

Underground Storage Tank Buoyancy Calculations for Fiberglass Tanks

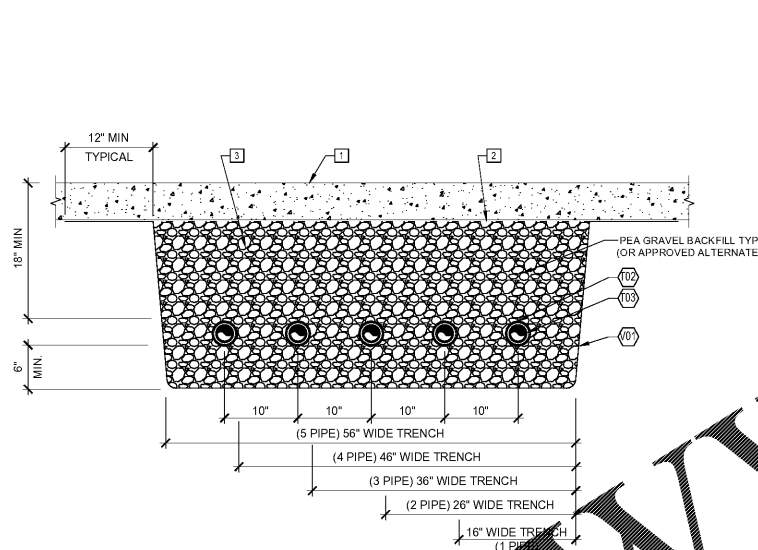
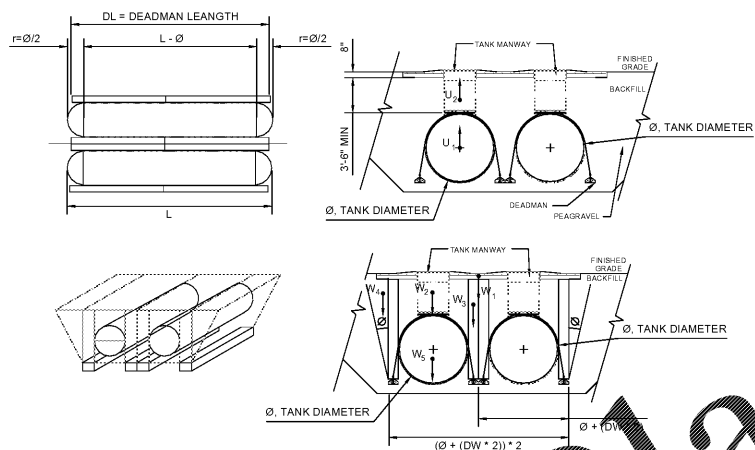
Project #:	38227	Assumptions	
Project Name:	Kissimmee, FL	100% saturation to finished grade	
Tank Manufacturer / Model:	Concrete DW 30 200	water =	62.4 lb/CF
		submerged concrete =	87.6 lb/CF
		submerged aggregate =	57.6 lb/CF
Number of Tanks:	3		
Tank Dry Weight:	90330 lbs		
Tank Volume:	20400 gallons		
Tank Diameter (Ø):	30 feet		
Tank Bury Depth:	5.34 feet		
Tank Length (L):	37.75 feet		
Number of Sumps:	3		
Sump Diameter:	42 inches		
Tank Slab Length:	52.2 feet		
Tank Slab Width:	29.5 feet		
Tank Slab Thickness:	3 inches		
Deadman Length (DL):	39 feet		
Deadman Width (DW):	28 inches		
Deadman Height:	8.25 inches		

Tank & Sump(s) Uplift	
Tank	$U1 = \frac{40000 \text{ gal}}{7.49 \text{ gal/CF}} \times 62.4 \text{ lb/CF} = 333,244 \text{ lbs}$
Sumps	$U2 = 154.1 \text{ CF} \times 62.4 \text{ lb/CF} = 9,613 \text{ lbs}$
Total Uplift	$U = \Sigma U1 = 342,857 \text{ lbs UPL}$

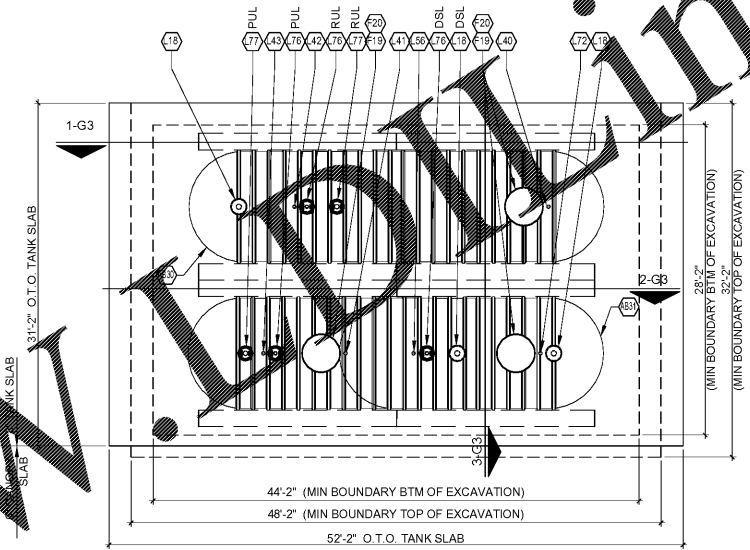
Dead Weights for Hold Down	
Concrete Slab	$W1 = 1032.6 \text{ CF} \times 87.6 \text{ lb/CF} = 90,457 \text{ lbs}$
Backfill Above Tank	$W2 = 4,217 \text{ CF} \times 57.6 \text{ lb/CF} = 242,910 \text{ lbs}$
Gravel Columns Above Deadman (2 deadman per tank)	$W3 = 3169.44 \text{ CF} \times 57.6 \text{ lb/CF} = 182,560 \text{ lbs}$
Soil Wedge Above Deadman (2 total)	$W4 = 342,450 \text{ CF} \times 57.6 \text{ lb/CF} = 19,727 \text{ lbs}$
Concrete Deadman (2 deadman per tank)	$W5 = 157.5 \text{ CF} \times 87.6 \text{ lb/CF} = 13,799 \text{ lbs}$
Dry Weight of Tank	$W6 = 90,330 \text{ lbs}$
Total Weight	$W = \Sigma W1 = 567,451 \text{ lbs DOWN}$

Net Force	$F_{net} = \Sigma W1 - \Sigma U1 = 224,594 \text{ DOWN}$
-----------	--

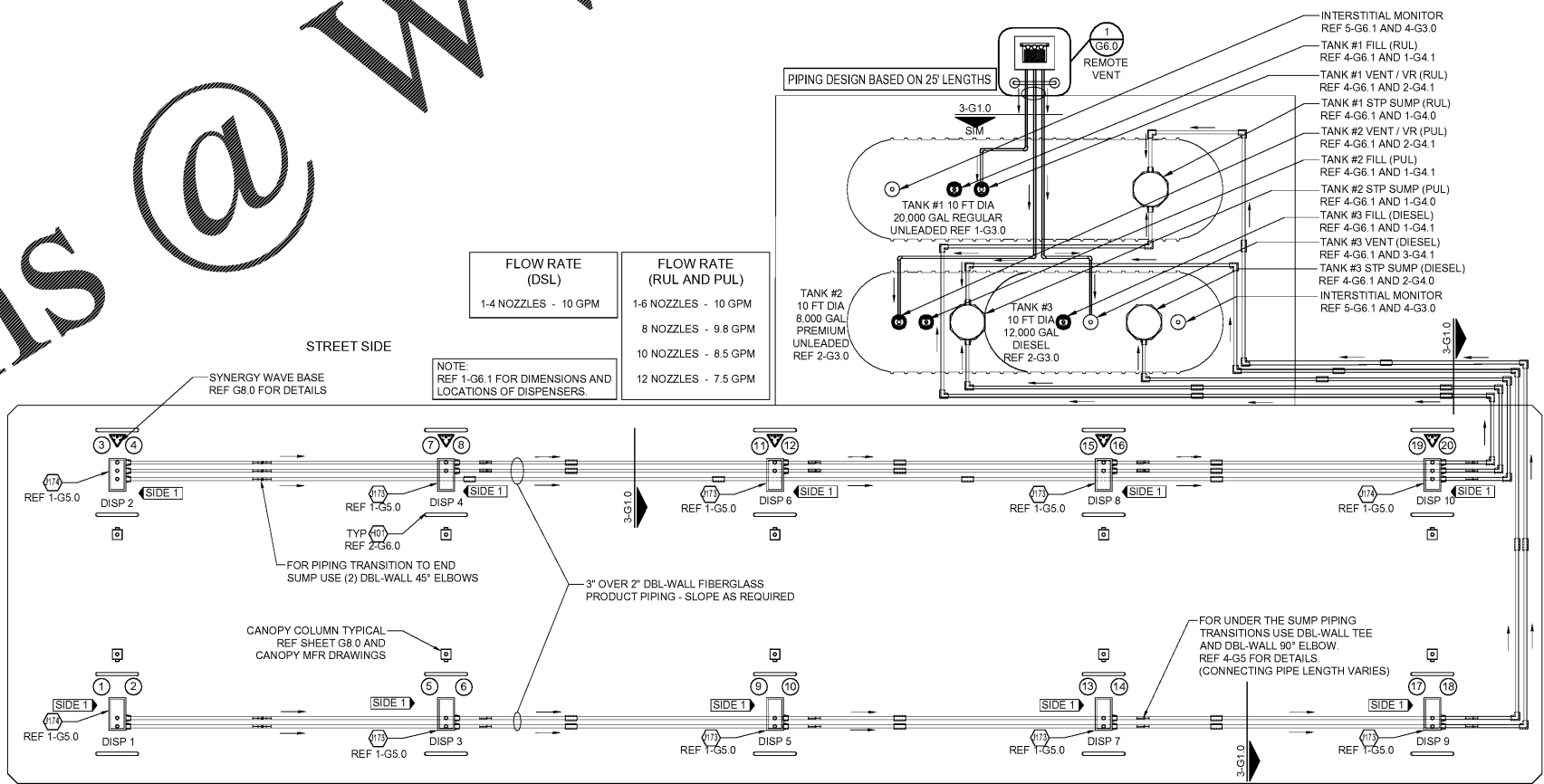
Factor of Safety	$F.S. = \frac{567,451 \text{ lbs}}{242,857 \text{ lbs}} = 1.64 \text{ PASS}$
------------------	--



3 PIPING TRENCH SECTION
1"=1'-0"



2 TANK SLAB PLAN
1/8"=1'-0"



1 FUEL PIPING PLAN
1/8"=1'-0"

GENERAL NOTES

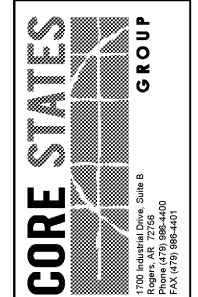
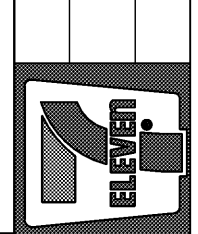
- ALL CONSTRUCTION SHALL MEET COUNTY STANDARDS. CONTRACTOR TO SECURE ENTIRE CONSTRUCTION AREA WITH CHAIN LINK FENCING DURING CONSTRUCTION PERIOD.
- THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DIFFERENCES BETWEEN THE ACTUAL FIELD CONDITIONS AND THE PLANS BEFORE PROCEEDING WITH CONSTRUCTION.
- FUEL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INTEGRITY OF THE PIPING SYSTEM DURING CANOPY ERECTION AND BEFORE FLATWORK INSTALLATION.
- AFTER COMPLETING INSTALLATION OF DISPENSERS, THE FUEL CONTRACTOR IS TO INSTALL BRIGHT ORANGE CONSTRUCTION FENCING AROUND ENTIRE DISPENSER.
- FUEL CONTRACTOR IS TO BE AWARE THAT ON THE DAY THE GASOLINE SYSTEM IS PUT INTO SERVICE, THE FUEL CONTRACTOR AND A LICENSED AUTHORIZED SERVICE CONTRACTOR MUST BE ON SITE ONE (1) HOUR PRIOR TO STARTUP AND MUST REMAIN ON SITE THREE (3) ADDITIONAL HOURS FOR A TOTAL OF FOUR (4) HOURS. ANY COSTS INCURRED OVER FOUR (4) HOURS DUE TO FUELING SYSTEM ISSUES SHOULD BE BILLED AS A CHANGE ORDER.

KEY NOTES

- 6" CONCRETE SLAB AT FUELING CANOPY. REF 1-G0.1 AND CIVIL DRAWINGS FOR TOS ELEVATIONS.
- GEOTECH FABRIC MATERIAL TO EXTEND 12" PAST EACH SIDE OF PIPING TRENCH AND TANK EXCAVATION.
- PIPING TRENCHES SHALL BE DUG IN SUCH A MANNER THAT THE TRENCH WIDTH IS EQUAL TO AT LEAST TWICE WIDTH OF ALL PIPING CONTAINED WITHIN. MAINTAIN A MINIMUM OF 4" (10cm) CLEAR DISTANCE BETWEEN PIPING POSITIONED IN THE TRENCH AND 6" WHERE PIPING CROSSES OVER EACH OTHER. THE BOTTOM OF THE TRENCH SHALL BE AS UNIFORM AS POSSIBLE TO ELIMINATE HIGH SPOTS AND ENSURING AN EVEN LAYER OF BEDDING MATERIAL UNDER THE PIPE. REMOVE ALL SHARP ROCKS AND DEBRIS FROM THE TRENCH BOTTOM BEFORE BEDDING MATERIAL IS INSTALLED.
- SITE CONDITIONS MAY CAUSE VARIATIONS WHICH MUST BE APPROVED BY 7-ELEVEN AND MANUFACTURER. PIPING BURIAL DEPTHS LESS THAN 18" REQUIRES 7-ELEVEN APPROVAL.

Rev. #	Date	Description

7-ELEVEN, INC.
3200 HACKBERRY ROAD, IRVING TEXAS 75063
7-ELEVEN #38227
S.W. CARROLL ST & DYER BLVD
KISSIMMEE, FL 34741
FUELING PIPING AND TANK PLAN
Proto 08-21-17



Job#: SEI-20880.521
Scale: AS NOTED
Date: 12/19/17
Drawn By: RMK
Checked By: KWS

Documents prepared by Core States Group are to be used only for the specific project and not for any other project. Any extension of use to other projects, by owner or any other party, without the written consent of Core States Group is done at the user's own risk. If used in a project not intended by Core States Group, Core States Group shall not be held liable for any claims and losses.

SHEET:
G1.0
FUELING - USA

Order Plans @