDIX A **BACKFILL METHOD**





CORRECT

SPREADER BAR

GUIDE LUG

- DO NOT UN-STRAP THE TANK FROM THE TRUCK UNTIL LIFTING EQUIPMENT IS FULL SECURED TO THE TANK
- USE GUIDE LUGS TO POSITION THE TANK.
- NEVER USE THE GUIDE LUGS TO LIFT THE TANK.
- DO NOT USE STEEL CABLE OR CHAINS TO LIFT OR SECURE THE TANK.
- STAND CLEAR OF THE TANK WHEN LIFTING AND NEVER STAND UNDER THE TANK.
- THE ANGLE BETWEEN THE LIFTING STRAPS/ SLINGS MUST NEVER EXCEED 60°. IF NECESSARY A SPREADER BAR SHOULD BE USED.
- NEVER LIFT A TANK WITH LIQUID INSIDE.
- NEVER ROLL, DRAG, OR DROP A TANK.
- TANK MUST BE SET ON A FLAT SURFACE WITH NO OBSTRUCTIONS BENEATH THE TANK.

TANK STORAGE NOTES:

- ALWAYS CHOCK THE TANK WITH SAND BAGS OR TIRES TO PREVENT MOVEMENT.
- IF HIGH WINDS ARE AN ISSUE TANK SHOULD BE TIFD DOWN
- COVER ANY OPENINGS ON THE TANK TO PREVENT WATER FROM ENTERING THE TANK.



SHEET TITLE:

WARNING



FAILURE TO FOLLOW THESE NOTES CAN RESULT IN DEATH, SERIOUS INJURY, OR

DAMAGE TO THE TANK.

DRAWN DATE: 07/08/20

Mailing: P.O. BOX 326, Montreal, MO 65591 MFG: 147 Camdenton Bus. Prk. Dr., Camdenton, MO 65020 P: 573-317-9620

WRONG

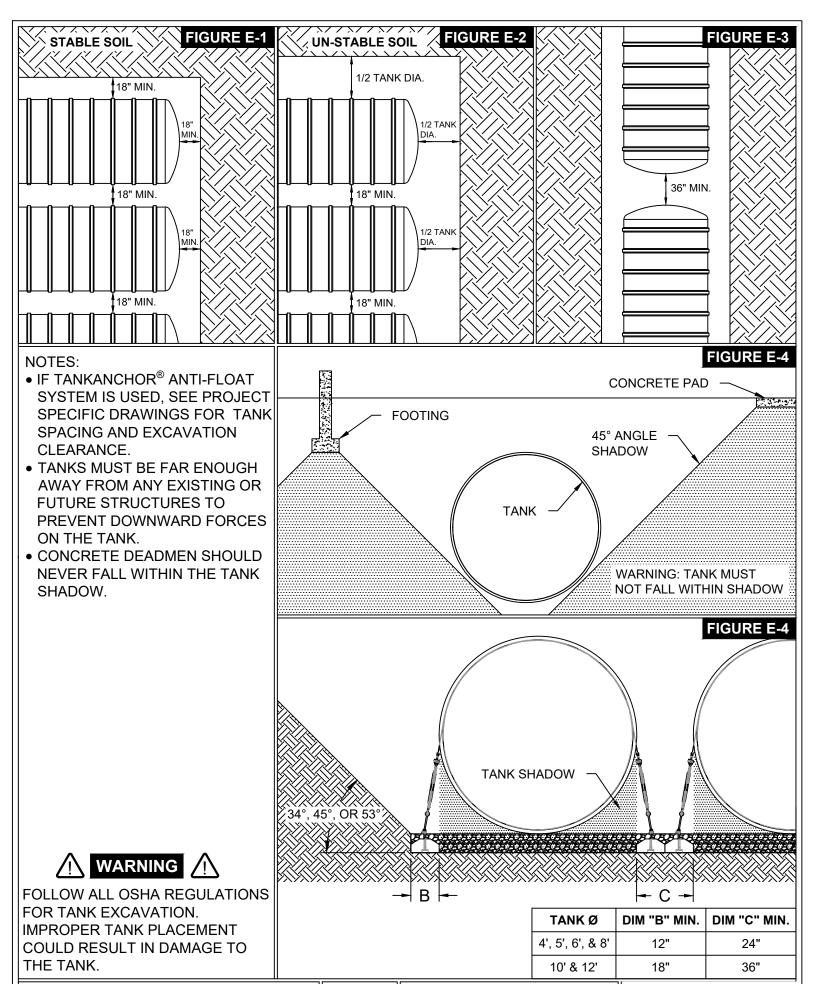


LIFTING LUG

FIGURE D-11

APENDIX D HANDLING & STORAGE DRAWN BY:

JACK



SHEET TITLE:

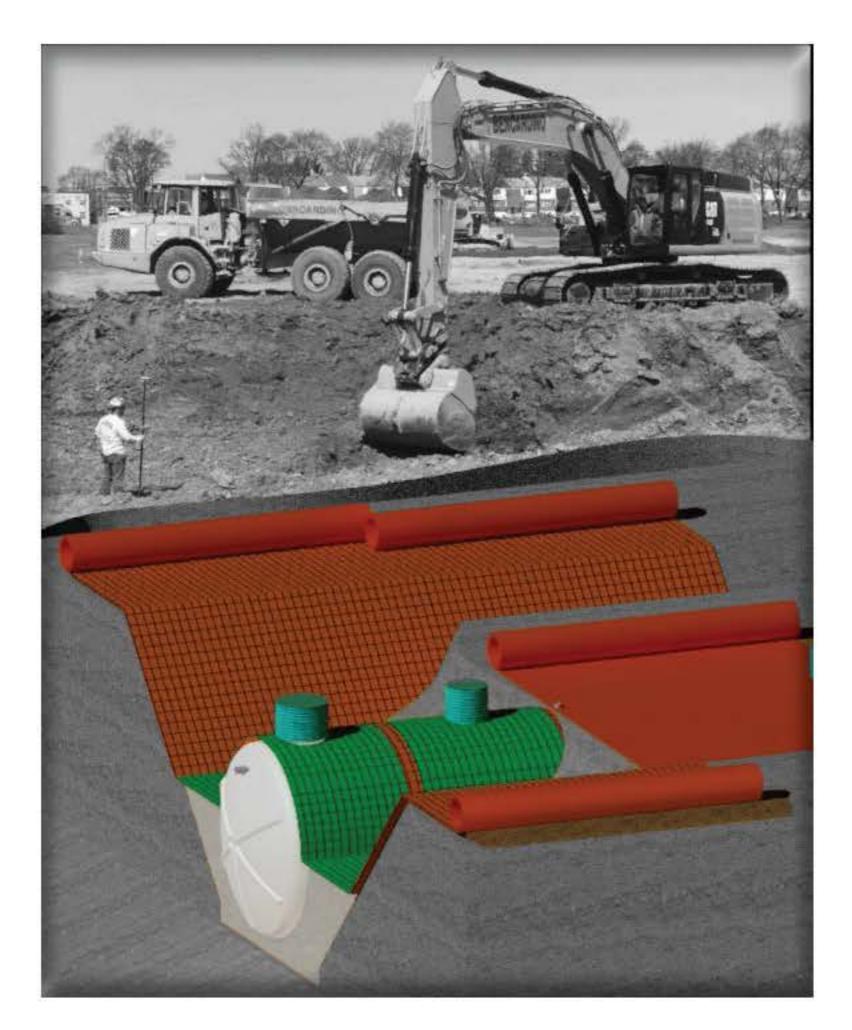
APENDIX E
EXCAVATION & TANK LOCATION

DRAWN DATE: 07/08/20
DRAWN BY: JACK

Mailing: P.O. BOX 326, Montreal, MO 65591 MFG: 147 Camdenton Bus. Prk. Dr., Camdenton, MO 65020 P: 573-317-9620







TankAnchorTM Installation Guide

Mailing: P.O. BOX 326

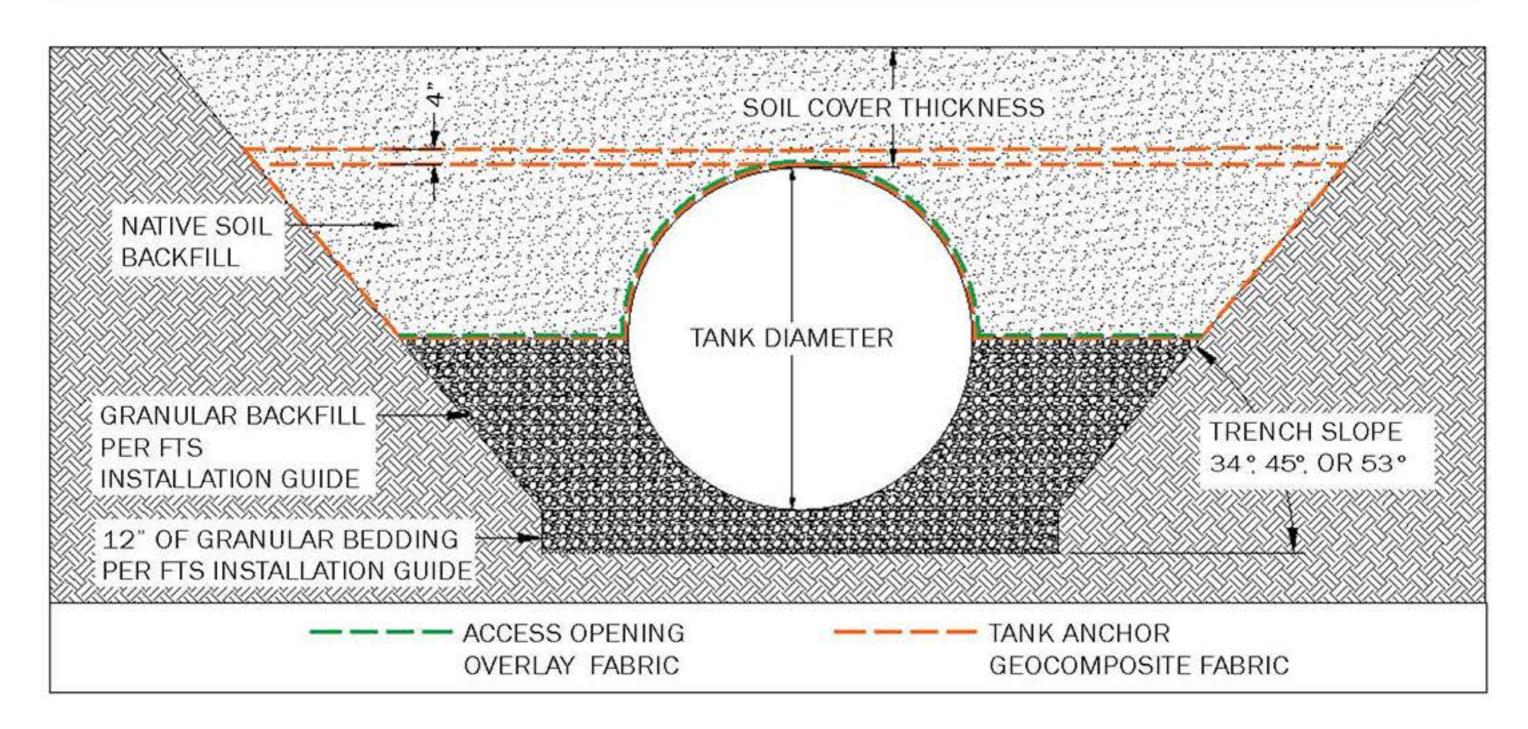
Montreal, MO 65591 MFG: 147 Opportunity Rd. Camdenton, MO 65020

573-317-9620 www.fgtsolutions.com

Notes and Safety

- This TankAnchor[™] Installation Guide is a general scope of instructions to install TankAnchor[™]. Prior to any tank installation, review and understand the *Fiberglass Tank Solutions UST Installation Guide* for all tank install steps, procedures, and details.
- Read and understand entire document prior to start of work.
- Contact Fiberglass Tank Systems with any questions prior to start of work.
- 4. Follow all safety standards.
- 5. Tools needed:
 - Shovel
 - Tape measure
 - Sawzall
 - Razor knife
 - Tin snips
- Install temporary protective covers over all access openings and fittings prior to backfill to eliminate bedding/backfill from entering tank.

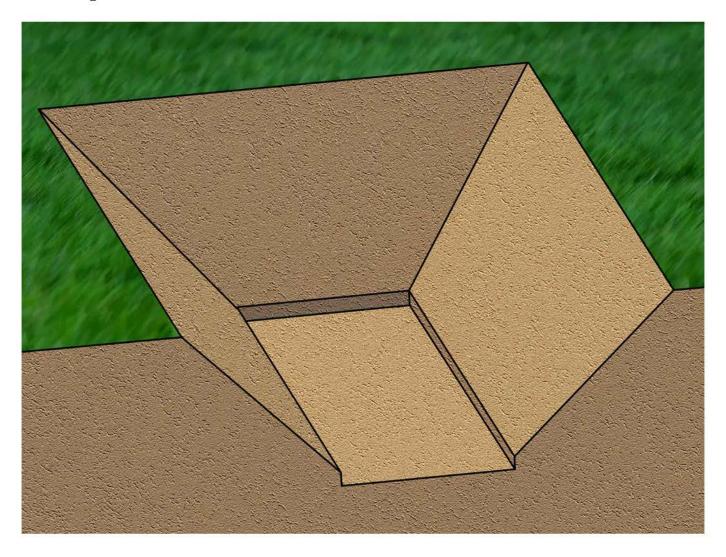
| SINGLE Tank Uplift Protection Reference Table | | | | | | | | | |
|---|---|-----------------------------------|---|------------------------------------|------------------------|--|--|--|--|
| Tank Diameter (ft) | Tank Weight per Unit Length (lb/ft) | Trench Side Slope (degrees) | Minimum Soil Cover Thickness Required (ft.) | Bottom of Trench Width (ft.) | Rated Safety Factor | | | | |
| | | 34 | 2.0 | 7.28 | 3.77 | | | | |
| 4 | 54 | 45 | 2.0 | 7.28 | 3.16 | | | | |
| | | 53 | 2.0 | 7.28 | 2.84 | | | | |
| 5 | 66 | 34 | 2.0 | 8.28 | 3.15 | | | | |
| | | 45 | 2.0 | 8.28 | 2.60 | | | | |
| | | 53 | 2.0 | 8.28 | 2.31 | | | | |
| 6 | 88 | 34 | 2.0 | 9.28 | 2.76 | | | | |
| | | 45 | 2.0 | 9.28 | 2.25 | | | | |
| | | 53 | 2.0 | 9.28 | 1.99 | | | | |
| 8 | 102 | 34 | 2.0 | 11.28 | 2.29 | | | | |
| | | 45 | 2.0 | 11.28 | 1.83 | | | | |
| | | 53 | 2.0 | 11.28 | 1.60 | | | | |
| 10 | | 34 | 2.0 | 13.28 | 2.03 | | | | |
| | 144 | 45 | 2.5 | 12.17 | 1.65 | | | | |
| | | 53 | 3.0 | 13.28 | 1.64 | | | | |
| 12 | 270 | 34 | 3.0 | 14.28 | 2.09 | | | | |
| | | 45 | 3.0 | 15.28 | 1.71 | | | | |
| | | 53 | 3.5 | 15.28 | 1.58 | | | | |



TankAnchor[™] is engineered and calculated for a minimum of a 1.2 safety factor.

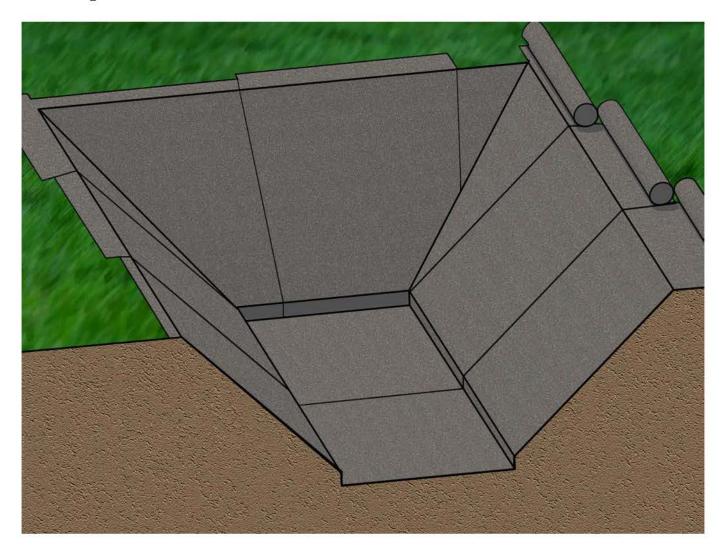
The values presented on this table are for estimate purposes and only valid for the listed soil conditions, tank sizes/ weights and trench geometries.

Step 1 - Excavate Tank Area



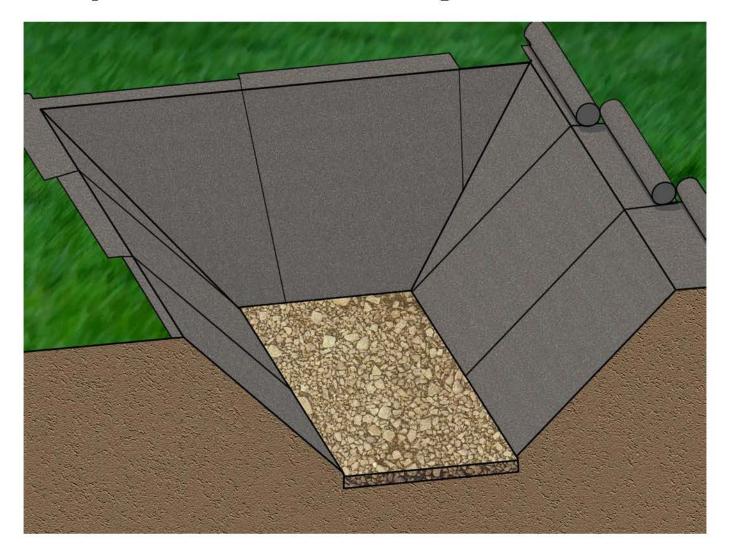
1. Excavate trench based on soil classification requirements, 34°, 45°, or 53°.

Step 2 - Soil Stabilization



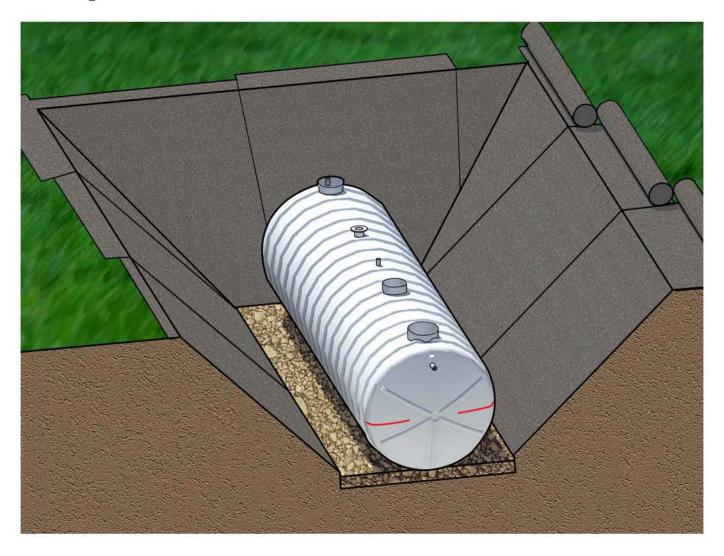
1. Install soil stabilization geofabric for soil & backfill separation as needed, based on geotechnical report.

Step 3 - Install Bedding



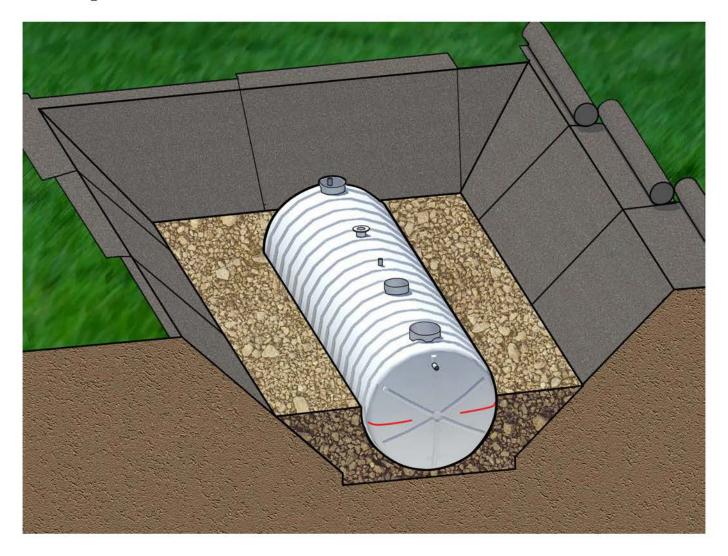
 Install first 12" of specified backfill granular material as tank bedding. See FTS Installation Guide for bedding material specification type.

Step 4 - Install Tank



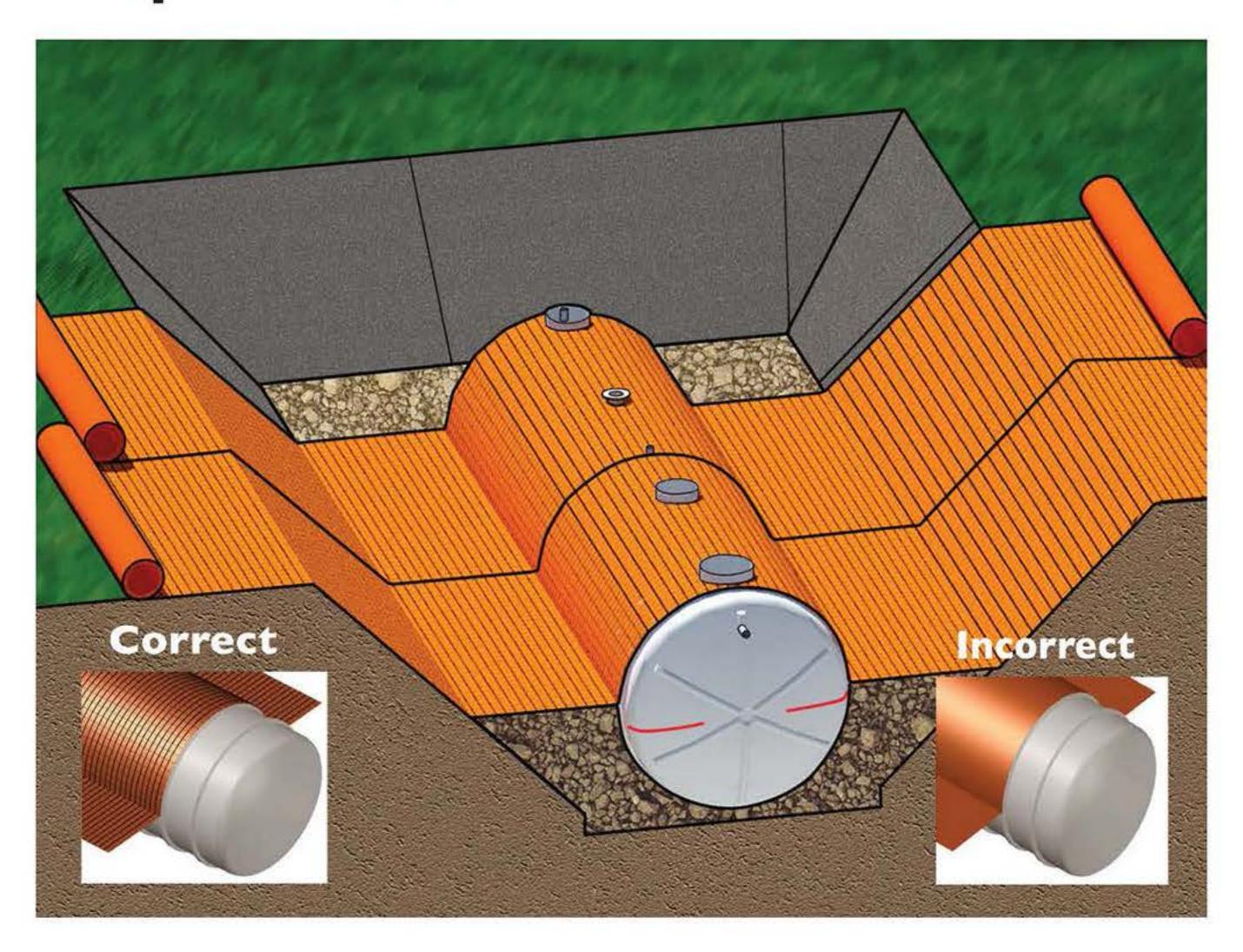
- 1. Center tank on 12" of specified bedding in excavation.
- Install temporary protective covers over all access openings and fittings prior to backfill to eliminate bedding and backfill from entering the tank.

Step 5 - Install Backfill



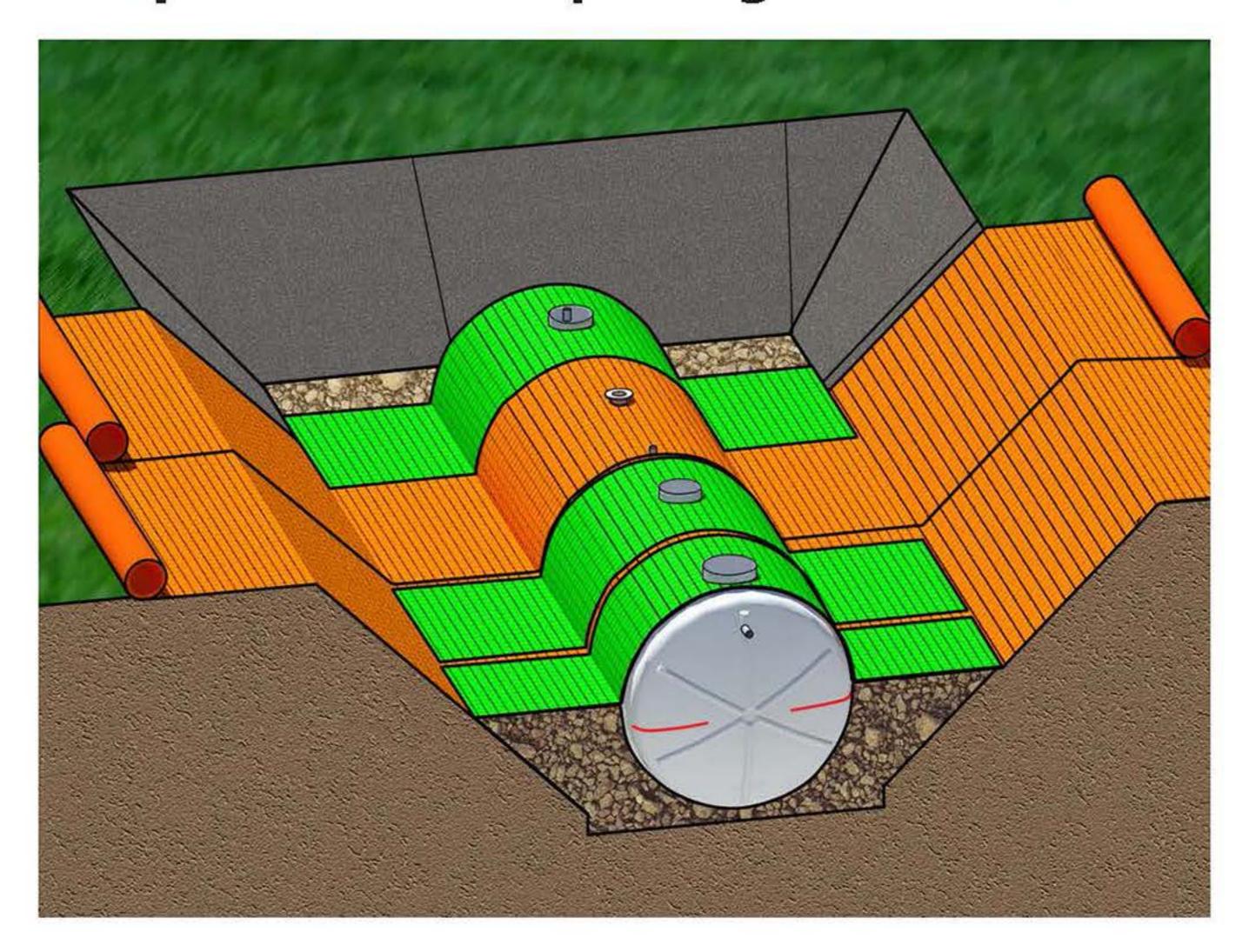
- 1. Begin backfilling in 12" lifts. Hand tamp under haunches of tank at 5:00 and 7:00 o'clock position to completely fill any voids under tank.
- 2. Backfill around tank to 3:00 and 9:00 o'clock positions.
- Backfill material must meet the same requirements as Step 3. See FTS Installation Guide for backfill material specification type.

Step 6 - Install TankAnchorTM



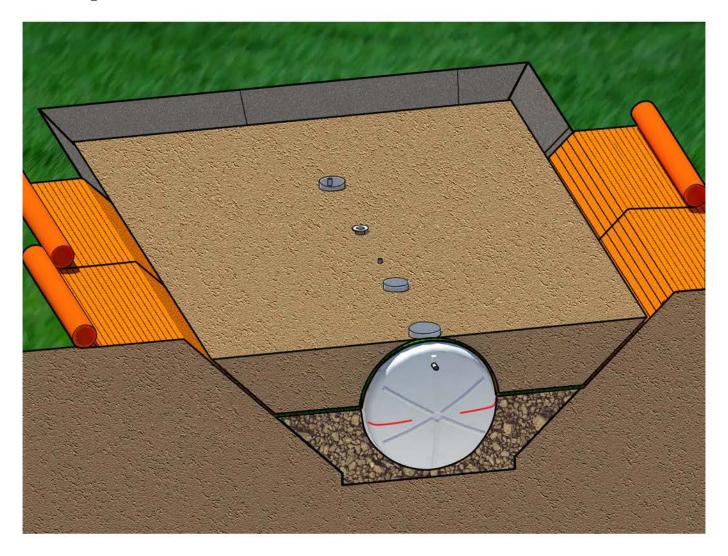
- Review TankAnchor[™] drawing and layout per project submittals.
- Place TankAnchor™ with grid side facing up and fabric side laying down on the tank.
- Cut holes in TankAnchor for fittings, access openings, and piping.
- 4. TankAnchor™ rolls come in 8.2' widths. Each horizontal fabric section requires a minimum 6" of overlap.

Step 7 - Install Opening Reinforcement



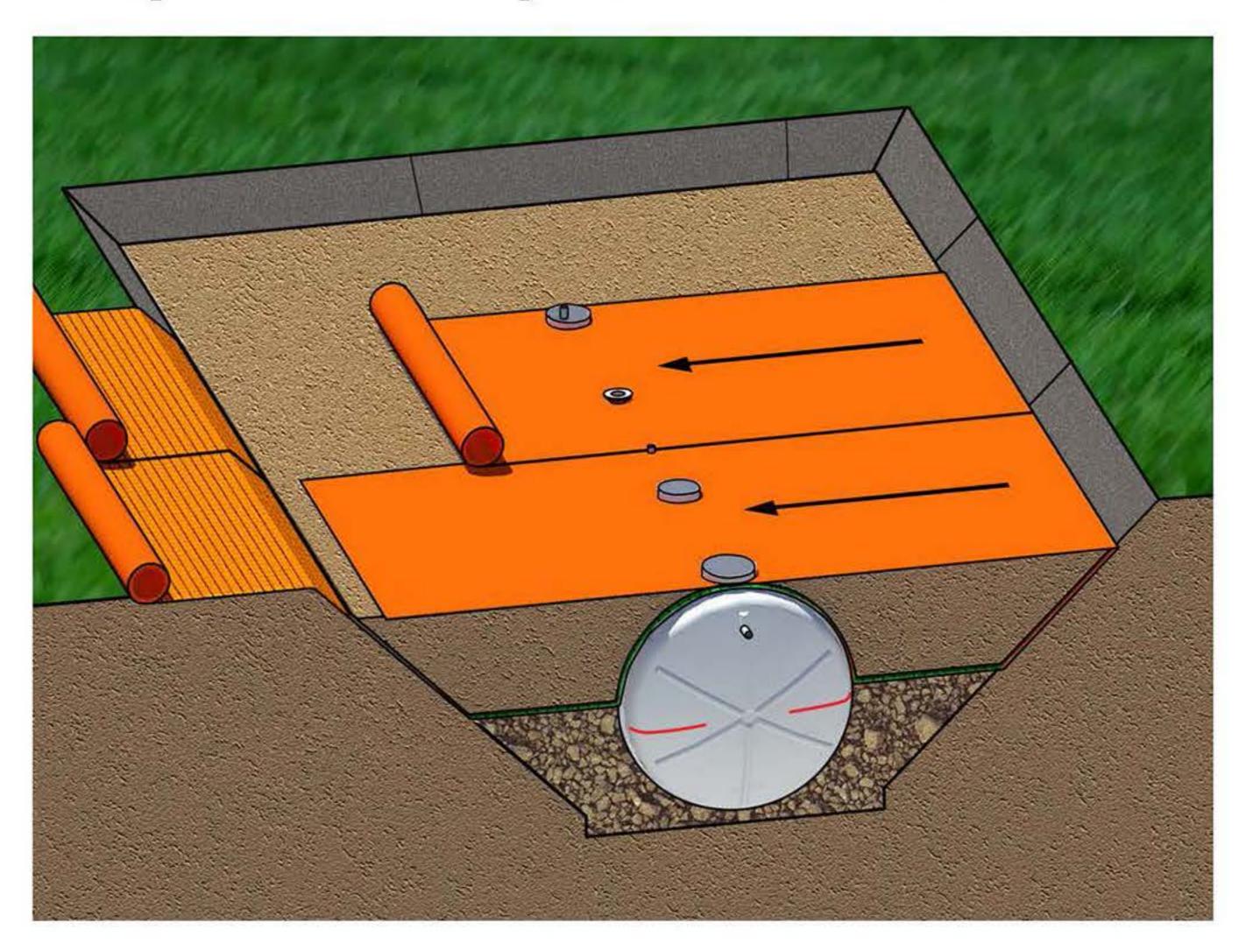
- TankAnchor™ reinforcement layer is only required on fittings, manways, and access openings greater than 24" diameter.
- Install access opening reinforcement up to the edges of the excavation only, at the 3:00 and 9:00 o'clock positions.
- Cut holes in the TankAnchor™ reinforcement layer for any fittings, access openings, and piping.

Step 8 - Install Backfill



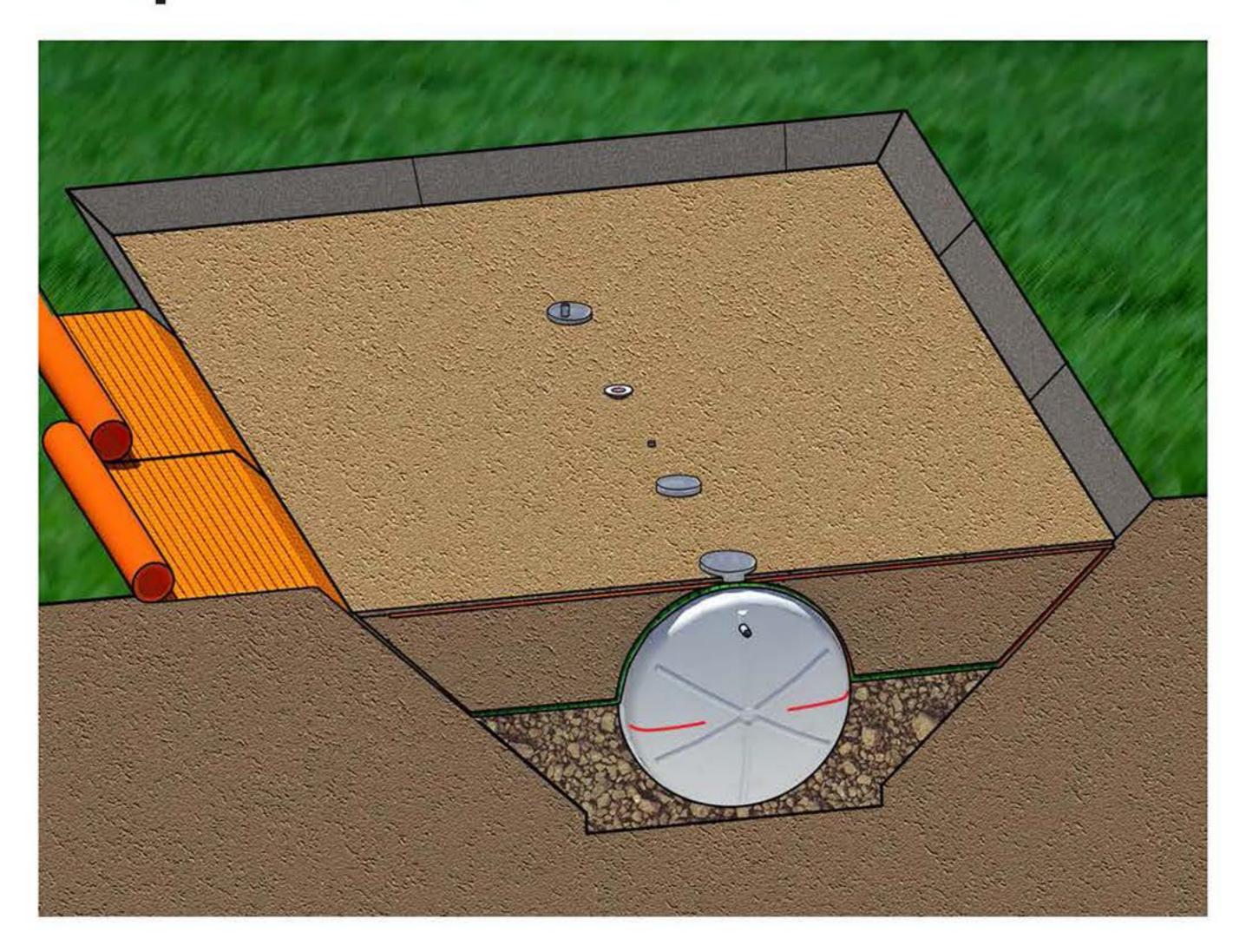
- Backfill in lifts using granular backfill material or alternative backfill. See FTS Installation Guide for specified material.
- 2. Install backfill to crown of the tank.

Step 9 - Overlay TankAnchor™



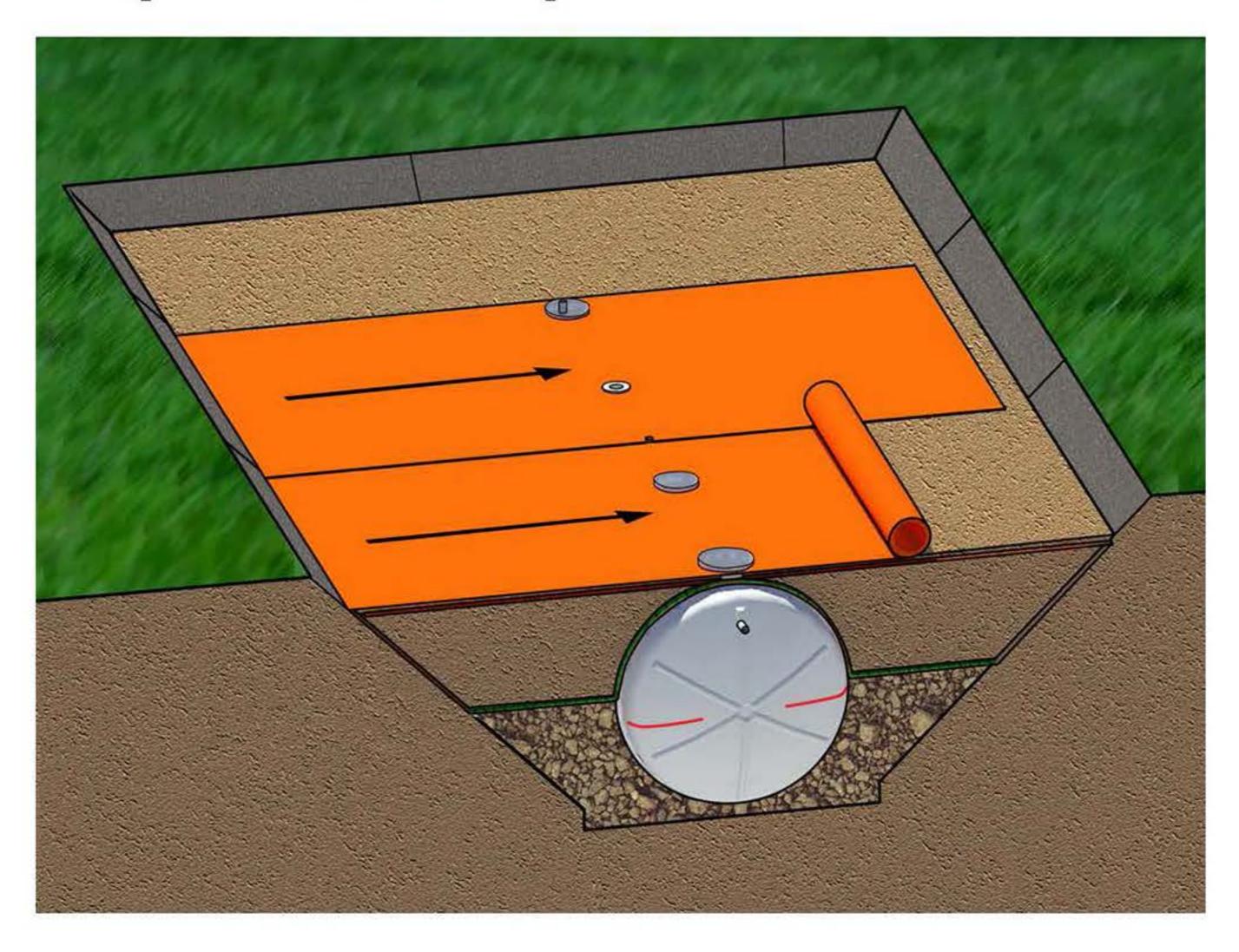
- 1. Rollout TankAnchor™ from side as shown.
- Cut holes in the TankAnchor™ for any fittings, access openings, and piping.

Step 10 - Install 4" Backfill Lift



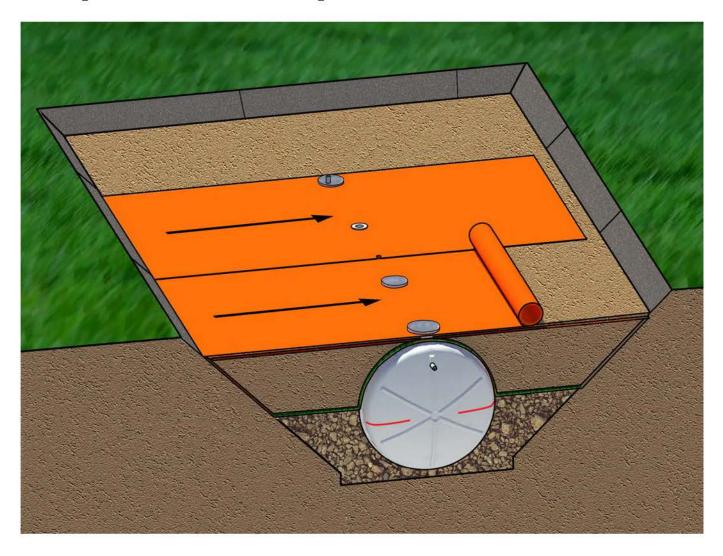
 Backfill TankAnchor™ with 4" of specified backfill or alternate backfill. See FTS Installation Guide for specified backfill material.

Step 11 - Overlay TankAnchor™



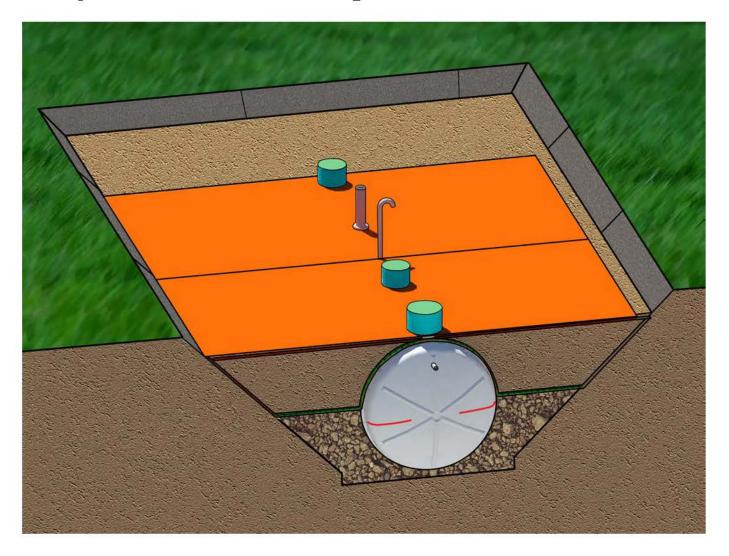
- 1. Rollout TankAnchor™ from the opposite side.
- Cut holes in the TankAnchor™ for any fittings, access openings, and piping.

Step 11 - Overlay TankAnchor®



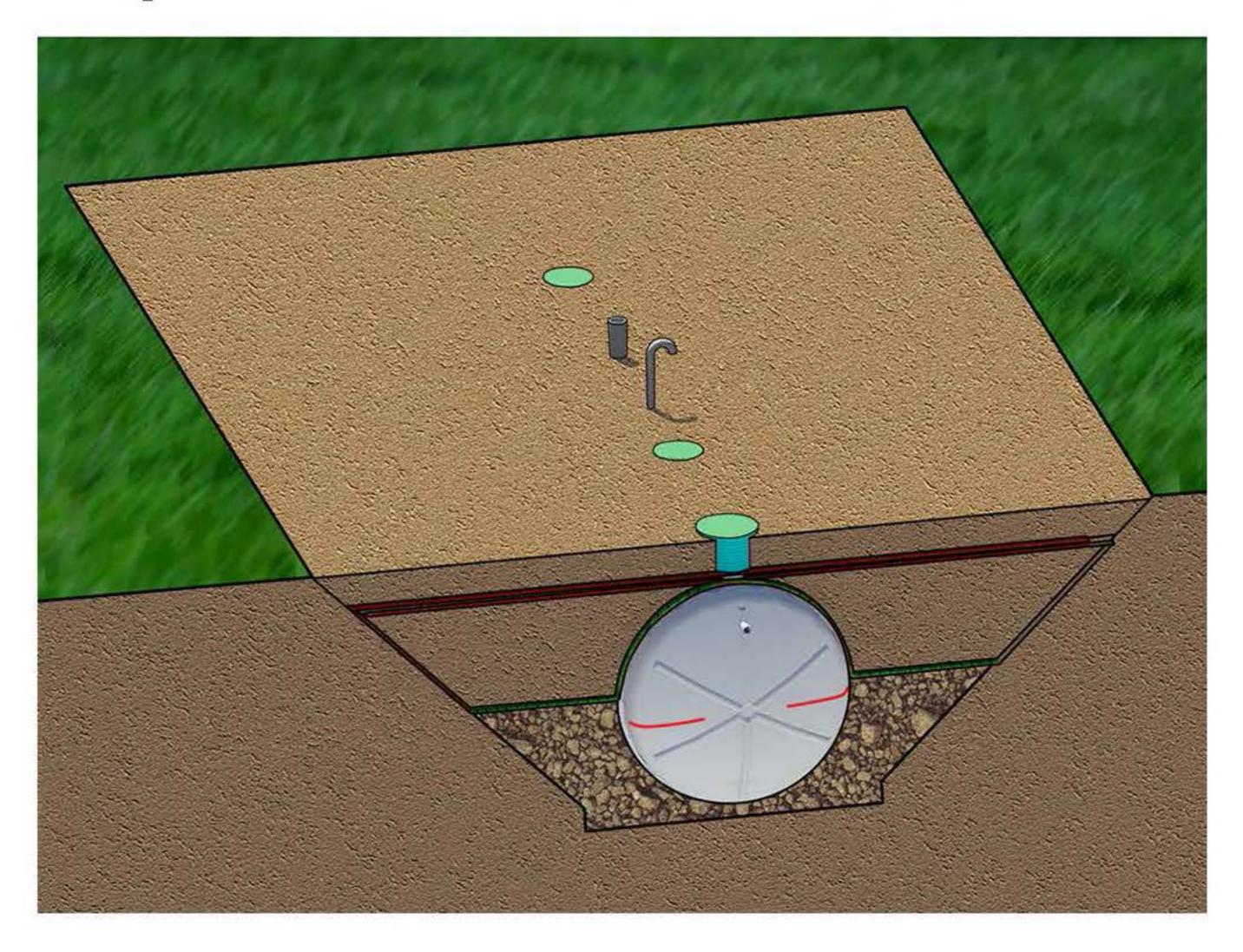
- 1. Rollout TankAnchor® from the opposite side.
- 2. Cut holes in the TankAnchor® for any fittings, access openings, and piping.

Step 12-Install Fitting Connections and Risers



1. Install risers, manways, and fitting connections to finish grade.

Step 13 - Backfill to Finish Grade



- Install select or alternative backfill to a minimum of 12" over top of final layer of TankAnchor™.
- 2. Use native soil or select backfill to finish grade.
- Install manhole rings and finish grade traffic rated covers as needed.
- 4. Finish grade for pedestrian or H-20 loads.

Specifications





Wastewater Underground Horizontal Tanks

Short Form Specification

The contractor shall provide materials, labor, to install the underground tank and accessories as represented on the plans and drawings. The tank shall be a single wall (SW) or double wall (DW) fiberglass storage tank. The anti-flotation system shall be a TankAnchor® geocomposite system or the Fiberglass Reinforced Composite System (FRPCS) deadman system. The tank and anti-flotation system shall be installed in accordance with the manufacturers' installation guide, directions, and drawings.

Submittal documents shall include Finite Element Analysis (FEA) of the underground tank structure & design features, along with buoyancy calculations for given site conditions. All FEA and Buoyancy calculations shall be provided with a Professional Engineer's stamp for the State where the tank is installed.

The contractor shall exhibit an expertise with a reference of three or more similar fiberglass underground tank installations. For contractors with less than three successful documented installations, the tank manufacturer shall provide "Construction Oversite Services" to the contractor at additional fees to insure a successful tank installation. Key tank installation steps and backfill materials, as noted in the Manufacturers Installation Guide Checklist, shall be confirmed and documented. Final documents shall be provided with As-Built documentation as part of project closeout procedures.

Single wall (SW) or double Wall (DW) tanks and the anti-flotation system shall be manufactured or supplied by Fiberglass Tank Solutions, LLC.

Long Form Specification

1. General

1.1. Sections – Underground Water & Wastewater Tanks

1.1.1. 33 16 00 Wastewater Storage Tanks

1.1.2. 02200 Earthworks 1.1.3. 03300 Concrete

1.2. References

- 1.2.1. ASTM D4097 Standard Specification for Contact-Molded Glass-Fiber-Reinforced Thermoset Resin Corrosion Resistant Tanks
- 1.2.2. Tanks and Materials conforming to ANSI / AWWA D120
- 1.2.3. Building code requirements for structural concrete, American Concrete Institute ACI 318

1.3. Submittals

- 1.3.1. Provide Tank Product Data Sheets with general tank application and lay-out.
- 1.3.2. Provide Anti-Flotation Product Data Sheets showing material properties.
- 1.3.3. Provide Tank resin type showing material properties.
- 1.3.4. Provide Finite Element Analysis for the tank structure and design features with P.E Stamp for State tank is installed.
- 1.3.5. Provide buoyancy calculations with P.E. Stamp for State tank is installed.

- 1.3.6. Provide Manufacturers' Installation Guide including shipping, handling and installation instructions.
- 1.3.7. Provide bedding and back fill sieve analysis.
- 1.3.8. Provide Manufacturers check list, reference documentation including pictures, videos, and handwritten reports, for general points of interest regarding tank installation steps.
- 1.3.9. Detailed shop drawings, to scale, in a DWG format, for the specific site plan, including all tank manufacturer accessories.
- 1.3.10. Provide contractors references of three or more similar successful installations of underground fiberglass tanks.

1.4. Design Criteria

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- 1.4.1.1. The underground single wall tank shall have a diameter or _____ft. with a length of ft.
- 1.4.1.2. Total storage volume shall be gallons.
- 1.4.1.3. Total storage to invert of outlet or overflow shall be gallons.

1.4.2. Loading Conditions

- 1.4.2.1. The tank shall be installed with a total backfill over the tank of
- 1.4.2.2. The tank shall be designed to handle pedestrian or H-20 axle loads (32,000 lbs. / axle), depending on finish cap at grade.
- 1.4.2.3. Tank risers and lids shall be designed for a maximum of 2500 # wheel load limits in common areas to accommodate mowing and maintenance equipment.
- 1.4.2.4. All tank penetrations shall be 100% watertight and installed by the manufacturer, no field inlet assembly allowed.

1.4.3. **Product Storage**

- 1.4.3.1. Tanks shall be design for atmospheric pressure only.
- 1.4.3.2. Tanks shall be designed to store Wastewater with a specific gravity up to 1.1.
- 1.4.3.3. Tanks shall be designed to operate at ambient temperatures.

1.4.4. **Testing**

1.4.4.1. The tank shall be designed to be watertight and testable to 5 psi for 6', 8', and 10' diameter tanks, 3 psi for 12' diameter tanks, with a 5:1 safety factor.

1.4.5. Accessories

1.4.5.1. **PVC Pipe Stubs**

- 1.4.5.1.1. PVC Pipe Stubs shall be Sch. 40 designed for drain, waste, or vent (DWV)
- 1.4.5.1.2. PVC Pipe Stubs shall be utilized for inlets up to 10", locations at tank top dead center or inlet hubs < 1/3 of tanks sidewall height.

1.4.5.2. FRP Pipe Stubs

- 1.4.5.2.1. FRP Pipe Stubs shall be a minimum of ¼" wall thickness, 4" thru 48".
- 1.4.5.2.2. FRP Pipe Stubs may be located at any location on the tank shell.

1.4.5.3. FRP Flanged Nozzles

- 1.4.5.3.1. Flanged nozzles shall be 2" thru 24" in size.
- 1.4.5.3.2. Cone or plate gussets shall be utilized on flanges over 4" for structural strength.
- 1.4.5.3.3. FRP Flanges shall be flat faced utilizing ANSI B 165, 150# bolt patterns.
- 1.4.5.3.4. Flanges shall be designed for atmospheric pressure only.

1.4.5.4. FRP Threaded Fittings

1.4.5.4.1. Threaded fittings shall be located on the tanks top dead center or on manway covers only.

1.4.5.5. Flexible Connectors

- 1.4.5.5.1. Flexible connectors should be utilized for all inlet or outlet connections that penetrate the tank on a horizontal plane. Top dead center fittings extended vertically to finish grade are not required to provide flexible connectors.
- 1.4.5.5.2. Flexible connectors should be designed to provide vertical movement to accommodate settlement.
- 1.4.5.5.3. Flexible connectors shall be designed for withstand needed soil burial depths.

1.4.5.6. FRP Riser Lids

- 1.4.5.6.1. FRP lids 24", 30", 36", 42", or 48" shall be of an FRP composite material with 316 S.S. bolts and latches.
- 1.4.5.6.2. FRP lids shall have a gasket connection that fits either a flat face flange or the riser pipe plain end connection.
- 1.4.5.6.3. FRP lids shall utilize a textured finish with UV inhibitors at finish grade.
- 1.4.5.6.4. FRP lids shall be rated for 300 # pedestrian rating for use in common areas where needed.
- 1.4.5.6.5. FRP lids shall be rated for 2500 # occasional wheel load for use in common areas where light wheel traffic will be required.
- 1.4.5.6.6. When utilizing FRP riser lids with C.I. manhole ring and lids, construction techniques should be utilized to isolate the wheel load from the FRP riser.

1.4.5.7. Hinged & Lockable Covers

1.4.5.7.1. Hinged and lockable covers shall be 100% FRP laminate in construction. Covers shall be hinged for easy inspection and sealed with a watertight gasket to keep out dirt, groundwater, or insects.

1.4.5.8. **FRP Risers**

- 1.4.5.8.1. FRP risers 24", 30", 36", 42" or 48" may be either a flanged connection or plain end to fit tank access openings or FRP riser lids.
- 1.4.5.8.2. FRP risers will be a minimum of 1/4" wall thickness with a gelcoat finish when projected above finish grade.
- 1.4.5.8.3. FRP risers will utilize a structural adhesive or an FRP bonding kit, when bonding to a FRP tank access collar.
- 1.4.5.8.4. FRP riser to tank joints shall be tested for a watertight connection utilizing a water test by filling the tank full, up to and 24" above the tank to riser connection. Mark water level and let stand for 24 hours, with < 1" of change in water level.

1.4.5.9. **PVC Risers**

- 1.4.5.9.1. PVC risers 24" or 30" shall be made of a PVC profile construction, cut to length and bonded to tank access opening collars with a structural adhesive.
- 1.4.5.9.2. PVC riser to tank joints shall be tested for a watertight connection utilizing a water test by filling the tank full, up to and 24" above the tank to riser connection. Mark water level and let stand for 24 hours, with < 1" of change in water level.

1.4.5.9.3. For riser lengths over 3' tall, a grade ring insert (GRI) shall be utilized to insure a proper deal is obtained at the tank access opening to riser connection.

1.4.5.10. Tank Access Openings

- 1.4.5.10.1. Tank access openings shall be 24", 30", 36", or 48" in size.
- 1.4.5.10.2. Tank access openings shall utilize an FRP collar that is ½" less than the riser I.D.
- 1.4.5.10.3. Tank access collars shall be a minimum of 3" tall.

1.4.5.11. **FRP Manways**

- 1.4.5.11.1. FRP Manways shall provide a 24" or 30" I.D. opening and come complete with 304 S.S. bolts, nuts, and neoprene flat face gaskets.
- 1.4.5.11.2. When utilizing FRP manways with C.I. manhole ring and lids, construction techniques should be utilized to isolate the wheel load from the FRP riser.

1.4.5.12. Manway Extensions

- 1.4.5.12.1. FRP Manways shall provide a 24" or 30" I.D. opening and come complete with 304 S.S. bolts, nuts, and neoprene flat face gaskets. Manways shall provide lengths needed to extend 12" above grade for easy assembly of covers to top manway connection.
- 1.4.5.12.2. Manway extensions shall be gel-coated 12" at finish grade.

1.4.5.13. **Ladders**

- 1.4.5.13.1. Ladders shall be FRP or aluminum in material construction and shall be supplied by the tank manufacturer.
- 1.4.5.13.2. Ladders shall be mounted in a way to allow for a flexible connection to accommodate tank movement during filling and empty cycles.

1.4.5.14. TankAnchor® Geocomposite Deadman System

- 1.4.5.14.1. Geocomposite deadman systems shall be a polyester geogrid with a nonwoven geotextile that has been developed to provide an anti-flotation system for tanks, when installed per the manufacturers recommendations and sizing.
- 1.4.5.14.2. Buoyancy calculations shall be provided by the tank manufacturer with consideration given to tank bury depth, flooded conditions to finish grade, weight of tank, and other specific site conditions to provide tank anti-flotation measures.

1.4.5.15. Fiberglass Deadman System

- 1.4.5.15.1. Fiberglass Reinforced Composite Deadman System (FRCDS) deadmen shall be provided by the tank manufacturer and shall meet the following design criteria:
 - 1.4.5.15.1.1. Manufactured using a reinforced fiberglass composite design, showing FEA analysis report and P.E stamp for design conditions.
 - 1.4.5.15.1.2. Buoyancy calculations shall be provided by the tank manufacturer with consideration given to tank bury depth, flooded conditions to finish grade, weight of tank, and other specific site conditions to provide tank anti-flotation measures.
 - 1.4.5.15.1.3. Provide multiple lengths to provide a full-length anchor to any sized tank, 6′, 8′, 10, or 12′ in diameter.

1.4.5.16. Precast Concrete Deadman System

1.4.5.16.1. Fiberglass Reinforced Composite Deadman System (FRCDS) deadmen shall be provided by the tank manufacturer and shall meet the following design criteria:

- 1.4.5.16.1.1. Manufactured using a reinforced fiberglass composite design, showing FEA analysis report and P.E stamp for design conditions.
- 1.4.5.16.1.2. Buoyancy calculations shall be provided by the tank manufacturer with consideration given to tank bury depth, flooded conditions to finish grade, weight of tank, and other specific site conditions to provide tank anti-flotation measures.
- 1.4.5.16.1.3. Provide multiple lengths to provide a full-length anchor to any sized tank, 6', 8', 10, or 12' in diameter.

1.4.5.17. **Deadman Anchor Straps**

- 1.4.5.17.1. Anchor straps shall be supplied by the tank manufacturer and be composed of a pultruded fiberglass strap with engineered D-Rings for connection to turnbuckles.
- 1.4.5.17.2. Each anchor strap shall be rated for a maximum load of 25,000 lbs.
- 1.4.5.17.3. The qty. and location of the straps shall be noted by the tank manufacturer on the tank drawing.

1.4.5.18. Turnbuckles

- 1.4.5.18.1. Turnbuckles shall be provided by the tank manufacturer.
- 1.4.5.18.2. Turnbuckles shall be a Class 7 forged type, meeting performance requirements of Federal Specification F1145 Type 1, Form1 and ASTM FF-T-791B.
- 1.4.5.18.3. Design loads for turnbuckles shall be based on a design factor of 5:1

1.4.6. Execution

- 1.4.6.1. Single wall fiberglass tanks shall be installed and tested in the methods established in the manufacturer's installation guide and checklist.
- 1.4.6.2. Tanks shall only store the products listed in the appropriate warranty and for which the tank is specified.
- 1.4.6.3. Failure to follow the installation guide will terminate the manufacturer's warranty.

1.4.7. Warranty

1.4.7.1. Warranty shall be the limited warranty in effect at the time of delivery, as provided by Fiberglass Tank Solutions, LLC.

Warranty





Fiberglass Tank Solutions, LLC (FTS) warrants to (Owner) that our underground storage tank package, if installed, used and maintained in the United States in accordance with FTS published specifications, installation instructions and operating guidelines, all applicable laws and requirements, and the limited underground storage tank applications defined herein, will be free from material defects in materials and workmanship for a period of one (1) year from date of original delivery by FTS. Underground storage tank applications for the purpose of this warranty are limited to the collection and storage of water, wastewater or solids or liquid organic sewage at temperatures not to exceed 120 degrees F.

FTS warrants to the Owner that all underground storage tank accessories, if installed, used and maintained in the United States in accordance with the FTS's' published specifications, installation instructions and operating guidelines, and all applicable laws and regulations, will be free from material defects in material and workmanship for a period of one (1) year following the date of original delivery by FTS.

The foregoing warranty does not extend to underground storage tanks or accessories (collectively "Goods") damaged due to acts of God, war, terrorism, or failure of Goods caused, in whole or in part, by misuse, improper installation, storage, servicing, maintaining, or operation in excess of the rated capacity, contrary to their recommended use, or contrary to the underground storage tank application defined above, whether intentional or otherwise, or any other cause or damage of any kind not the fault of FTS. FTS only warrants repairs or alternations performed by FTS or its authorized contractors.

Owner's sole and exclusive remedy for breach of warranty is limited at FTS's option to: (a) repair of the defective underground storage tank or accessories, (b) delivery or replacement underground storage tank or accessories to the point of original delivery, or (c) refund of the original purchase price of the whole or component in question. A claimant must give FTS the opportunity to observe and inspect the underground storage tank and / or accessories prior to removal from the ground or the claim will be forever barred. All claims must be made in writing within one (1) year after underground storage tank and /or accessory failure or be forever barred.

THE FOREGOING WARRANTY CONSTITUTES FTS'S EXCLUSIVE OBLIGATION AND FTS MAKES NO OTHER WARRANTY OR RERESENTAION, EXPRESS OR IMPLIED, WITH RESPECT TO THE UNDERGROUND STORAGE TANK OR ANY SERVICE, ADVICE, OR CONSULTATION, IF ANY, FURNISHED TO THE OWNER BY FTS OR ITS REPRESENTATIVES, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PRPOSE, OR OTHERWISE. THE SELLER (FIBERGLASS TANK SOLUTIONS, LLC) UNDERTAKES NO RESPONSIBILITY FOR THE QUALITY OF THE GOODS, EXCEPT AS OTHERWISE PROVIDED IN THE CONTRACT. THE SELLER (FTS) ASSUMES NO RESPONSIBILITY THAT THE GOODS WILL BE FIT FOR ANY PARTICULAR PURPOSE FOR WHICH YOU (OWNER) MAY BE BUYING THESE GOODS, EXCEPT AS OTHERWISE PROVIDED IN THE

CONTRACT. THE REMEDIES SET FORTH IN THE ABOVE WARRANTY ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON OR ENTITY FOR BREACH OF WARRANTY OR FOR THE BREACH OF ANY OTHER COVENANT, DUTY, OR OBLIGATION ON THE PART OF FTS. FTS SHALL HAVE NO LIABILITY OR OBLIGATION TO ANY PERSON OR ENTITY FOR BREACH OF ANY OTHER COVENANT, DUTY, OR OBLIGATION UNDER THIS WARRANTY EXCEPT AS EXPRESSLY SET FORTH HEREIN. IT IS EXPRESSLY AGREED THAT THE WARRANTY DOES NOT FAIL OF TIS ESSENTIAL PURPOSE. FTS SHALL HAVE NO LIABILITY FOR COST OF INSTALLATION OR REMOVAL OF GOODS, ENVIRONMENTAL CONTAMINATIONS, FIRE, EXPLOSIONS, OR ANY OTHER CONSEQUENCES ALLEGEDLY ATTRITABLE TO A BREACH OF WARRANTY OR INCIDENTAL CONSEQUENTIAL, PUNITIVE OR OTHER DAMAGES OF ANY DESCRIPTION, WHETHER ANY SUCH CLAIM OR DAMAGES BE BASED UPON WARRANTY, CONTRACT, NEGLIGENDE, STRICT LIABILITY OR OTHER TORT, OR OTHERWISE. IN NO EVENT SHALL FTS, INC.S' TOTAL LIABILITY HEREUNDER EXCEED THE ORIGINAL PURCHASE PRICE OF THE GOODS WHICH GAVE RISE TO SUCH LIABILITY.



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