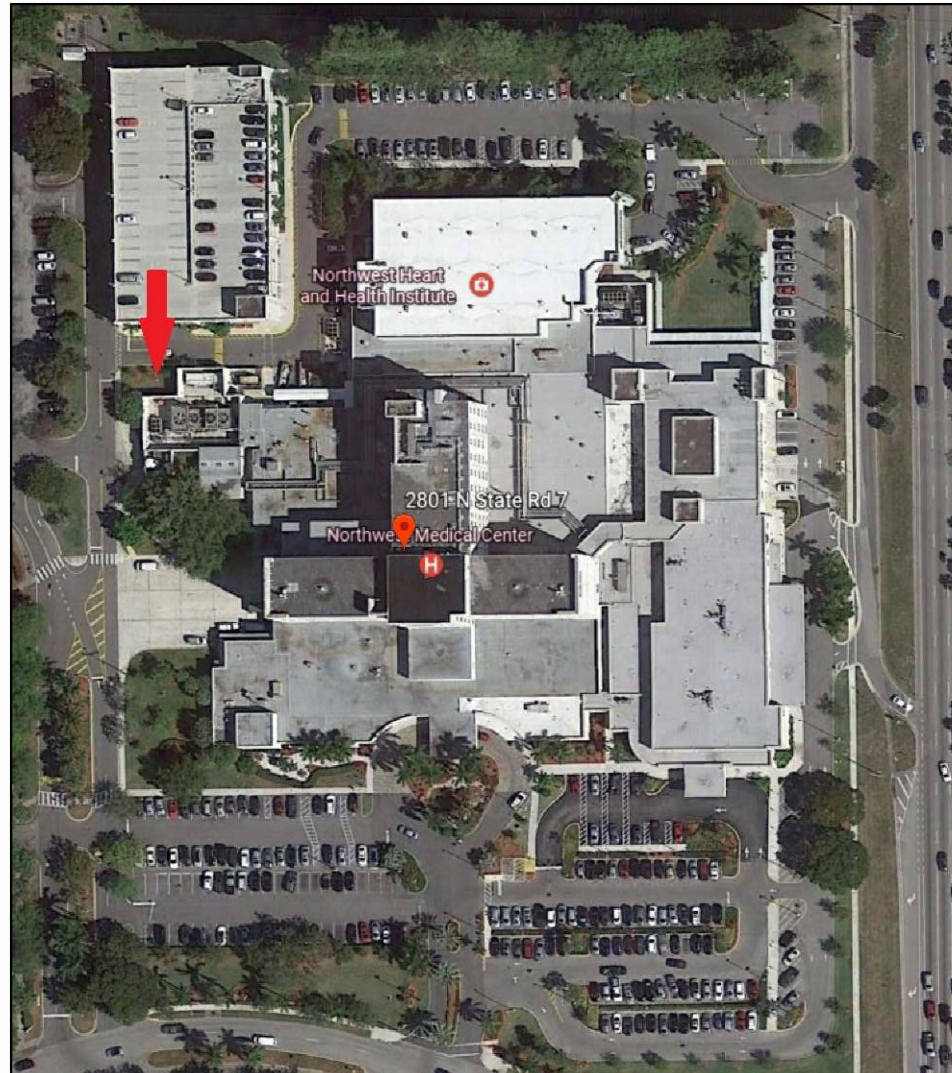


NORTHWEST MEDICAL CENTER

FUEL TANK INSTALLATION

2801 N. STATE ROAD 7
MARGATE, FLORIDA 33063



SAMPLE ENGINEERING PLAN

SHEET	INDEX DESCRIPTION
P1	INSTALLATION PLAN
S1	SITE PLAN
S2	DETAIL PLAN
TA	TANK ANCHORING DETAIL
S	SURVEY



ALL FLORIDA CONTRACTING SERVICES
3814 NW 126TH AVENUE
CORAL SPRINGS, FL 33065
PHONE: 954-775-7767
FAX: 954-753-3122

ITEM	FUEL COMPONENT DESCRIPTION
①	GUILLOTINE FLOW RESTRICTOR MH18428
②	REMOTE DISPENSER 115V AC PUMP MODEL FR713V
③	METER CABINET FR902CRU
④	NON-RECONNECTABLE BREAKAWAY HOSE B075F350
⑤	DIESEL ARCTIC NOZZLE FRNA075DAU10
⑥	KRUEGER LEAK DETECTION GAUGE TYPE K
⑦	KRUEGER LEVEL GAUGE TYPE D
⑧	ANTI-SIPHON VALVE EBW-300-01

SUMMARY OF WORK:

SUPPLY AND INSTALL 4000 GALLON SPLIT FUEL TANK FOR DISPENSING FUEL INTO VEHICLES (2000 GALLON DIESEL, 2000 GALLON GAS)

SCOPE OF WORK:

- 1) Obtain approval from Broward County Environmental and Growth Management Department (EGMD)
- 2) Permit project through Building and Zoning department
- 3) Form and pour new concrete pad per detail "A", sheet S-2
- 4) Set & secure new 4000 gallon above ground Convault UL2085 fuel tank per "FUEL TANK HOLD DOWN METHOD".
- 5) Install components on new tank
- 6) Run (2) SETS 2-#12, w/2-# 12 GND THHN/THWN wire in 3/4" conduit from panel EQL2 breaker location #9,13 in electrical room to tank dispensing pumps (120 volt, 20 amp circuits)
- 7) Install emergency stop button a minimum of 20 from tank for dispensing pump (see sheet S-1 for locaton)
- 8) Start-up and test

NOTES:

- 1) NO FUEL PIPING IS NEEDED OR INCLUDED IN THE WORK SCOPE
- 2) TANK WILL HAVE PLACARDS PLACED AROUND TANK PER " SIGNAGE DETAIL"
- 3) NEW TANK IS SPLIT 4000 GALLONS, 2000 GALLON DIESEL, 2000 GALLON GAS, UL2085, STEEL INTERIOR AND CONCRETE EXTERIOR
- 4) EQ NUMBERS ARE SHOWN UNDER "FDEP REQUIREMENTS"
- 5) TANK WILL BE VENTED WITH 2" RIGID GALVANIZED PIPE 12' ABOVE GRADE
- 6) ALL ELECTRICAL CONDUITS INSIDE WILL BE EMT, OUTSIDE RGS, AND UNDERGROUND SCHEDULE 40 PVC. NOTE: NO VEHICULAR TRAFFIC
- 7) GROUNDING PER NEC 250
- 8) ALL CONCRETE TO HAVE A 28 DAY COMPRESSION STRENGTH (MIN 4000 PSI)
- 9) TANK COMES WITH FACTORY INSTALLED ANTI-SIPHON VALVE (EBW 606-300-001)AND BALL CHECK VALVE

SIGNAGE DETAIL

- 2- CONVAULT PLACARDS 12" X 8"
- 2- NO SMOKING PLACARDS 20" X 3-1/2"
- 2- COMBUSTIBLE PLACARDS 20" X 3-1/2"
- 2- PRODUCT PLACARDS 20" X 3-1/2"
- 2- WEIGHT PLACARDS 13-1/2"X 2"
- 2- SIZE BY GALLON PLACARDS 13" X 2"
- 1- LEAK DETECTOR PLACARD 20" X 3-1/2"
- 1- FILL PLACARD 6" X 2"
- 1- CAUTION PLACARD 20" X 3-1/2"
- 1- EMERGENCY PLACARD 20" X 2"
- 1- VENT PLACARD 6" X 2"
- 2- NFPA 704 DIAMOND PLACARD 12" X 12"

FDEP REQUIREMENTS

ITEM	MANUFACTURER/MODEL	ITEM
TANK	CONVAULT 4000 GALLON TANK	EQ-750
SPILL/FILL	INCLUDED IN EQ-750 ABOVE	
OVERFILL	GUILTINE FLOW RESTRICTOR	EQ-637
LEAK DET.	KRUEGER LEAK DETECTION GAUGE	EQ-675
LIQUID LEVEL	KRUEGER LEVEL GAUGE	EQ-730

FUEL NOTES:

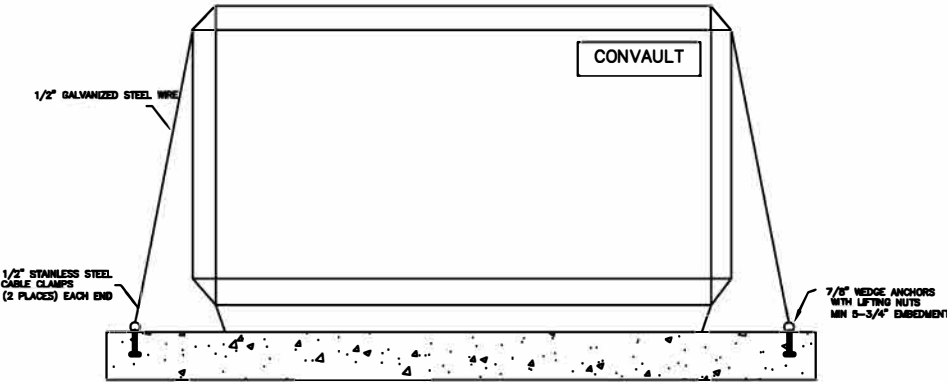
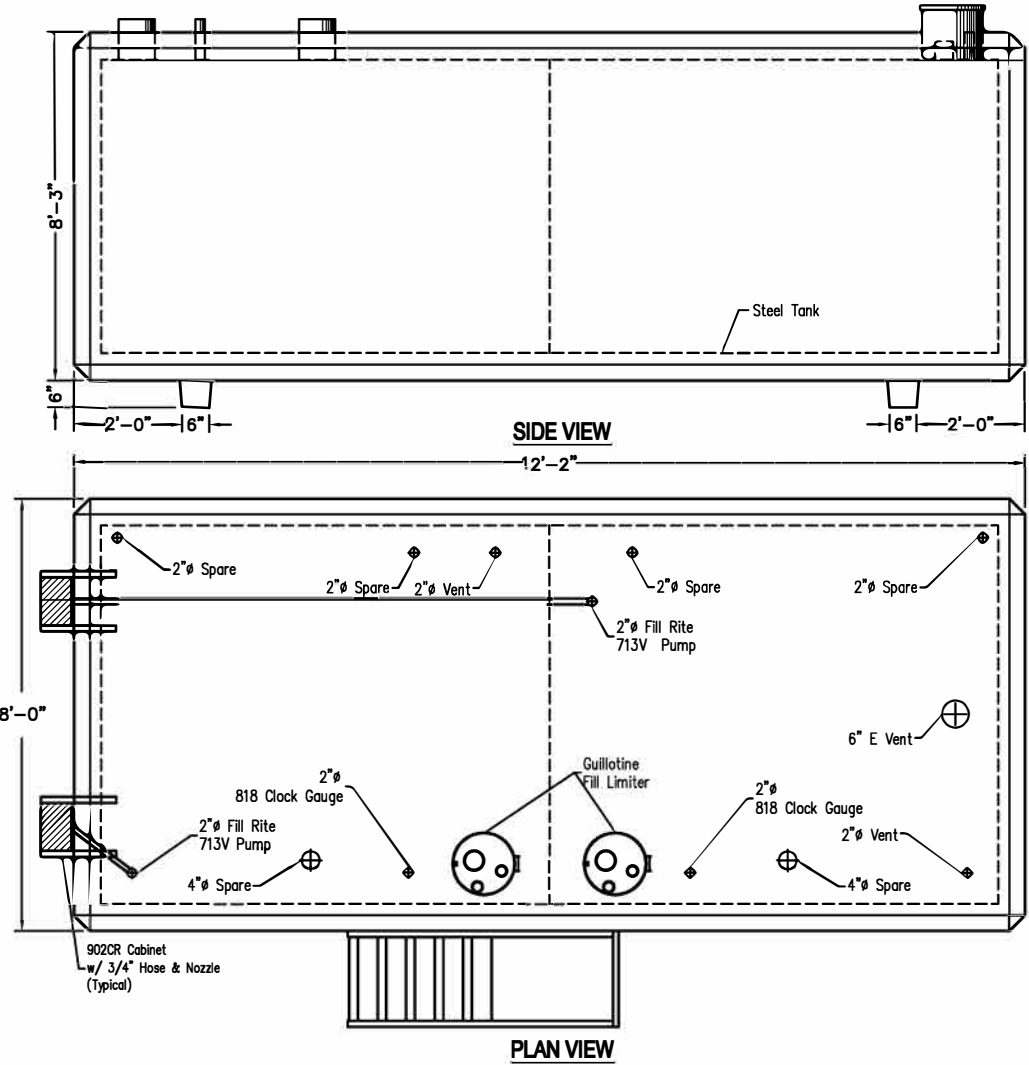
1. ALL NEW PETROLEUM EQUIPMENT, MATERIALS, AND ACCESSORIES SHALL BE FDEP APPROVED. ALL PETROLEUM EQUIPMENT, MATERIALS, AND ACCESSORIES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH APPLICABLE MANUFACTURER'S INSTRUCTIONS.
2. ALL TANK AND PIPING INSTALLATION WORK IS TO BE PERFORMED BY A STATE REGISTERED POLLUTANT STORAGE SPECIALTY CONTRACTOR.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE STATE, COUNTY AND MUNICIPAL REQUIREMENTS---THE LATEST FLORIDA BUILDING CODE; FLORIDA FIRE PREVENTION CODE; NATIONAL ELECTRIC CODE; AND THE FOLLOWING REFERENCE STANDARDS:

NATIONAL FIRE PROTECTION ASSOCIATION:
30 FLAMMABLE AND COMBUSTIBLE LIQUID CODE
30A MOTOR FUEL DISPENSING FACILITIES AND REPAIR GARAGE
70 NATIONAL ELECTRIC CODE
704 STANDARD SYSTEMS FOR THE IDENTIFICATION OF THE HAZARDS OF MATERIALS FOR EMERGENCY RESPONSE

PETROLEUM EQUIPMENT INSTITUTE:
RP200 RECOMMENDED PRACTICES FOR INSTALLATION OF ABOVE GROUND SYSTEMS FOR MOTOR VEHICLE FUELING

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION:
62-762 ABOVE GROUND STORAGE TANK SYSTEMS

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING UNDERGROUND UTILITIES IDENTIFICATION BY CONTACTING SUNSHINE ONE CALL (1-800-432-4770) AND APPLICABLE MUNICIPAL JURISDICTION AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GIVING REQUIRED NOTICE(S) AND SCHEDULING APPLICABLE CITY, COUNTY AND/OR STATE INSPECTIONS AS REQUIRED FOR PERMIT CLOSE OUT(S).



FUEL TANK HOLD DOWN METHOD

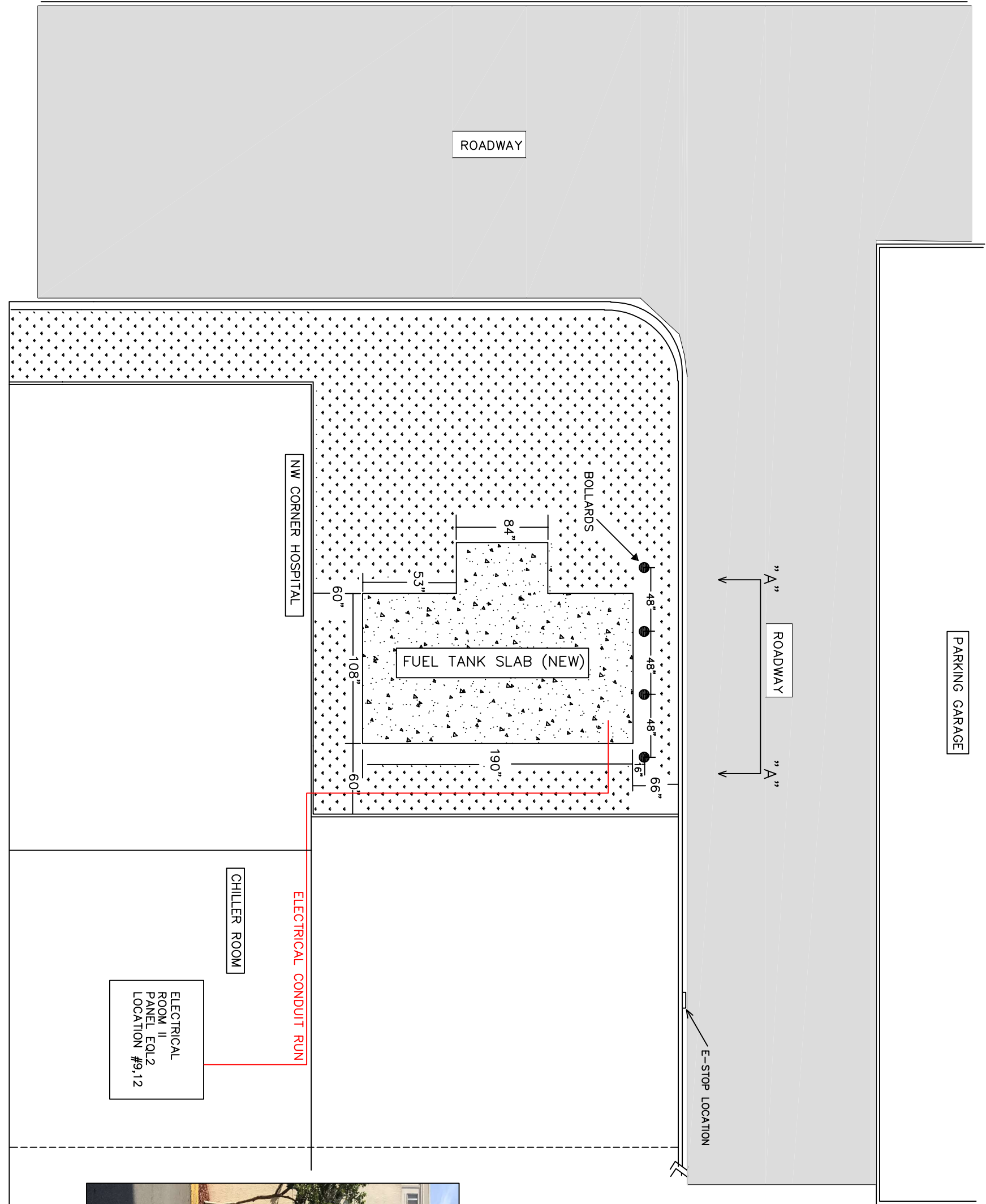
REVISIONS:	DATE:	BY:	DESCRIPTION:	SUBMITTED BY:
1				MICHAEL COX POLLUTANT STORAGE CONTRACTOR PCC1256894 LICENSE NO.
2				MICHAEL COX GENERAL CONTRACTOR CSC1517560 LICENSE NO.
				MICHAEL COX ELECTRICAL CONTRACTOR EC0002256

SUBMITTED BY:

AFCs
All Florida Contracting Services
3814 N.W. 128th Avenue
Coral Springs, FL 33065
PHONE: 954-775-7767
FAX: 954-753-3122

NORTHWEST MEDICAL CENTER
2801 N. STATE ROAD 7
MARGATE, FL 33063

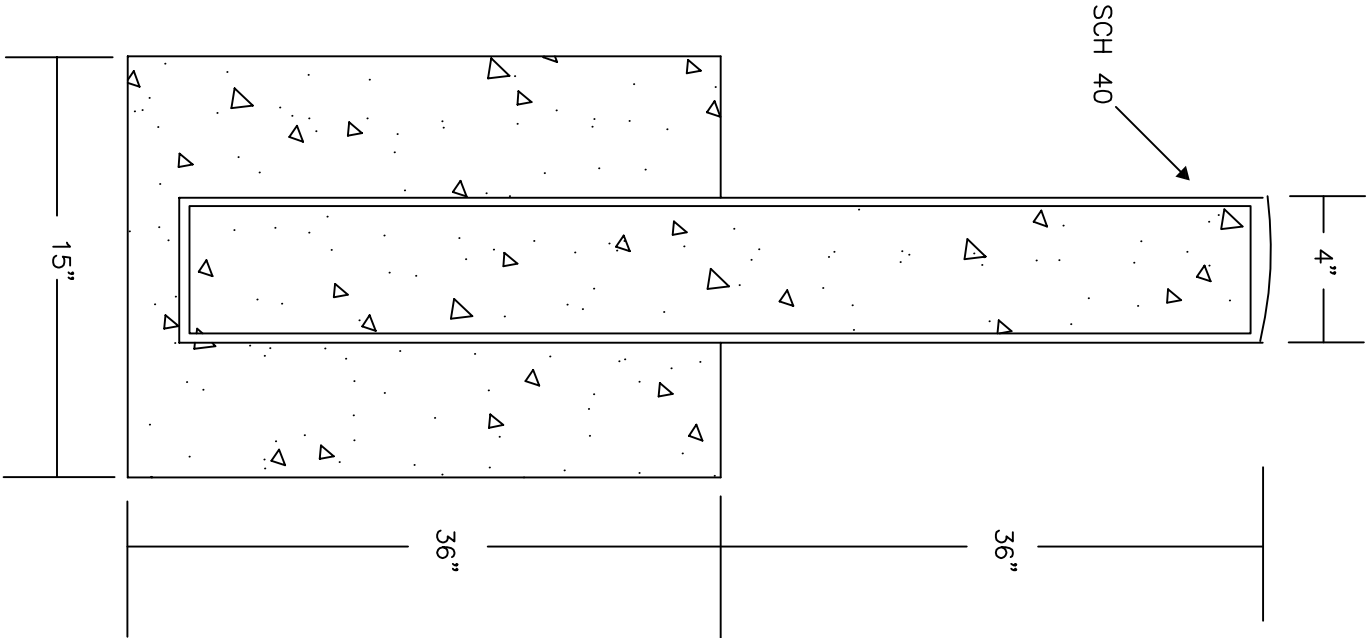
SHEET TITLE:	SHEET NO.
FUEL TANK INSTALLATION	P-1



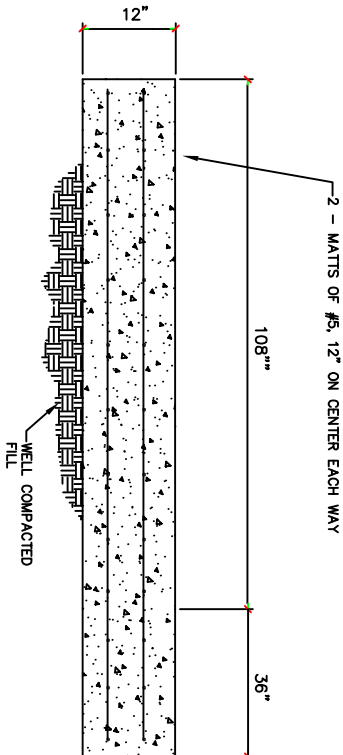
A-A LOCATION DETAIL _____

REVISIONS:	DATE:	BY:	DESCRIPTION:	SUBMITTED BY:	SUBMITTED BY:	SHEET TITLE:	SHEET NO.
A				MICHAEL COX POLLUTANT STORAGE CONTRACTOR PCC1256894		NORTHWEST MEDICAL CENTER 2801 N. STATE ROAD 7 MARGATE, FL 33063	SITE PLAN
2				MICHAEL COX GENERAL CONTRACTOR PCC1256894			
				MICHAEL COX ELECTRICAL CONTRACTOR ECC0002295			

NOTE: INSTALL BOLLARDS PER NFPA 4.3.7.2 AROUND FUEL TANKS MAXIMUM OF 4 FEET ON CENTER.

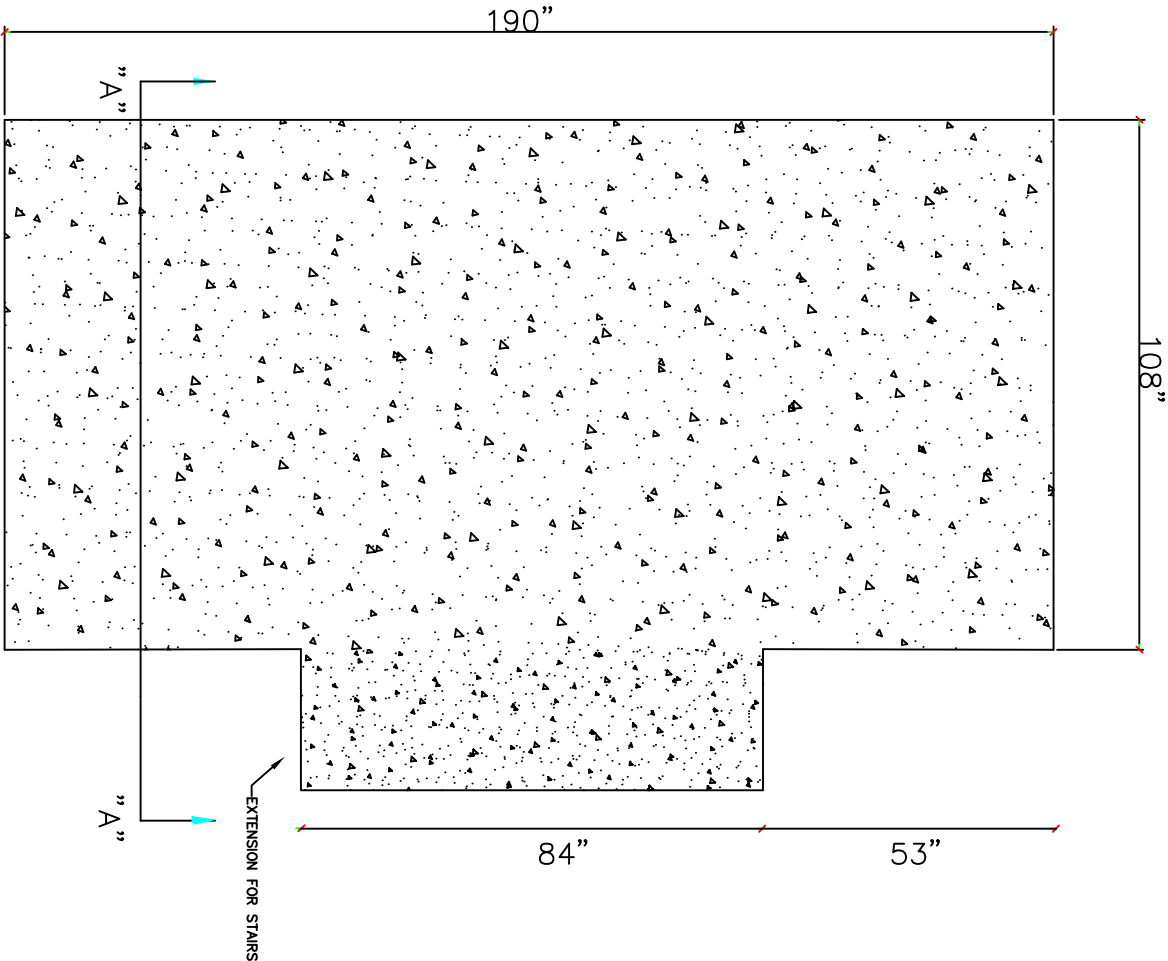


BOLLARD DETAIL



A-A SLAB DETAIL

NOT TO SCALE



SLAB DETAIL "TANK"

NOT TO SCALE

REVISIONS:	DATE:	BY:	DESCRIPTION:	SUBMITTED BY:	SUBMITTED BY:	APCS	SHEET TITLE:	SHEET NO.
<div>A</div>				MICHAEL COX POLLUTANT STORAGE CONTRACTOR PCC1256894 LICENSE NO.	RICKY A. DEROSA PROFESSIONAL ENGINEER P.E. #39802 LICENSE NO.	All Florida Contracting Services 3814 N.W. 126th Avenue Coral Springs, FL 33065 PHONE: 954-753-7767 FAX: 954-753-3122	NORTHWEST MEDICAL CENTER 2801 N. STATE ROAD 7 MARGATE, FL 33063	DETAIL PLAN
<div>A</div>				MICHAEL COX GENERAL CONTRACTOR PCC1256894 LICENSE NO.				S-2
				MICHAEL COX ELECTRICAL CONTRACTOR EC0002295				

Wind Load for equipment attachment Using ASCE-7-10 .

Step 1	Risk Category:	II	(ASCE Table 1.5-1)
Step 2	Basic Wind Speed V =	165	mph (ASCE fig. 26.5 1A)
Step 3	Wind Directionality Factor Kd =	0.9	(ASCE Table 26.6-1, equipment with square section)
	Exposure Category:	C	(The Bldg has exposure C in all direction)
	Topographic Factor Kzt =	1.0	(ASCE Sect. 26.8, flat terrain surrounding the bldg)
	Gust effect Factor G:	NA	(GCr values are given in ASCE Sect. 29.5.1)
Step 4	Velocity Pressure Exposure Coefficient Kz =	0.9	(ASCE table 29.3-1. for z = h = 20 ft and exposure C)
Step 5	Velocity Pressure qz =	56.45	psf (ASCE Sect. 29.3.2)
	(qz = 0.00256 x Kz x Kzt x Kd x V^2)		
Step 6	Force Coefficient Cf	NA	(Not Applicable)

Step 7	DIMENSIONS(LxWxH)(inch) :	146	96	99	WEIGHT (lb) =	45000
	Af: (Area of projection normal to wind direction)	100	ft sq		(ASCE Sect. 29.5.1 eq 29.5-2)	
	Ar: (Equipment horizontal Area Projected Area)	97.33	ft sq		(ASCE Sect. 29.5.1 eq 29.5-3)	
	Hf: (Height of force from overturning point) =	4.13	ft			
	Lateral Force: Fh = qz x 3.1 x Af =	17566.3	lb	Shear Force		

TANK TO SLAB ATTACHMENT:

Number of bolts used per long side	=	2
Number of bolts used per short side	=	0
Total number of bolts used (7/8") 5.75" embedment	=	4

Shear (breaking all bolts and sliding unit horizontally)

Shear per bolt = Shear force / number of bolts	17566.3	/	4	=	4392	lbs	
Shear capacity per bolt				=	5060	lbs	acceptable

TENSION (overturning of unit along long side by pulling bolts on the other long side and short sides)

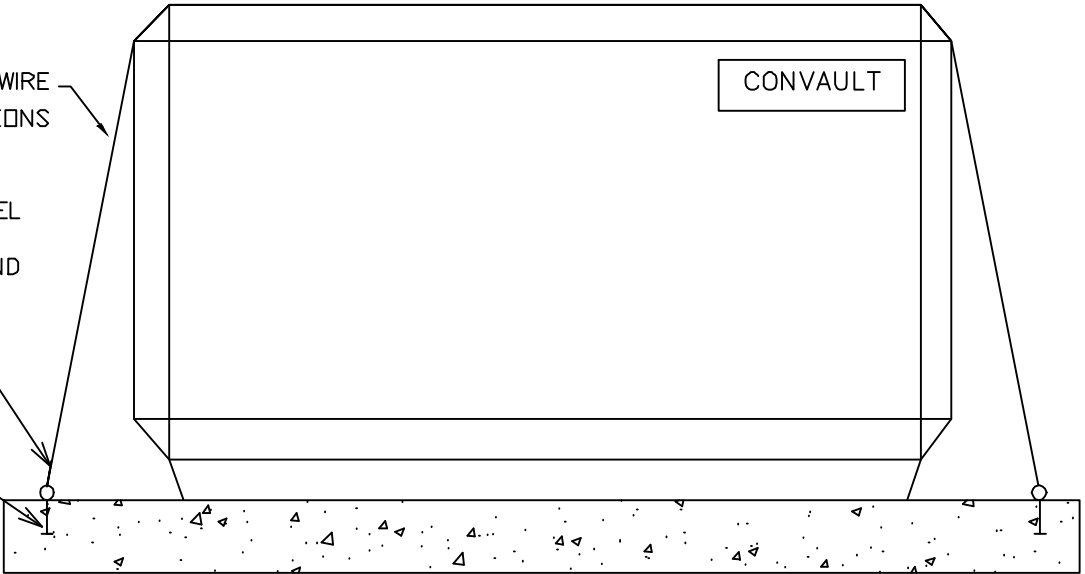
Uplift Force: Fv = qz x 1.5 x Ar =	8242.2	lb	
OVER TURNING MOMENT (LATERAL+UPLIFT) = Fh x 1.5 x Hf +(Fv x W/2)	141660.4	ft lbs	
RESISTING MOMENT = (weight) X width/2) =	180000.0	ft lbs	
RESULTING MOMENT = OVERTURNING M. - RESISTING M. =	-38339.6	ft lbs	Tension Force
ANCHORING FORCE REQUIRED = RESULTING MOMENT /WIDTH OF UNIT	=	-4792	lbs tank weight resists wind overturning moment
Tension per bolt = Tension force / number of bolts per long side and 2-short sides	=	-2396.2	lbs
Tension capacity per bolt	=	4565	lbs acceptable

Test :	calculated tension per bolt / bolt tension capacity + calculated shear per bolt/ bolt Shear capacity=	must be less than 1
	0.34 < 1 acceptable	

1/2" GALVANIZED STEEL WIRE
TWO WIRES @ TWO LOCATIONS

1/2" STAINLESS STEEL
CABLE CLAMPS
(2 PLACES) EACH END

7/8" WEDGE ANCHORS
WITH LIFTING NUTS
MIN 5-3/4" EMBEDMENT
(TOTAL OF 4 ANCHORS
BY POWERS FASTENING
OR EQUAL)



TANK ANCHORING DETAIL

NTS

Query Date: Mon Jun 19 2017
Latitude: 26.2631
Longitude: 80.2029
ASCE 710
Windspeeds
(3sec peak gust in mph*):
Risk Category I: 153
Risk Category II: 165
Risk Category IIIIV:
177
MRI** 10Year: 89
MRI** 25Year: 111
MRI** 50Year: 126
MRI** 100Year: 137
ASCE 705
Windspeed:
141 (3secpeak gust in mph)
ASCE 793
Windspeed:
109 (fastest mile in mph)

REVISIONS

DESCRIPTION DATE

BUCHANAN P.E CONSULTING INC.
ELECTRICAL * MECHANICAL * PLUMBING
ENGINEERING
6191 W. ATLANTIC BLVD, SUITE# 2 MARGATE, FL 33063
Ph: 954-590-3300 Fax: 954-590-2232
Email: BUCHANAN@ENGINEERS.COM
CERTIFICATE OF AUTHORIZATION # 8842
BUCHANAN P.E # 48916 MAURICE LORD P.E # 72550

TANK ATTACHMENT
2801 N SR-7
MARGATE, FL

SCALE:
DRAWN BY:
CHECKED BY:
PRINT DATE: