PROJECT REQUIREMENTS

General Project Notes and Requirements:

All existing utilities indicated on the drawings are according to the best information available to the engineer; however, all utilities actually existing may not be shown. Utilities damaged through the negligence of the Contractor to obtain the location of same shall be repaired or replaced by the Contractor at his/her expense.

Trees marked with an "X" indicate clear and grub.

All excavated material shall be placed at a location that will not inhibit on-site traffic.

All disturbed ground is to be prepped and seeded according to the requirements for seeding and mulching.

The construction process shall be done in a way as to limit the amount of time that the septic tank is out of commission. The connection points for the new piping should first be determined in order to establish necessary elevations. Once elevations of the connection points are determined, construction can commence on the lateral field and storage tank. Upon completion of the lateral field, the new lateral field piping should be installed and connected to the septic tank outlet. Once the septic tank is connected to the new lateral filed, the storage tank connections can be made and the existing lateral field taken out of commission.

Base Bid – Lateral Field:

1. The Contractor shall establish, with the Engineer, the elevation of the lateral field inlet lines and laterals and the flow line elevation of the incoming sewer after determining the effluent flow line elevation of the existing septic tank.
2. The Contractor shall limit the amount of soil compaction that occurs during excavation of the lateral field.
3. The soil fill shall be of a USDA soil classification loam variety (~40% sand, ~40% silt, ~20% clay) with good organic matter content.
4. The gravel fill should have a gradation of 1 1/2" – 3" diameter according to ASTM particle size classification (ASTM D2487).
5. The geo-textile fabric shall conform to MODOT Specification 1011.3.1 which is a non-woven US 160NW.
6. The Contractor must make distribution box accessible for pumping and adjustment. Install risers if necessary. The covers should be locked or of sufficient weight to prevent a child from lifting it.
7. The cut material is to be mixed with loam and used as the top backfill layer of the lateral field. Any remaining cut material shall be disposed of properly by the contractor.
8. The lateral field mound shall be graded as to promote rainwater runoff.
9. The disturbed soil over the lateral field shall be planted with a combination of native grasses as per MODOT's request. The ground shall be prepped and seeded according the requirements for seeding and mulching.

Base Bid – Storage Tank and Monitoring System:

1. The intended usage of the storage tank is to store truck wash wastewater. Therefore, no infiltration or inflow of groundwater into the proposed collection system and storage tank will be allowed. It will be the sole responsibility of the Contractor to provide for a water tight collection and storage system.
2. The Contractor shall establish, with the Engineer, the elevation of the bottom of the storage tank and the flow line elevation of the incoming sewer after determining the effluent flow line elevations of the existing oil/water separators. The Contractor will manually uncover the effluent lines to determine pipe diameter and flow line elevation.
3. The storage tank will be constructed to the general dimensions shown on the drawing. The storage tank will be a premanufactured precast concrete utility vault conforming to the requirements of ASTM C858. The top of the proposed aluminum access hatch (see Item 8) will be a minimum of 6 inches above the final grade. All lift holes will be filled with non-shrink cementious grout. The storage tank will be delivered to the project site in 3 separate sections (base slab + walls, roof slab, square riser with hatch). All section joints shall be sealed with EZ Stick butyl joint sealant (1" x 1.25") conforming to ASTM C990. After installation of sections and before backfilling all exterior joints will be further water proofed using 6" Exterior Butyl Rubber Joint Wrap.
4. The manufacturer of the precast concrete storage tank will have PCI Plant Certification.
5. At the Contractor's option, the storage tank can be site built. A registered professional engineer in Missouri shall seal the design drawings of the poured in place tank. All costs associated with the design of this option shall be considered subsidiary to the cost of the project.
6. The tank will be set on a 4" bed of gravel and leveled. The wall connections for the influent PVC pipe and effluent pump discharge line will be an A Lok O-ring or a PSX boot style gasket. The electrical and control wiring conduit penetration will be sealed in a Link Seal LS200 modular seal.
7. The Contractor will coordinate with the storage tank manufacturer the position of the opening in the top slab and the square access manhole to properly install the submersible pump discharge elbow and guide rail bracket (see Additive Alternate No. 1 – Item No. 3)
8. The Contractor will install a 3ft x 3ft aluminum hatch, Series F1R, Model F1R3636 by Halliday Products or Engineer approved equal. The aluminum access hatch will be secured to the square concrete manhole by twelve (12) 1/2 inch diameter by 3 inch long stainless steel bolts. The bolts will be drilled and epoxy anchored. The hinge of the hatch will be located opposite of the proposed guide rail system (see Additive Alternate No. 1 – Item No. 3).
9. The joint between the access hatch frame and concrete shall be sealed using a minimum of 1/2 inch thick by 1 inch wide preformed butyl joint sealant by Press Seal.
10. The excavation will be backfilled with previous excavated materials. The backfill will be compacted in layers to 95% of maximum density, plus or minus 3% moisture. The top 12 inches will be topsoil.
11. The Contractor shall purchase and install a water level monitoring system for the storage tank. The level monitoring system will be powered by a 115 Volt 15 amp circuit that will originate inside the "cold storage building". The level monitoring system will deploy a float switch inside the storage tank. The float will be suspended by stainless steel hardware to the inside of the tank access manhole. The elevation of the float on and off positions will be established in the field by the Owner.
12. The level monitoring relay will be located in a NEMA 3R rated panel which is attached to a 2-legged Uni-Strut system. Each leg will be secured in a concrete foundation that is a minimum of 8 inches in diameter and 24 inches deep. The bottom of the panel will located a minimum of 4'-6" above the surrounding grade. The 115V relays will activate the float system and a red warning light mounted on top of the panel. The warning light, when activated, will be visible at a distance of 100 feet or greater. The entire level monitoring system will be suitable for year round outdoor exposure.
13. Concrete and steel bollards, painted safety yellow will be provided as shown on the drawings.

Additive Alternate No. 1

1. Alternative No. 1 consists of the purchase and installation of a pumping system and truck loading system as shown on the drawings. This system covers the submersible pump, pump discharge elbow, guide rail assembly, discharge piping, truck loading assembly, and pump control/alarm panel and electrical circuits.
2. The Owner reserves the right, if sufficient funding is not available, to delete this system and associated improvements from the Project.
3. The pumping system will consist of one (1) semi-vortex submersible pumping by Tsurumi – Model 70K50PU2.75S (Thompson Pump, Kansas City, KS), a Model 70K2-65 guide rail system which includes a discharge elbow with 2" NPT discharge, upper guide rail bracket, and two (2) Schedule 80 PVC guide rails. The discharge elbow will be secured to the storage tank base slab with 1/2 inch x 5 inch SS anchor bolts. The upper guide rail brackets will be secured by 3/8 inch diameter x 3 inches SS anchor bolts. The anchor bolts will be secured with epoxy adhesive. The Contractor will attach ten (10) feet of 314 SS chain to the bale of the pump to allow the Owner to remove the pump.
4. Pump Control and Level Monitoring Systems
a. The Contractor will purchase and install a pump control system (Model TS1120) for the storage tank. The pump control panel be provided by Tsurumi, and designed to control the manual starting and stopping of the submersible pump. Automatic operation of the pump will not be allowed. The face of the pump control panel will be installed to face east. On the face of the pump control panel two annunciator lights (red and green) will be installed. Red will indicate stop and green will indicate operating. An exterior weatherproof switch with on and off operating positions will also be provided.
b. As part of Additive Alternate No. 1 the Contractor will install the previously described level monitoring system inside the pump control panel.
c. The pump control and level monitoring systems will be located in a NEMA 4X rated panel which will be attached to a 2-legged Uni-Strut system. Each leg will be secured in a concrete foundation that is a minimum of 8 inches in diameter and 24 inches deep. The bottom of the panel will located a minimum of 4'-6" above the surrounding grade. The pump control panel will be located 3'-0" from the
d. The pump control system will be powered by a 115 Volt, Single Phase, 20 amp electrical circuit that will originate inside the "cold storage building". The level control system will be powered by a 115 Volt 15 amp electrical circuit that will originate inside the "cold storage building". The Contractor will be responsible for installing a 2" diameter electrical conduit suitable for ground burial. Circuit breakers of the type and size compatible with the existing breaker box will be provided and installed by the Contractor.

5. A truck loading station will be provided as shown on the drawings.

PLANS FOR MODOT-GALLATIN WASH WATER STORAGE TANK AND LATERAL FIELD

GBA PROJECT NUMBER 12718.10

GENERAL LOCATION MAP

ROJECT BENCHMARK ELEVATION: 100.00

500' 0' 500' 1000'
SCALE : 1 INCH = 500 FEET

STATE OF MISSOURI
WILLIAM A. CARTER
NUMBER E-27250
REGISTERED PROFESSIONAL ENGINEER

LEGEND

- PROPOSED SANITARY SEWER LINE
- SAN — EXISTING SANITARY SEWER LINE
- SWS — EXISTING STORM SEWER
- EXISTING FENCE
- W — EXISTING WATER LINE
- GAS — EXISTING GAS LINE
- OHT — EXISTING TELEPHONE LINE
- UGE — EXISTING POWER LINE
- UGT — EXISTING TELEPHONE LINE
- TREE OR SHRUB LINE
- 24" Oak TREE SIZE and SPECIES AS INDICATED

INDEX OF SHEETS

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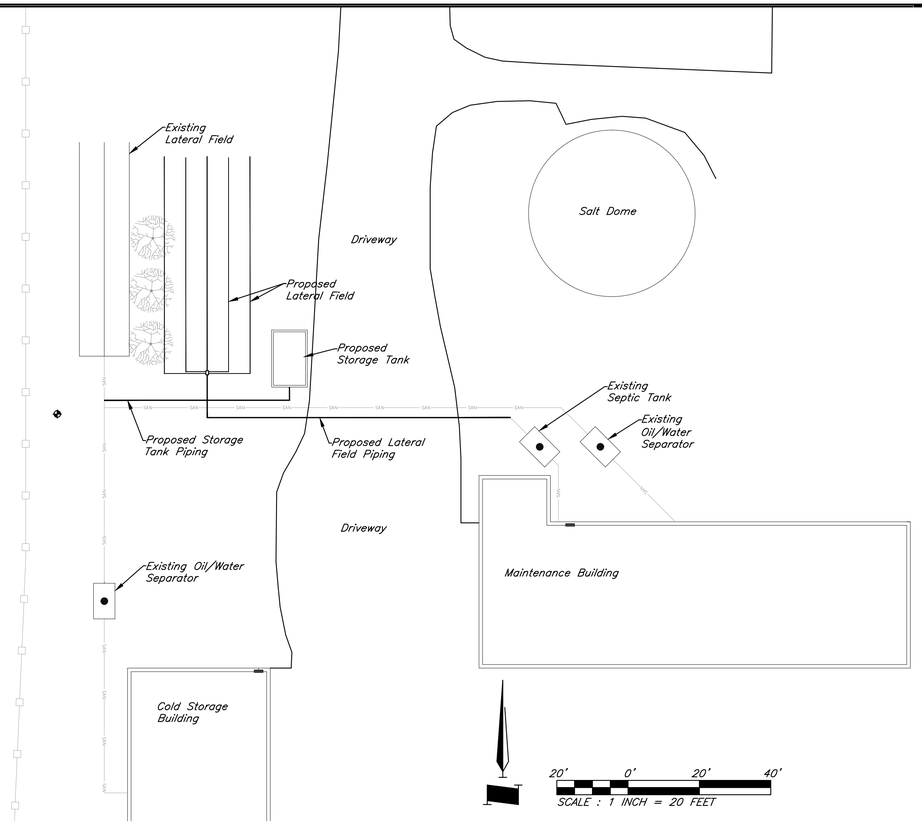
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge/9801 Renner Ridge Drive/Lenexa, KS 66214/(913)492-0400
GBA Project No. 12718



SITE PLAN

SCALE 1"=20'

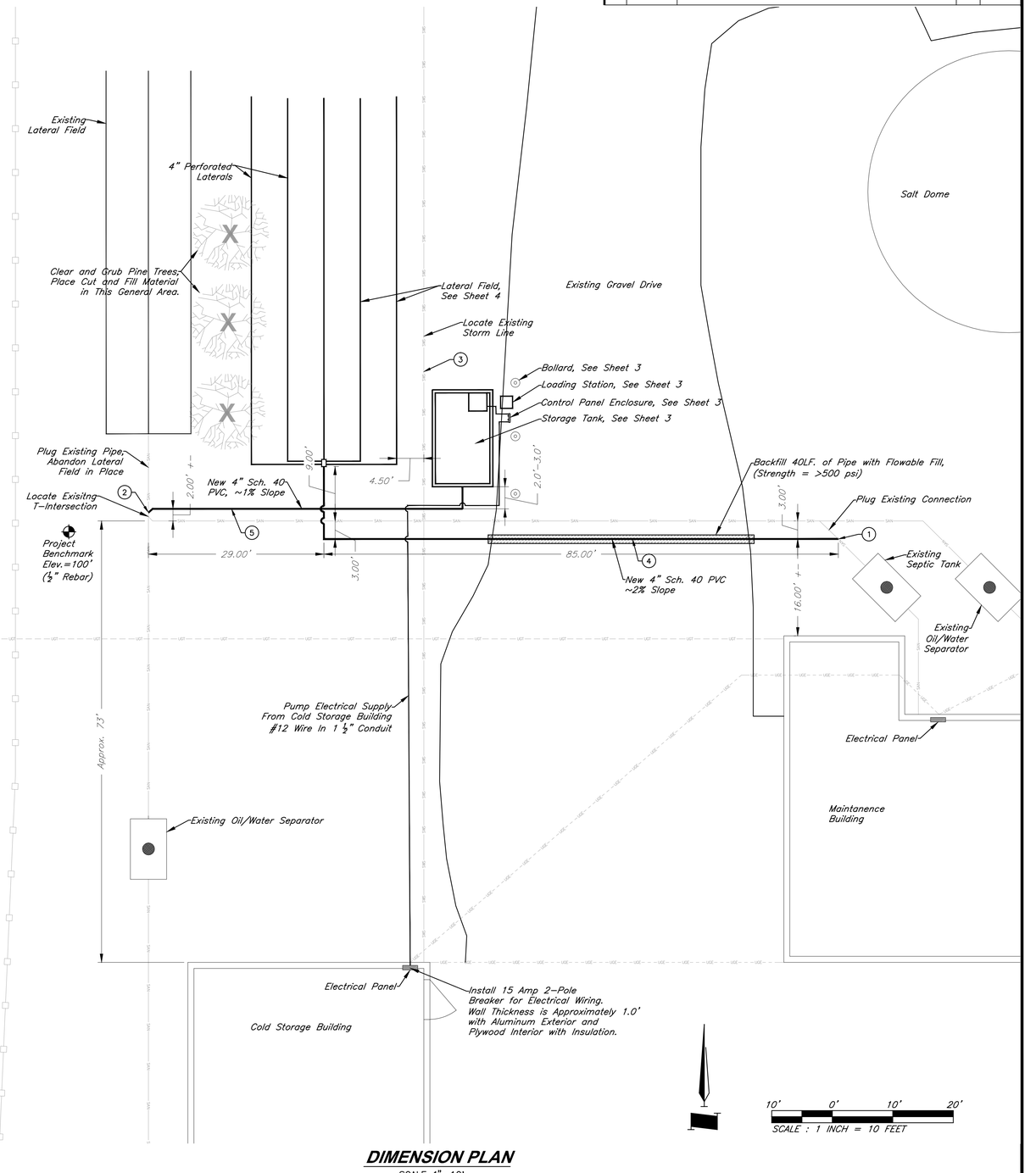
Notes	
1	Locate septic tank effluent pipe and determine elevation relative to benchmark. Disconnect from from existing line and connect to proposed lateral field pipe.
2	Connect proposed wash water storage storage tank piping downstream of the located T-intersection. Plug the exisitng lateral field pipe.
3	Locate storm line prior to excavation for storage tank and lateral field piping.
4	Septic tank effluent piping to lateral field should be at a 1% slope and a minimum depth of 1'-6".
5	Wash water piping to storage tank should be at a 1% slope and a minimum depth of 1'-6".

Seeding and Mulching:

Fertilizer: Starter fertilizer for fescue seeding shall be an approved commercial brand composed of a "Slow Release Nitrogen" fertilizer in the 1–2–1 range, such as 13–25–12, Starter fertilizer for brome grass seeding shall be an approved commercial brand composed of a mixture of soluble and insoluble Nitrogen, in the range of 1–1–1, such as 12–12–12. All fertilizer used on this project shall be uniform in composition, free flowing, and suitable for application with approved equipment, and shall be delivered to the site in convenient containers, each fully labeled, conforming to the applicable state fertilizer laws, bearing the name, trade mark or trade name, and a warranty of the producer.

Mulch: Mulch shall be the vegetative type, wood cellulose fiber type, asphalt emulsion type, or asphalt emulsion over mulch, as approved by the Engineer.
1. Vegetative Type: The vegetative type shall be the cereal straw from stalks of oats, rye, wheat, or barley and shall be free of prohibited and noxious weed seeds.

Construction Details for Seeding:
A. Top Soil: Twelve inches (12") of stockpiled or imported topsoil shall be placed over all areas disturbed by construction equipment prior to finish grading and tilling.
B. Application of Fertilizer: Before tilling the soil the fertilizer shall be distributed uniformly at the rate of 200 pounds per acre, and incorporated into the soil to a depth of at least 2 inches by discing or harrowing methods. This fertilizing rate is equivalent to 4.6 pounds per 1000 square feet.
C. Tilling the Seed Bed: The surface shall be tilled to a depth of at least 2 inches by discing or other approved methods until the topsoil is suitable for seeding. The seed bed shall be free from tree roots, clay balls, 1–inch and larger diameter stones, trash, weeds, and other debris. Areas tilled shall be maintained until seeding and mulching is complete to insure a smooth area with no gullies or depressions. Approval of the seed bed shall be obtained from the Engineer before seeding is started.
D. Planting Seeds:
1. Lateral Field: As per MODOT's Request
2. Above Storage Tank and Other Disturbed Areas: Alta Fescue or Kentucky 31 Fescue at a rate of 200 lbs per acre.
E. Seeding Season: All seeding work shall be done between the dates of February 1 and April 15 for spring planting or August 15 and October 15 for fall planting. Sowing shall be accomplished by use of an approved mechanical seeder or drill (a hand spreader can be used in small areas), making sure that successive seed strips overlap to provide uniform coverage. Each seed type shall be applied in a crossing pattern of two passes, each applying half of the seed required. Seed should be drilled to a depth of 1/2 inch.
F. Compaction: Immediately following the completion of seeding operations, the entire area shall be compacted by means of a roller weighing at least 60 but not more than 90 pounds per linear foot of roller.
G. Mulching: Mulching shall be done within 24 hours following the seeding operation except in the case of wood cellulose fiber type mulch.
1. Vegetative Type Mulch: After compacting the surface, mulch shall be uniformly spread at the rate of 1 1/2 tons per acre by means of a mechanical spreader or other approved means. As soon as the mulch is spread, it shall be anchored to the soil a minimum depth of 3 inches by use of a heavy disc harrow, set nearly straight, or a similar approved tool. Discs of the anchoring tool shall be set approximately 9 inches apart. Anchoring shall be accomplished by not more than two passes of the tool.
H. Maintenance and Acceptance: All seeded areas shall be maintained until acceptance by the Engineer. Maintenance shall include repair of erosion damage, reseeding, maintenance of mulch, and watering.
I. Seed Bed Watering and Maintenance: After each day that seed is placed, it shall be watered sufficiently to wet the soil and seed bed at least 2 inches deep. Thereafter in the absence of adequate rainfall, enough water shall be added to the seed bed to keep the soil moist at least 2 inches deep and as often as necessary to keep the seed bed moist at all times. Watering by the Contractor shall continue until the seed is firmly established and accepted. The Engineer and the Owner shall be notified immediately of any damage by others to the restored areas.
J. Water: Water used in this work shall be furnished by the Contractor and will be suitable for irrigation and free from ingredients harmful to plant life. All watering equipment required for the work shall be furnished by the Contractor. Water from adjacent fire hydrants or public water lines shall be metered. Written approval from the property owner shall be obtained prior to the use of suitable water from ponds or creeks. Water from private owners shall also be metered.
K. Protection and Repair: The seeded area shall be kept free of traffic until accepted. If at any time before acceptance by the Owner, any portion of the seeded surface becomes gullied or otherwise damaged, or the seeding has been damaged or destroyed, the affected portion shall be repaired to reestablish the specified condition prior to the acceptance of the Work. The Contractor shall notify the property owner prior to beginning the seeding operation. The Engineer and the Owner shall be notified immediately of any damage to the restored areas by other parties.



DIMENSION PLAN

SCALE 1"=10'

STATE OF MISSOURI
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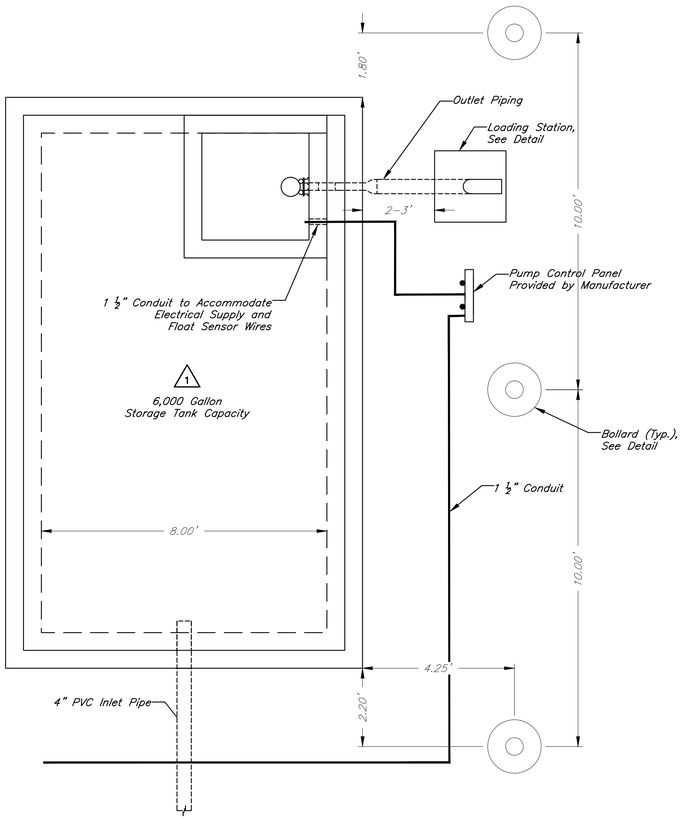
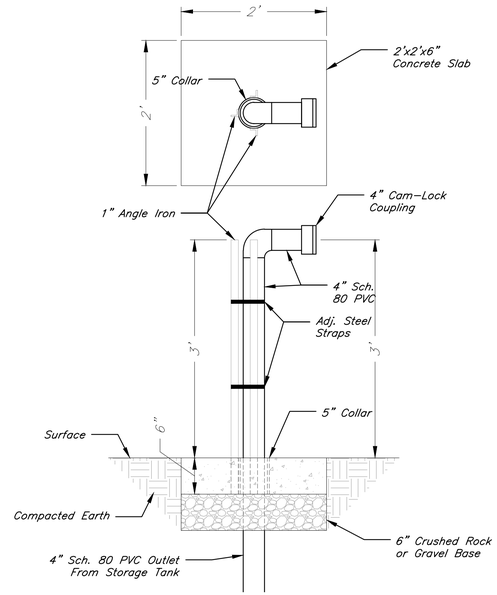
DATE:
DESIGN BY: JLW
DRAWN BY: JLW
PROJECT NO.: 12718.10
SHEET NO.: 2
TOTAL SHEETS: 4

William C. Carter Jr
Professional Engineer
License No. E-27250

NO.	DATE	REVISIONS	BY	APPROVED



STORAGE TANK PLAN
NO SCALE



LOADING STATION DETAIL
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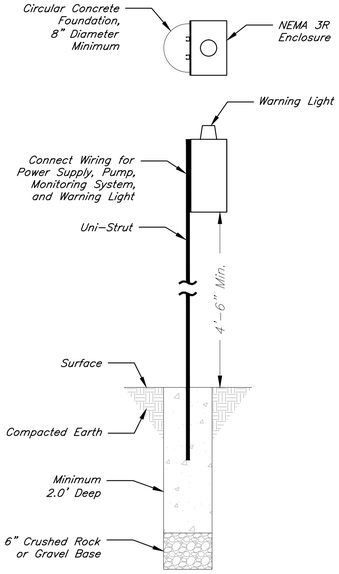

CONTROL PANEL ENCLOSURE
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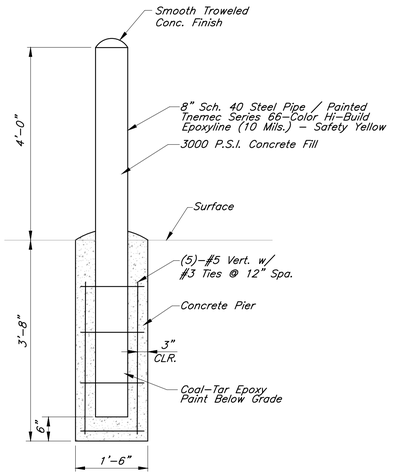

BOLLARD DETAIL
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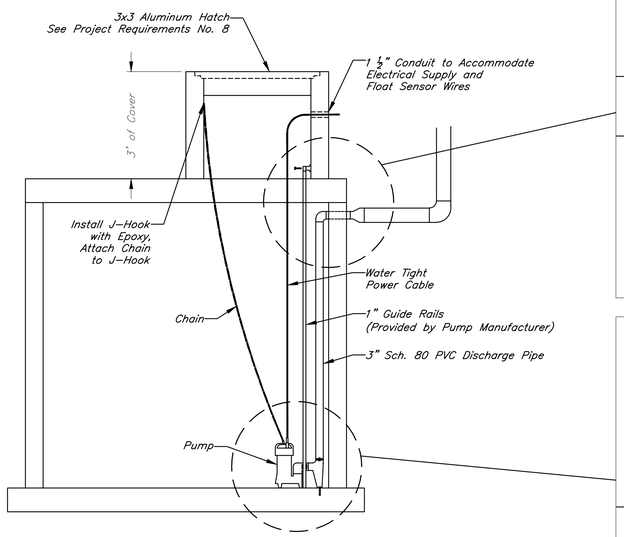
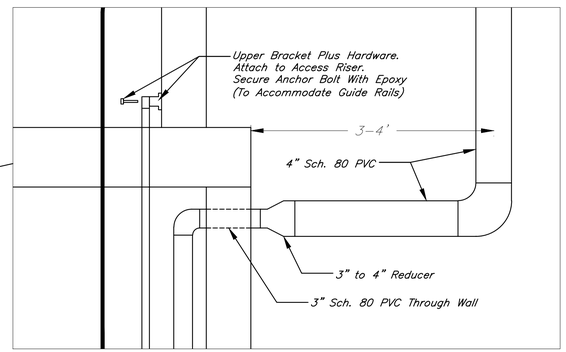
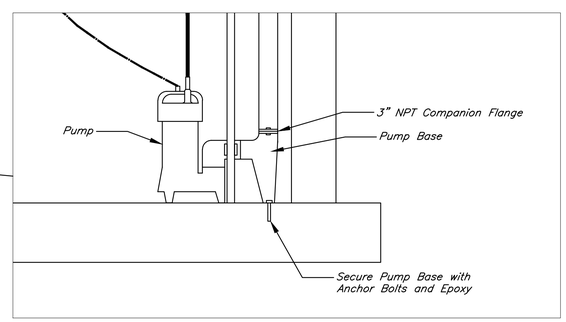
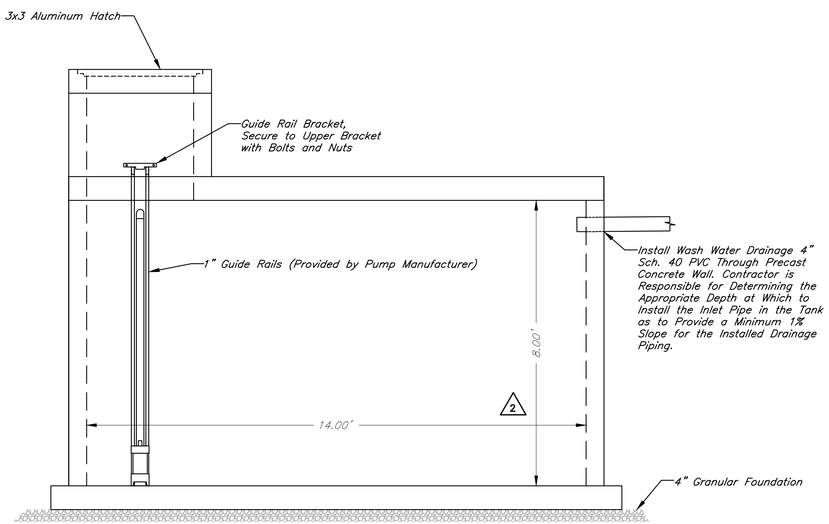






STORAGE TANK SECTION VIEW
NO SCALE



STORAGE TANK SECTION VIEW
NO SCALE

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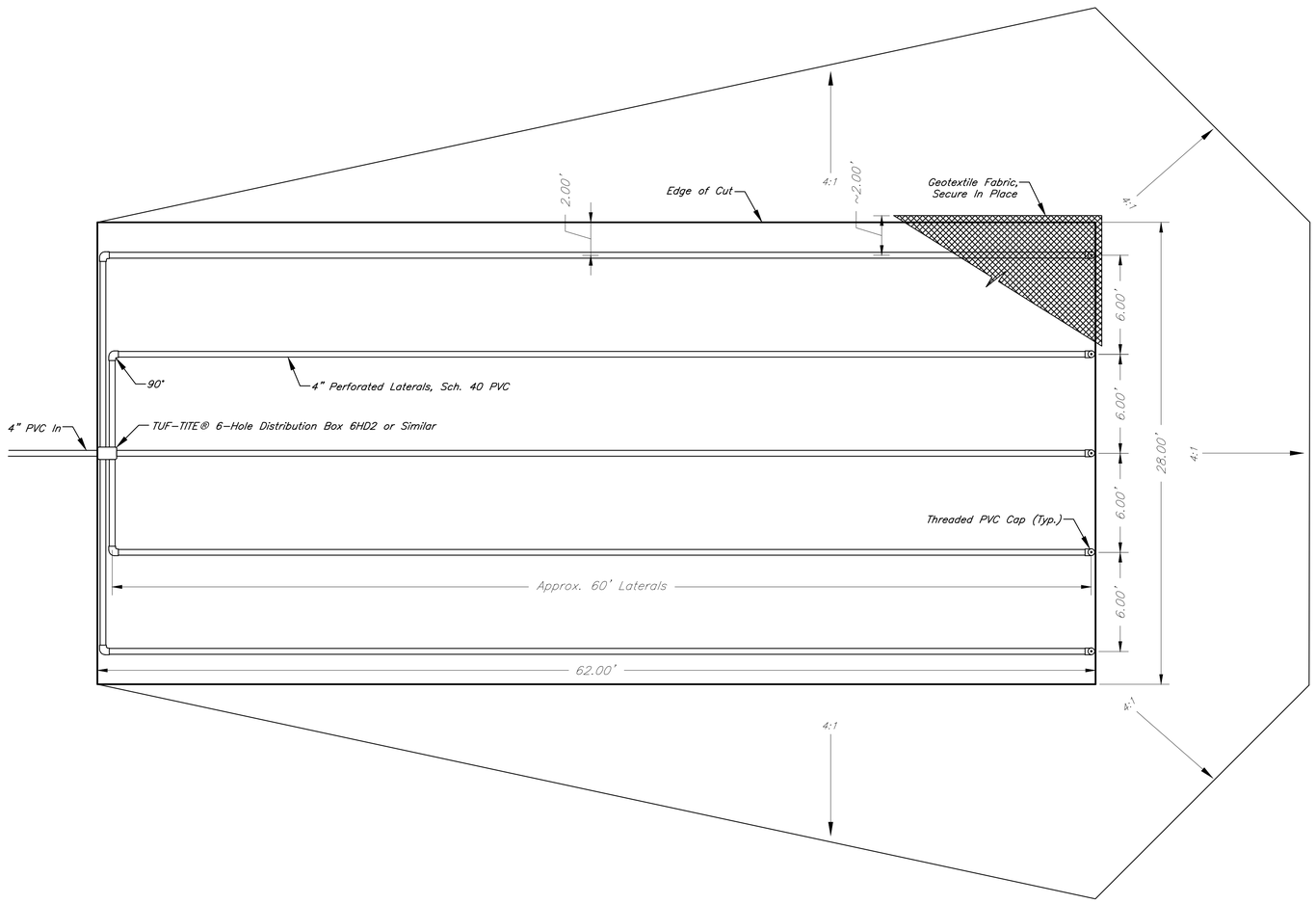
DRAWN BY:	JLW
PROJECT NO.:	12718.10
SHEET NO.	3
TOTAL SHEETS	4

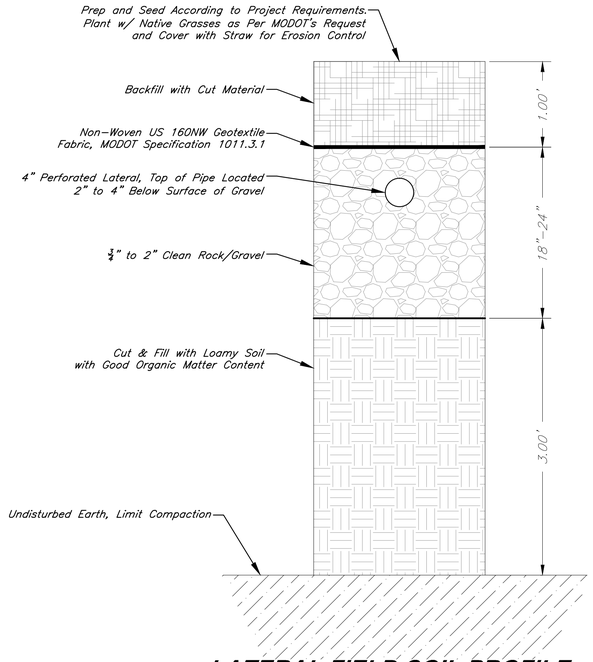
William C. Carter Jr
Professional Engineer
License No. E-27250

NO.	DATE	REVISIONS	BY	APPROVED
1	05/14	Specified Holding Tank Capacity	JLW	WCC
2	05/14	Provided Dimensions for Holding Tank	JLW	WCC



LATERAL FIELD PLAN

NO SCALE



LATERAL FIELD SOIL PROFILE

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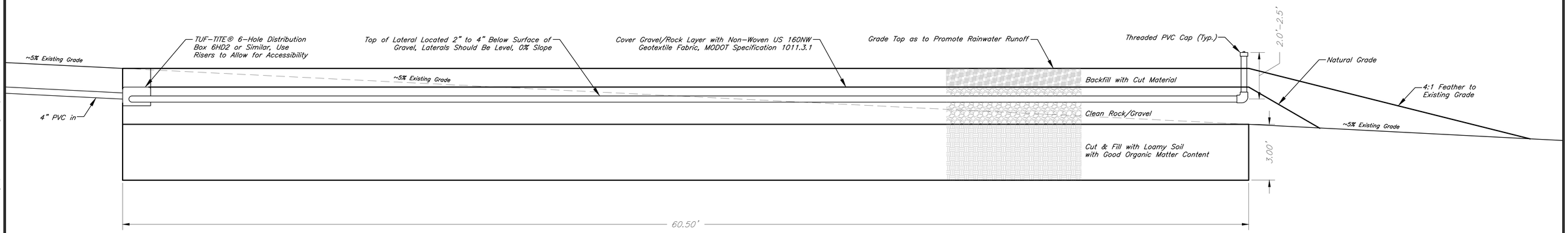

LATERAL FIELD SIDE PROFILE

NO SCALE

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DATE:	
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DRAWN BY:	JLW
PROJECT NO.:	12718.10
SHEET NO.	4
TOTAL SHEETS	4

NO.	DATE	REVISIONS	BY	APPROVED