

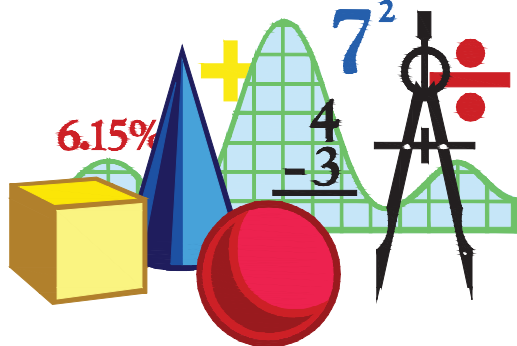
DRAWING LIST:

DRAWING NUMBER	TITLE
CS	Cover Sheet
A-1	Floor Plan
A-2	Reflected Ceiling Plan
A-3	Furniture & Equipment Plan
A-4	Building Elevations
A-5	Building Elevations Cont.
A-6	A.D.A Restrooms & Elevations
A-7	Door & Storefront Details
A-8	Sections
A-9	Enlarged Plan & Interior Elevations
A-10	Misc. Interior Elevations
A-11	Wall Sections
A-12	Misc. Details
S-6	Roof Plan

ARCHITECTURAL PLANS FOR  
GIANT OIL COMPANY  
BP

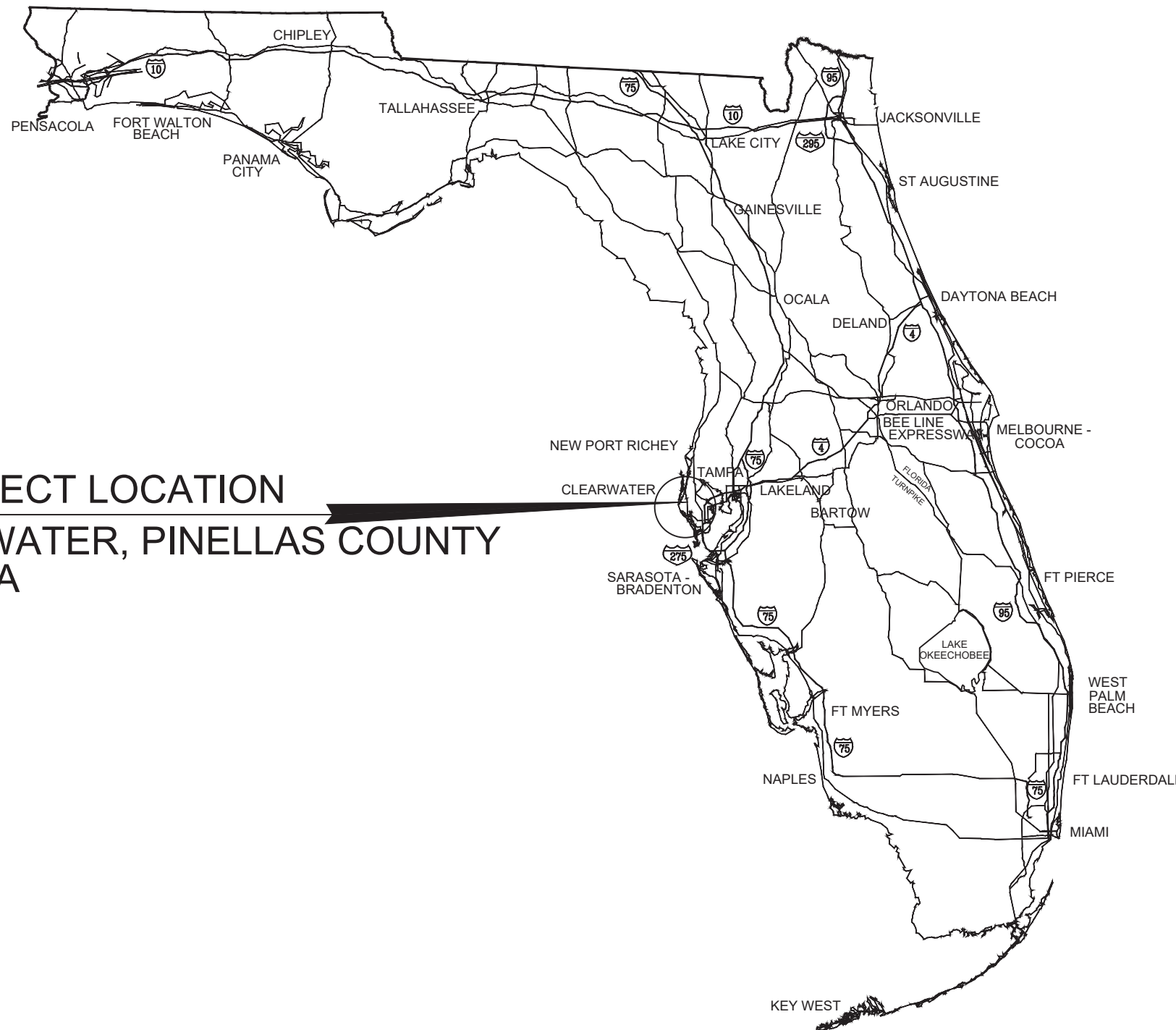
3009 Gulf to Bay  
Clearwater, Florida 34619

PREPARED BY  
ENGINEER OF RECORD:  
AEC Services, Inc.  
RON FAIR, P.E. FL #50738 QB0011445 License #9277



1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
(813)684-2660 (f)  
www.aecservicesinc.com

PROJECT LOCATION  
CLEARWATER, PINELLAS COUNTY  
FLORIDA



VICINITY MAP



PROJECT LOCATION MAP  
NOT TO SCALE

Florida Design Criteria:

Applicable Codes:

- Florida Building Code-Building 2017 Edition.
- Florida Building Code-Plumbing 2017 Edition.
- Florida Building Code-Mechanical 2017 Edition.
- Florida Building Code-Fuel Gas 2017 Edition.
- Florida Building Code-Energy Conservation 2017 Edition.
- Florida Building Code-Accessibility 2017 Edition.
- Florida Fire Prevention Code 2017 6th Edition.
- National Electrical Code (NEC) 2014 Edition.
- ACI 318-05: American Concrete Institute.
- AISC 360-05: American Institute of Steel Construction.
- ASCE 7-10
- IESNA: Illuminating Engineering Society of North America.
- NFPA 30: Flammable & Combustible Liquids.
- NFPA 30A: Motor Fuel Dispensing Facilities.
- NFPA 37: Stationary Combustion Engines & Gas Turbines.
- NFPA 70: National Electrical Code 2014 Edition.
- NFPA 90A: Installation of Air-Conditioning & Ventilation Systems.
- NFPA 90B: Installation of Warm Air Heating & Air-Conditioning Systems.
- NFPA 101: Safety to Life from Fire in Buildings & Structures.
- NFPA 110: Emergency and Standby Power Systems.
- NFPA 780: Standards for the Installation of Lightning Protection System.
- NESC: National Electrical Safety Code 2014 Edition.
- PEI / RP 100-05: Petroleum Equipment Institute / Recommended Practice.
- CHAPTER 62-761: Florida Administrative Code.
- FDEP: Florida Department of Environmental Protection.

Building Design Data:

- BUILDING AREA:  
C-STORE 3500 S.F.
- CONSTRUCTION TYPE:  
C-STORE II-B (UNSPRINKLERED)  
OCCUPANCY:  
C-STORE "M" MERCANTILE GROUP
- OCCUPANCY LOAD:  
C-STORE 116 OCCUPANTS  
(30 S.F./PER OCCUPANT)
- WIND LOAD:  
168 MPH
- RISK CATEGORY:  
CATEGORY II
- EXPOSURE CATEGORY:  
"C"
- MAXIMUM ALLOW BUILDING HEIGHT:  
55 FT.
- PROPOSED BUILDING HEIGHT:  
C-STORE 23'-0" T.O. ROOF

REVISIONS LEGEND:

DATE ISSUED:	10-10-2018	DATE
REVISION No.	1	
REVISION No.	2	
REVISION No.	3	

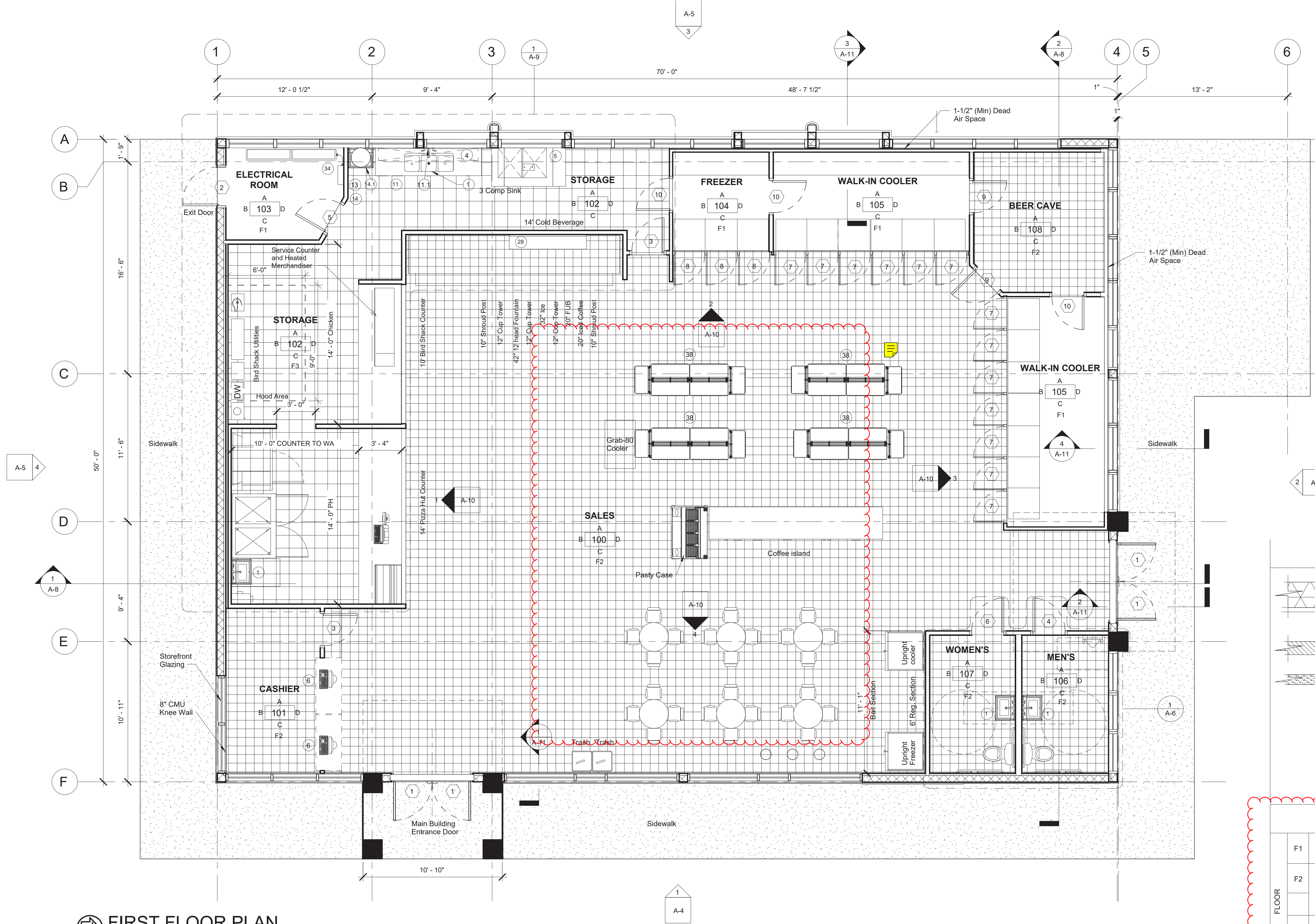
CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602  
SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

ENGINEER OF RECORD:  
AEC Services, Inc.  
RON FAIR, P.E.  
FL # 50738 License No. 9277 QB #0011445  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
(813)684-2660 (f)  
www.aecservicesinc.com

6	JOB NO:	GO161712
5	DWG Name	BASEPLAN
4	XREF Name	NONE
3	SCALE	AS NOTED
2	DATE	10-10-18
1	DRAWN BY	PAZ
	CHECKED	GEP
	DATE	
	APPROVAL	RAF
REVISIONS		

COVER SHEET

CS



**FIRST FLOOR PLAN**  
1/4" = 1'-0"

**ROOM FINISH SCHEDULE**

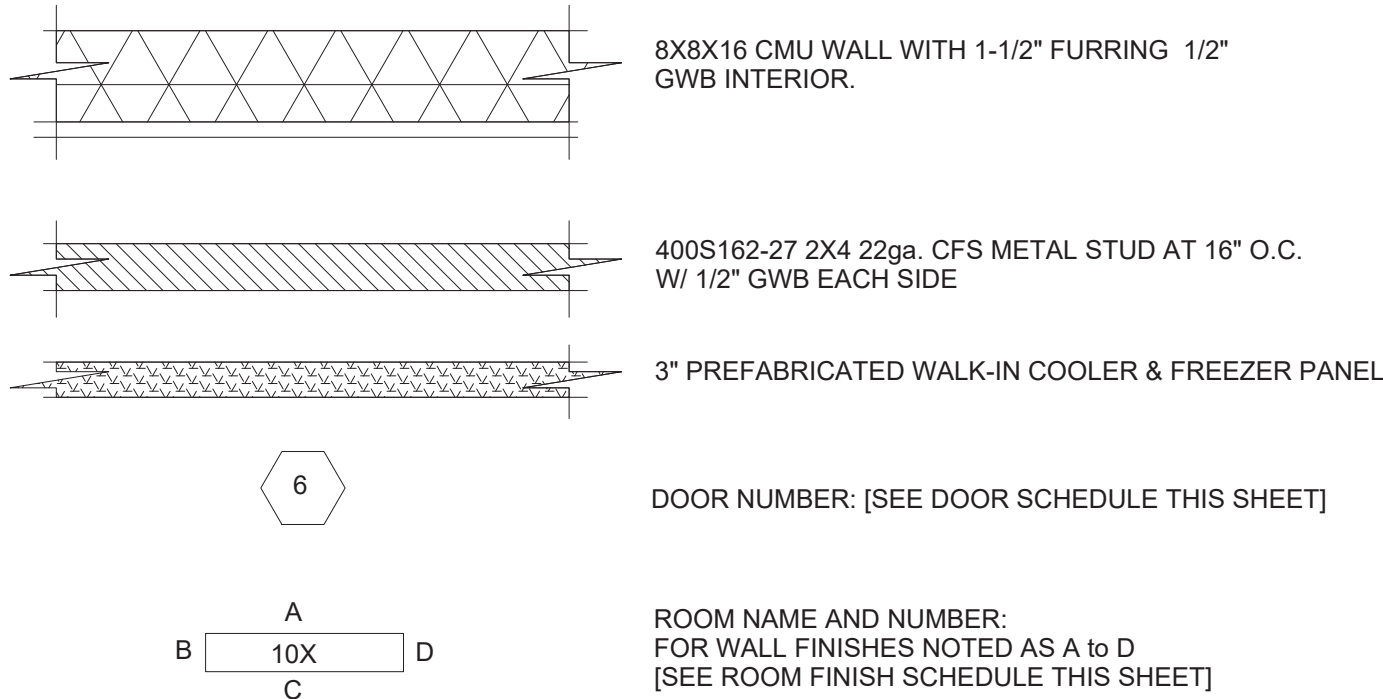
RM. NO.	ROOM NAME	FLOOR	BASE	WALLS				CLG. HGT.	CLG. FIN.	REMARKS
				A	B	C	D			
100	SALES AREA	F2	B3	W1	W1	W1	W1	12'-8"	C2	
101	CASHIER	F2	B3	W1	W1	W1	W1	12'-8"	C2	
102	STORAGE	F3	B1	W1	W1	W1	W1	9'-0"	C2	
103	ELECTRICAL ROOM	F1	-	-	-	-	-	9'-0"	C2	
104	FREEZER	F1	B2	W3	W3	W3	W3	-	-	(SEE MANUFACTURERS SHOP DRAWINGS)
105	WALK-IN COOLER	F1	B2	W3	W3	W3	W3	-	-	(SEE MANUFACTURERS SHOP DRAWINGS)
106	MEN	F2	B3	W2	W2	W2	W2	12'-8"	C2	GYP. BOARD SHALL BE MOISTURE RESISTANT- AT MENS & WOMENS RESTROOMS, MIN. 4" A.F.F. (PER CODE)
107	WOMEN	F2	B3	W2	W2	W2	W2	12'-8"	C2	
108	BEER CAVE	F2	B3	W2	W2	W2	W2	-	-	(SEE MANUFACTURERS SHOP DRAWINGS)

NOTE: CAULK ALL JUNCTURES BETWEEN DISSIMILAR PRODUCTS

**GENERAL NOTES :**

- ALL INTERIOR FINISHES SHALL COMPLY WITH TABLE 803.5 OF THE 2014 FLORIDA BUILDING CODE.
- PAINT ALL SITE UTILITIES TO MATCH BUILDING COLOR.
- G.C. TO PROVIDE & INSTALL RESTROOM ACCESSORIES, INCLUDING: WATER CLOSET, SINK, MIRROR, GRAB BARS AND TOILET PAPER DISPENSER.
- G.C. TO PROVIDE SEAT PROTECTOR DISPENSER AND ELECTRIC HAND DRYER.
- NO VISIBLE SCREWS OR POP RIVETS ON WINDOW FRAMES.
- USE FDA APPROVED FOOD GRADE CLEAR CAULKING, BETWEEN COUNTERTOPS AND FRP, AND WHERE REQUIRED PER LOCAL & COUNTY HEALTH DEPARTMENT.
- GENERAL CONTRACTOR SHALL COORDINATE W/ THE EQUIPMENT & DRYWALL INSTALLERS TO INSURE THAT ALL ELECTRICAL WIRING, WATER LINES AND REFRIGERATIONS LINES HAVE BEEN INSTALLED PROPERLY, ON ALL EQUIPMENT, PRIOR TO THE HANGING OF ANY DRYWALL.

**LEGENDS AND SYMBOLS**



**FINISH MATERIAL SCHEDULE**

FLOOR	FLOOR FINISH	WALL	WALL FINISH
F1	EXPOSED CONC. SEALED	W1	1/2" GYPSUM WALL BOARD - PAINTED
F2	CERAMIC TILE W/THINSET OVER CONC.	W2	3/32" THICK FRP OVER GYP. BD. (WHITE)
F3	12"x 12"x 1/8" VINYL COMPOSITION TILE (Armstrong shelter white)	W3	FACTORY FINISH
F4	6" HIGH BLACK RUBBER BASE	W4	MARLITE F.R.P.
B1	6" H. 3/8" RADIUS COVED METAL BASE	C1	1/2" GYPSUM WALL BOARD - PAINTED
B2	6" H. 3/8" RADIUS COVED METAL BASE	C2	SUSPENDED 2"x4" T-BAR GRID W/ LAY-IN 5/8" WASHABLE ACOUSTICAL TILES, BY ARMSTRONG.
B3	6" H. COVED CERAMIC TILE	C3	FACTORY FINISH

CUSTOMER:

Giant Oil Inc.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS:

BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

ENGINEER OF RECORD:

AEC Services, Inc.  
RON FAIR, P.E.  
FL # 50738 License No. 9277 QB #0011445

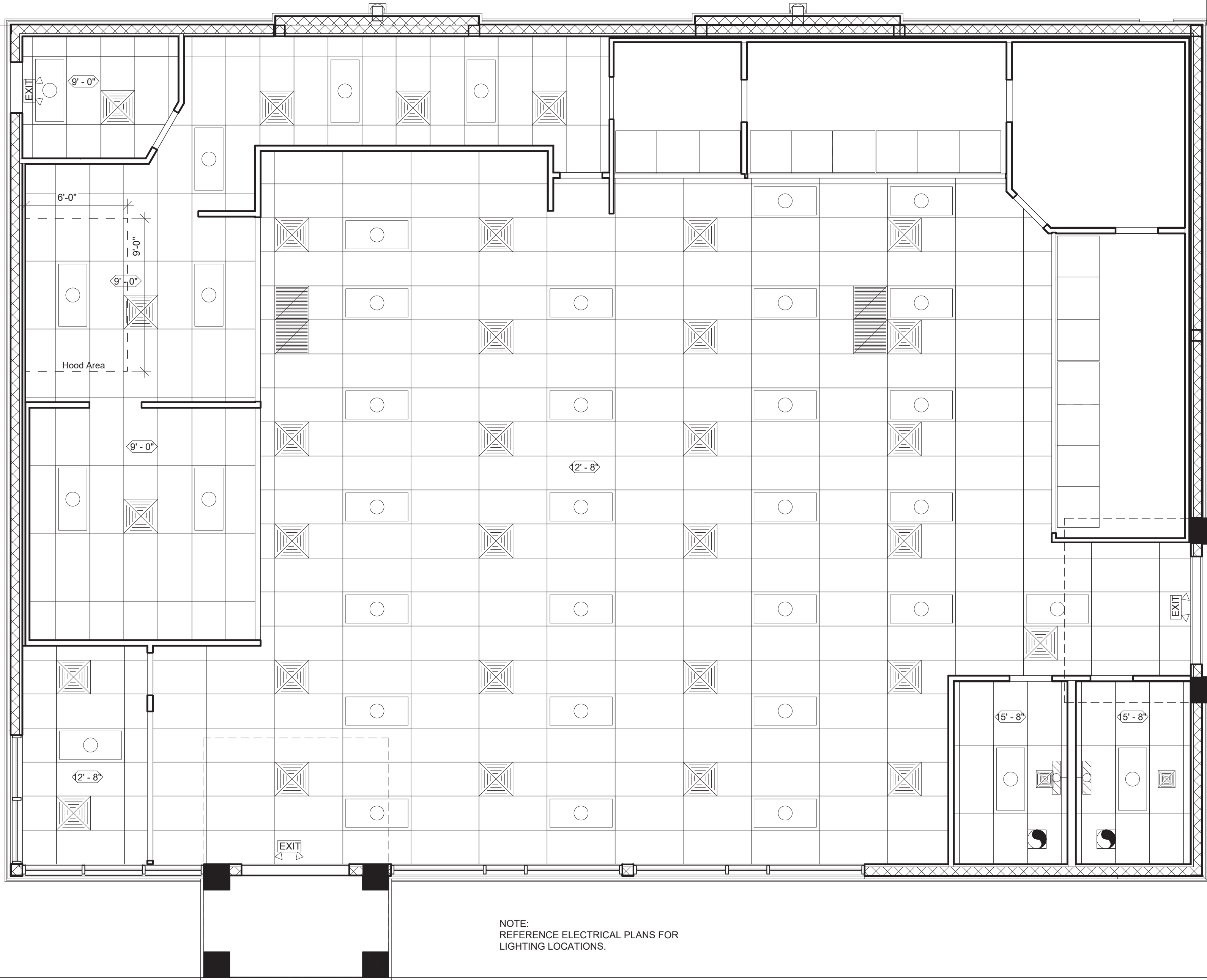
1616 ALLISON WOODS LANE  
CLEARWATER, FL 34619  
(813) 864-1231  
www.aecservicesinc.com

6	JOB NO:	GO161712
5	DWG Name:	
4	XREF Name:	
3	SCALE:	As indicated
2	DATE:	09/13/18
1	DRAWN BY:	Author
NO	DATE	CHECKED:
REVISIONS		
		CHECKER
	APPROVAL:	APPROVER

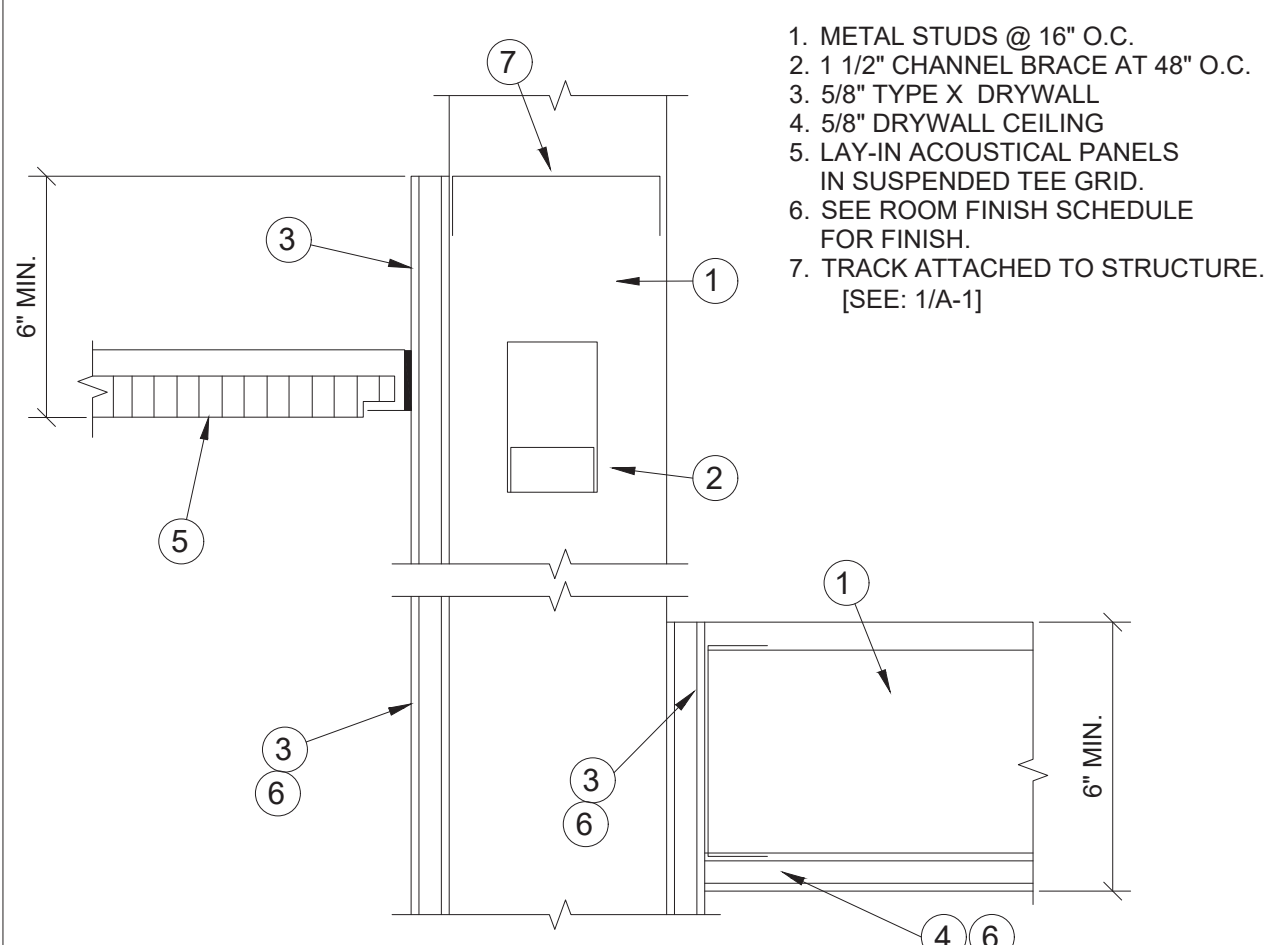
FLOOR PLAN

A-1

 REFLECTED CEILING PLAN  
1/4" = 1'-0"

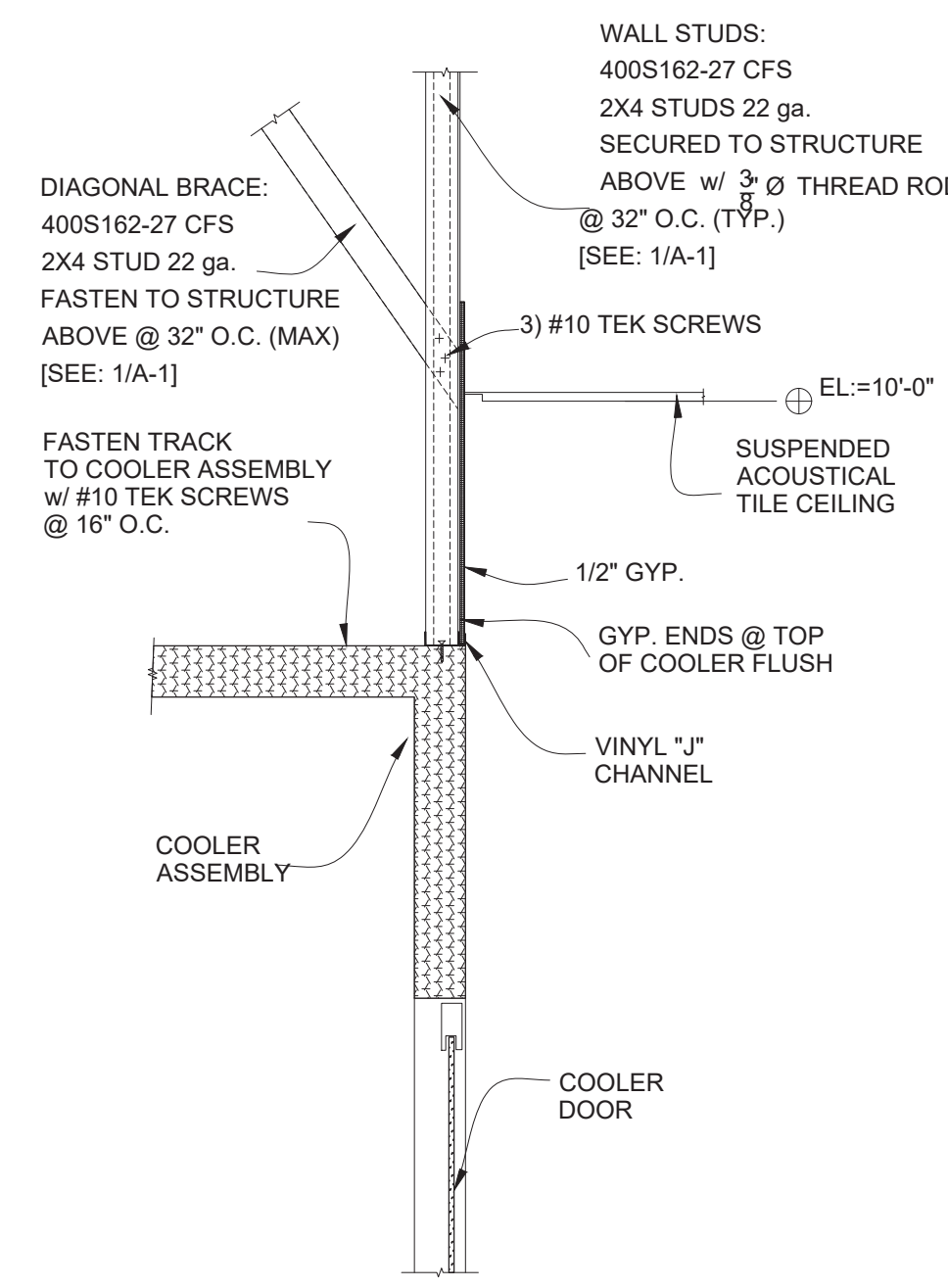


NOTE:  
REFERENCE ELECTRICAL PLANS FOR  
LIGHTING LOCATIONS.

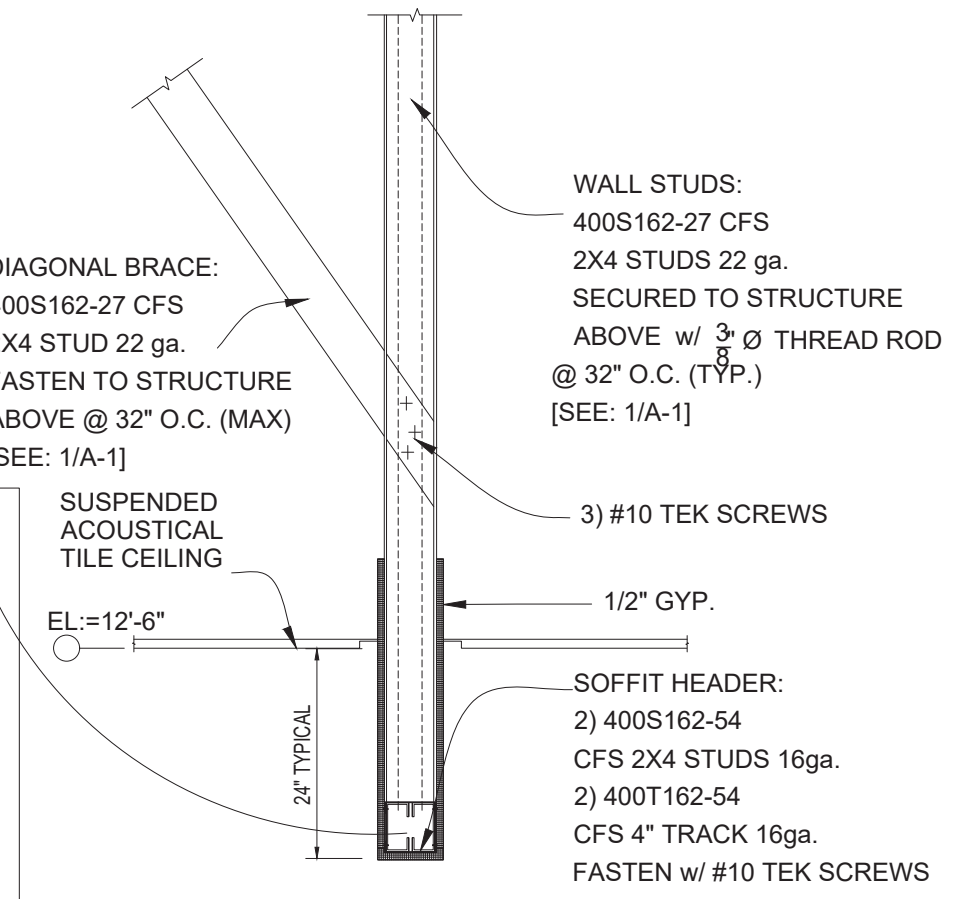


3  
A-2  
CEILING DETAIL  
N.T.S.

2  
A-2  
BULKHEAD DETAIL  
N.T.S.



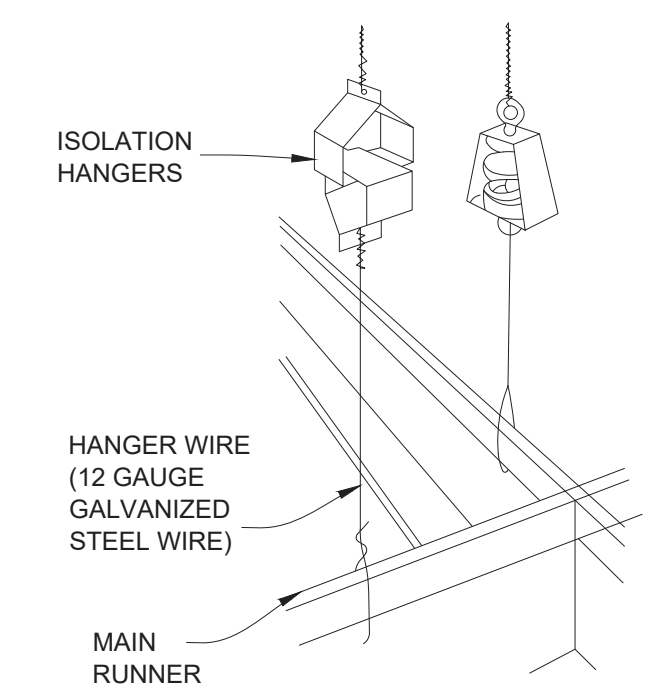
1  
A-2  
SOFFIT DETAIL  
N.T.S.



\*NOTES:  
  
METAL SUSPENSION SYSTEMS FOR ACOUSTICAL TILE AND FOR LAY-IN PANEL CEILINGS SHALL BE INSTALLED IN ACCORDANCE WITH 2014 FBC w/2007 Amdement  
  
HANGERS FOR SUSPENDED CEILING SHALL BE FASTENED TO OR EMBEDDED IN THE STRUCTURAL FRAMING MASONRY OR CONCRETE. HANGERS SHALL BE SADDLE TIED AROUND MAIN RUNNERS TO DEVELOP THE FULL STRENGTH OF THE HANGERS LOWER ENDS  
  
SPICES AND INTERSECTIONS OF RUNNERS SHALL BE ATTACHED WITH MECHANICAL INTERLOCKING CONNECTORS SUCH AS, POP RIVET, SCREWS, PINS, PLATES W/BENT TABS, OR OTHER APPROVED CONNECTORS. DESIGN CONNECTORS FOR 2 TIMES DESIGN LOAD OR ULTIMATE AXIAL TENSION OR COMPRESSION (MIN 60LBS.) OR CROSS-FURRING SHALL BE SECURELY ATTACHED TO THE MAIN RUNNER BY SADDLE-TYING WITH NOT LESS THAN ONE STRAND OF NO. 16 OR TWO STRANDS OF NO. 18 U.S. GAUGE TIE WIRE OR APPROVED EQUIVALENT ATTACHMENTS.

LEGEND:

- NOTE:  
All Floresent light fixtures are 3) tube / 32W unless noted otherwise.
- 2'x4' LAY-IN LIGHT FIXTURE
  - EXTERIOR LIGHT FIXTURE
  - CEILING EXHAUST FAN
  - BATTERY PACK EMERGENCY LIGHT
  - EXIT LIGHT
  - 12"x12" HVAC SUPPLY AIR DIFFUSER
  - 24"x24" HVAC SUPPLY AIR DIFFUSER
  - 2'x2' HVAC RETURN AIR DIFFUSER
  - CEILING HEIGHT
  - METAL CEILING GRID WITH ACOUSTICAL CEILING TILE



SUSPENDED CEILING DETAIL  
N.T.S.

CUSTOMER:  
**GIANT OIL INC.**  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS:  
**BP STATION**  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 864-1234  
(813) 864-2660 (f)  
www.aecservicesinc.com

NO	DESCRIPTION	DATE	CHECKED	Author	Checker	Approver
6						
5						
4						
3						
2						
1						

GO161712

JOB NO:

DWG Name:

XREF Name:

SCALE:

DATE:

DRAWN BY:

As indicated

09/13/18

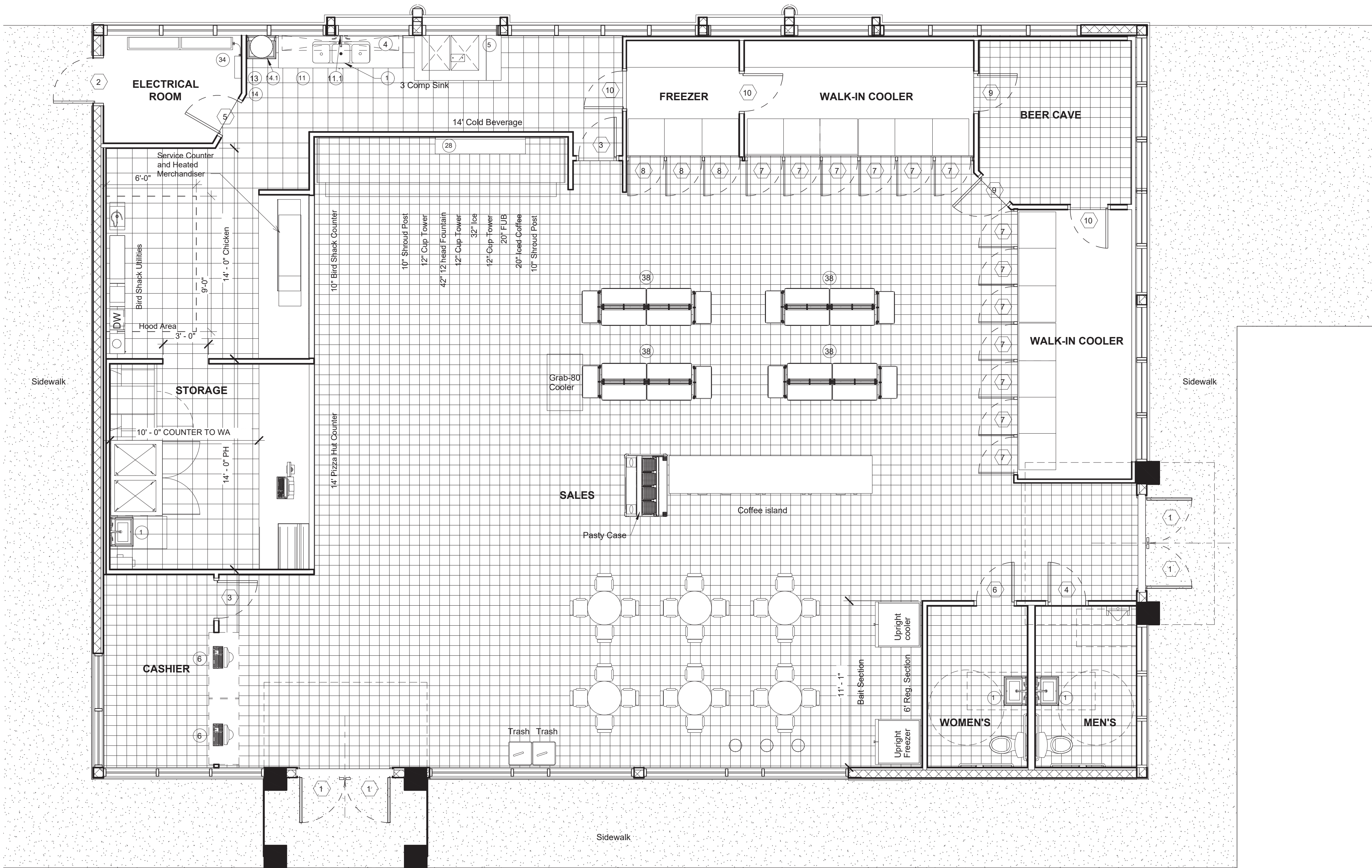
Author

Checker

Approver

REFLECTED  
CEILING PLAN

A-2



 FURNITURE & EQUIPMENT PLAN  
1/4" = 1'-0"

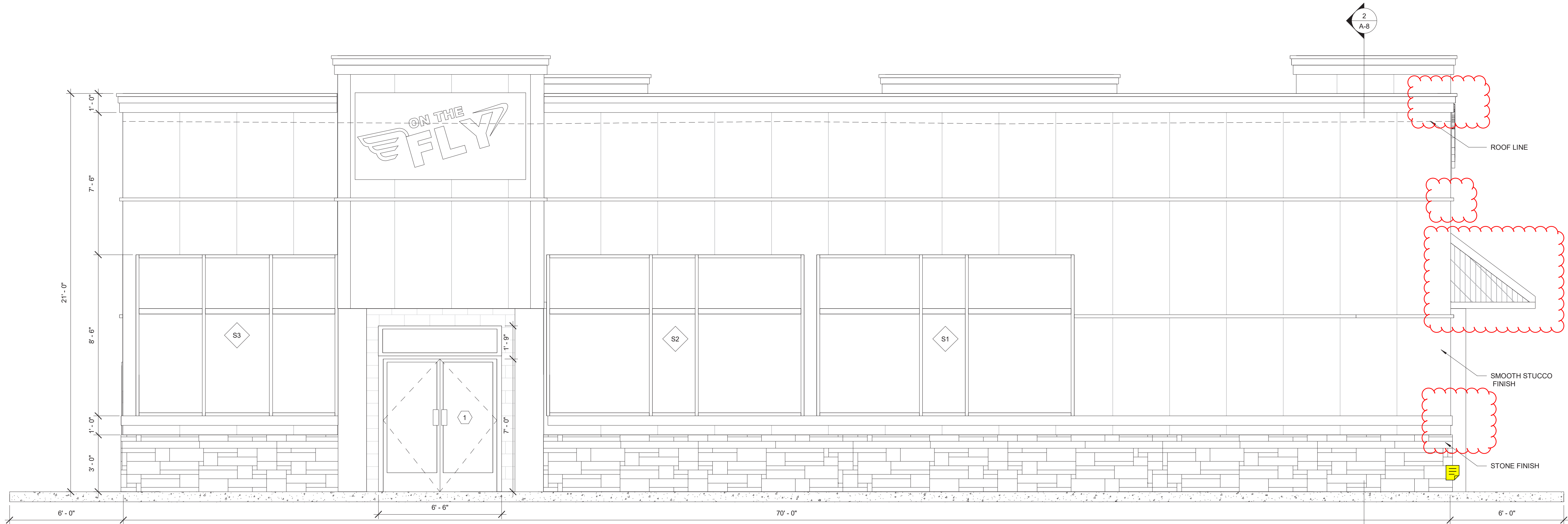
ENGINEER OF RECORD:  
**AEC Services, Inc.**  
FL # 50738 License No. 9277 QB #0011445  
1616 ALISON WOODS LANE  
TAMPA, FL 33619  
(813) 884-1234  
(813) 884-2660 (f)  
www.aecservicesinc.com

NO	DESCRIPTION	DATE	REVISIONS		
			CHECKED	CHECKER	APPROVAL
6	JOB NO:	GO161712			
5	DWG Name:				
4	XREF Name:				
3	SCALE:	1/4" = 1'-0"			
2	DATE:	09/13/18			
1	DRAWN BY:	Author			
	CHECKED:	Checker			
	APPROVAL:	Approver			

RON FAIR, P.E.  
FL #50738

CUSTOMER:  
GIANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS:  
BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619



1 EAST ELEVATION (FRONT)  
3/8" = 1'-0"



2 NORTH ELEVATION  
3/8" = 1'-0"

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
FL # 50738 License No. 9277 CB #001445

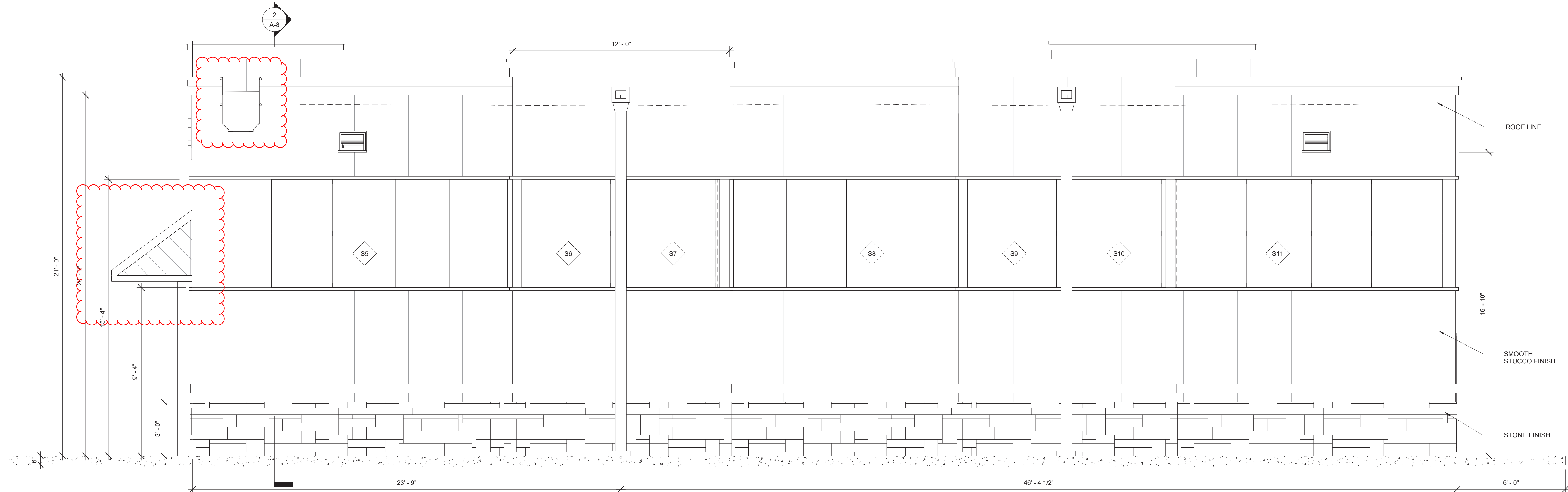
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
www.aecservicesinc.com

RON FAIR, P.E.  
FL #50738

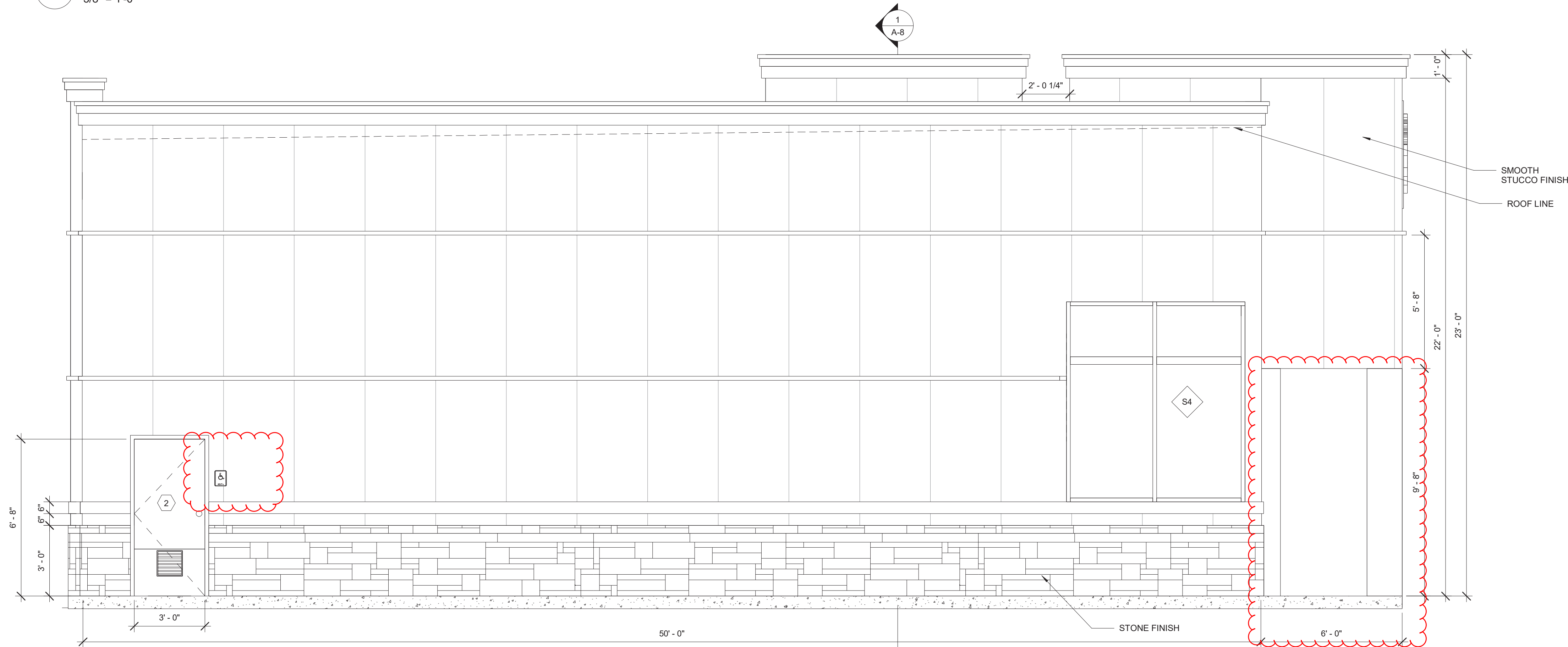
JOB NO:	GO161712
DWG Name:	BASEPLAN
XREF Name:	NONE
SCALE:	3/8" = 1'-0"
DATE:	09/13/18
DRAWN BY:	Author
CHECKED:	Checker
APPROVAL:	Approver

BUILDING  
ELEVATIONS

A-4



3 WEST ELEVATION  
3/8" = 1'-0"



4 SOUTH ELEVATION  
3/8" = 1'-0"

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

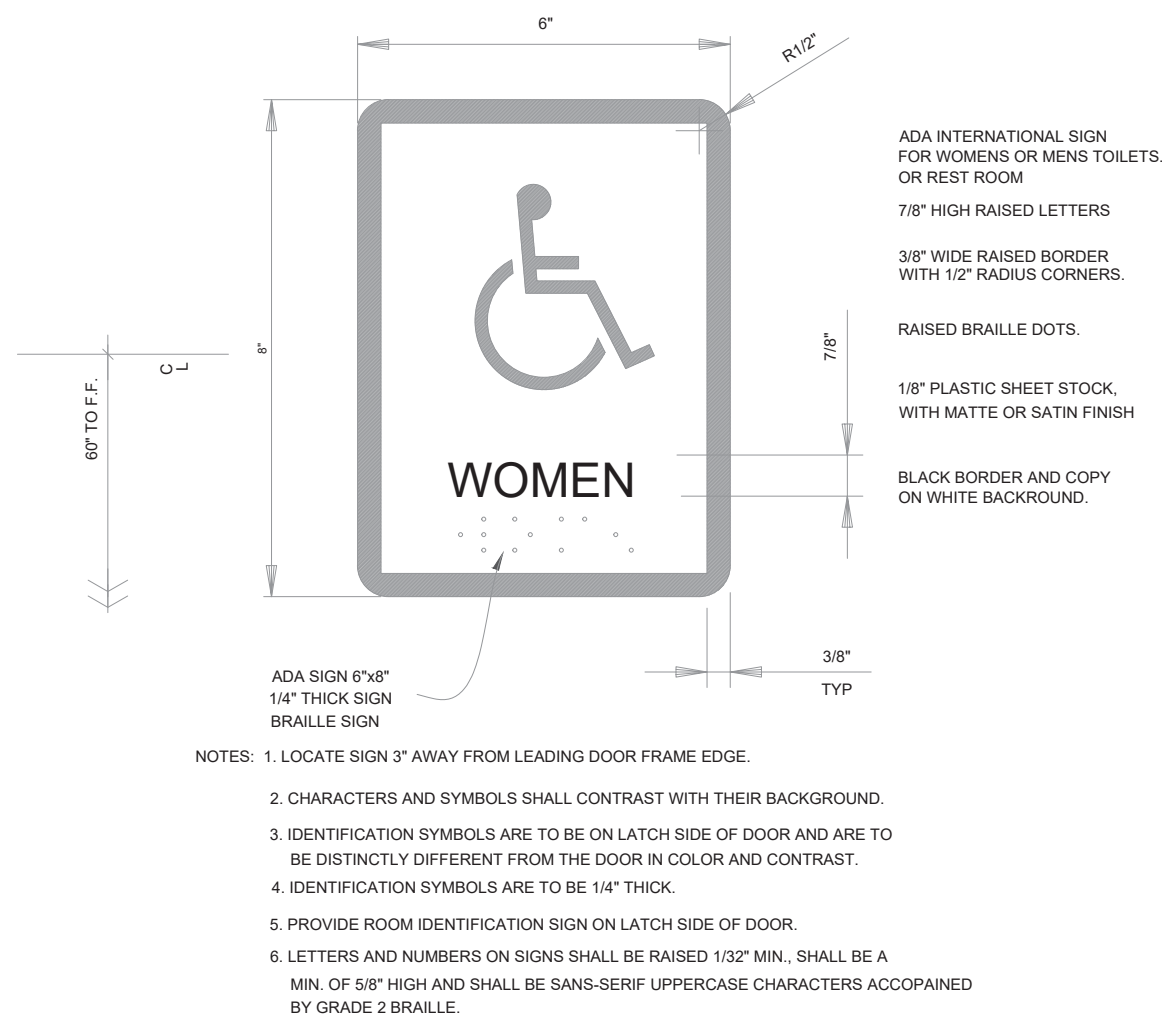
ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 OB #001445  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
(813)684-2680 (f)  
www.aecservicesinc.com

RON FAIR, P.E.  
FL #50738

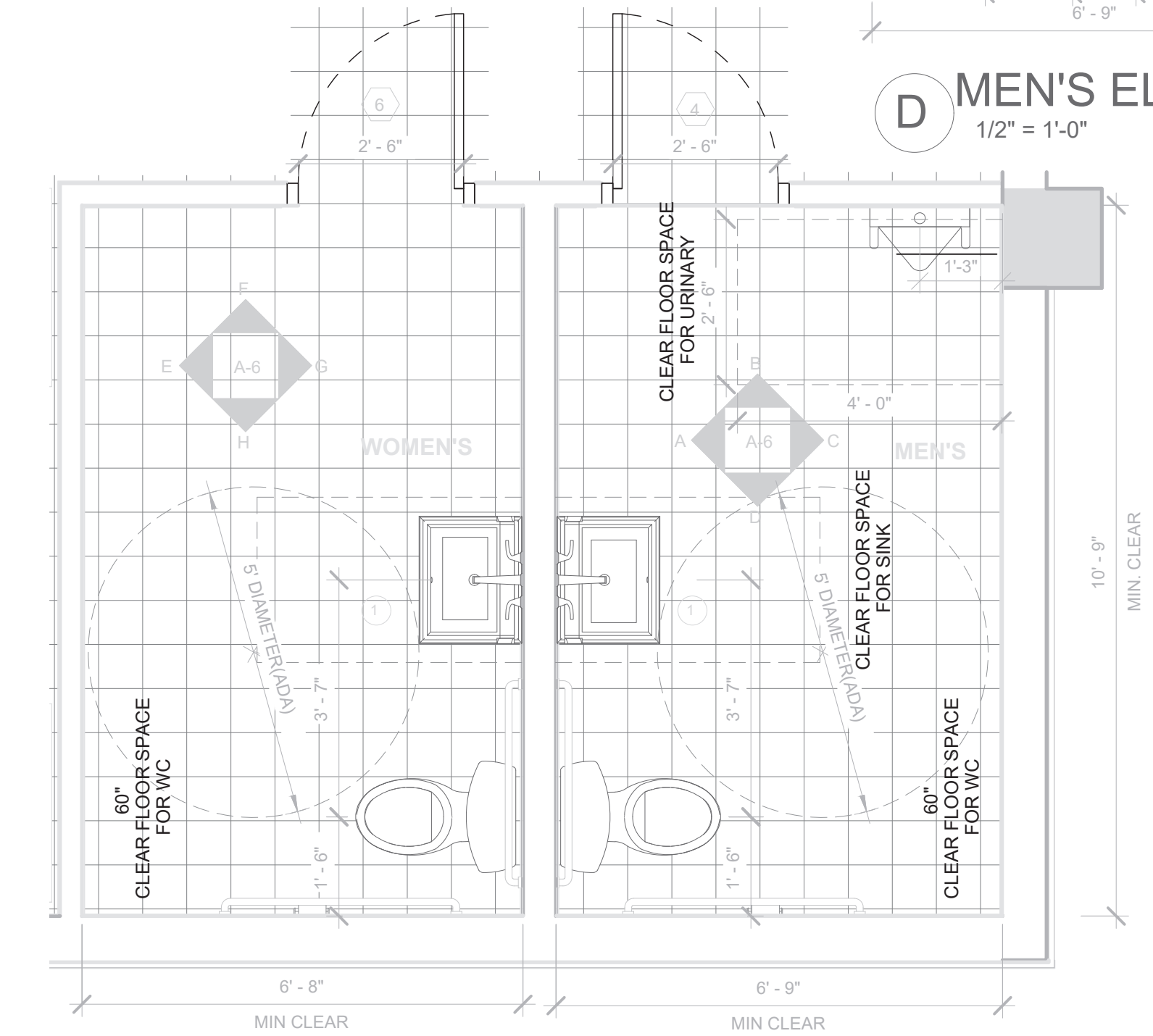
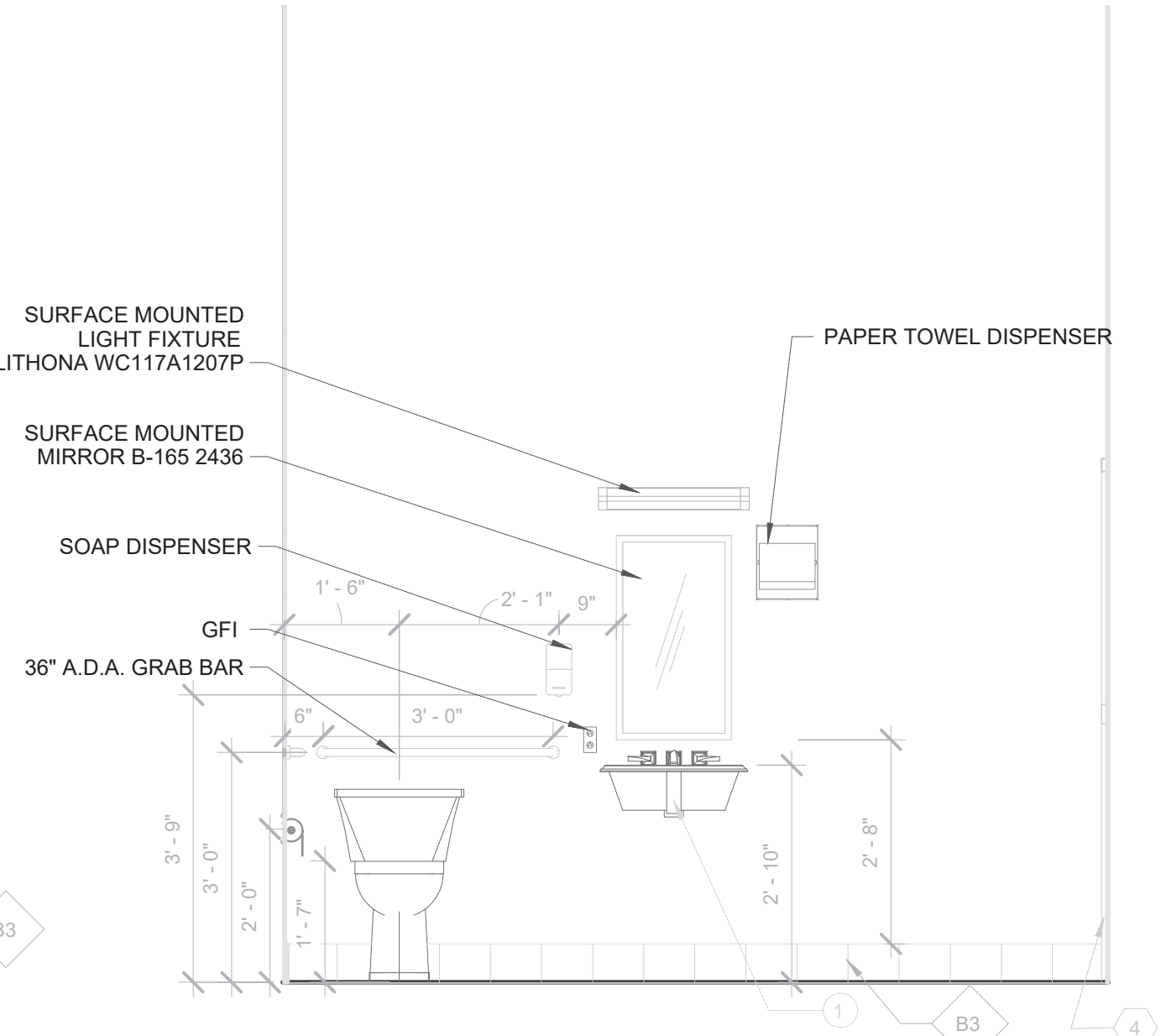
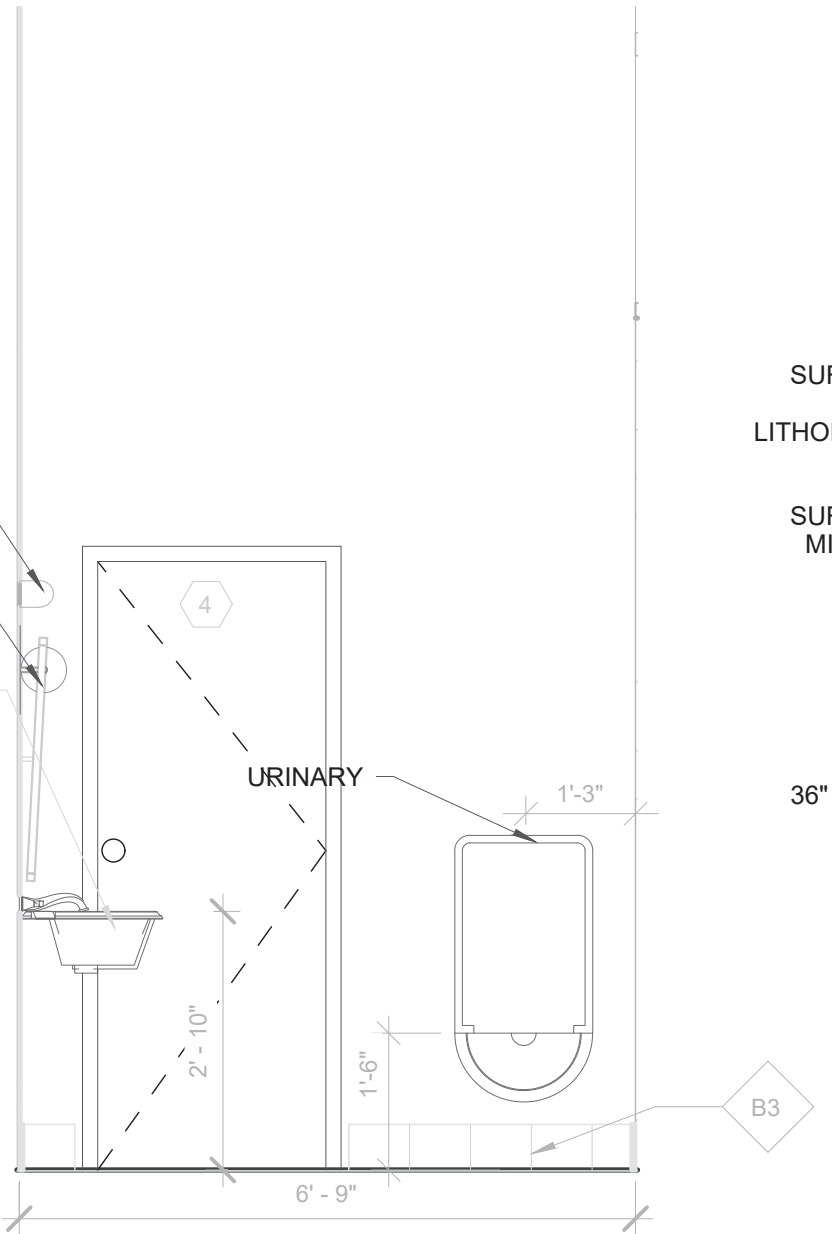
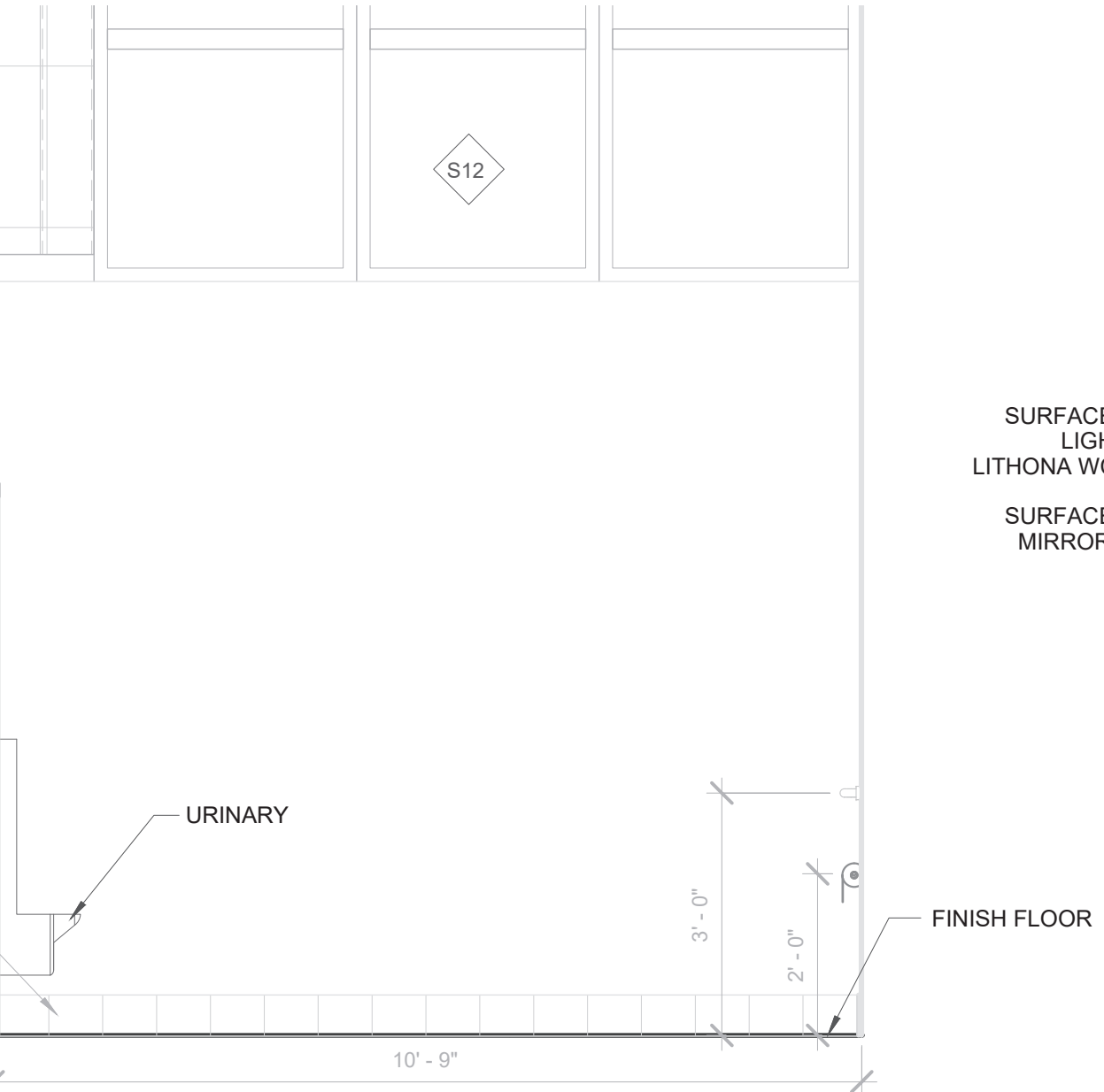
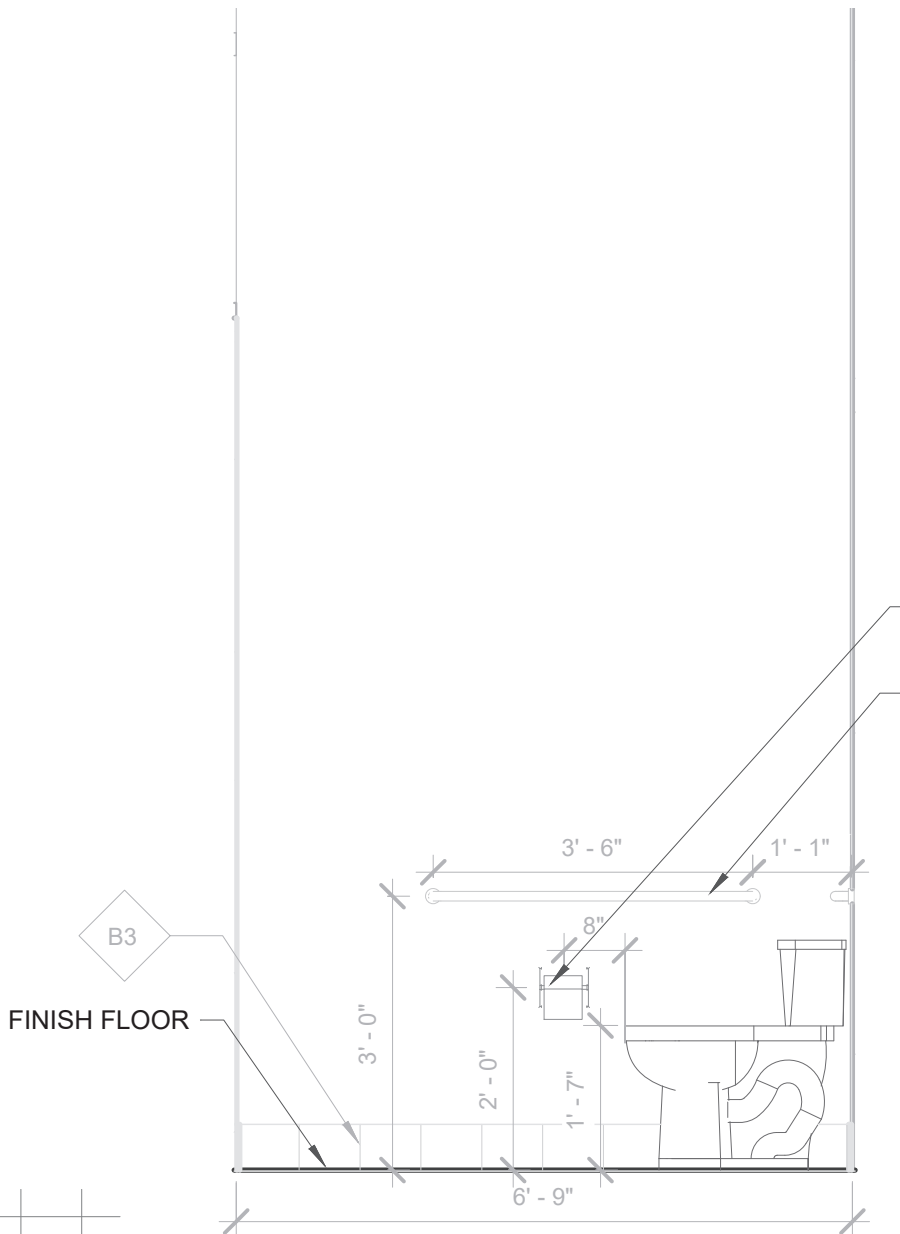
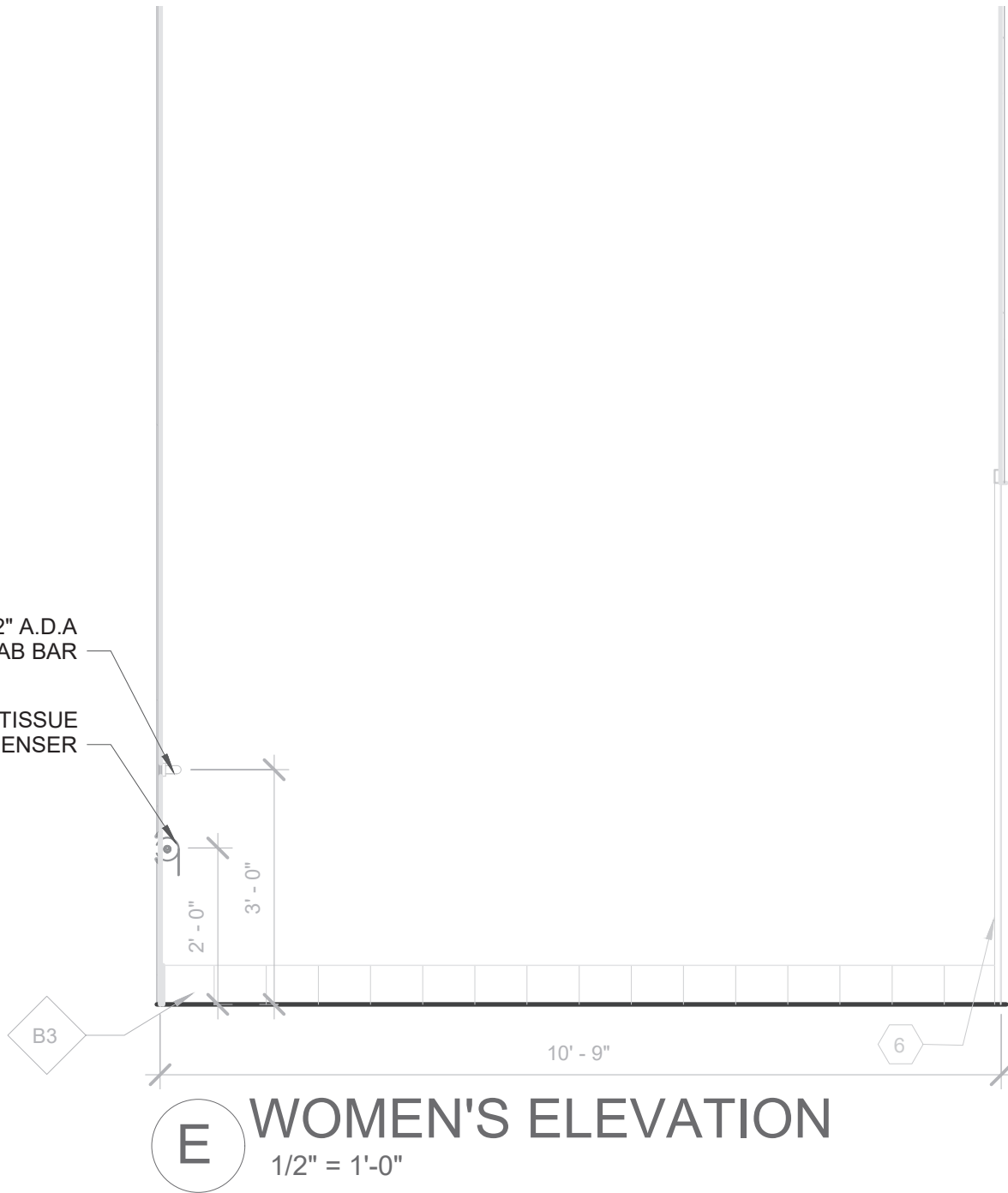
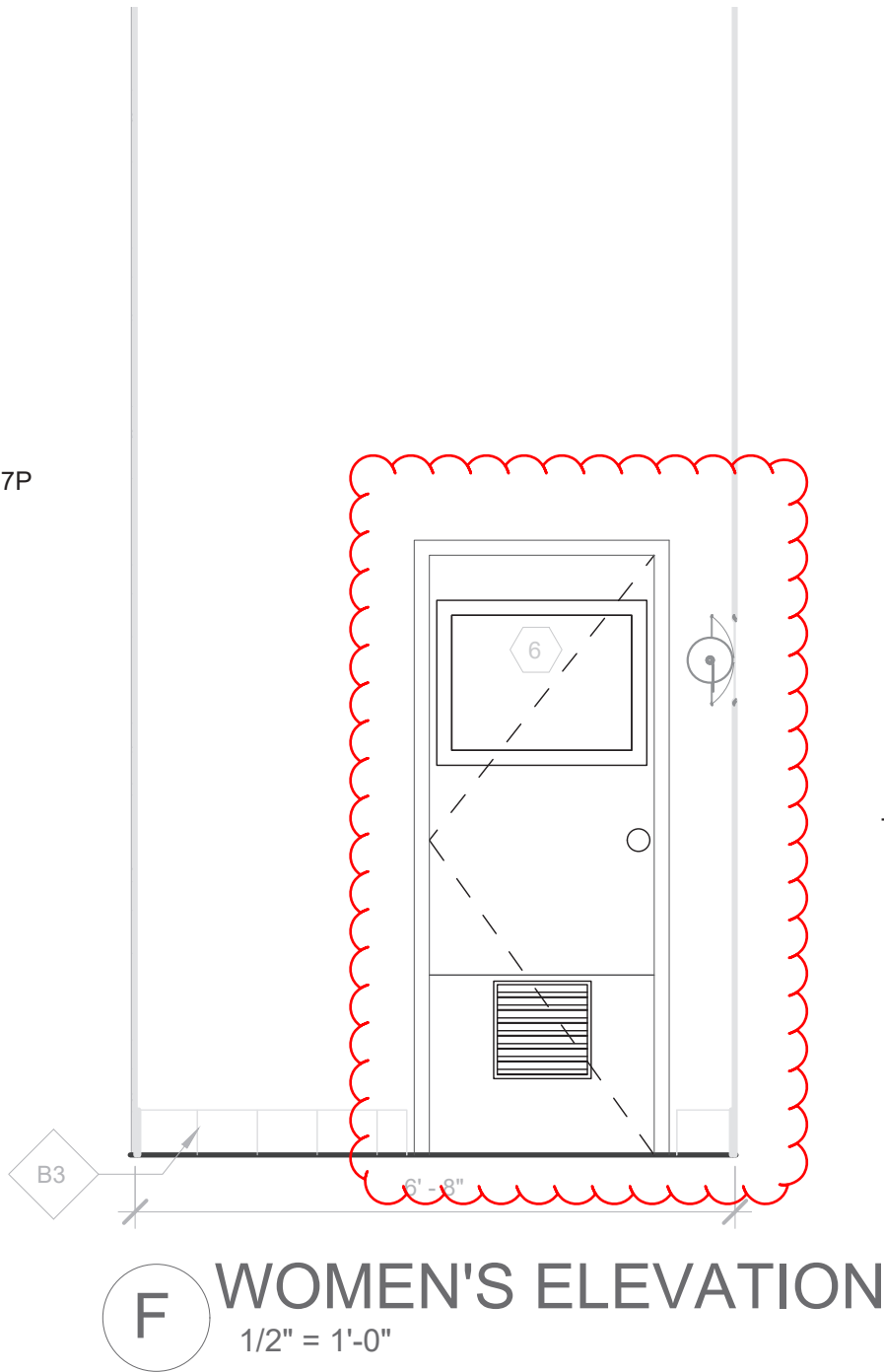
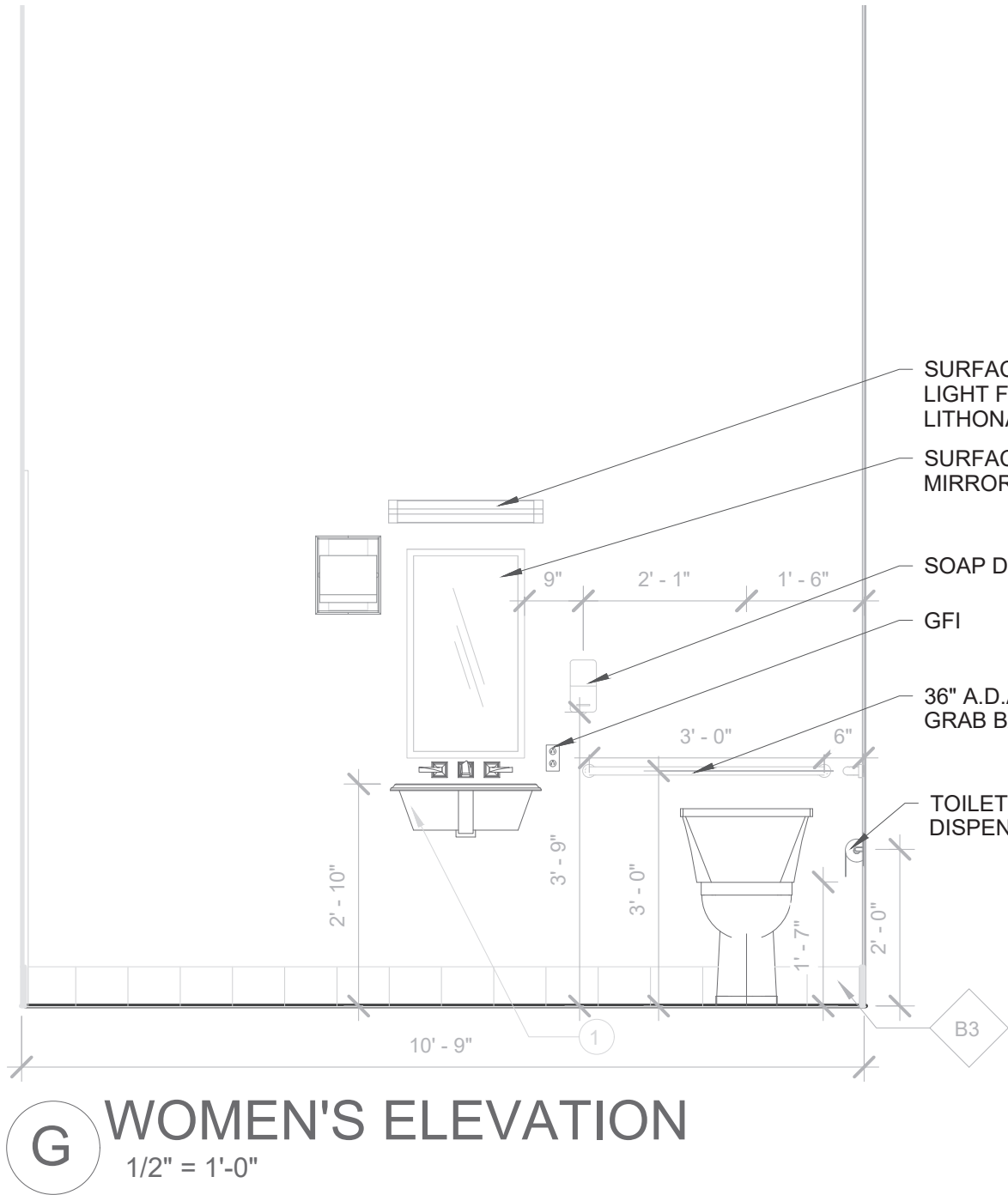
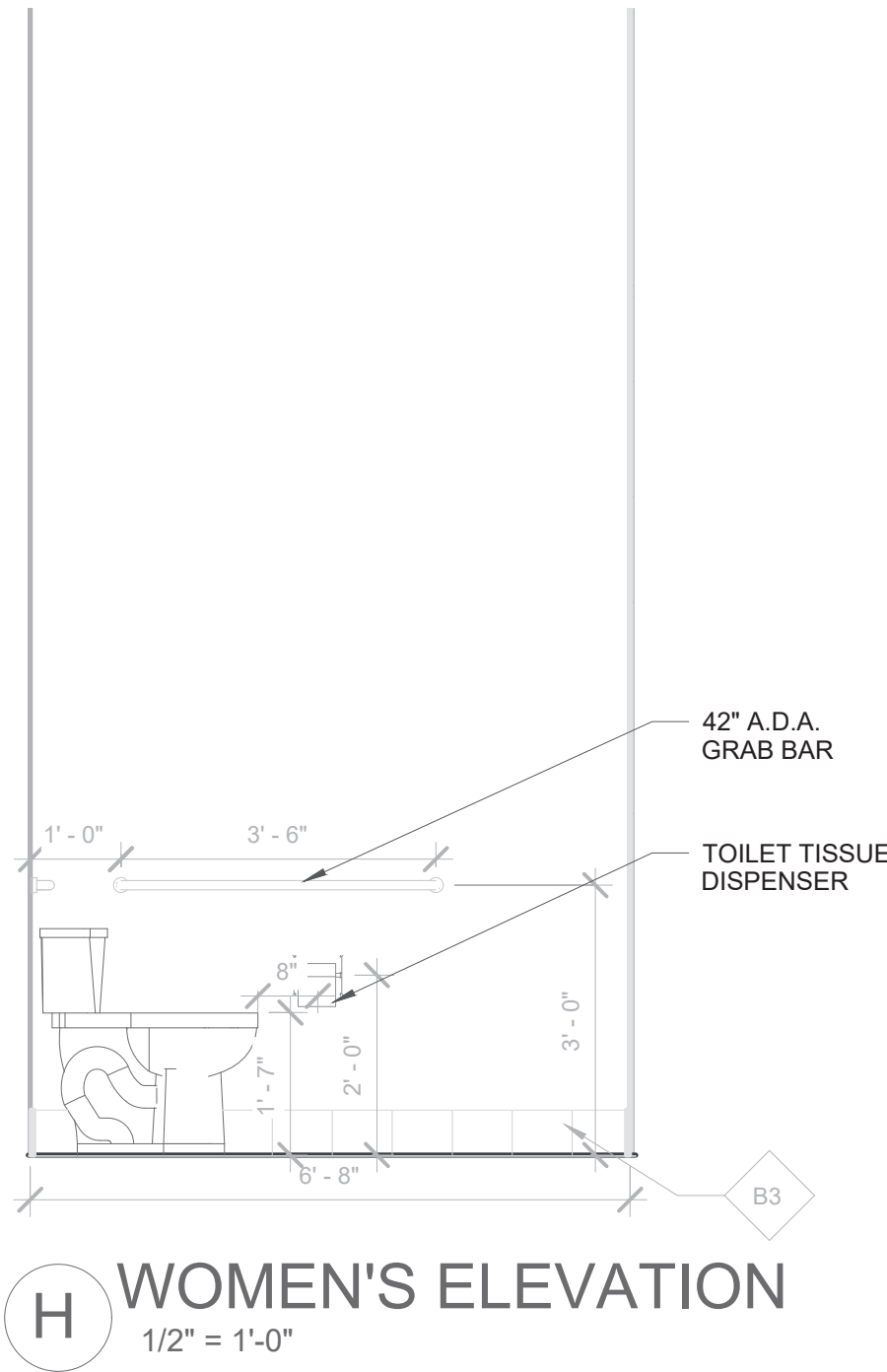
NO	DESCRIPTION	DATE	CHECKED	AUTHOR	CHECKER	APPROVER
6						
5						
4						
3						
2						
1						

BUILDING  
ELEVATIONS

A-5

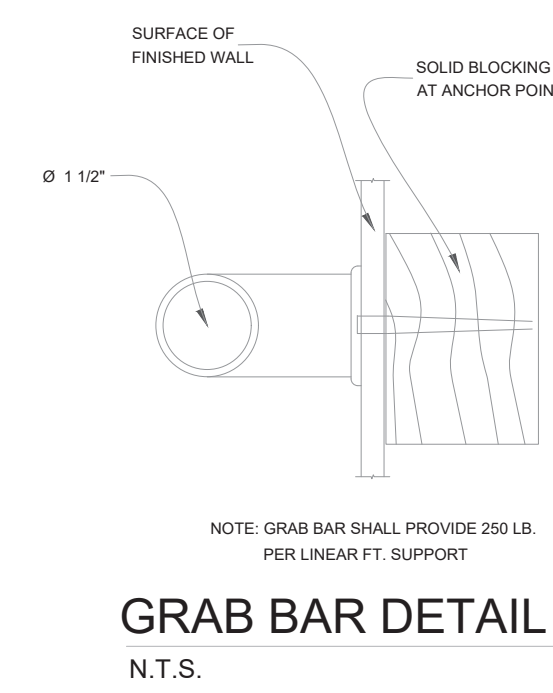


ACCESSIBILITY SIGNAGE DETAIL & NOTES  
N.T.S.



- TOILET ACCESSIBILITY NOTES:**
- ALL GRAB BARS LOCATED AT WATERCLOSETS ARE TO BE 1 1/2" DIAMETER STAINLESS STEEL AT 33" A.F.F. x 36" LONG AT REAR AND 42" LONG AT SIDE.
  - G.C. TO INSTALL ALL REQUIRED BACKING.
  - INSULATE ALL EXPOSED PIPES AND DRAINS AT LAVATORIES TO PREVENT CONTACT.
  - ALL ACCESSIBLE WATERCLOSETS TO BE 1" - 6" FROM CENTERLINE TO WALL AND THE TOP OF THE SEAT IS TO BE 17" A.F.F.
  - CONTROLS AND MECHANISMS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GREATER THAN 5 POUNDS PER FOOT.
  - MIRRORS SHALL BE MOUNTED WITH THE BOTTOM EDGE NOT MORE THAN 36" ABOVE THE FLOOR.
  - LOCATE HAND DRYER OPERABLE PARTS NOT MORE THAN 40" ABOVE THE FLOOR.
  - LOCATE TOILET TISSUE DISPENSERS LOCATED FROM THE BACK WALL 2'-6" TO INSIDE EDGE.
  - GRAB BARS, FASTENERS AND MOUNTING DEVICES SHALL BE DESIGNED FOR 250 LBLINEAR FT. LOAD.
  - LAVATORIES SHALL BE MOUNTED WITH THE RIM OR COUNTER SURFACE 34" MAX. A.F.F. 100" MIN. CLEAR TO BOTTOM OF THE FRONT EDGE. FIXTURE SHALL EXTEND 17" MIN. FROM WALL. CLEARANCE BETWEEN THE BOTTOM OF THE FRONT EDGE OF THE APRON & THE FLOOR SHALL BE 29" MIN. CLEAR KNEE SPACE SHALL BE 8" MIN. DEEP AT 27" MIN. A.F.F. & 11" MIN. DEEP AT 37" A.F.F. PROVIDE CLEAR FLOOR SPACE 30" W x 48" D MIN. EXTEND 19" MIN. UNDER LAV. OR SINK.
  - ALL OPERATING MECHANISMS SHALL BE LEVER TYPE.
- NOTES:**
- ALL RESTROOM DOORS WILL HAVE AN "OCCUPIED" DISPLAY DEADBOLT (FALCON DB71K WITH 2" HANDICAP LEVER). DEADBOLT (FALCON DB71K WITH 2" HANDICAP LEVER). SEE SHEET A-1 HARDWARE SETS FOR DETAIL.
  - TSN EQUIPMENT SUPPLIED AT NO COST.
  - USE TSN PAPER TOWEL DISPENSER AND SOAP DISPENSER AT HAND SINK WITHIN SALES AREA AS NECESSARY.
  - SEE WALL TILE SCHEDULE FOR TILE SPECS.

RESTROOM	Location / Item	Color	Specification
- Restroom Fixtures	Toilet	White	American Standard Cadet 17" H EL 1.6/FY 10" Rough 3043. 102 Top Spool Seat. Chrome #85 open front seat and seat cover. Flush Valve: Sloan Royal #111 1" N.P.T. or 1" C.W.T. Supply to Flush Valve. Bobrick: B-6202 99 - 42"
	Grab Bar		Bobrick: B-6202 99 - 36"
	Toilet Tissue Dispenser		Kimberly Clark UNIF 459719 - supplied by TSN (901-246-1876)
	Paper Towel Dispenser		Kimberly Clark UNIF 637538 - supplied by TSN (901-246-1876)
	Waste Receptacle - Surface Mount		RUBBERMAID 2338
	Mirror		Bobrick: B-165 2436
	Soap Dispenser		Kimberly Clark UNIF 520585 - supplied by TSN (901-246-1876)
	Electric Hand Dryer		Bobrick: B-7017, 115V 2300W
AIR FRESHNER DISPENSER	Baby Changing Station (Mount at 36" A.F.F.) - Surface Mount		SAFE STRAP CO. 44304
	Backflow Preventers		S - with Bronze Strainer, Series 909 sizes 3/4" to 2"
	Anti-siphon Vacuum Breaker		Series 008Q2
	Hit & Coat Hook (Mount on wall)		Bobrick: B-6827
LAVATORY	Kimberly Clark	VIN# 153650	TSN INC. BARRY HEALY 1-901-246-1876
	AMERICAN STANDARD	0321.075	DEOLYN WALL HUNG LAVATORY. COLOR: WHITE. 1/2" HW & CW. 1-1/4" x 1-1/2" trap. 1-1/2" drain & vent. Sloan ADA Optima Plus Model EAF-150-0.5gpm Sensor Activated faucet (automatic faucet, GC to supply batteries). LAV DRAIN: McGuire Model 150WC Strainer Drain Assy w/ "Hasty Shaver" Wheel Chair Offset Tailpiece Safety Cover. Chrome P-Trap and Angle Supplies.
WATER CLOSET	AMERICAN STANDARD	3043.102	MADIRA 17" H EL 1.6 ELONGATED FLUSH VALVE TOILET. FLOOR MOUNTED W/ CLOSET FLANGE. MOUNTED AT HANDICAP HEIGHT. color: white. 1" CW, 3" drain, 2" vent. Sloan ADA Optima Plus Model #6115-MC Battery powered flushometer (automatic flush). GC to provide batteries) & #815SLS-3.5 Re-seat Conversion Kit. SEAT: Cleante #65. NOTE: PLUMBER SHALL ADJUST SENSOR RANGE FOR MALE OCCUPANT
			STANDING USE OF WATER CLOSET
			ULTRAFUSH 17" H 600P ELONGATED TOILET. FLOOR MOUNTED W/ CLOSET FLANGE. MOUNTED AT HANDICAPED HEIGHT. COLOR: WHITE. 3/8" S.P.S. CW SUPPLY 3" DRAIN
			HAUTE COMFORT SERIES 17-1/4" x 1.5 GPF ELONGATED TOILET. FLOOR MOUNTED W/ CLOSET FLANGE. MOUNTED AT HANDICAPED HEIGHT. COLOR: WHITE. 3/8" S.P.S. CW SUPPLY 3" DRAIN
WATER CLOSET	GERBER	21-317	ULTRAFUSH 17" H 600P ELONGATED TOILET. FLOOR MOUNTED W/ CLOSET FLANGE. MOUNTED AT HANDICAPED HEIGHT. COLOR: WHITE. 3/8" S.P.S. CW SUPPLY 3" DRAIN
	QUANTUM	158-100	HAUTE COMFORT SERIES 17-1/4" x 1.5 GPF ELONGATED TOILET. FLOOR MOUNTED W/ CLOSET FLANGE. MOUNTED AT HANDICAPED HEIGHT. COLOR: WHITE. 3/8" S.P.S. CW SUPPLY 3" DRAIN
	EEEMAX	EX65	240V, 6.5KW, 27A
	FLOW CONTR. ELEC. INSTANT WATER HEATER		
SURFACE MOUNTED LIGHT FIXTURE	LITHONA	WC117A120TP	WALL MOUNT FLUORESCENT FIXTURE WC117A120TP WITH TAMPER PROOF CONSTRUCTION AND (1) 4100 K, GE 17W T8 LAMP.
	PLUMBEREX	2003	COLOR: WHITE
	Restroom door		Falcon DB71K (Deadbolt with 2" handicap lever)
	Restroom door		Falcon B-561 CLASSROOM LOCK W/IDE26 FINISH W/STD BACKSET & ANSI STRIKE



GIGANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

CUSTOMER:

SITE ADDRESS:  
BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

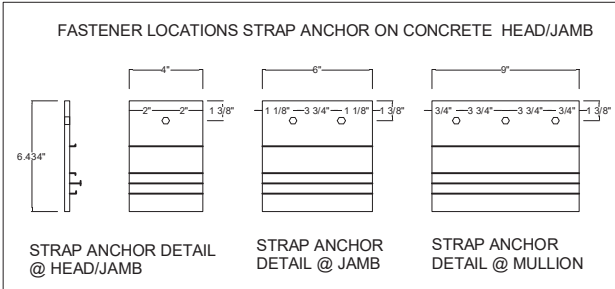
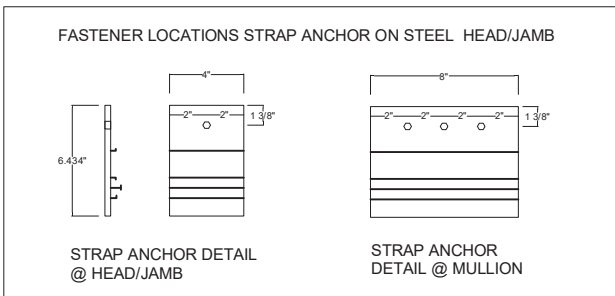
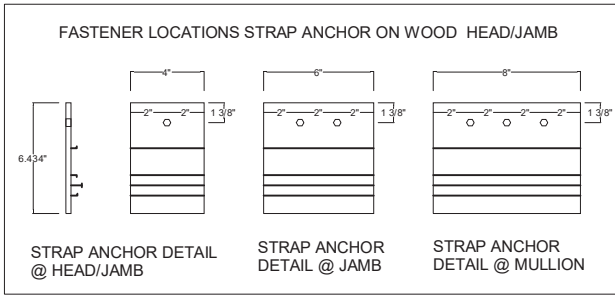
ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
FL # 50738 License No. 9277 QB #0011445

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 984-1234  
(813) 984-2660 (f)  
www.aecservicesinc.com

NO	DESCRIPTION	DATE	CHECKED	AUTHOR	APPROVAL
6					
5					
4					
3					
2					
1					
NO					

A-6.

A-6



GENERAL NOTES:  
1. ALL JAMB, HEAD, SILL AND DOOR STILE AND RAIL, ARE CLEAR ANODIZED ALUMINUM.  
2. ALL JAMB, HEAD, SILL, MUTN AND MULLION ARE IR 500 FRAMING.  
3. ALL DOOR STILE AND RALES ARE KAWNEER 350 IR FRAMING.

MAXIMUM MULLION SEPARATION	
HEIGHT	WIDTH
FROM 7'-0" UP TO 8'-0"	4'-6"
FROM 8'-1" UP TO 9'-0"	4'-0"
FROM 9'-1" UP TO 10'-0"	3'-0"
FROM 10'-3" UP TO 12'-0"	3'-0"
FROM 12'-1" UP TO 14'-4"	2'-6"
FROM 14'-5" UP TO 18'-0"	2'-0"

DESIGN PRESSURE (PSF)		
MAX. DAYLIGHT OPENING WIDTH	MAX. DAYLIGHT OPENING HEIGHT	DESIGN PRESSURE
58 3/4"	94 3/4"	+/- .88
57 3/4" OR LESS	94 3/4"	+/- .89

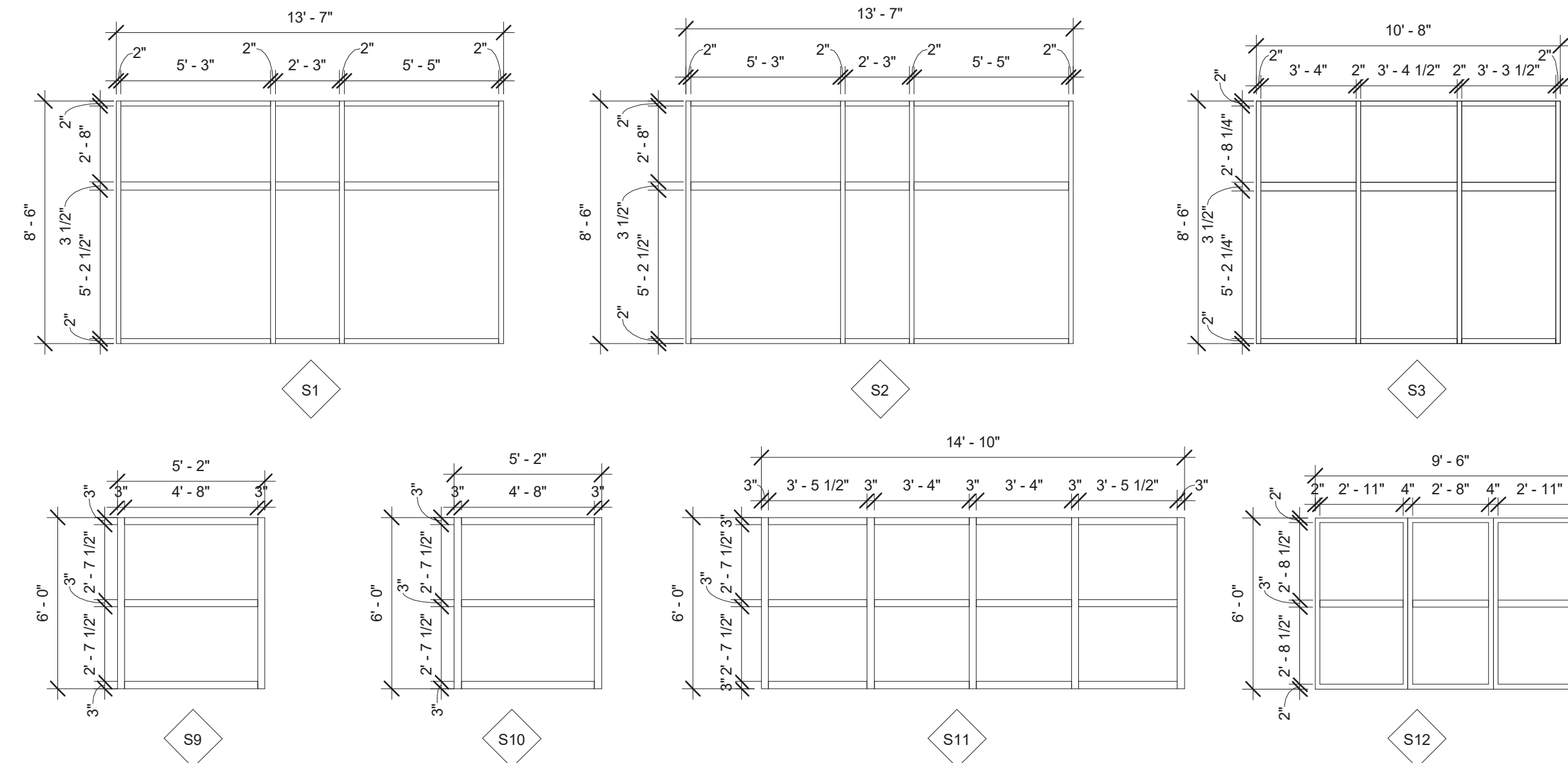
GLAZING SCHEDULE PER ASTM E 1300	
GLASS TYPE	MAX. DAYLIGHT OPENING SIZE
816" VIRACOM STORMGUARD	SEE DESIGN PRESSURE TABLE
TYPICAL GLASS SIZE = DAYLIGHT OPENING + 1 1/4"	

DOOR HARDWARE SETS  
THRESHOLD: KAWNEER No. 37-872 CLEAR ANODIZED ALUMINUM FINISH. HEADSILL: ADAMSTRITE MIS No. 1850, CASE HARDENED, 3/16" THICK SPLIT WITH BOLT 1 1/2" THROW, KEY OUTSIDE. THUMB TURN INSIDE. ELEC. STRIKE: ADAMSTRITE No. 7800-25-35-50 WITH TAIL-SAFE™ REVERSE ACTION 24 V TRANSFORMER WITH RECTIFIER MOUNTED IN STRIKE FRAME. LATCH LOCK: ADAMSTRITE No. 4510 WITH No. 4500 THUMB TURN, KEY OUTSIDE. THUMB TURN INSIDE. MOUNT IN STILE.  
HINGES: CONTINUOUS ROLL BEARING BUTT HINGES. CLOSER: NORTON No. 1805 BACK CHECK WITHOUT HOLD OPEN. PUSH/PULL SET: KAWNEER STYLE 100 PULL & STYLE 77 PUSH BAR. PUSH PAD AND PULL HANDLE ARE # 29 BLACK FINISH.  
SAFETY CHAIN: SANTIALLY No. C01707 BRIGHT ZINC PLATED WITH VINYL COVER. KEY: KEY LOCKS ALIKE.  
FINISH: UNLESS NOTED ALL DOOR HARDWARE TO HAVE CLEAR FINISH.

#### FASTENER SCHEDULE

SUBSTRATE	MATERIAL	DESCRIPTION	MIN. EMBED.
WOOD	SAE GRADE 5 STEEL	5/16" DIA. SHEET METAL SCREW	1 1/2" Zk P.T. SOUTHER PINE
STEEL	SAE GRADE 5 STEEL	5/16" DIA. TEX SCREW	5/8" THICK OR 18 GA. 40 KSI
CONCRETE / CRS	SAE GRADE 5 STEEL	5/16" DIA. ELCO TEXTON TAPCON	1 3/4" HEAD /SILL - 1 1/4" JAMB

\* HEAD /SILL: 3/16" PSB CONCRETE JAMB: HOLLOW CONCRETE BLOCK

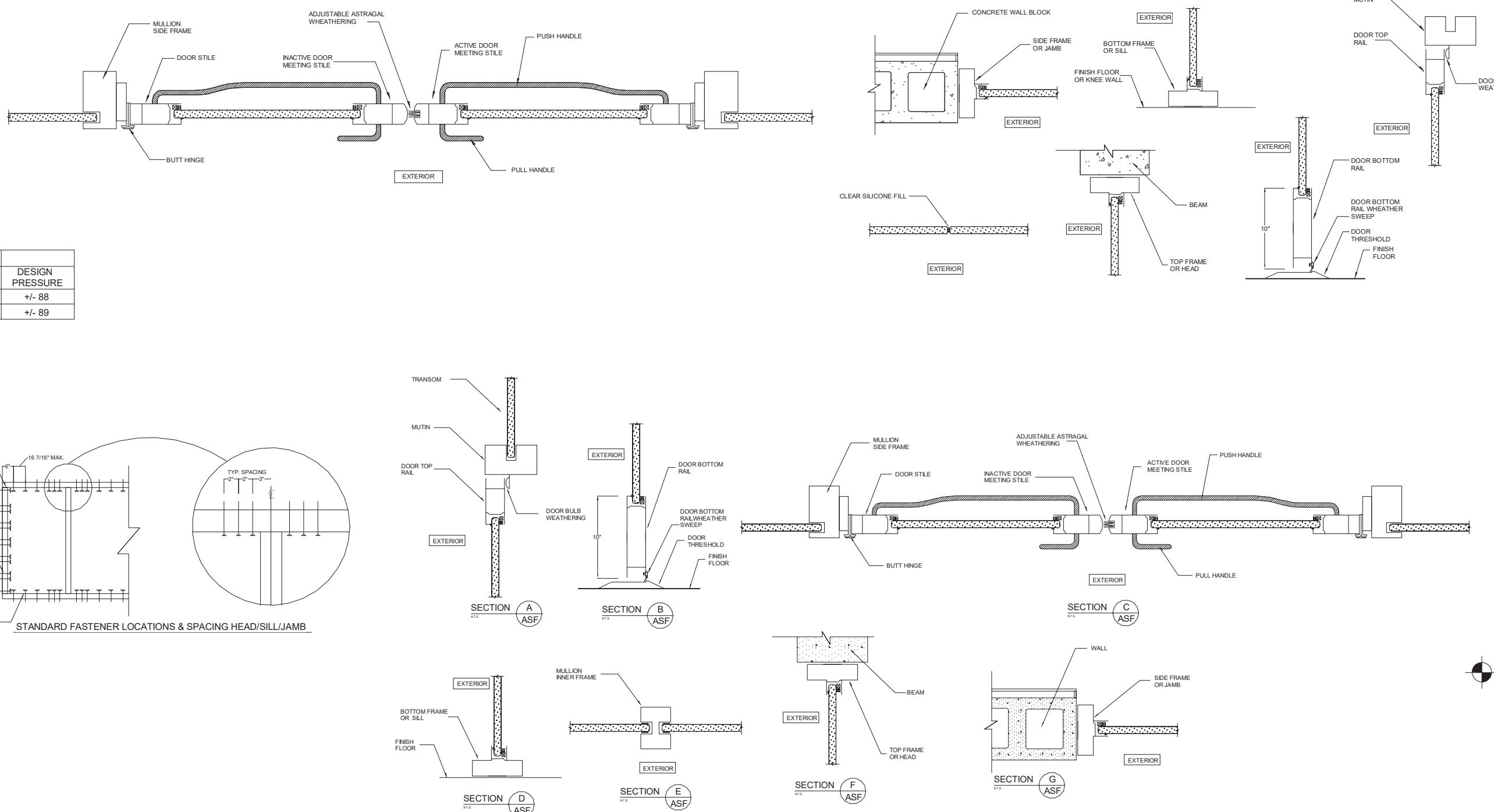


#### STOREFRONT WINDOW

1/4" = 1'-0"

#### DOOR SCHEDULE

DR.NO	SIZE	THICKNESS	DOOR TYPE	LOCATION	DOOR MATERIAL	FRAME MATERIAL	FIRE RATING	FINISH	HARDWARE SET	REMARKS
1	DBL. 3070	1 3/4"	A	ENTRY	GLASS/ALUM.	ALUM.	N/A	CLEAR	1	STOREFRONT WDW SYSTEM, W/ SWEEPS (HEADER HEIGHT AT + 7'-2")
2	3068	1 3/4"	B	OFFICE (EXTERIOR)	SC METAL	H.M.	MFR.	SEMI-GLOSS ENAM. (WHT.)	3	1 1/2 HR FIRE RATING EXIT DOOR
3	3068	1 3/4"	B		HOLLOW METAL	H.M.	N/A	SEMI-GLOSS ENAM. (WHT.)	2	12"X12" LOUVER AND ONEWAY MIRR. WDW.
4	3068	1 3/4"	B	MEN'S RESTROOM	HOLLOW METAL	H.M.	N/A	SEMI-GLOSS ENAM. (WHT.)	4	A.D.A. SIGNAGE (by, G.C.)
5	3068	1 3/4"	B	ELECTRICAL ROOM	HOLLOW METAL	H.M.	N/A	SEMI-GLOSS ENAM. (WHT.)	3	
6	3068	1 3/4"	B	WOMEN'S RESTROOM	HOLLOW METAL	H.M.	N/A	SEMI-GLOSS ENAM. (WHT.)	4	A.D.A. SIGNAGE (by, G.C.)
7	3066	1 3/4"		COLD STORAGE DOOR						FURNISHED BY COOLER MFR. INSTALLED BY GENERAL CONTRACTOR
8	3066	1 3/4"		FREEZER STORAGE DOOR						FURNISHED BY COOLER MFR. INSTALLED BY GENERAL CONTRACTOR
9	2670	1 3/4"		BEER CAVE						BEER CAVE STORAGE DOOR
10	3070	1 3/4"		WALK IN COOLER	HOLLOW METAL	H.M.	N/A			



#### DOOR ELEVATIONS

1/2" = 1'-0"

#### EXIT PASSAGE AND EXIT DOOR NOTES:

1. ALL EXIT DOORS SHALL BE EQUIPPED WITH LEVER TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATING BARS DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE.
2. EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
3. EXITS SHALL BE ILLUMINATED AT ANY TIME THE BUILDING IS OCCUPIED, WITH LIGHT HAVING AN INTENSITY OF NOT LESS THAN ONE FOOT - CANDLE AT FLOOR LEVEL.
4. ALL DOORS SHALL HAVE HARDWARE WHICH COMPLIES W/ STATE & NATIONAL ADA REQUIREMENTS.
5. ALL HARDWARE AND HINGES TO BE BRUSH ALUMINUM.

#### HARDWARE SET #1 (Entrance doors):

Double actuating recessed hinges  
Pull type handles (8" long X 4" deep)  
2 cylinder 985 x 9899 x US26D Falcon Bal.  
of Hdw. by Store Front Supplier 1 plastic sign 444 1/2p -  
"THESE DOORS TO REMAIN UNLOCKED DURING BUSINESS HOURS"

#### HARDWARE SET #2 (Passage doors):

Hinges, US26D by Pre-Hung Door Supplier  
1 privacy set S300HG x 2 3/8" BS x US26D Falcon  
(lever-type handles mounted at 30"-44" a.f.f.)  
1 wall stop 4275 x US26D Drs. 2-3 Baldwin  
1 floor stop 4001 x US26D Drs. 5 Baldwin  
1 12" H. kick plate 1 closer P120B-SBL/SNB

#### HARDWARE SET #3 (Rear exit doors):

3 hinges 1279 4 1/2 x 4 1/2 x NRP x US26D Hager  
1 alarm panic, Safeguard 70 x 313 Alarm Lock  
1 rim cylinder 951 x US26D Falcon  
1 limit chain 1572C Vies  
1 threshold 170A Pemko  
1 door sweep 307AV Pemko  
1 set weatherstrip 292 DV Pemko  
2 pull handles Pemko  
1 closer P120B-SBL/SNB  
1 12" H. kick plate

#### HARDWARE SET #4 (Restroom doors):

Hinges, US26D by Pre-Hung Door Supplier  
1 privacy set S300HG x 2 3/8" BS x US26D Falcon  
(lever-type handles mounted at 30"-44" a.f.f.)  
1 wall stop 4275 x US26D Baldwin  
1 closer P120B-SBL/SNB (closer shall take at least 3 seconds to move from 70" to 3" from the latch)  
1 sign (men / women, w/ handicapped symbol)  
1 12" H. kick plate

#### HARDWARE SET #5 (Passage doors):

Hinges, US26D by Pre-Hung Door Supplier  
1 passage set S100 HG x 2 3/8" B.S. x US26D Falcon  
1 wall stop 4275 x US26D Drs. 2-3 Baldwin  
1 floor stop 4001 x US26D Drs. 5 Baldwin  
1 12" H. kick plate  
1 closer P120B-SBL/SNB

CUSTOMER:  
**GIANT OIL INC.**  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602  
BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619  
SITE ADDRESS:

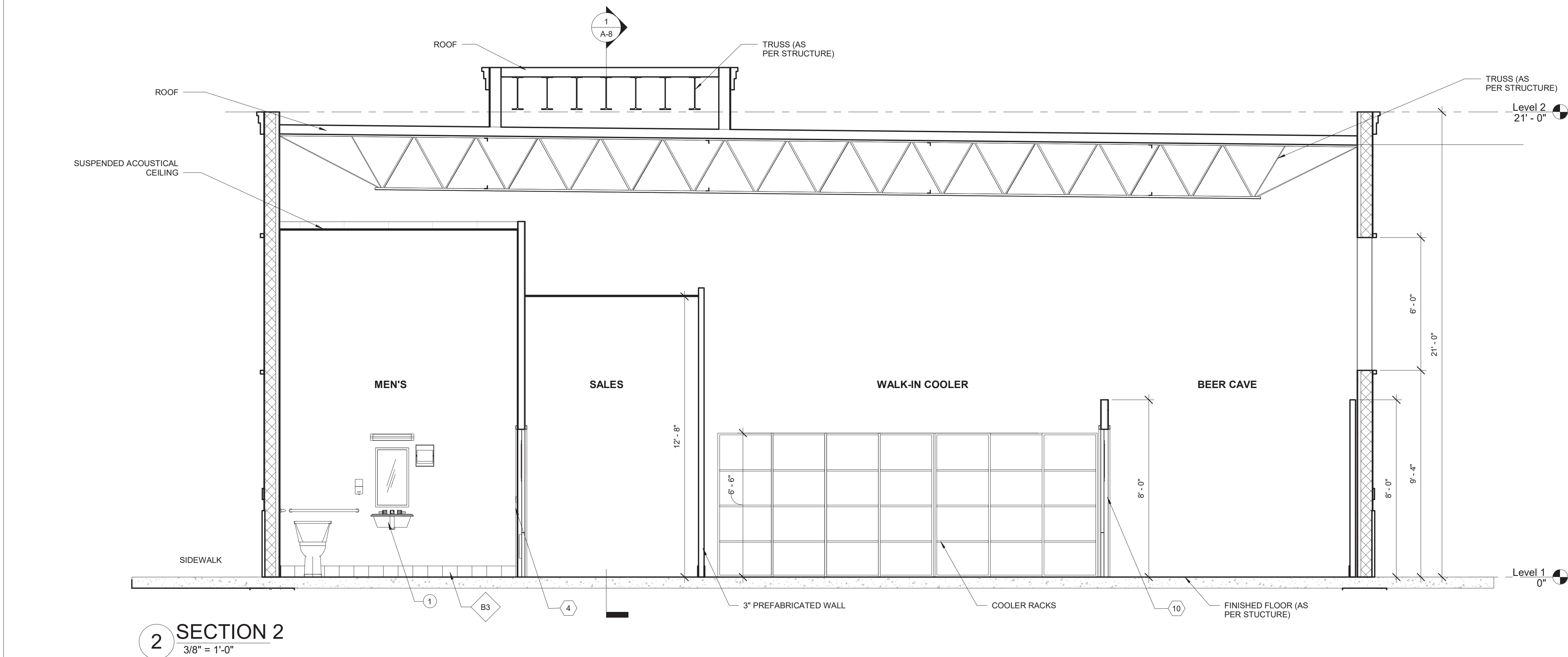
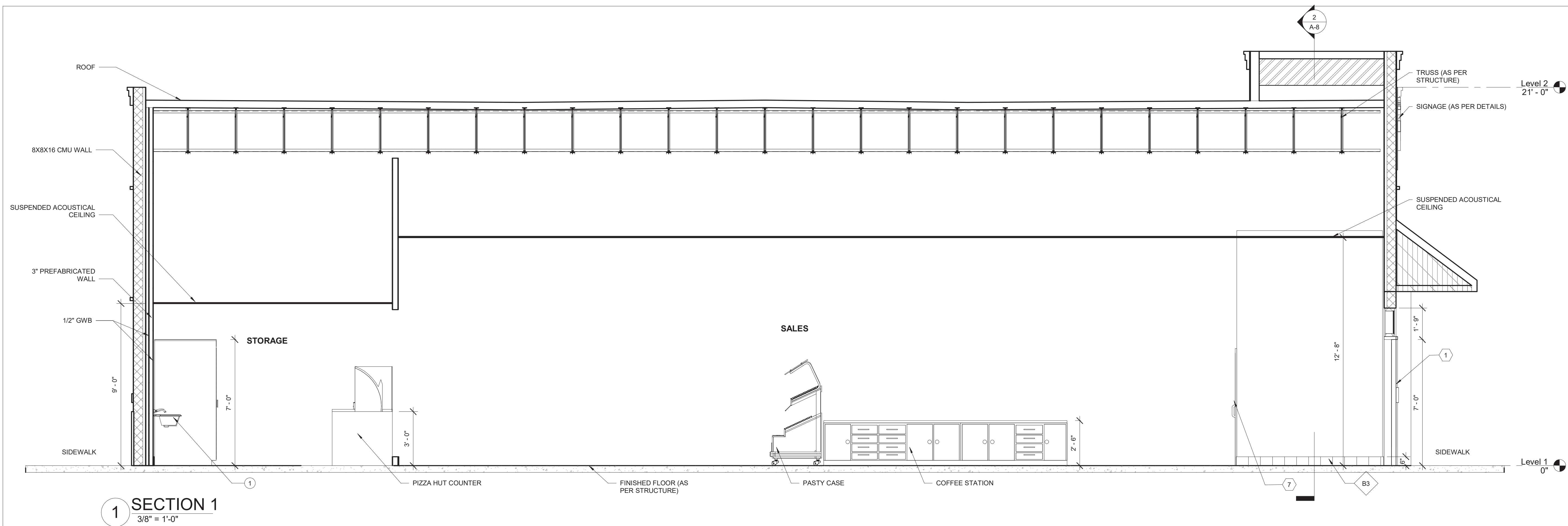
RON FAIR, P.E.  
FL #50738

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 CB #0011445  
FL #50738  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
www.aecservicesinc.com

JOB NO.	DWG Name:	XREF Name:	SCALE:	DATE:	DRAWN BY:	CHECKED:	APPROVAL:
GO161712			As indicated	09/13/18	Author	Checker	Approver
6							
5							
4							
3							
2							
1							
NO	DESCRIPTION	DATE	CHECKED	APPROVAL	REVISIONS		

DOOR &  
STOREFRONT  
DETAILS

A-7



CUSTOMER: **GIANT OIL INC.**  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS: **BP STATION**  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

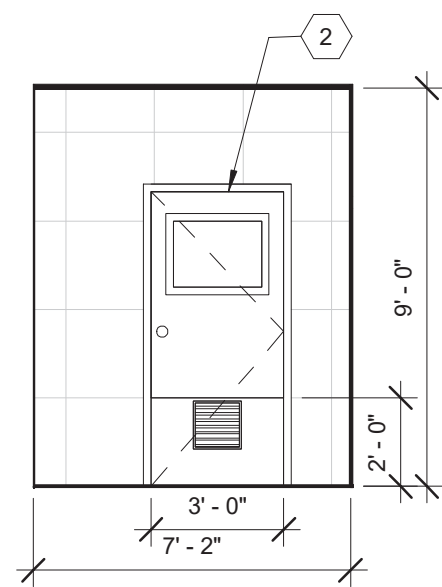
ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 OB #011445  
FL # 50738

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
(813)684-2680 (f)  
www.aecservicesinc.com

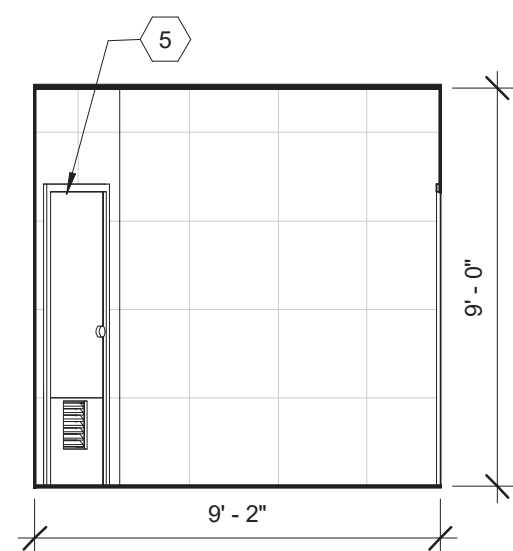
6	JOB NO:	GO161712
5	DWG Name:	
4	XREF Name:	
3	SCALE:	3/8" = 1'-0"
2	DATE:	09/13/18
1	DRAWN BY:	Author
	CHECKED:	Checker
	DATE	
	REVISIONS	
	NO	DESCRIPTION

SECTIONS

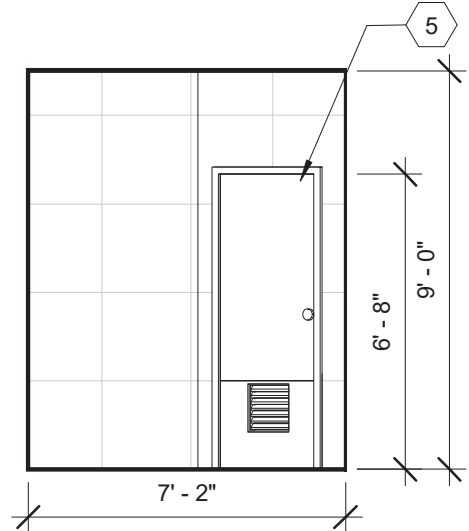
A-8



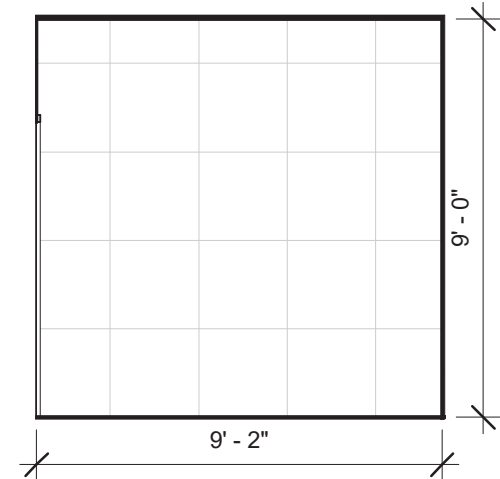
9 ELECTRICAL ROOM ELEVATION  
1/4" = 1'-0"



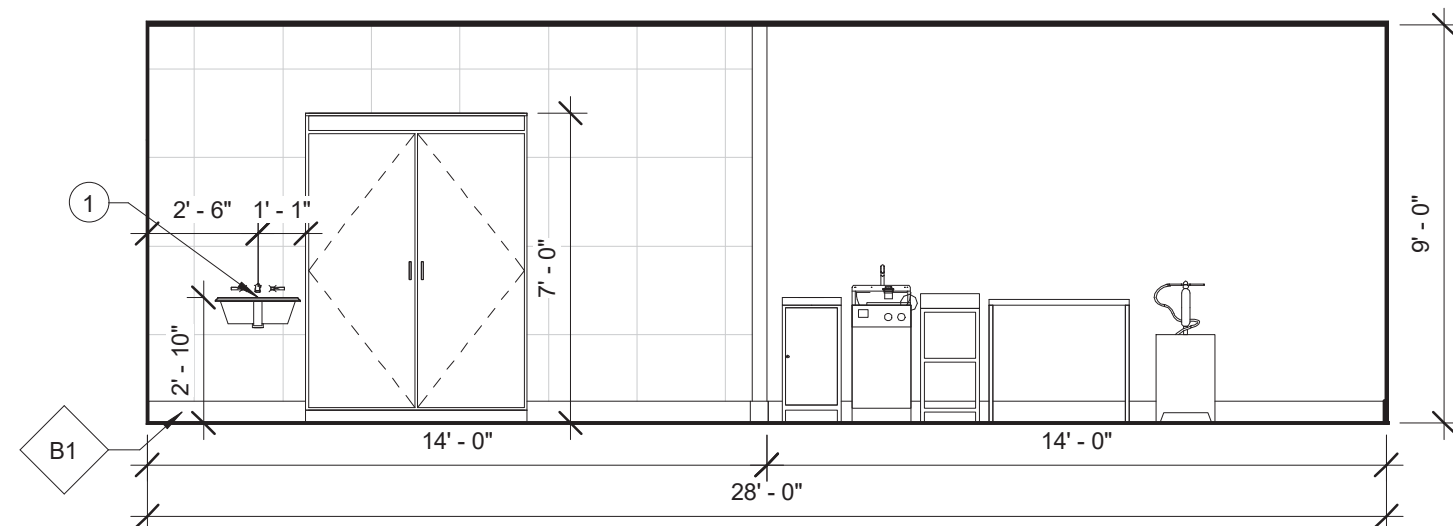
8 ELECTRICAL ROOM ELEVATION  
1/4" = 1'-0"



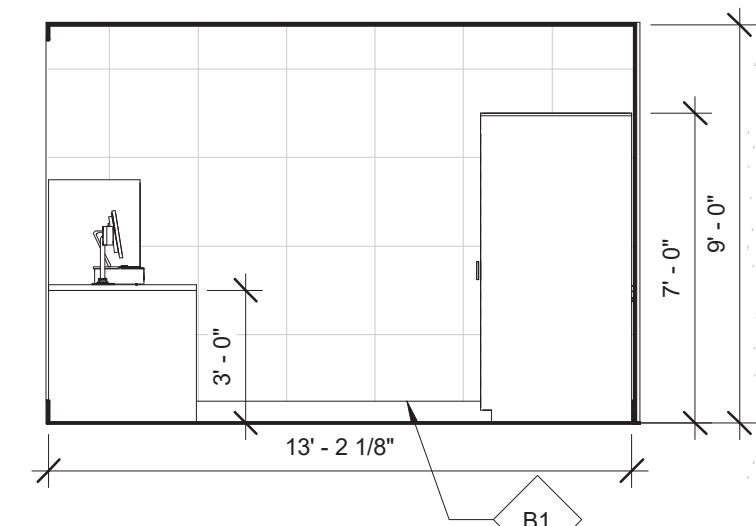
7 ELECTRICAL ROOM ELEVATION  
1/4" = 1'-0"



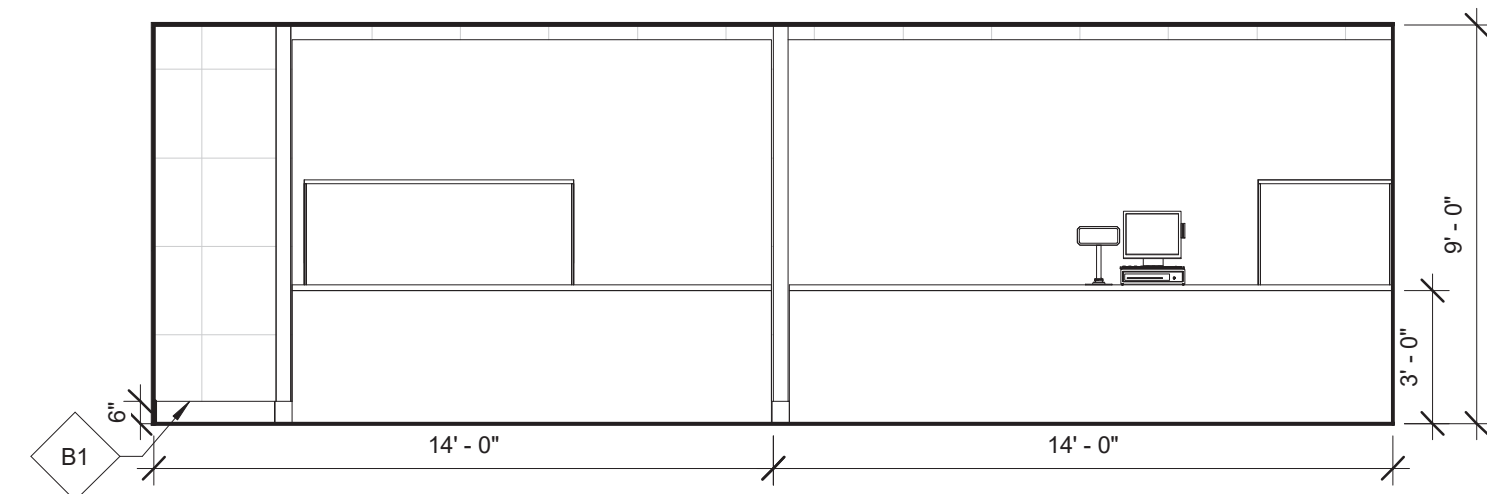
6 ELECTRICAL ROOM ELEVATION  
1/4" = 1'-0"



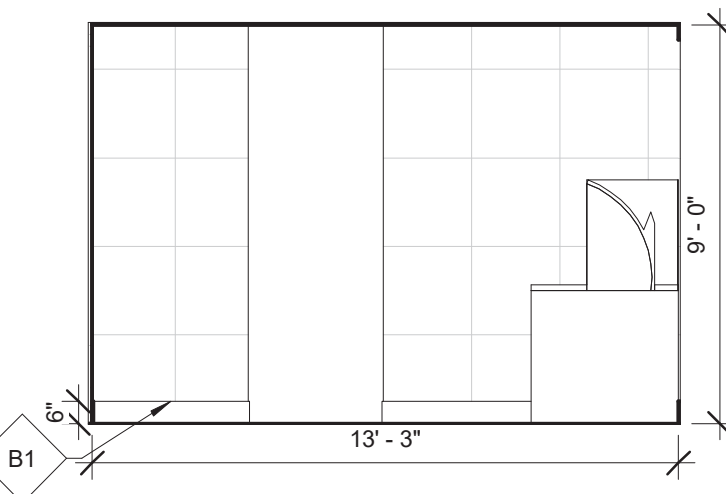
5 STORAGE ELEVATION  
1/4" = 1'-0"



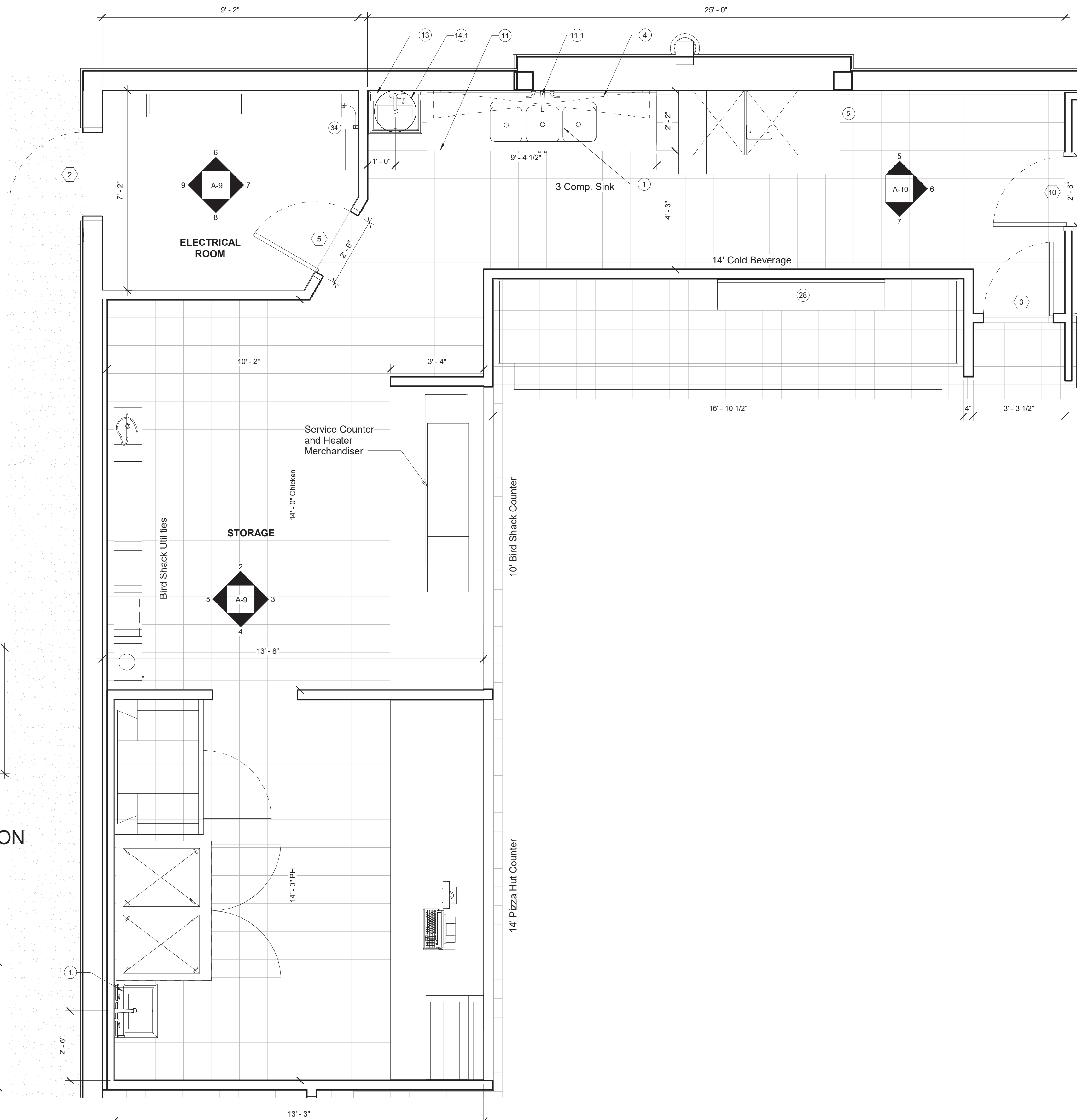
4 STORAGE ELEVATION  
1/4" = 1'-0"



3 STORAGE ELEVATION  
1/4" = 1'-0"



2 STORAGE ELEVATION  
1/4" = 1'-0"



1 STORAGE PLAN  
1/2" = 1'-0"

Giant Oil Inc.  
1806 N. Franklin St.  
Tampa, FL 33602

BP Station  
3009 Gulf to Bay Blvd  
Clearwater, FL 34619

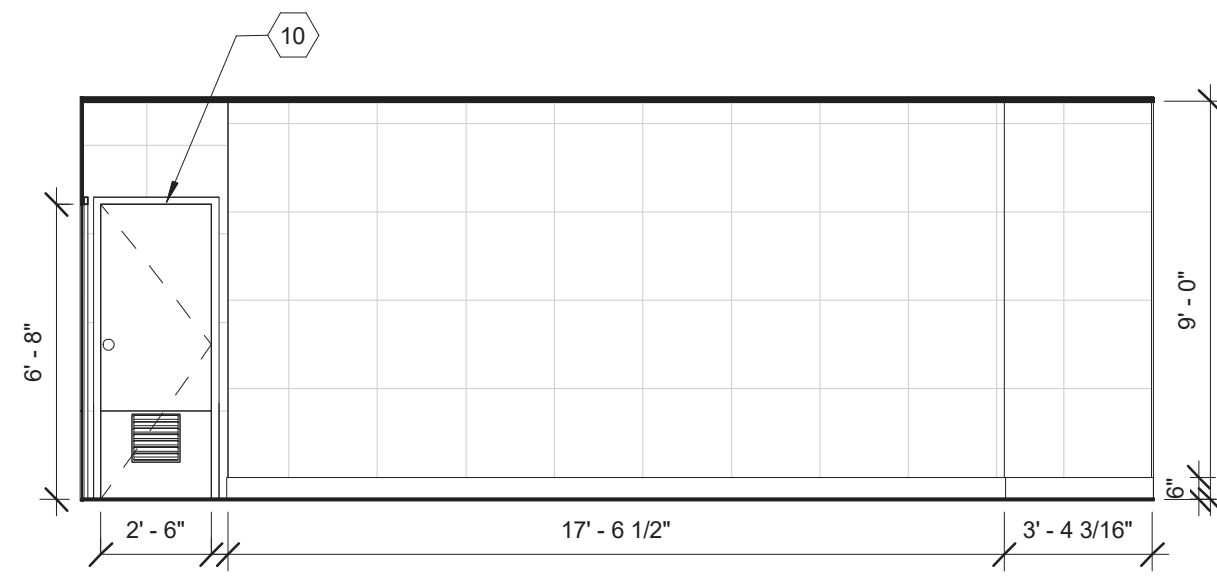
AEC Services, Inc.  
Ron Fair, P.E.  
License No. 9277  
OB #0011445  
FL # 50738

1616 Allison Woods Lane  
Tampa, FL 33619  
(813) 884-1234  
(813) 884-2680 (f)  
www.aecservicesinc.com

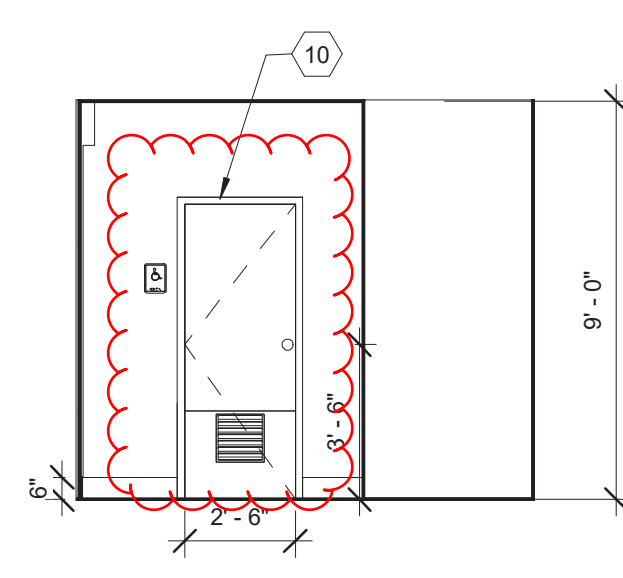
NO	DESCRIPTION	DATE	CHECKED	AUTHOR	CHECKER	APPROVER
6	JOB NO:	GO161712				
5	DWG Name:					
4	XREF Name:	As indicated				
3	SCALE:	09/13/18				
2	DATE:					
1	DRAWN BY:					
	CHECKED:					
	APPROVAL:					

ENLARGED PLAN  
& INTERIOR  
ELEVATIONS

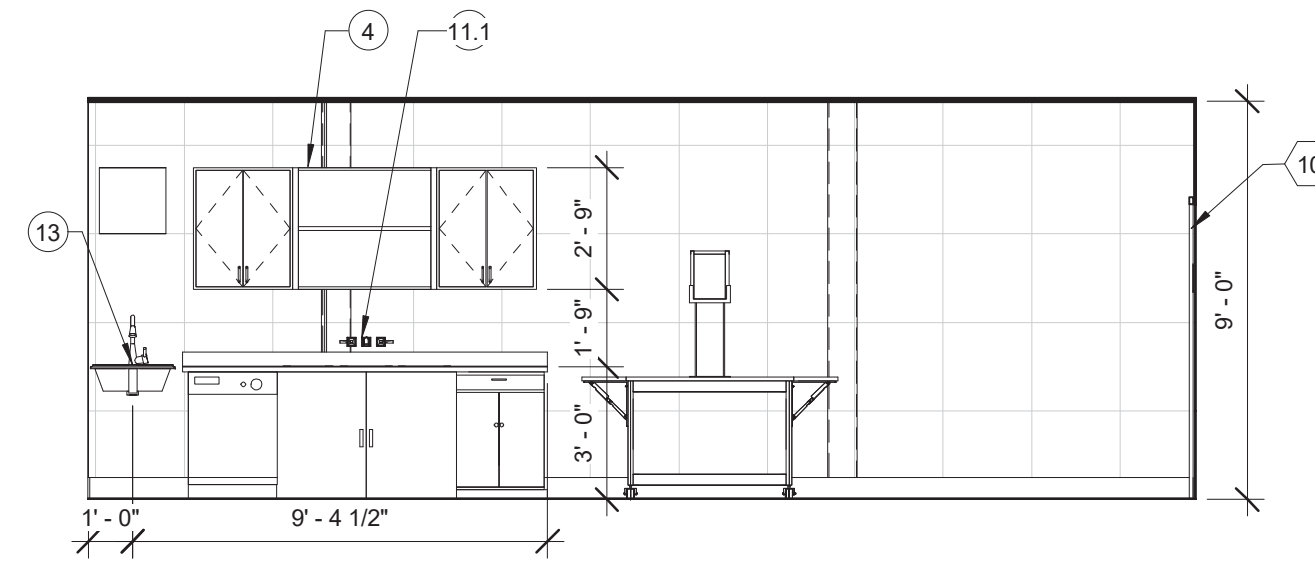
A-9



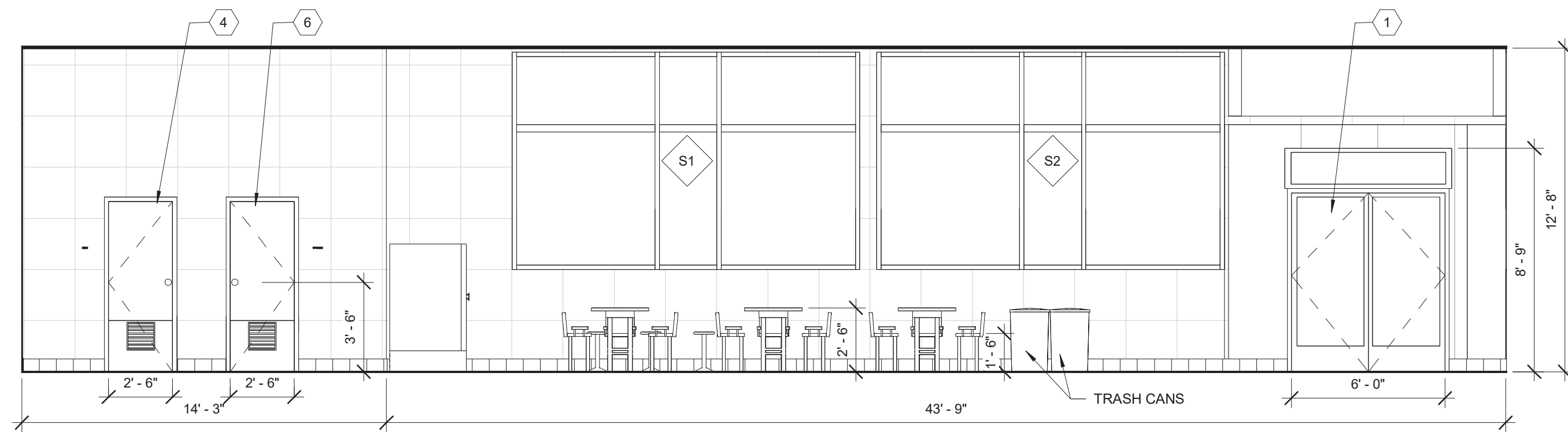
7 STORAGE ELEVATION  
1/4" = 1'-0"



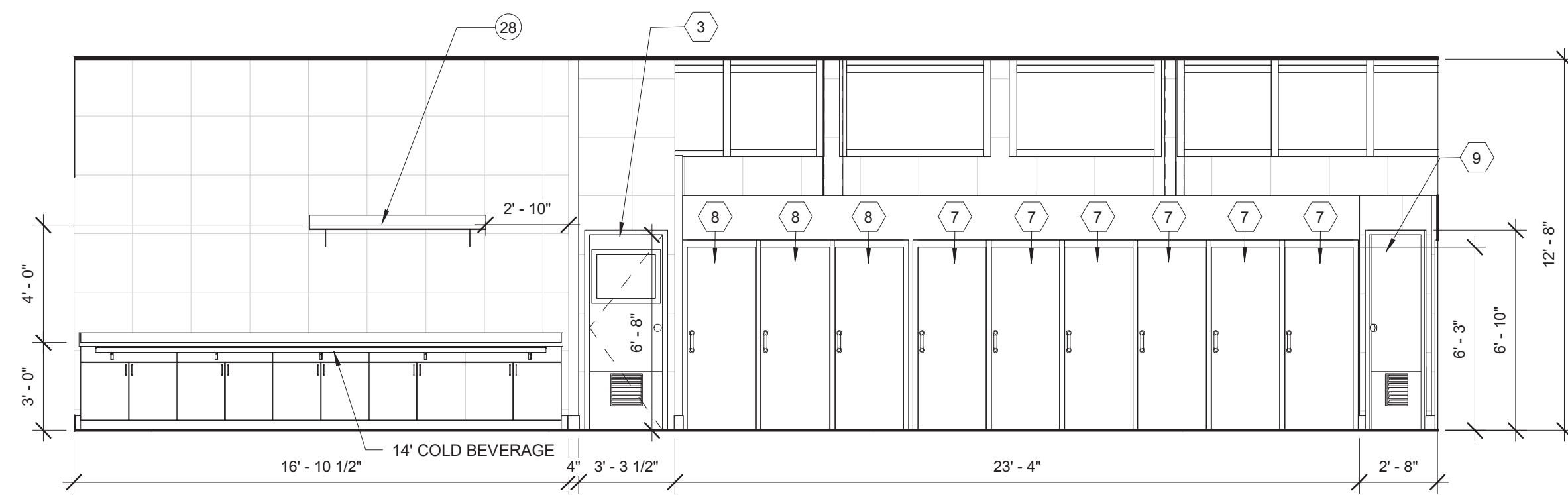
6 STORAGE ELEVATION  
1/4" = 1'-0"



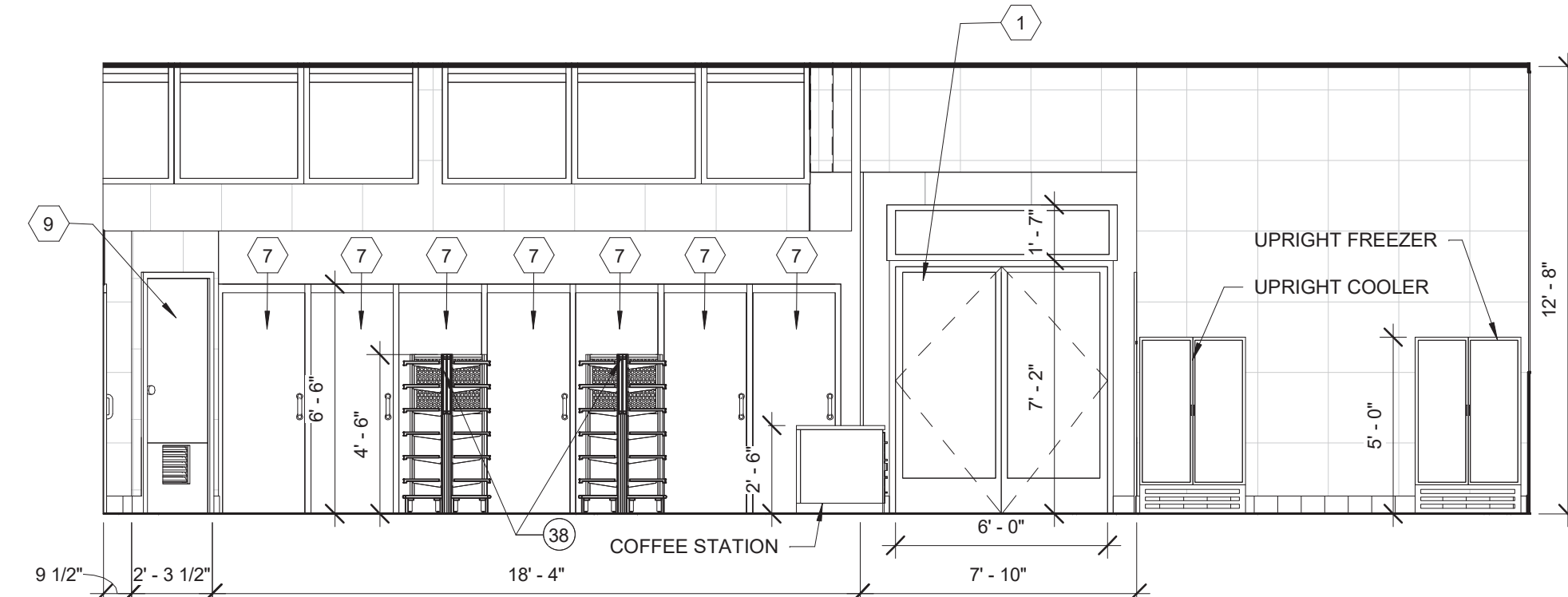
5 STORAGE ELEVATION  
1/4" = 1'-0"



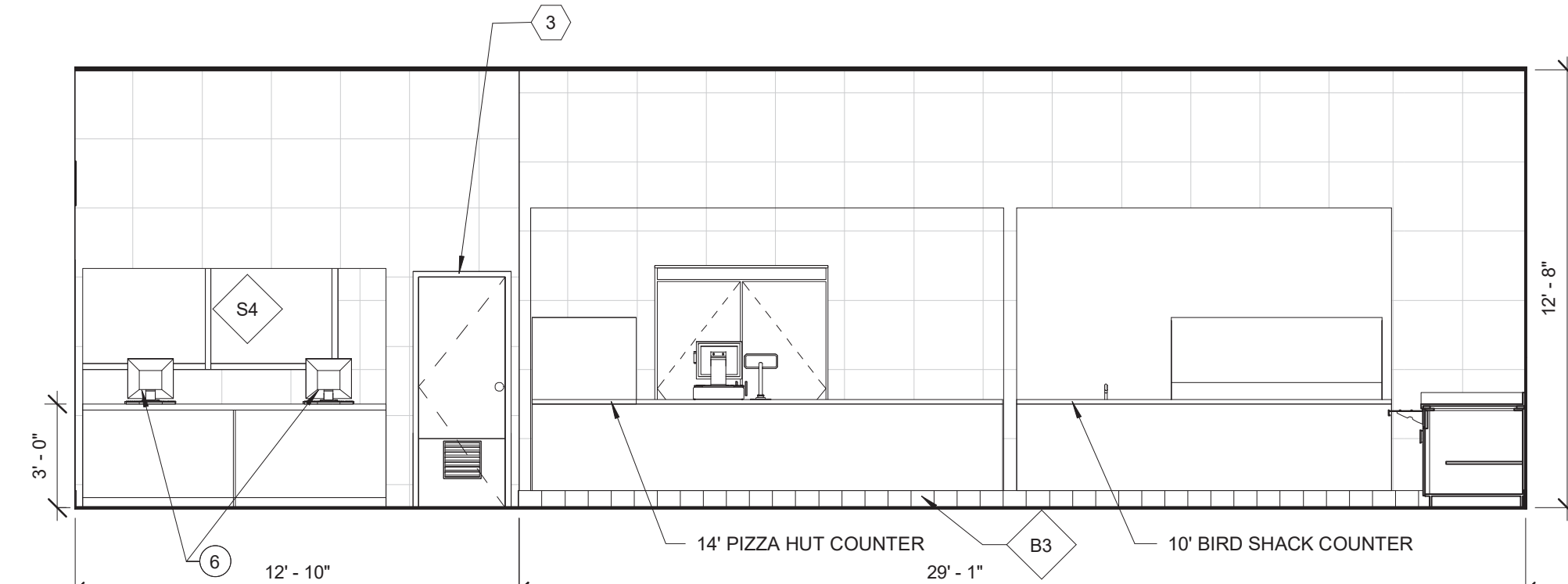
4 SALES ELEVATION  
1/4" = 1'-0"



2 SALES ELEVATION  
1/4" = 1'-0"



3 SALES ELEVATION  
1/4" = 1'-0"



1 SALES ELEVATION  
1/4" = 1'-0"

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
FL # 50738 License No. 9277 OB #001445

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 884-1234  
(813) 884-2680 (f)  
www.aecservicesinc.com

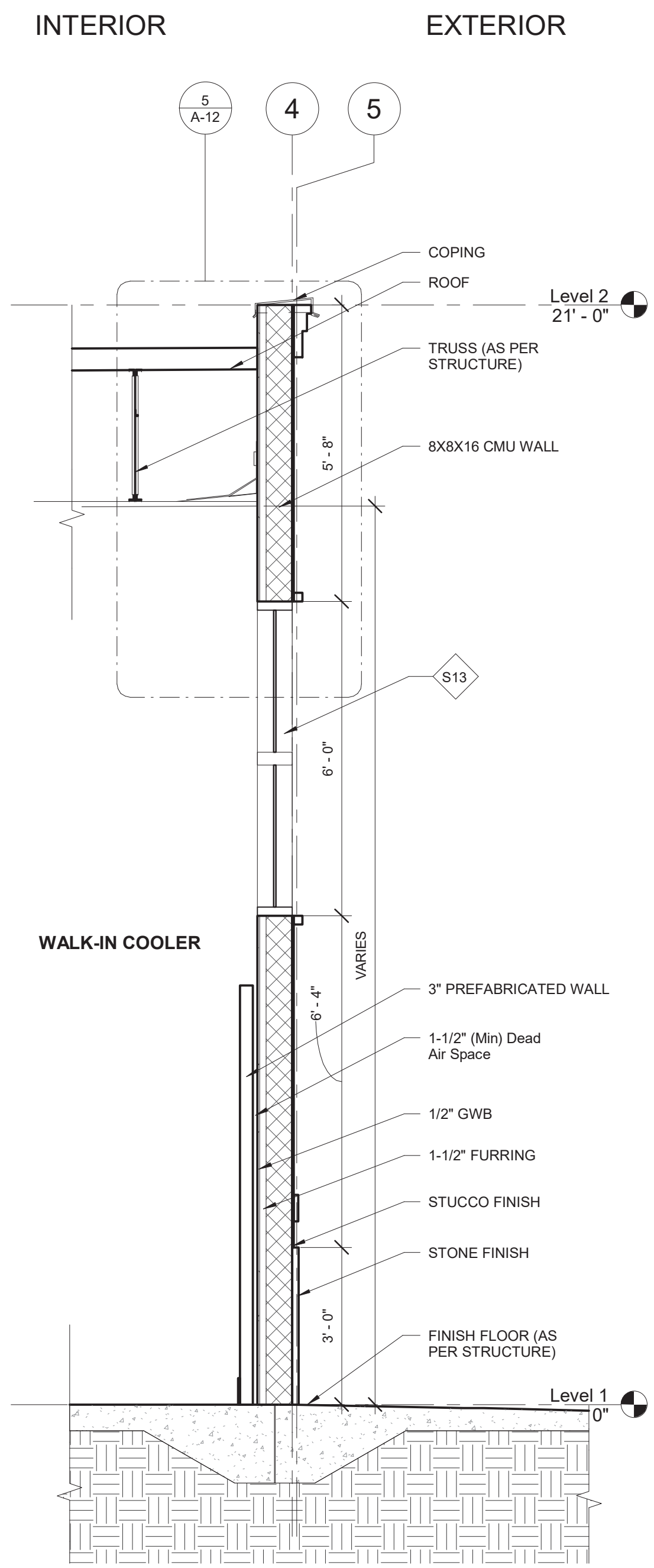
RON FAIR, P.E.  
FL #50738

JOB NO:	GO161712
DWG Name:	
XREF Name:	
SCALE:	1/4" = 1'-0"
DATE:	09/13/18
DRAWN BY:	Author
CHECKED:	Checker
APPROVAL:	Approver

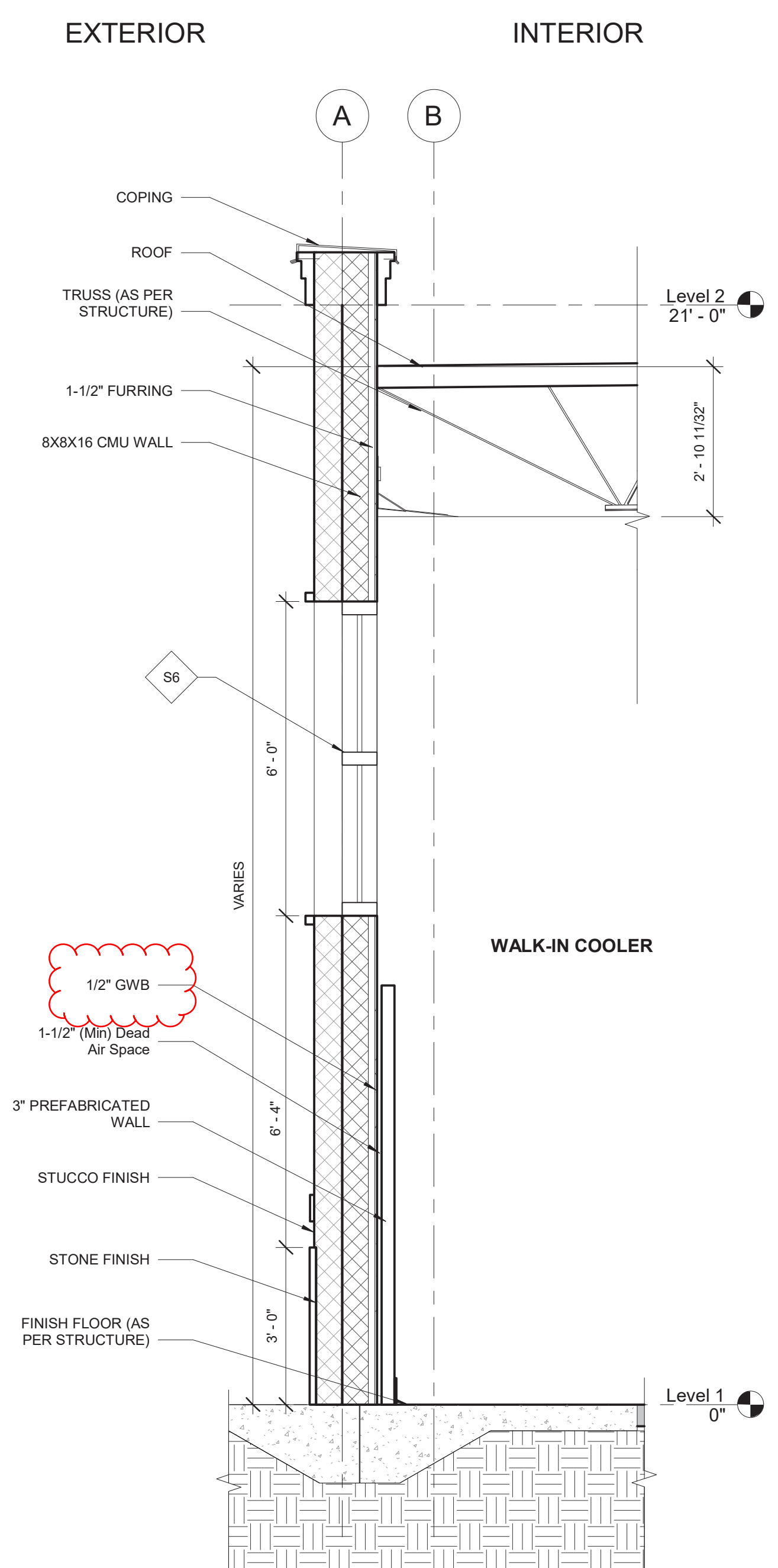
MISC. INTERIOR  
ELEVATIONS

A-10

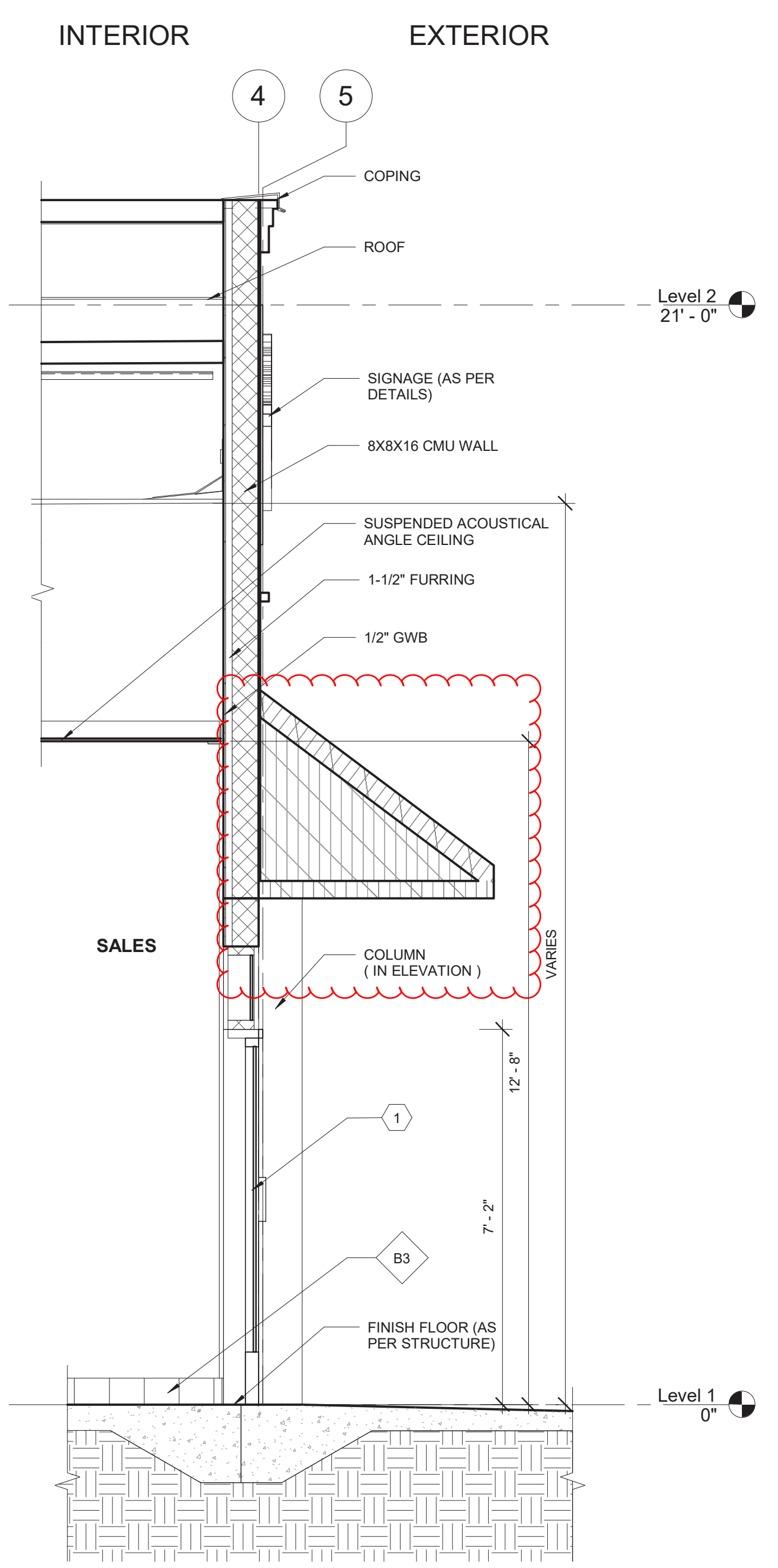
GENERAL NOTE : 0" = 103'



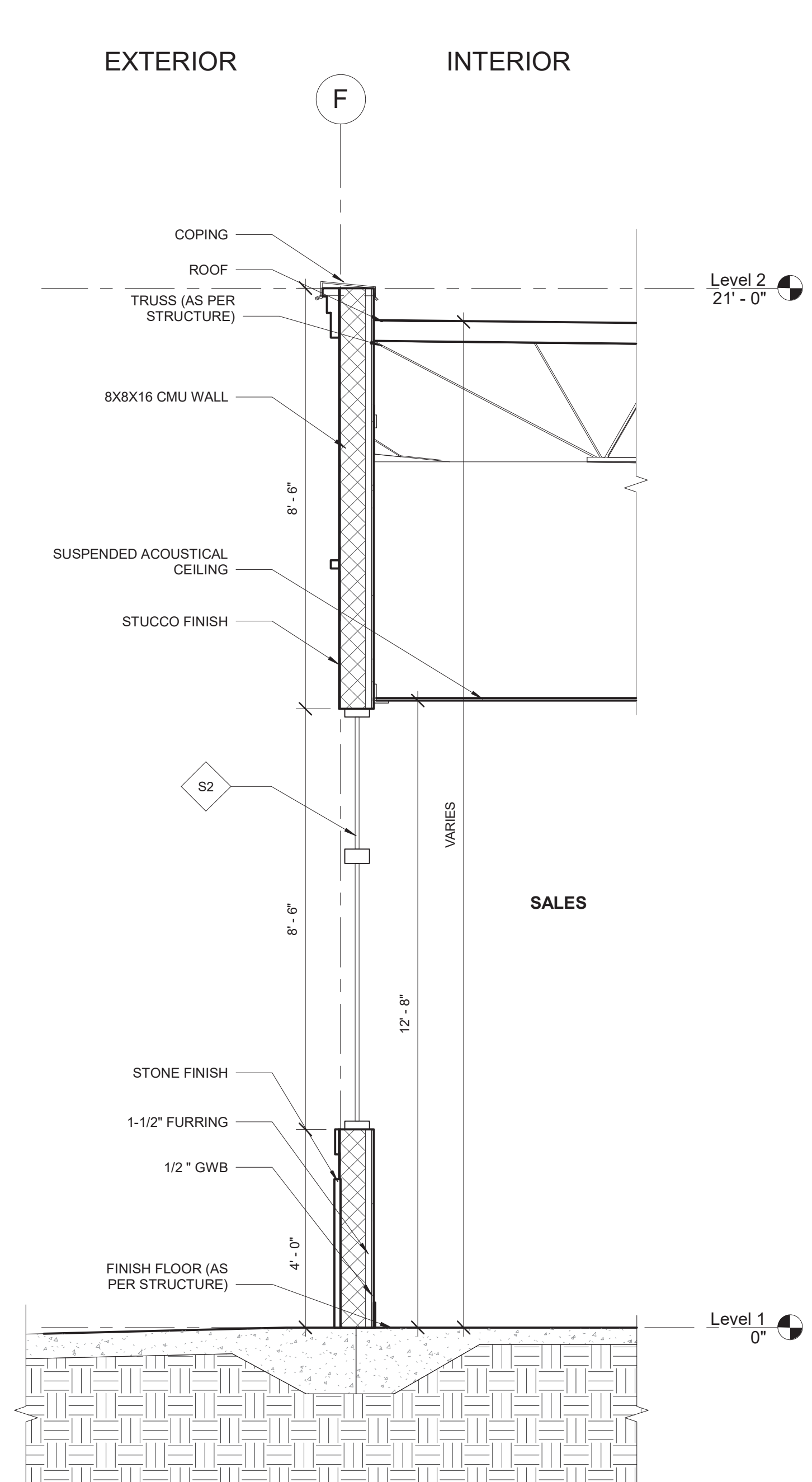
4 WALL SECTION  
1/2" = 1'-0"



3 WALL SECTION  
1/2" = 1'-0"



2 WALL SECTION  
1/2" = 1'-0"



1 WALL SECTION  
1/2" = 1'-0"

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

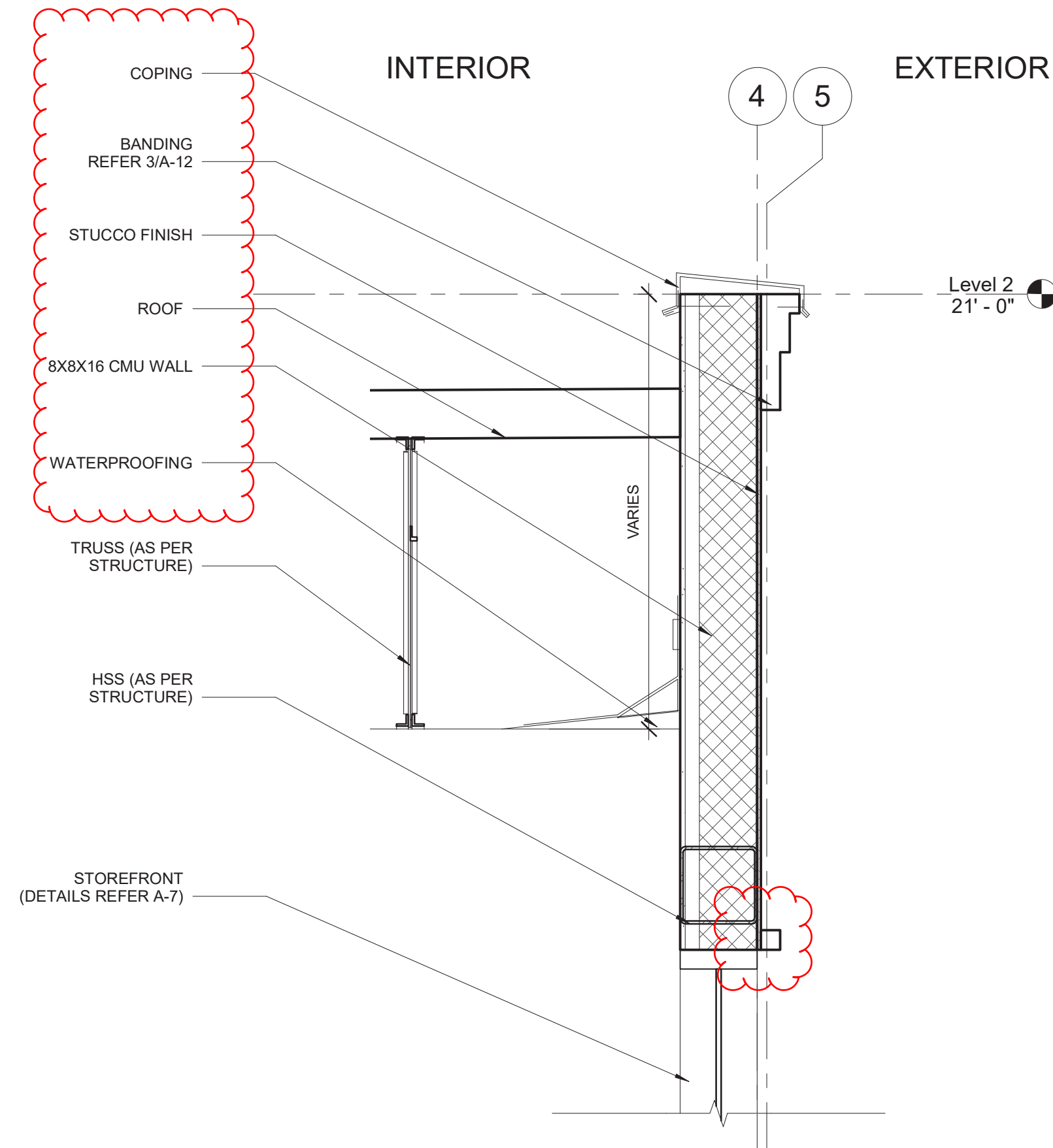
ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 OB #0011445  
FL # 50738

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 884-1234  
(813) 884-2880 (f)  
www.aecservicesinc.com

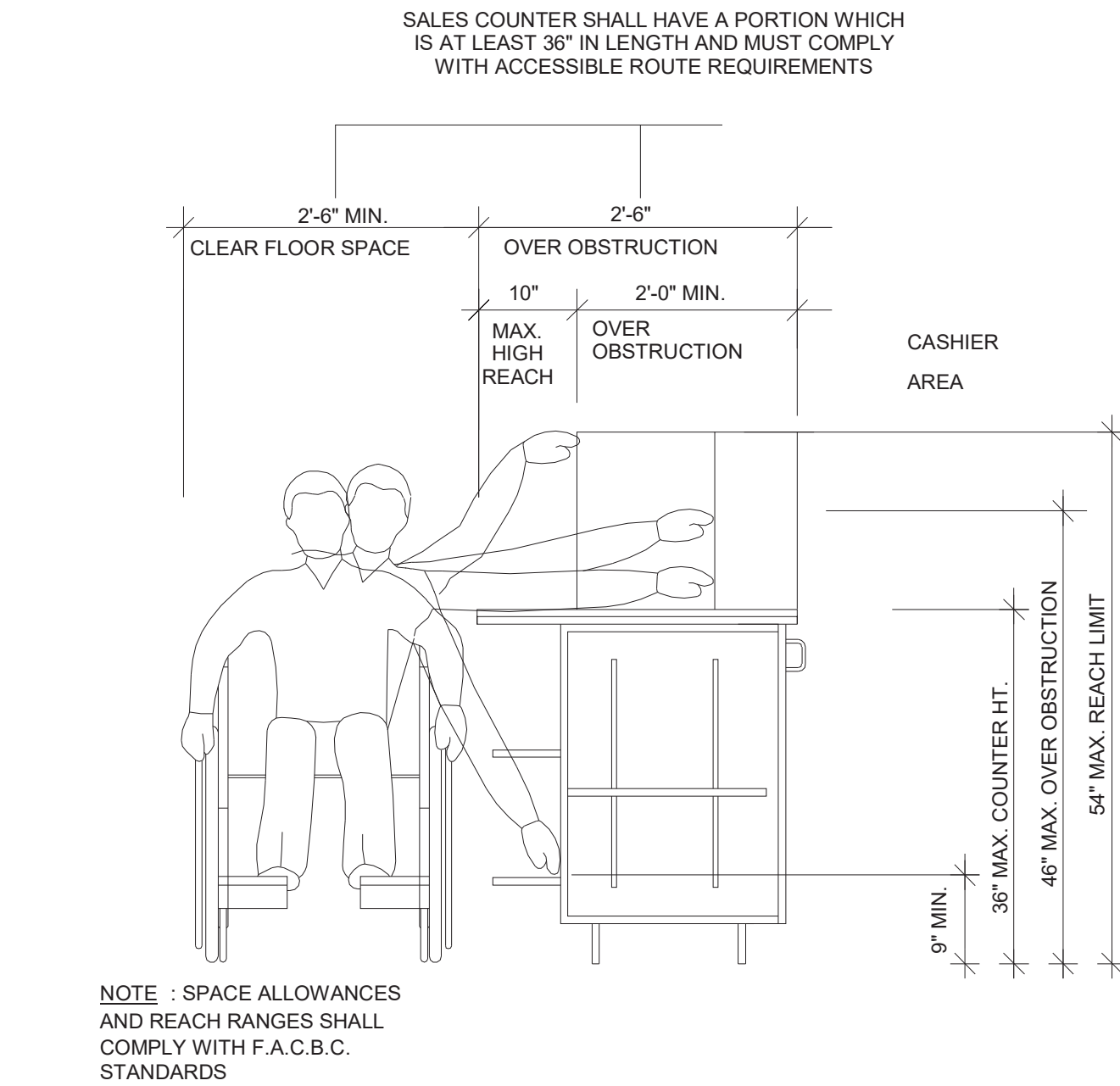
JOB NO:	GO161712
DWG Name:	
XREF Name:	1/2" = 1'-0"
SCALE:	09/13/18
DATE:	Author
DRAWN BY:	Checker
CHECKED:	Approver
DATE:	
DESCRIPTION	REVISIONS
6	
5	
4	
3	
2	
1	

WALL SECTIONS

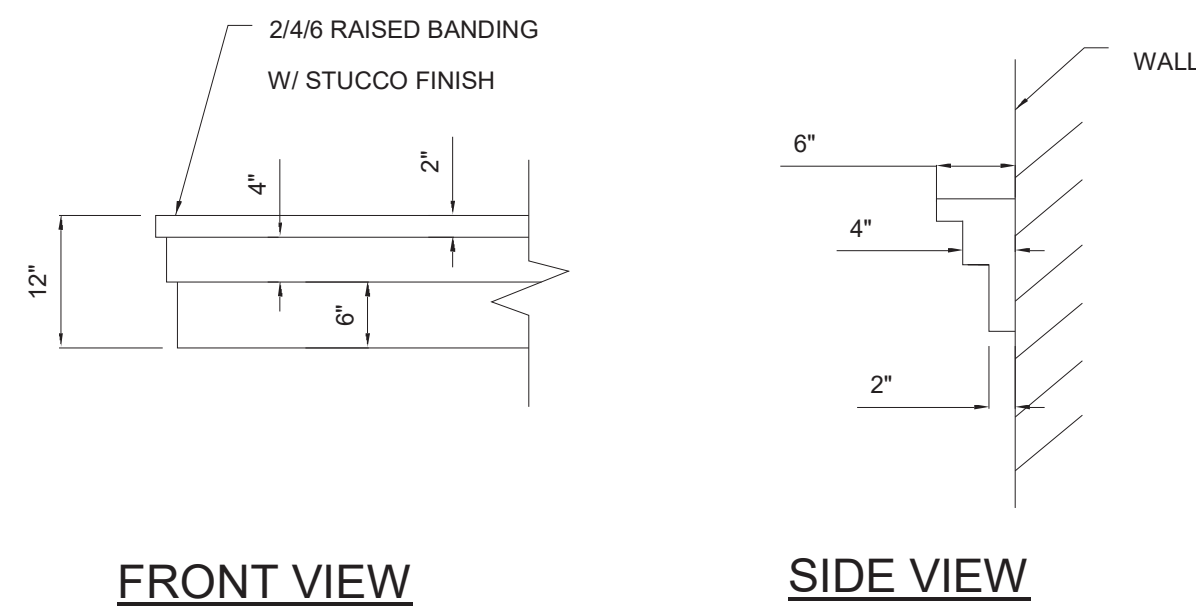
A-11



5 ROOF DETAILS  
1" = 1'-0"

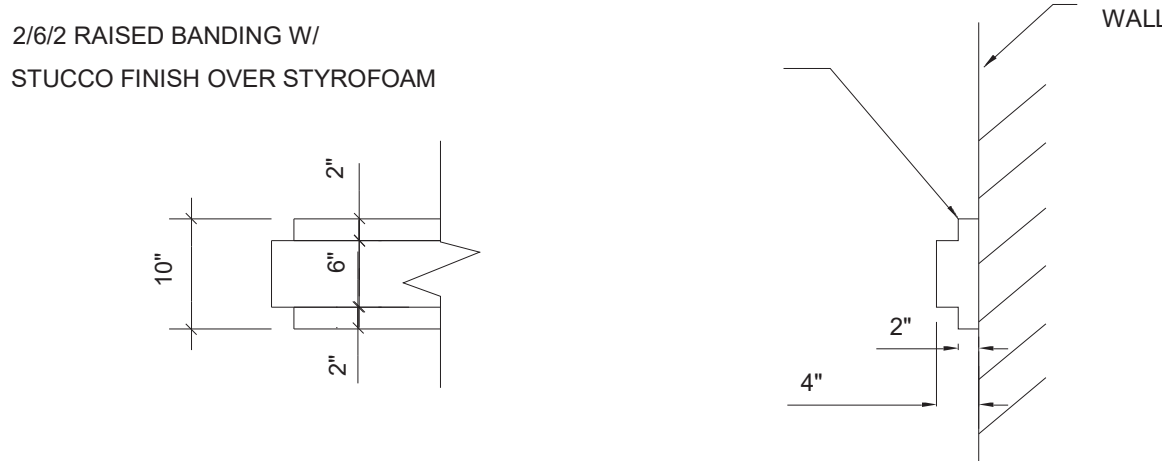


4 COUNTER ACCESSIBILITY DETAIL @ CASHIER AREA  
1/2" = 1'-0"



FRONT VIEW

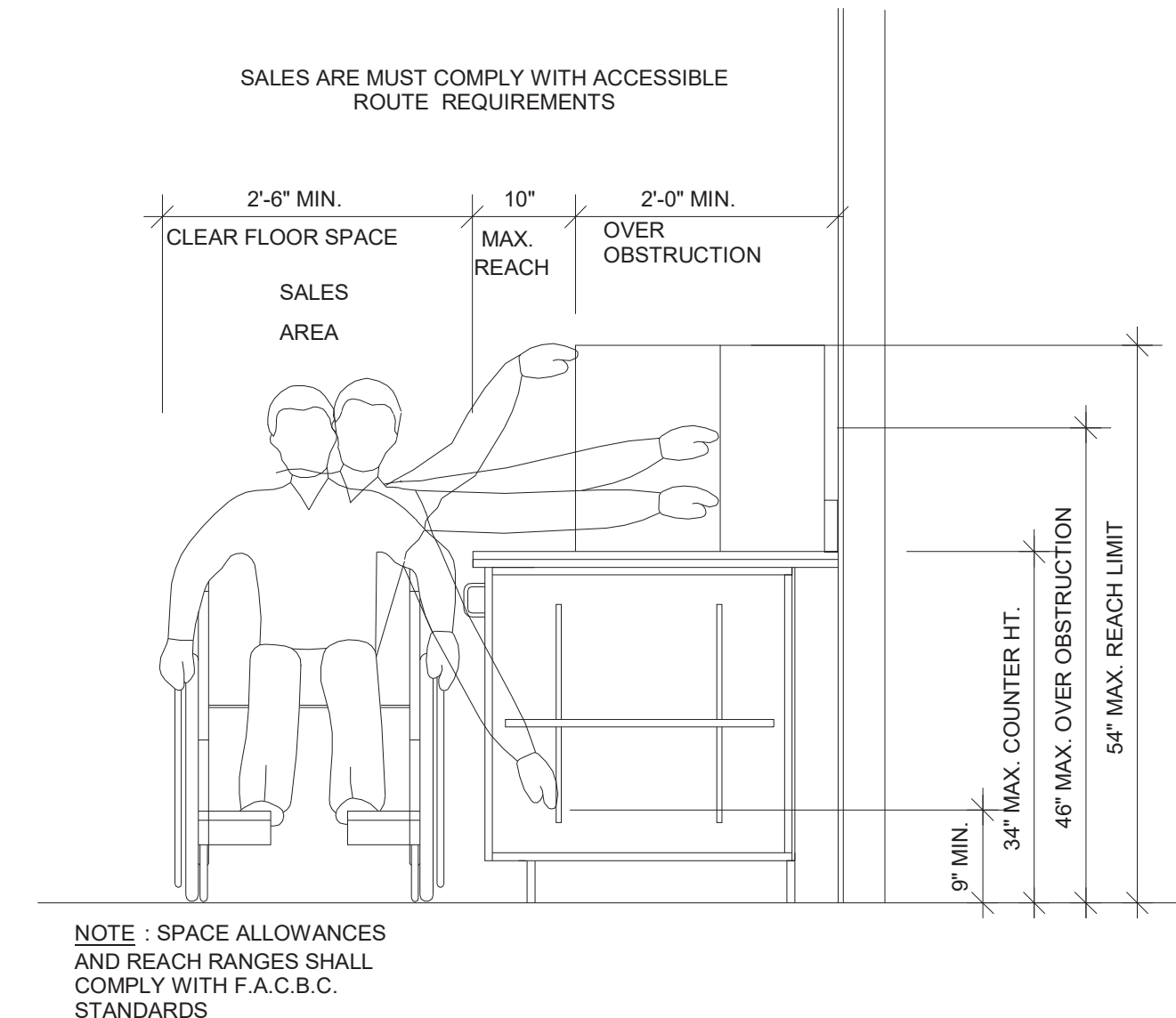
SIDE VIEW



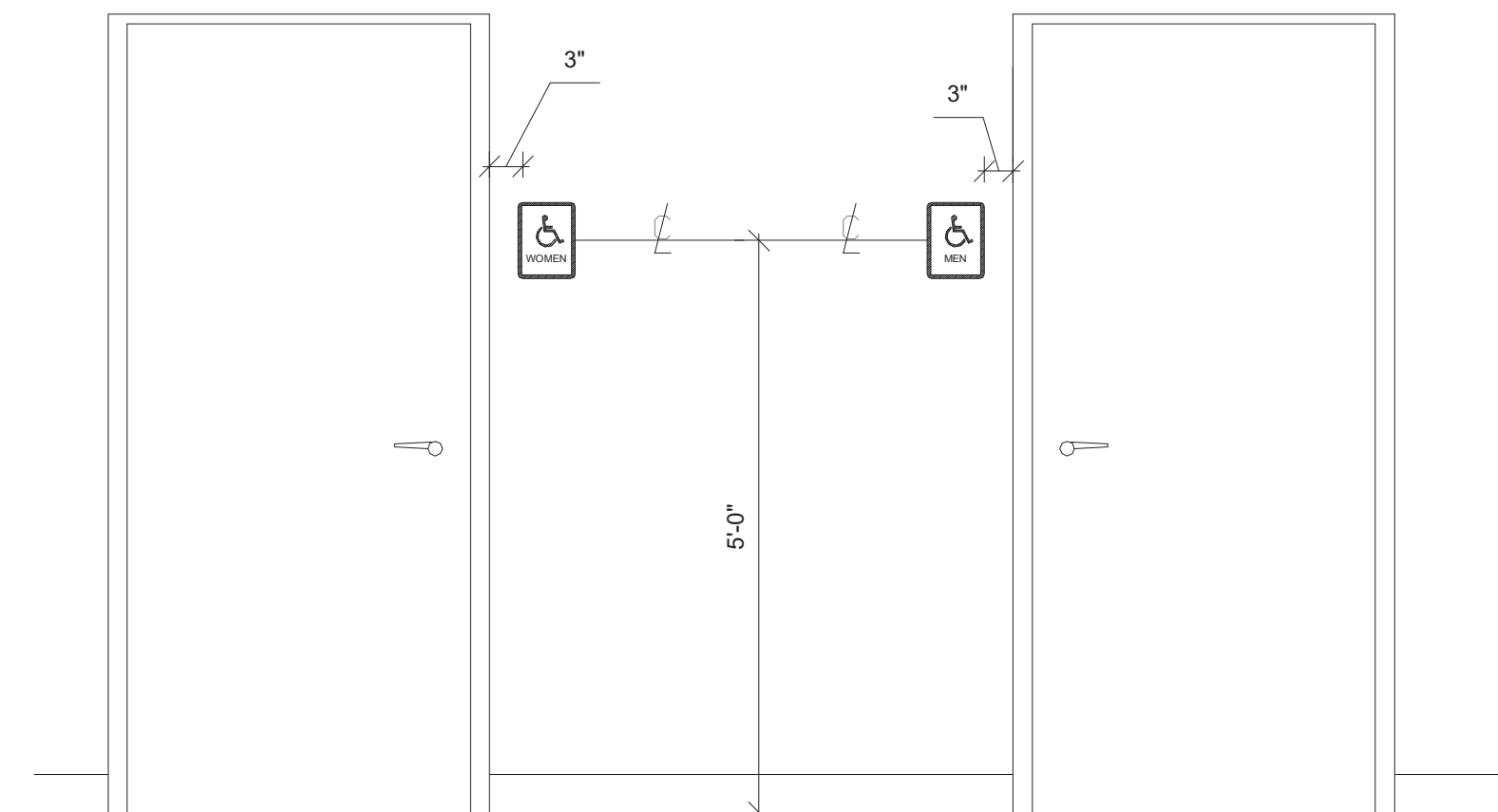
FRONT VIEW

SIDE VIEW

3 BANDING DETAILS  
1/2" = 1'-0"



2 COUNTER ACCESSIBILITY DETAIL @ BEVERAGE AREA  
1/2" = 1'-0"



1 HC SIGNAGE LOCATION  
1/2" = 1'-0"

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
FL # 50738 License No. 9277 OB #0011445

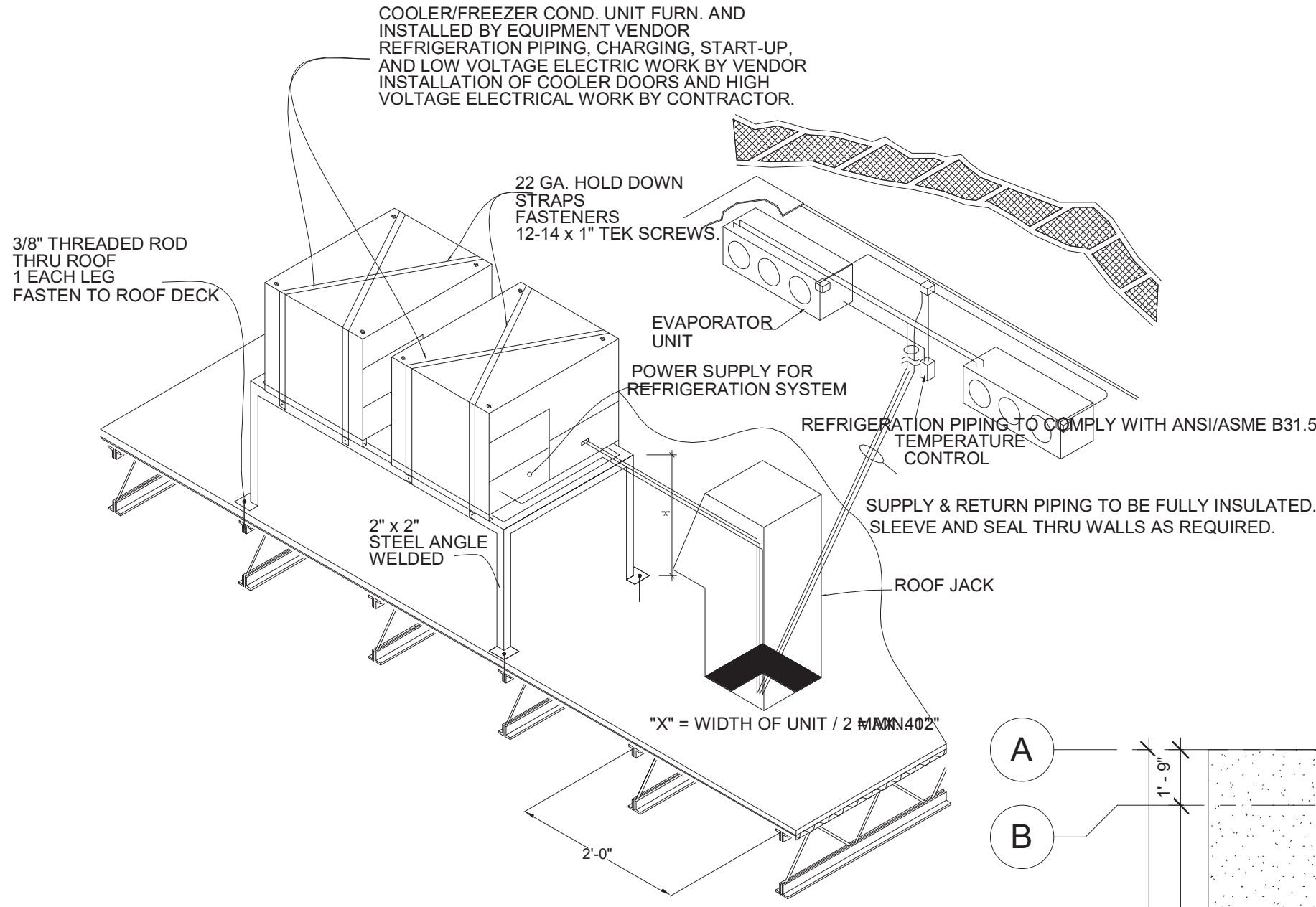
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
(813)684-2680 (f)  
www.aecservicesinc.com

RON FAIR, P.E.  
FL #50738

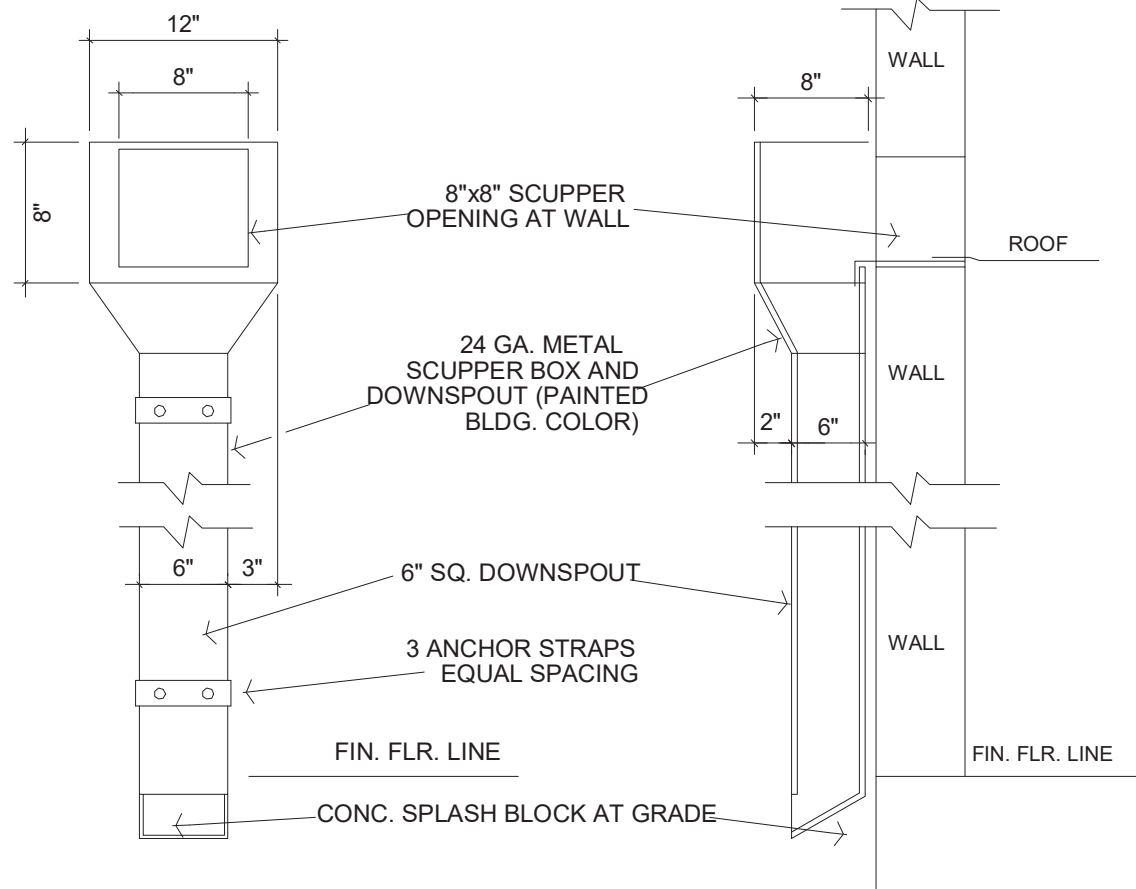
JOB NO:	GO161712
DWG Name:	
XREF Name:	As indicated
SCALE:	09/13/18
DATE:	Author
DRAWN BY:	Checker
CHECKED:	Approver
DATE	
DESCRIPTION	
NO	REVISIONS
6	
5	
4	
3	
2	
1	

MISC. DETAILS

A-12



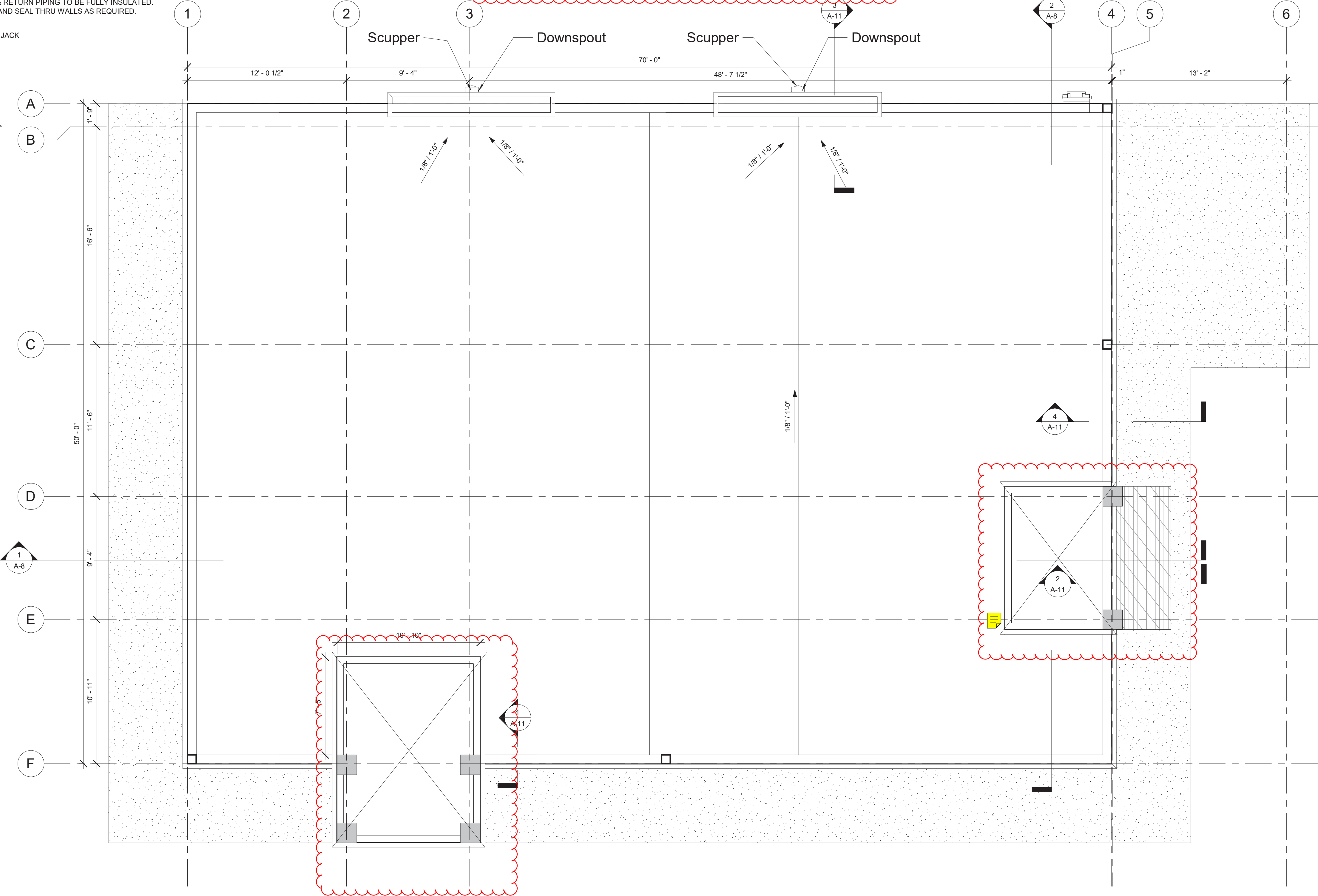
TYPICAL COOLER COND. INSTALLATION SCHEMATIC  
N.T.S.



METAL SCUPPER BOX AND DOWNSPOUT DETAIL  
N.T.S.

4 LAYER BITUMINOUS BUILT-UP ROOF SYSTEM

1. Steel Roof Joists
2. Steel Deck - No. 22 MSG min. ga; min. fluted depth 1-1/2" w/ no perforations. Welded or mechanically fastened to supports in accordance with deck manufacturer's recommendations.
3. Vapor Barrier - [Optional] 6 mil. min. (or equiv.)
4. Insulation Board - Classified by Und. Lab. (Roofing Materials and Systems Directory, Roof Deck Construction, Building Units). [See Cornell Corp. "Vent-Top ThermoCal X1" OR "Vent-Top ThermoCal X2" (or equiv.)]
5. Roof Covering - Built-up from hot mopped materials Classified by UL. [Authorities having jurisdiction should be consulted to which class of roof coverings will be acceptable in each location.]
6. Mineral Capping Membrane - (Inbetween layers of hot mop).



ROOF PLAN  
1/4" = 1'-0"

CUSTOMER:  
GIANT OIL INC.  
1806 N. FRANKLIN ST.  
TAMPA, FL 33602

SITE ADDRESS:  
BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FL 34619

RON FAIR, P.E.  
FL #50738

ENGINEER OF RECORD:  
AEC Services, Inc.

RON FAIR, P.E.  
License No. 9277 OB #001445

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
(813)684-2680 (f)  
www.aecservicesinc.com



JOB NO: GO161712

DWG Name:

XREF Name:

SCALE: As indicated

DATE: 09/13/18

DRAWN BY: Author

CHECKED: Checker

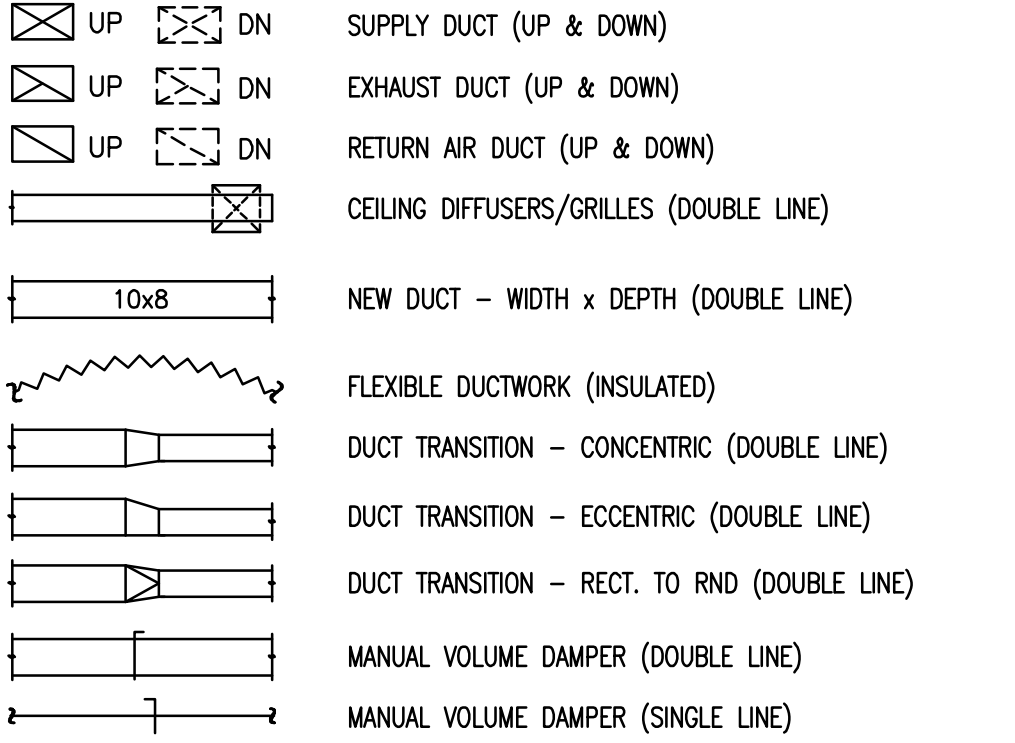
APPROVAL: Approver

REVISIONS

ROOF PLAN

S-6

## DUCTWORK



### FLEX DUCT

0	- 100	CFM	= 6"
101	- 160	CFM	= 7"
161	- 200	CFM	= 8"
201	- 325	CFM	= 10"
326	- 400	CFM	= 12"
401	- 640	CFM	= 14"
641	- 700	CFM	= 16"

## BUILDING CODES

THESE PLANS WERE PREPARED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE 6TH EDITION (2017) INCLUDING ALL APPLICABLE SECTIONS OF FBC BUILDING, MECHANICAL, PLUMBING, FUEL GAS, RESIDENTIAL, ENERGY CONSERVATION, TEST PROTOCOLS, ACCESSIBILITY, EXISTING BUILDING INCLUDING BUT NOT LIMITED TO THE FOLLOWING REFERENCED STANDARDS. ALL MECHANICAL WORK PERFORMED SHALL MEET THE APPLICABLE REQUIREMENTS OF THESE CODES AND REFERENCED STANDARDS:

- FLORIDA FIRE PREVENTION CODE, INCLUDING THE FLORIDA EDITIONS OF NFPA 1 (FIRE CODE) AND NFPA 101 (LIFE SAFETY CODE)
- NFPA-70 (NATIONAL ELECTRIC CODE, 2014 ED.)
- NFPA 90A (STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATION, 2015 ED.)
- ASHRAE 62.1 (VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY, 2013 ED.)
- SMACNA/ANSI (HVAC DUCT CONSTRUCTION STANDARDS, METAL & FLEXIBLE, 2005 3RD ED.)
- SMACNA (FIBROUS GLASS DUCT CONSTRUCTION STANDARD, 2003 7TH ED.)
- NAIMA AH116 (FIBERGLASS DUCT CONSTRUCTION STANDARDS, 2009 ED.)
- MSS SP-58 (PIPE HANGERS AND SUPPORTS-MATERIALS DESIGN AND MANUFACTURE, SELECTION, APPLICATION AND INSTALLATION, 2009 ED.)

## MECHANICAL GENERAL NOTES

- DUCT DIMENSIONS SHOWN ON THE DRAWINGS ARE CLEAR INSIDE AIR PASSAGE DIMENSIONS.
- MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 8'-0".
- INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS AND RECOMMENDATIONS.
- CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND MECHANICAL EQUIPMENT AND MATERIALS.
- MOUNT ALL SPACE THERMOSTATS AND/OR SENSORS 4 FEET ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.
- SEE ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT.
- UNLESS OTHERWISE NOTED, INSTALL ALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO THE BOTTOM OF THE STRUCTURE. COORDINATE ELEVATION AND LOCATION WITH RAIN LEADERS, WATER PIPING, PLUMBING VENTS, AND MAJOR ELECTRICAL CONDUITS OR CABLE TRAY.
- ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
- SUPPORT DUCTS PER SMACNA.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT FLORIDA BUILDING CODE, SMACNA FGDCS & DCS, AND NFPA 90A.
- ROUTE ALL DUCTWORK, PIPING, ACCESSORIES AS NECESSARY TO AVOID BUILDING STRUCTURE, COMPONENTS AND LIGHTING. COORDINATE ANY TRANSITIONS MADE TO DUCTWORK WITH MAXIMUM FAN PRESSURE DROP REQUIREMENTS FROM MANUFACTURER. ROUTE/SIZE ALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
- ALL DIMENSIONS ARE APPROXIMATE. DO NOT SCALE DRAWINGS FOR CONSTRUCTION.
- ALL FINISHED WORK SHALL BE FREE OF DEFECTS WITH EXISTING SURFACES MAINTAINED IN THE SAME CONDITION AS ORIGINAL.
- ALL DEBRIS SHALL BE PROPERLY DISPOSED OF OFF SITE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FIRE RATING AND WEATHERPROOFING INTEGRITY OF ALL PIPING AND DUCT PENETRATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY SUPPORTING DEVICES FOR ALL ACCESSORIES INCLUDED IN CONTRACT OR HEREIN SPECIFIED OR OTHERWISE.
- THE WORK INDICATED ON THESE DRAWINGS IS GENERALLY DIAGRAMMATIC AND IS INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT OF DUCTWORK AND EQUIPMENT, ETC.
- THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO IDENTIFY ABOVE CEILING CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO CHECK FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER.
- ALL ROOF ATTACHED EQUIPMENT AND APPURTENANCES INCLUDED IN THE SCOPE OF THIS PROJECT ARE REQUIRED TO BE SECURED TO THE UNDERLYING BUILDING STRUCTURE. THE FASTENING SYSTEMS SHALL BE INSTALLED TO RESIST THE WIND PRESSURES ON THE EQUIPMENT AS DETERMINED IN ACCORDANCE WITH THE CURRENT BUILDING CODE.
- HVAC WORK CONSISTS OF PROVIDING AIR CONDITIONING SYSTEMS FOR A COMPLETE OPERATING SYSTEM AS INDICATED ON THE DRAWINGS. ALL WORK SHALL COMPLY WITH APPLICABLE CODES IN SPECIFICATIONS. IT IS THE INTENTION OF THE CONTRACT DRAWINGS AND SPECIFICATION TO CALL FOR COMPLETE, FINISHED WORK, TESTED, AND READY FOR OPERATION.

## ABBREVIATIONS

AC	AIR CONDITIONING	EQUIP	EQUIPMENT	NIC	NOT IN CONTRACT
AD	ACCESS DOOR	EXIST	EXISTING	NO	NORMALLY OPEN
AFF	ABOVE FINISHED FLOOR	ESP	EXTERNAL STATIC PRESSURE	PD	PRESSURE DROP
AHU	AIR HANDLING UNIT	FCU	FAN COIL UNIT	PRESS	PRESSURE
AP	ACCESS PANEL	FD	FLOOR DRAIN	RA	RETURN AIR
BFF	BELOW FINISHED FLOOR	FL	FLOOR	RG	REFRIGERANT
BHP	BRAKE HORSE POWER	FM	FACTORY MUTUAL	RLA	RUNNING LOAD AMPS
BOT	BOTTOM	FPI	FINS PER INCH	RPM	REVOLUTIONS PER MINUTE
BTUH	BRITISH THERMAL UNIT	FPF	FINS PER FOOT	RTU	ROOF TOP UNIT
	PER HOUR	FFM	FEET PER MINUTE	SD	SMOKE DETECTOR
CC	COOLING COIL	BSD	FIRE/SMOKE DAMPER	SA	SUPPLY AIR
CD	CONDENSATE DRAIN		NATURAL GAS	SP	STATIC PRESSURE
CFM	CUBIC FEET PER MINUTE	GPH	GALLONS PER HOUR	STRUCT	STRUCTURAL
CLG	CEILING	GPM	GALLONS PER MINUTE	SYS	SYSTEM
CU	CONDENSING UNIT	H	HUMIDITY	T	TEMPERATURE
DB	DRY BULB	HC	HEATING COIL	TSF	TOTAL STATIC PRESSURE
DG	DOOR GRILLE	HP	HORSE POWER	TYP	TYPICAL
DP	DEW POINT	HVU	HEATING AND VENTILATING UNIT	UC	UNDERCUT
DX	DIRECT EXPANSION	KW	KILOWATT	UG	UNDERGROUND
EA	EXHAUST AIR	LAT	LEAVING AIR TEMPERATURE	UL	UNDERWRITERS LABORATORY
EAT	ENTERING AIR TEMPERATURE	LRA	LOCKED ROTOR AMPS	UON	UNLESS OTHERWISE NOTED
EDH	ELECTRIC DUCT HEATER	LWT	LEAVING WATER TEMPERATURE	UV	UNIT VENTILATOR
EER	ENERGY EFFICIENCY RATIO	MAX	MAXIMUM	VD	VOLUME DAMPER
EF	EXHAUST FAN	MIN	MINIMUM	WB	WET BULB
EL	ELEVATION	NC	NORMALLY CLOSED		

## SYSTEM SUMMARY

### HVAC DESIGN PARAMETERS

CITY	SUMMER DESIGN OUTDOOR	SUMMER DESIGN INDOOR	WINTER DESIGN OUTDOOR	WINTER DESIGN INDOOR
CLEARWATER, FL	92.7°F / 77.1°F	75°F / 50%RH	40°F	72°F

BUILDING U-VALUE	GLASS CHARACTERISTICS	SYSTEM	VENTILATION RATE AS PER ASHRAE 62.1	FILTRATION CRITERIA ASHRAE 52.1/52.2
ROOF = 0.0526 WALL = 0.0976	U VALUE = .65 SHGC = .25	RTU-1 RTU-2	SEE CHART ON M-1 SEE CHART ON M-1	2"-30% EFF 2"-30% EFF

### SYSTEM OCCUPANCY

SYSTEM	# OF PEOPLE	OUTSIDE AIR (CFM)	TYPE OF OCCUPANCY	DESIGN NOTES:
RTU-1	20	280	RETAIL	
RTU-2	15	280	RETAIL	

## SPECIFICATIONS

### 1.0 BASIC MATERIAL AND METHODS

#### 1.1 SCOPE OF WORK

PROVIDE LABOR AND MATERIALS AS REQUIRED TO PROVIDE A FULLY FUNCTIONING AND COMPLETE SYSTEM AS INDICATED ON DRAWINGS. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND EQUIPMENT. FINAL LOCATIONS OF EQUIPMENT SHALL BE FIELD DETERMINED. ALL DISCREPANCIES ON DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IN WRITING PRIOR TO SUBMISSION OF BIDS.

#### 1.2 GENERAL AND SPECIAL CONDITIONS AND WARRANTY

ALL DIVISION 1 SPECIFICATIONS AND ARCHITECTURAL GENERAL AND SPECIAL CONDITIONS OUTLINED IN THE CONTRACT DOCUMENTS APPLY TO MECHANICAL SYSTEMS. ADDITIONALLY, WORK SHALL COMPLY WITH THE CURRENT FLORIDA BUILDING CODE WITH THE SUPPLEMENTS, ORDINANCES AND REGULATIONS OF THE LOCAL AUTHORITY HAVING JURISDICTION, NATIONAL FIRE PROTECTION ASSOCIATION AND NATIONAL ELECTRICAL CODE. ALL EQUIPMENT SHALL CARRY THE UNDERWRITERS LABORATORIES (UL) SEAL WHERE APPLICABLE. CONTRACTOR SHALL PROVIDE A ONE-YEAR PARTS AND LABOR WARRANTY ON ALL EQUIPMENT PROVIDED ON THIS PROJECT. WARRANTY SHALL START ON THE DATE OF SUBSTANTIAL COMPLETION. CONTRACTOR SHALL PURCHASE MANUFACTURER'S WARRANTY FOR ALL REFRIGERATION EQUIPMENT.

#### 1.3 QUALITY CONTROL

UNLESS OTHERWISE NOTED, PROVIDE NEW MATERIALS FREE OF DEFECTS, WHERE NO SPECIFIC WEIGHTS OR GRADES ARE SPECIFIED PROVIDE MATERIALS OF AN ACCEPTED STANDARD WEIGHT AND GRADE ACCORDING TO CODE AND GOVERNING STANDARDS BY ASHRAE, SMACNA, NFPA AND UL. INSTALL ALL EQUIPMENT, PIPING, DUCTWORK AND CONTROLS IN ACCORDANCE WITH CODES, GOVERNING STANDARDS, AND MANUFACTURER'S RECOMMENDATIONS. FIRE PERFORMANCE CHARACTERISTICS OF INSTALLED MATERIALS SHALL BE RATED IN ACCORDANCE WITH ASTM E84. MAXIMUM SMOKE DEVELOPED RATING SHALL BE 50. SUPPLIED EQUIPMENT SHALL BE AS SCHEDULED OR OWNER APPROVED EQUAL IN QUALITY AND PERFORMANCE.

#### 1.4 COORDINATION

COORDINATE ALL WORK FOR PROPER LOCATION, POWER, AND UTILITY REQUIREMENTS. SCHEDULE INSTALLATIONS TO AVOID CONFLICT AMONG TRADES. ADDITIONS TO THE CONTRACT FOR COORDINATION AMONG TRADES WILL NOT BE ALLOWED.

#### 1.5 PENETRATIONS, CUTTING AND PATCHING

SEAL ALL PIPING AND DUCT PENETRATIONS OF WALLS IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. FLASH ALL ROOF AND WALL PENETRATIONS IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS. PROVIDE FIRE DAMPERS AT ALL RATED PENETRATIONS.

#### 1.6 HANGERS AND SUPPORTS

PROVIDE HANGERS AND SUPPORTS FOR ALL PIPING, DUCTWORK AND EQUIPMENT IN ACCORDANCE WITH SMACNA, MSS, ASME AND ASHRAE STANDARDS. SUPPORT ALL ITEMS FROM INTEGRAL BUILDING STRUCTURAL MEMBERS. DO NOT HANG ITEMS FROM ROOF DECKING.

#### 1.7 ELECTRICAL WORK

THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL STARTERS, CONTACTORS, RELAYS, CONTROLS AND ACCESSORIES NECESSARY TO PROVIDE A COMPLETE POWER AND CONTROL WORKING SYSTEM FOR THE EQUIPMENT FURNISHED HEREIN. IT IS THE INTENT THAT THE ELECTRICAL SUBCONTRACTOR WILL FURNISH ALL DISCONNECT SWITCHES, CONDUIT & WIRING FOR THE EQUIPMENT FURNISHED HEREIN.

#### 2.0 CONDENSATE AND REFRIGERANT PIPING

CONDENSATE PIPES SHALL BE SCH-40 PVC WITH SOLVENT WELDS, SUPPORTED TO BUILDING. PROVIDE CONDENSATE PUMPS IF REQUIRED TO MAINTAIN A PITCH OF 1/8" PER FOOT. REFRIGERANT PIPING SHALL BE TYPE "L" COPPER PIPE. PIPING SHALL BE INSULATED WITH 3/4" THICK ARMAFLEX INSULATION SUITABLE FOR RETURN AIR PLENUMS. ALL ROOF PIPING SHALL BE SECURED TO THE DECK AND DRAIN PIPING CONNECTED INTO A ROOF DRAIN OR GUTTER. PROVIDE P-TRAPS AT UNIT.

#### 3.0 SHEET METAL MATERIALS

A. SHEET METAL, GENERAL: PROVIDE SHEET METAL IN THICKNESSES INDICATED, PACKAGED AND MARKED AS SPECIFIED IN ASTM A 700.  
B. GALVANIZED SHEET STEEL: LOCK FORMING QUALITY, ASTM A 527, COATING DESIGNATION G 90. PROVIDE MILL PHOSPHATIZED FINISH FOR EXPOSED SURFACES OF DUCTS EXPOSED TO VIEW.  
C. REINFORCEMENT SHAPES AND PLATES: UNLESS OTHERWISE INDICATED, PROVIDE GALVANIZED STEEL REINFORCING WHERE INSTALLED ON GALVANIZED SHEET METAL DUCTS. FOR ALUMINUM AND STAINLESS STEEL DUCTS PROVIDE REINFORCING OF COMPATIBLE MATERIALS.  
D. TIE RODS: GALVANIZED STEEL, 1/4" INCH MINIMUM DIAMETER FOR 36" INCH LENGTH OR LESS; 3/8" INCH MINIMUM DIAMETER FOR LENGTHS LONGER THAN 36 INCHES.

#### 3.01 SEALING MATERIALS

- JOINT AND SEAM SEALANT: LOW VOC, ONE-PART, NON-SAG, SOLVENT-RELEASE-CURING, POLYMERIZED BUTYL SEALANT COMPLIING WITH FST-5-001657, TYPE I; FORMULATED WITH A MINIMUM OF 75% SOLIDS AND SGAND RULE 1168. IRON-GRIP 601 OR APPROVED EQUAL (75 G/L (LESS WATER) VOC CONTENT).
- FLANGED JOINT MASTICS: ONE-PART, ACID-CURING, SILICONE ELASTOMERIC JOINT SEALANTS, COMPLIING WITH ASTM C 920, TYPE S, GRADE NS, CLASS 25, USE 0.

#### 3.02 FIRE STOPPING

- FIRE-RESISTANT SEALANT: PROVIDE ONE-PART ELASTOMERIC SEALANT FORMULATED FOR USE IN A THROUGH-PENETRATION FIRE-STOP SYSTEM FOR FILLING OPENINGS AROUND DUCT PENETRATIONS THROUGH WALLS AND FLOORS, HAVING FIRE-RESISTANCE RATINGS INDICATED AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES PER ASTM E 814 BY UNDERWRITERS LABORATORY, INC. OR OTHER TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
  - "DOW CORNING FIRE STOP SEALANT"; DOW CORNING CORP.
  - "3M FIRE BARRIER CAULK CP-25"; ELECTRICAL PRODUCTS DIV./3M.
  - "RTV 7403"; GENERAL ELECTRIC CO.
  - "FYRE PUTTY"; STANDARD OIL ENGINEERED MATERIALS CO.

#### 3.03 HANGERS AND SUPPORTS

- BUILDING ATTACHMENTS: CONCRETE INSERTS, POWDER ACTUATED FASTENERS, OR STRUCTURAL STEEL FASTENERS APPROPRIATE FOR BUILDING MATERIALS. DO NOT USE POWDER ACTUATED CONCRETE FASTENERS FOR LIGHTWEIGHT AGGREGATE CONCRETES OR FOR SLABS LESS THAN 4 INCHES THICK.
- HANGERS: GALVANIZED SHEET STEEL, OR ROUND, STEEL, THREADED ROD.
  - HANGERS INSTALLED IN CORROSIVE ATMOSPHERES: ELECTRO-GALVANIZED, ALL-THREAD ROD OR HOT-DIPPED GALVANIZED RODS WITH THREADS PAINTED AFTER INSTALLATION
  - STRAPS AND ROD SIZES: CONFORM WITH TABLE 4.1 IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS, 1985 EDITION, FOR SHEET STEEL WIDTH AND GAGE AND STEEL ROD DIAMETERS.
- DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETS, OR SELF-TAPPING METAL SCREWS; COMPATIBLE WITH DUCT MATERIALS.
- TRAPEZE AND RISER SUPPORTS: STEEL SHAPES CONFORMING TO ASTM A 36.
  - WHERE GALVANIZED STEEL DUCTS ARE INSTALLED, PROVIDE HOT-DIPPED GALVANIZED STEEL SHAPES AND PLATES.

#### 3.04 RECTANGULAR DUCT FABRICATION

- GENERAL: EXCEPT AS OTHERWISE INDICATED, FABRICATE RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," TABLES 1.3 THROUGH 1.19, INCLUDING THEIR ASSOCIATED DETAILS. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.
  - FABRICATE RECTANGULAR DUCTS IN LENGTHS APPROPRIATE TO REINFORCEMENT AND RIGIDITY CLASS REQUIRED FOR PRESSURE CLASSIFICATION.
  - PROVIDE MATERIALS THAT ARE FREE FROM VISUAL IMPERFECTIONS SUCH AS PITTING, SEAM MARKS, ROLLER MARKS, STAINS, AND DISCOLORATIONS.
- FABRICATE KITCHEN HOOD EXHAUST DUCTS WITH 16-GAGE, CARBON STEEL SHEETS FOR CONCEALED DUCTS AND 18-GAGE STAINLESS STEELS FOR EXPOSED DUCTS. WELD AND FLANGE SEAMS AND JOINTS LIQUID TIGHT. CONFORM TO NFPA STANDARD 96.
- FABRICATE DISHWASHER HOOD EXHAUST DUCTS WITH 18-GAGE STAINLESS STEELS. WELD AND FLANGE SEAMS AND JOINTS.
- STATIC PRESSURE CLASSIFICATIONS: EXCEPT WHERE OTHERWISE INDICATED, CONSTRUCT DUCT SYSTEMS TO THE FOLLOWING PRESSURE CLASSIFICATIONS:
  - SUPPLY DUCTS: 3 INCHES WATER GAGE.
  - RETURN DUCTS: 2 INCHES WATER GAGE, NEGATIVE PRESSURE.
  - EXHAUST DUCTS: 2 INCHES WATER GAGE, NEGATIVE PRESSURE.
- CROSSBREAKING OR CROSS BEADING: CROSSBREAK OR BEAD DUCT SIDES THAT ARE 19 INCHES AND LARGER AND ARE 20 GAGE OR LESS, WITH MORE THAN 10 SQ. FT. OF UNBRACED PANEL AREA, AS INDICATED IN SMACNA "HVAC DUCT CONSTRUCTION STANDARD."

#### 3.05 RECTANGULAR DUCT FITTINGS

- FABRICATE ELBOWS, TRANSITIONS, OFFSETS, BRANCH CONNECTIONS, AND OTHER DUCT CONSTRUCTION IN ACCORDANCE WITH SMACNA "HVAC METAL DUCT CONSTRUCTION STANDARD," 1985 EDITION, FIGURES 2.1 THROUGH 2.10.

## SPECIFICATIONS

### 3.1 FLEXIBLE DUCTS

- GENERAL: COMPLY WITH UL 181, CLASS 1.
- FLEXIBLE DUCTS - INSULATED: FACTORY-FABRICATED, INSULATED, ROUND DUCT, WITH AN OUTER JACKET ENCLOSING GLASS FIBER (1" THICK IN CONDITIONED AREAS, 1-1/2" THICK IN NON-CONDITIONED SPACES) INSULATION AROUND A CONTINUOUS INNER LINER.
  - REINFORCEMENT: STEEL-WIRE HELIX ENCAPSULATED IN THE INNER LINER.
  - OUTER JACKET: GLASS-REINFORCED, SILVER MYLAR WITH A CONTINUOUS HANGING TAB, INTEGRAL FIBER GLASS TAPE, AND NYLON HANGING CORD.
  - INNER LINER: POLYETHYLENE FILM.

### 3.2 FLEXIBLE CONNECTIONS

PROVIDE FLEXIBLE CONNECTIONS AT ALL EQUIPMENT CONNECTIONS. SHALL BE INSTALLED WITH A MINIMUM CLEARANCE TO THE APPLIANCE AS SPECIFIED IN THE APPLIANCE'S INSTALLATION INSTRUCTIONS.

### 3.4 AIR DUCTS - EXHAUST AIR

SMACNA LOW PRESSURE CLASS GALVANIZED SHEET METAL DUCT SYSTEM WITH LOCK FORMING QUALITY. (SNAP-LOCK IS OK)

### 3.7 REINFORCEMENT

- CHANNEL REINFORCEMENT: GALVANIZED-STEEL CHANNELS FABRICATED FROM ASTM A 527 AND HAVING G 60 OR G 90 ZINC COATING WEIGHT. REFER TO FGDCS FOR CHANNEL SIZES AND SPACING.
- TIE RODS REINFORCEMENT: 12-GAGE, GALVANIZED-STEEL WIRE, LENGTH TO SUIT TERMINATION METHOD. REFER TO FGDCS FOR ROD SIZES AND SPACING.
- REINFORCING ROD WASHERS: 2-1/2 INCHES SQUARE BY 0.028 INCHES THICK MINIMUM OR 0.020 INCHES THICK TO SUIT TERMINATION METHOD, GALVANIZED-STEEL WASHER WITH TURNED EDGES.
- INSTALL ANTI-SAG DEVICES IN DUCTS 48 INCHES WIDE AND LARGER.
- FOR NEGATIVE PRESSURE DUCTS, FASTEN REINFORCING CHANNELS THROUGH DUCTS TO 2-INCH, BY 6-INCH, BY 20-GAGE GALVANIZED-STEEL CLIPS AT TRANSVERSE JOINTS AND 2-1/2-INCH-SQUARE GALVANIZED-STEEL WASHERS AT INTERMEDIATE REINFORCEMENT. REFER TO SCHEDULES IN THE FGDCS FOR QUANTITIES.

### 3.8 CLOSURE

- MATERIALS: SELECT ONE OF THE FOLLOWING CLOSURE MATERIALS AS RECOMMENDED BY THE FIBROUS GLASS DUCT MANUFACTURER:
  - PRESSURE-SENSITIVE TAPE: A MINIMUM OF 2-1/2 INCHES WIDE, FIBER GLASS-REINFORCED, ALUMINUM FOIL TAPE COMPLIING WITH UL STANDARD 181A, PART P, AND IMPRINTED WITH THE REQUIRED INFORMATION.
  - HEAT-ACTIVATED TAPE: A MINIMUM OF 2-1/2 INCHES WIDE, FIBER GLASS-REINFORCED, FOIL/SCRM TAPE COMPLIING WITH UL STANDARD 181A, PART H, AND IMPRINTED WITH THE REQUIRED INFORMATION.
  - MASTIC AND GLASS FABRIC: A MINIMUM OF 3 INCHES WIDE, GLASS FABRIC AND DUCT MANUFACTURER'S RECOMMENDED MASTIC THAT COMPLIES WITH UL STANDARD 181.

### 3.9 HANGING AND SUPPORTING

- INSTALL UPPER ATTACHMENTS TO STRUCTURES WITH AN ALLOWABLE LOAD NOT EXCEEDING 1/4 OF THE FAILURE (PROOF TEST) LOAD.
- INSTALL CONCRETE INSERT BEFORE PLACING CONCRETE.
- INSTALL POWDER-ACTUATED CONCRETE FASTENERS AFTER CONCRETE IS PLACED AND COMPLETELY CURED.
- DUCT ATTACHMENT: SUPPORT HORIZONTAL DUCTS WITH TRAPEZE-TYPE HANGERS.
- HANGER: SUSPEND DUCT ATTACHMENT FROM BUILDING ATTACHMENT WITH 1 OF THE FOLLOWING HANGER TYPES:
  - GALVANIZED-SHEET METAL STRIP, A MINIMUM OF 22 GAGE BY 1 INCH WIDE.
  - GALVANIZED-STEEL ROD, 1/4 INCH DIAMETER, THREADED ITS ENTIRE LENGTH.
  - GALVANIZED-STEEL WIRE, 12 GAGE MINIMUM.

- ATTACH HANGERS TO JOINT AND REINFORCEMENT CHANNELS THAT OCCUR WITHIN THE REQUIRED HANGER SPACING. ATTACH HANGERS TO TRANSMIT LOAD TO THE SIDES AND BOTTOM CHANNELS AND NO MORE THAN 6 INCHES FROM SIDES OF DUCT.
- SUPPORT EQUIPMENT AND METAL DUCT COMPONENTS AND ACCESSORIES INDEPENDENT FROM DUCT.
- SUPPORT TERMINAL COMPONENTS SEPARATELY.
- INSTALL STEEL-METAL SLEEVE TO SUPPORT DAMPERS. EXTEND SLEEVE FOR MOTORIZED DAMPERS TO SUPPORT OPERATOR.

### 4.0 AIR DEVICES

PROVIDE AIR DEVICES AS PER AIR DEVICE SCHEDULE. SUBSTITUTIONS MAY BE SUBMITTED FOR PRIOR APPROVAL.

### 4.1 INSULATION

INSULATE ALL GALVANIZED STEEL SUPPLY AND RETURN AIR DUCTWORK. EXHAUST DUCTS SHALL NOT BE INSULATED, EXCEPT INTERNALLY LINED WITH INSULATION 10 FEET OF DUCTWORK ATTACHED TO AND INCLUDING THE DISCHARGE PLENUMS AT EXHAUST LOUVERS FOR NOISE CONSIDERATIONS. INSULATE OUTSIDE AIR INTAKE DUCTS TO OUTSIDE AIR OPENING.

DUCT WRAP SHALL BE SPECIFICALLY DESIGNED FOR WRAPPING HEATING AND AIR CONDITIONING DUCTWORK AND INCLUDE 2" OVERLAP FACING TAB TO PROVIDE FOR CONTINUOUS VAPOR SEAL. DUCT WRAP SHALL BE 2" THICK, 1.5 LB. DENSITY, FOIL-SCRM-KRAFT LAMINATED VAPOR BARRIER FACING. MINIMUM INSTALLED R-VALUE EQUAL TO 6.4, AND A MAXIMUM FLAME SPREAD/SMOKE DEVELOPMENT RATING OF 25/50 PER ASTM E84.

INSULATE HVAC PLENUMS AND UNIT HOUSINGS NOT PRE-INSULATED AT FACTORY OR LINED WITH 2" THICK DUCT WRAP.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

### 5.0 TESTING, ADJUSTING AND BALANCING

TEST AND BALANCE SHALL BE PROVIDED BY AN INDEPENDENT COMPANY SPECIALIZING IN THE TESTING AND BALANCING OF HVAC SYSTEMS AS SUBCONTRACTOR TO THE HVAC CONTRACTOR, GENERAL CONTRACTOR, OR OWNER. THE TEST AND BALANCE CONTRACTOR SHALL BE A MEMBER OF EITHER ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). THE MECHANICAL CONTRACTOR SHALL HAVE ALL SYSTEMS FULLY INSTALLED AND OPERATIONAL WITH CLEAN FILTERS PRIOR TO T&B.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

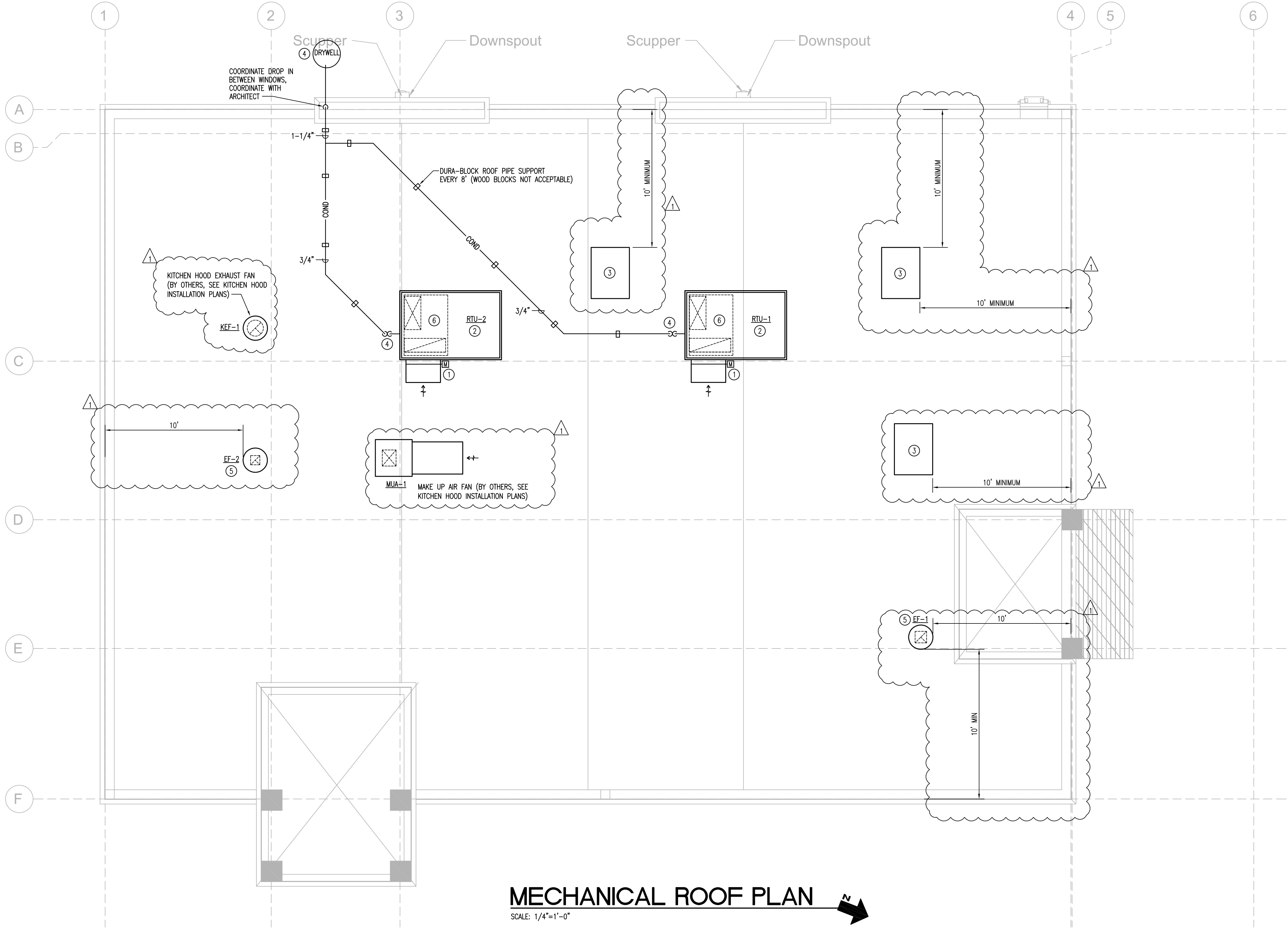
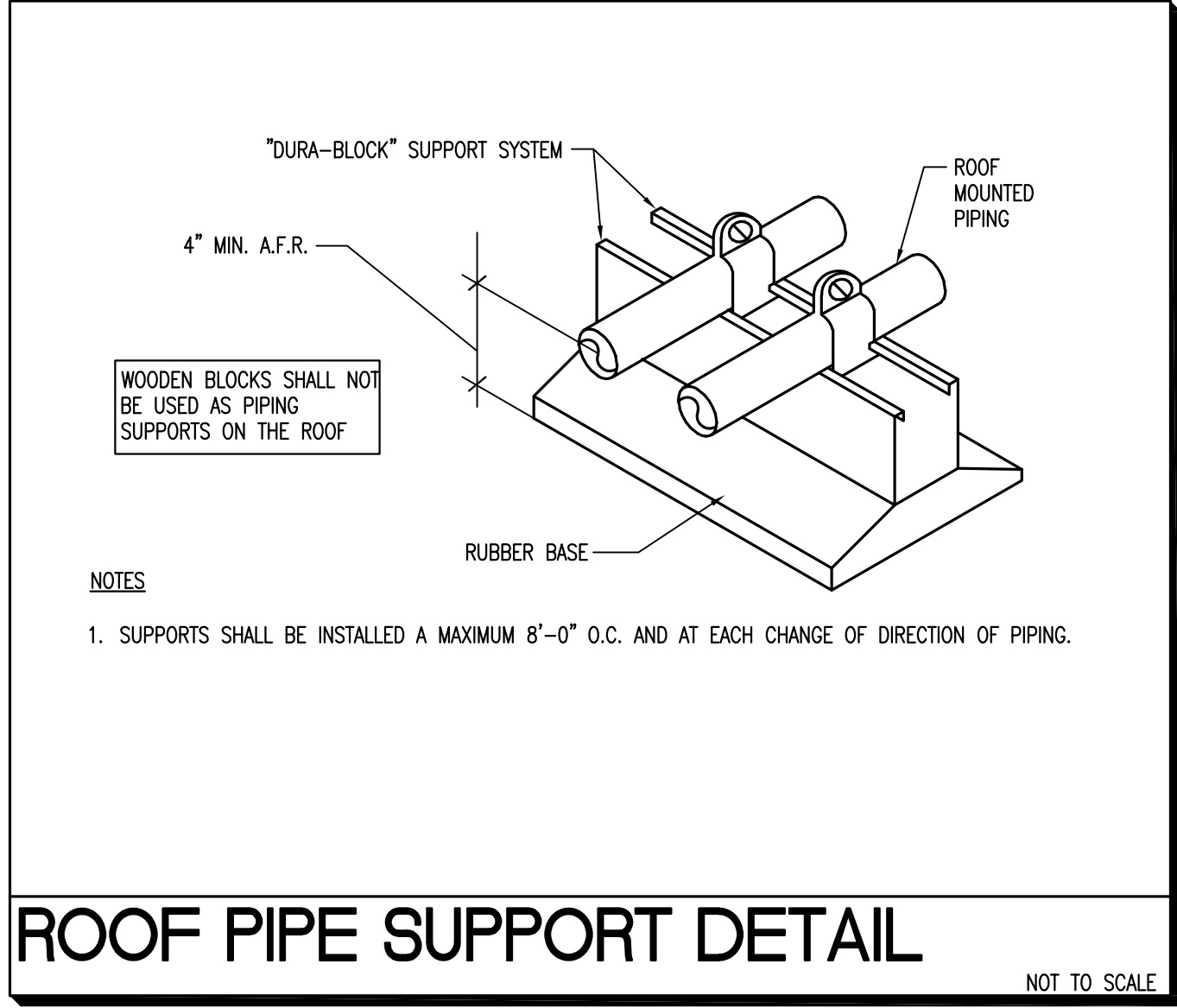
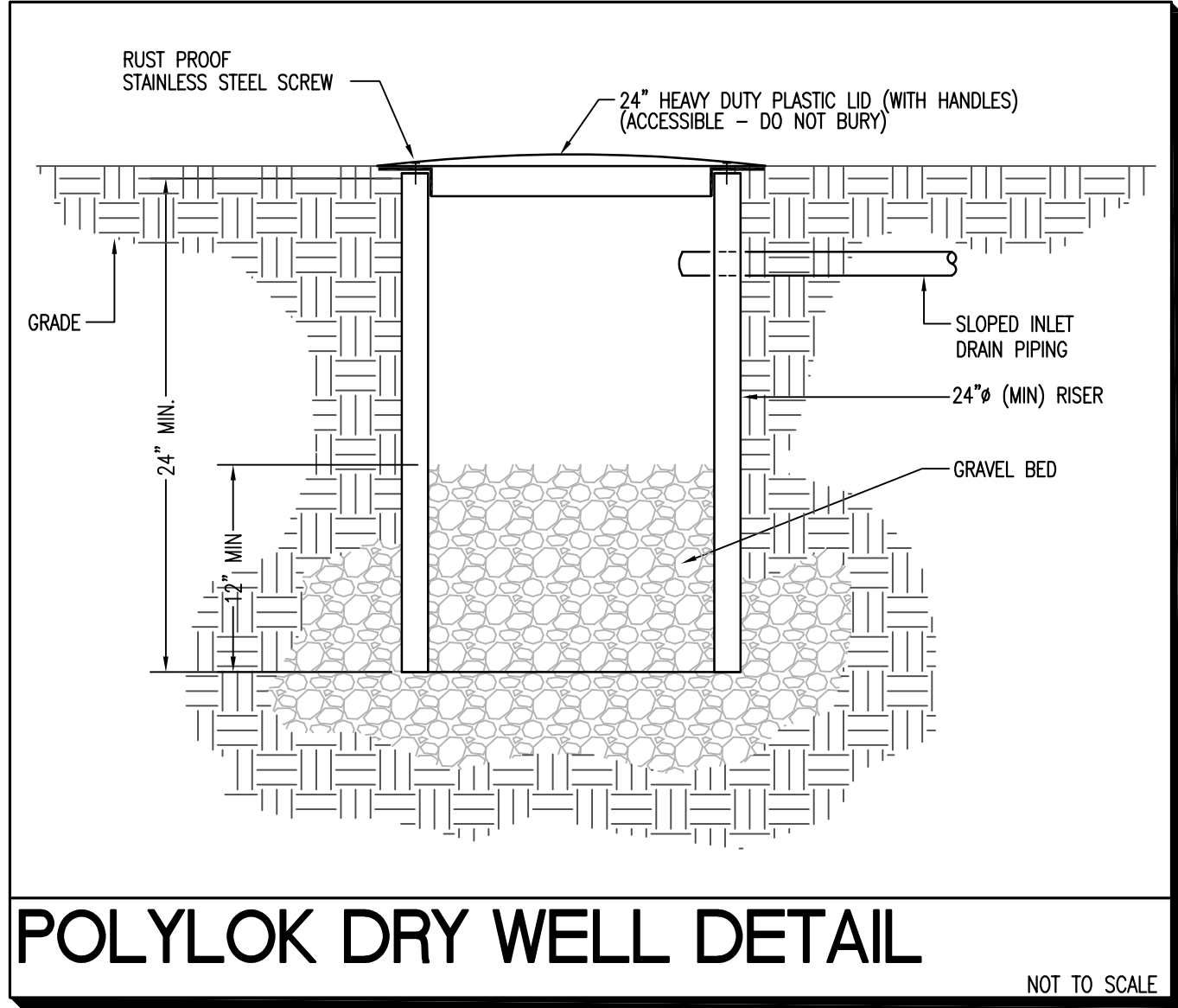
INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

INSULATE ALL EXPOSED METAL SURFACES ON BACK OF CEILING DIFFUSERS WITH 1" THICK FIBERGLASS WITH VAPOR BARRIER.

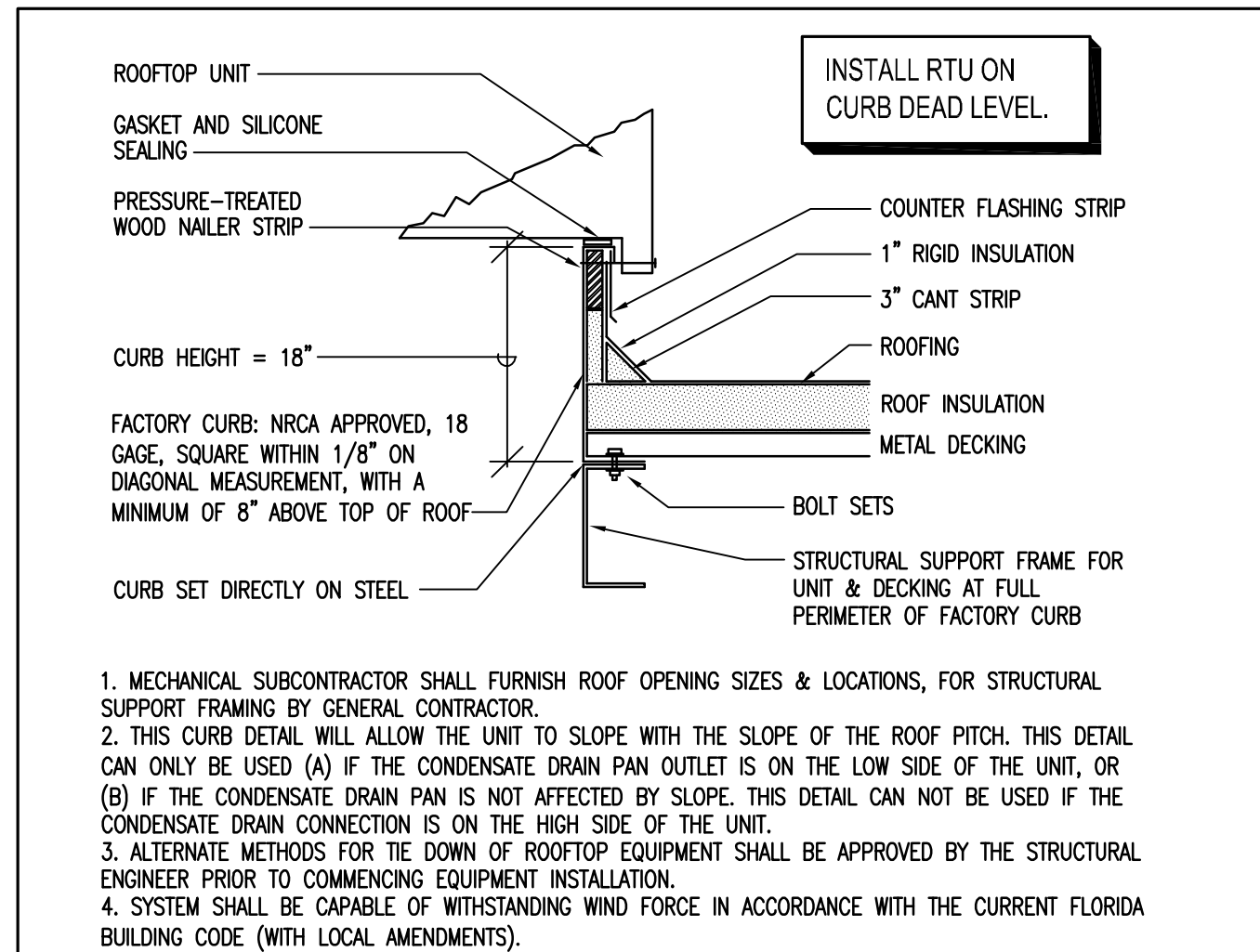




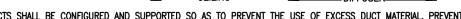
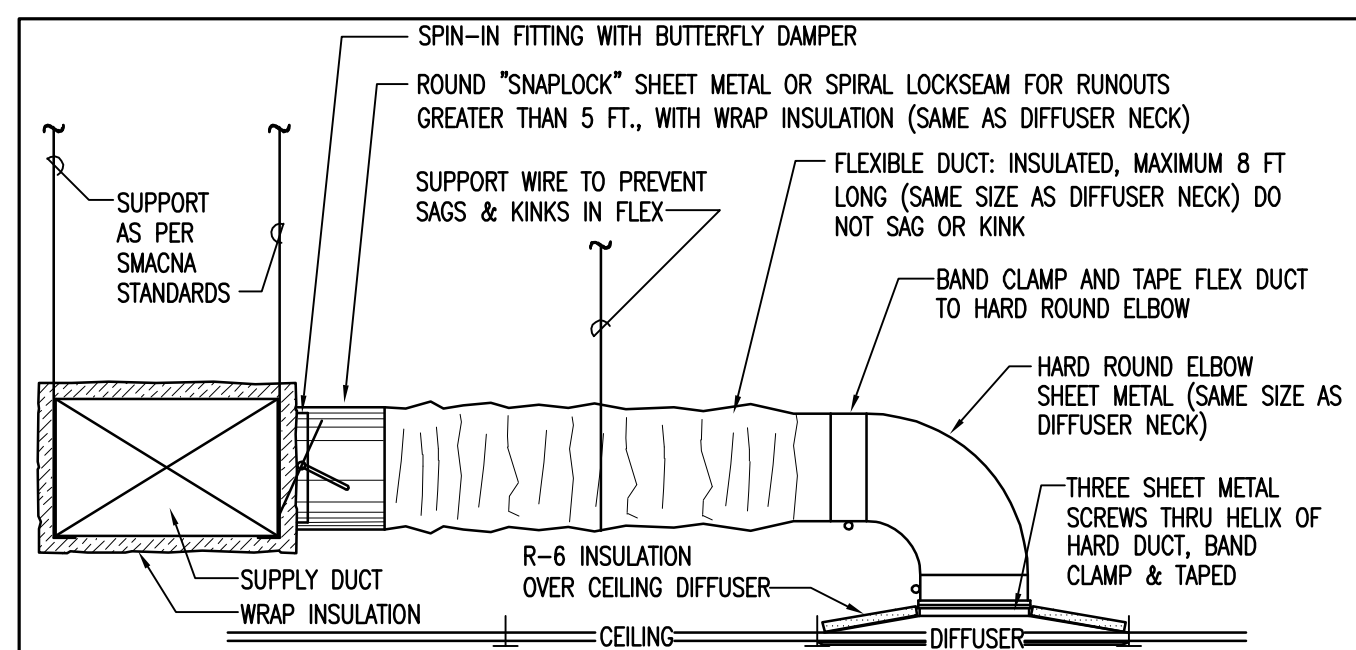
#### KEY NOTES

- RTU FACTORY MODULATING MOTORIZED OUTSIDE AIR DAMPER, DAMPER SHALL BE SET FOR OUTSIDE AIR QUANTITIES INDICATED. SEE AIR BALANCE AND ROOFTOP A/C UNIT SCHEDULE. MAINTAIN INTAKE 10' CLEAR FROM ANY EXHAUST OR VENT STACK.
- ROOF MOUNTED A/C UNIT WITH MANUFACTURER'S ROOF CURB. COORDINATE LOCATION WITH STRUCTURAL BUILDING CONDITIONS, FURNISH AND INSTALL ALL TEMPERATURE CONTROL WIRING FROM THE UNIT TO THE THERMOSTAT OR OTHER CONTROL DEVICES. UNIT SHALL HAVE ALL FILTERS REPLACED AND ALL COILS CLEANED WITH APPROVED METHODS. ALL COIL FINNS SHALL BE COMBED AS STRAIGHT AS POSSIBLE. ALL THIS WORK SHALL BE PERFORMED AFTER CONSTRUCTION AND PRIOR TO C.O.
- PROPOSED LOCATION FOR FREEZER/COOLER SPLIT SYSTEM. REMOTE ROOF MOUNTED CONDENSER UNITS AND REFRIGERATION SUPPORT SYSTEM. COOLER/FREEZER SPECIFIED BY OTHERS. SEE PIPING CAP DETAIL ON M-3 FOR REFRIGERANT PIPING THROUGH ROOF.
- CONDENSATE DRAIN LINE FROM UNIT WITH P-TRAP. PROVIDE A CLEANOUT TEE AT EVERY CHANGE OF DIRECTION. M. ROUTE TO REAR OF BUILDING FOLLOWING ROOF SLOPING AND DOWN TO DRY-WELL. LOCATE DRY-WELL IN LANDSCAPING AND COORDINATE WITH ALL OTHER UNDER GROUND UTILITIES.
- ROOF EXHAUST FAN. PROVIDE ROOF CURB EQUAL TO GREENHECK GPFR. MAINTAIN A MINIMUM 10'-0" FROM ANY RTU OUTSIDE AIR INTAKE OPENING.
- SUPPLY AND RETURN AIR DUCTWORK DOWN THROUGH ROOF. ROUTE THROUGH ROOF JOISTS TO ABOVE CEILING SPACE. COORDINATE PENETRATIONS WITH STRUCTURAL BUILDING CONDITIONS AND ALL OTHER TRADES, TRANSITION AS REQUIRED. SEE SHEET M1.0 FOR CONTINUATION. PROVIDE SUPPLY AND RETURN AIR DUCT MAINS WITH MINIMUM 1" THICK DUCT LINER FOR THE FIRST 10'-0" FROM UNIT.

JOB NO:	181116
DWG Name:	MECH
XREF Name:	-
SCALE:	AS NOTED
DATE:	10-19-18
DRAWN BY:	DB
CHECKED:	SJ
APPROVAL:	-
PERMIT COMMENTS	2/4/19
NO	REVISIONS

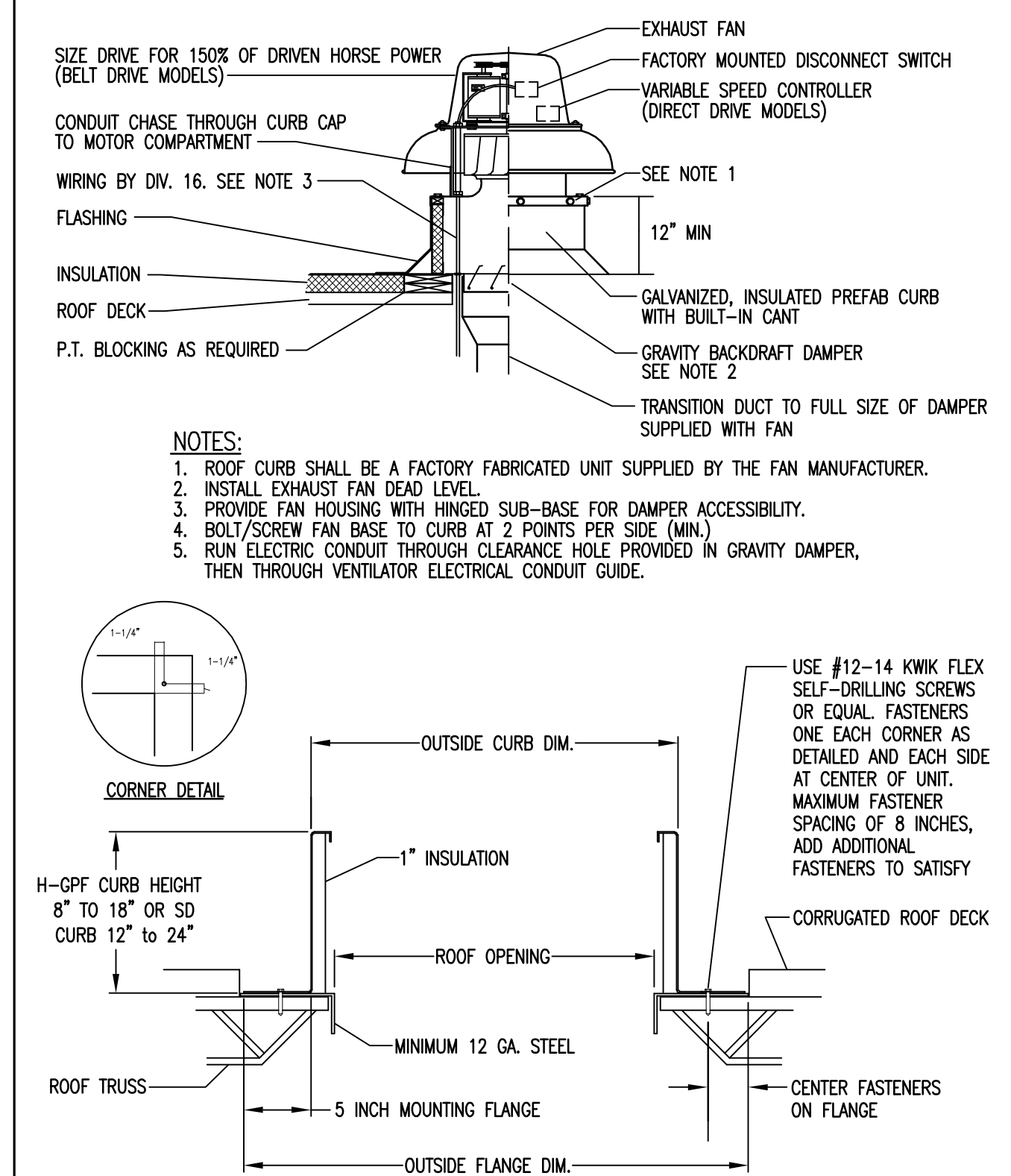


## ROOF CURB DETAIL

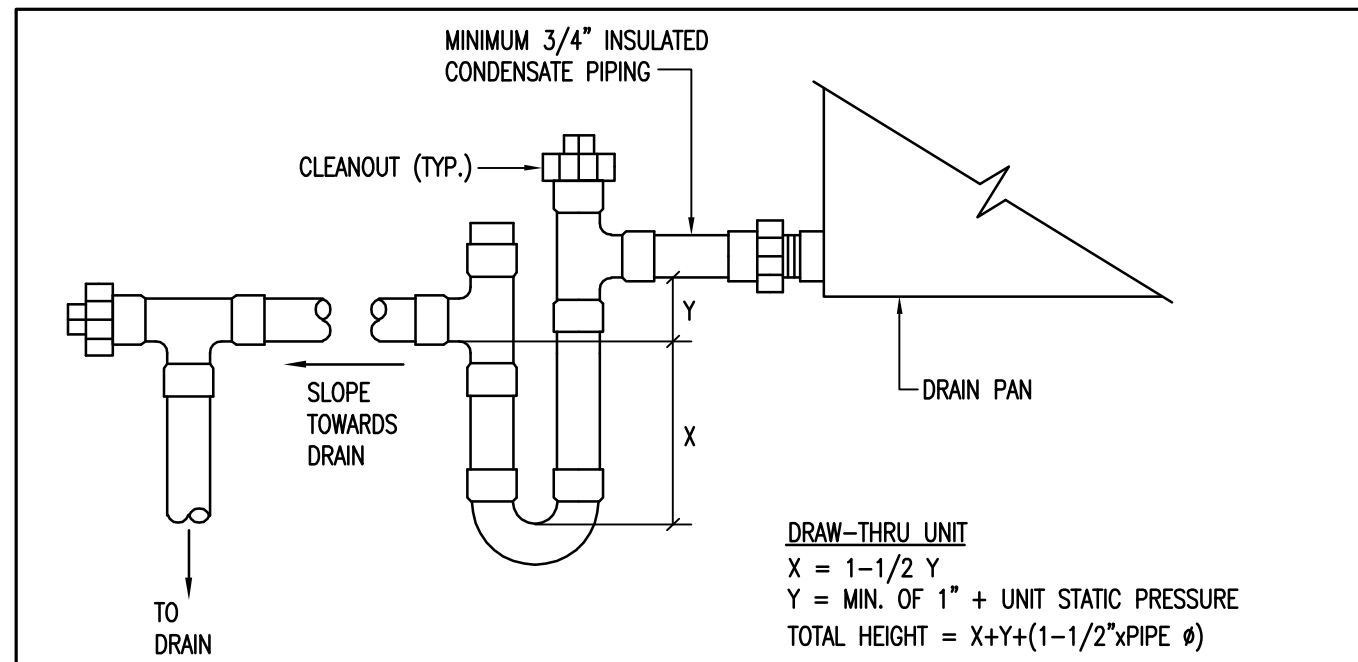


FLEXIBLE DUCT SHALL BE CONFIGURED AND SUPPORTED SO AS TO PREVENT THE USE OF EXCESS DUCT MATERIAL, PREVENT DUCT DISLOCATION AND DAMAGE, AND PREVENT CONSTRUCTION OF THE DUCT BELOW THE RATED DUCT DIAMETER IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

1. DUCTS SHALL BE INSTALLED FULLY EXTENDED, THE TOTAL EXTENDED LENGTH OF DUCT MATERIAL SHALL NOT EXCEED 5 PERCENT OF THE MINIMUM REQUIRED LENGTH FOR THAT RUN.
2. BENDS SHALL MAINTAIN A CENTER LINE RADIUS OF NOT LESS THAN ONE DUCT DIAMETER.
3. TERMINAL DEVICES SHALL BE SUPPORTED INDEPENDENTLY OF THE FLEXIBLE DUCT.
4. HORIZONTAL, DUCT SHALL BE SUPPORTED AT INTERVALS NOT GREATER THAN 5 FEET (1524 MM), DUCT SAC BETWEEN SUPPORTS SHALL EXCEED 1/2 INCH (12.7 MM) OF TOTAL LENGTH. SUPPORTS SHALL PROVIDE WITHIN 6 INCHES (152 MM) OF INTERMEDIATE FITTINGS AND BETWEEN INTERMEDIATE FITTINGS AND BENDS. CEILING JOISTS AND RIGID DUCT OR EQUIPMENT MAY BE CONSIDERED TO BE SUPPORTS.
5. VERTICAL DUCT SHALL BE STABILIZED WITH SUPPORT STRIPS AT INTERVALS NOT GREATER THAN 6 FEET (1829 MM).
6. HANGERS, SADDLES AND OTHER SUPPORTS SHALL MEET THE DUCT MANUFACTURER'S RECOMMENDATIONS AND SHALL BE OF SUFFICIENT WIDTH TO PREVENT THE DUCT FROM SLIDING OFF THE SUPPORT. IN THE CASE SHALL THE MATERIAL SUPPORTING FLEXIBLE DUCT THAT IS IN DIRECT CONTACT WITH IT BE LESS THAN 1 1/2 INCHES (38.1 MM) WIDE.



## ROOF MOUNTED EXHAUST FAN DETAIL



## CONDENSATE DRAIN TRAP DETAIL

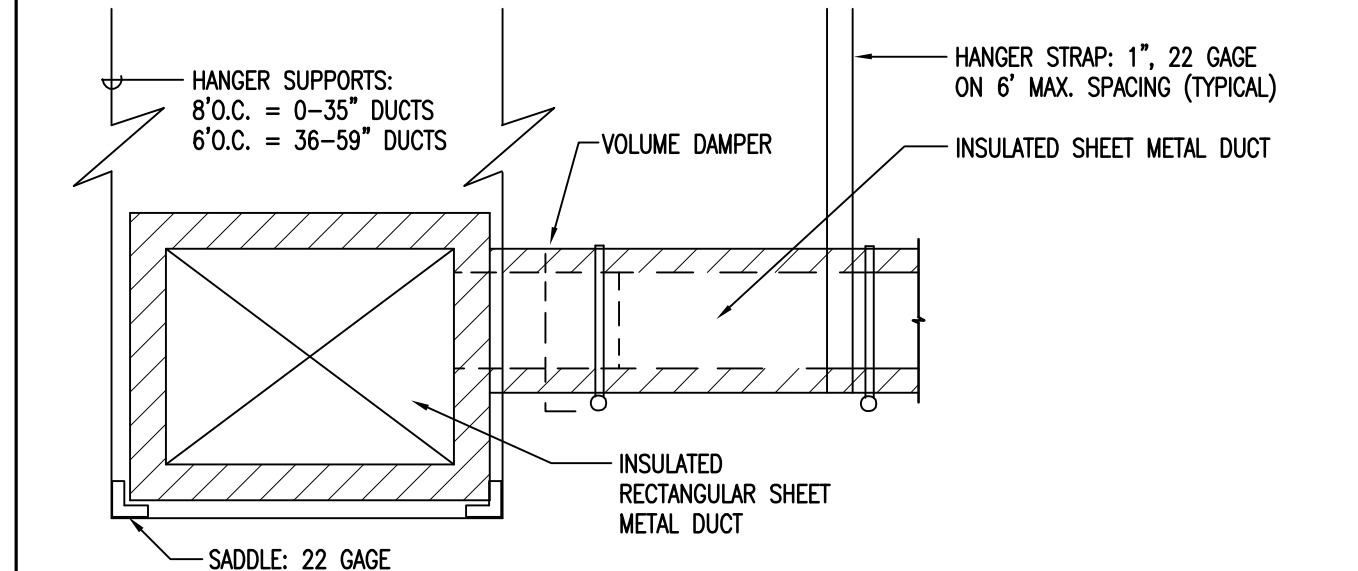
## GENERAL NOTES

1. MOUNT NEW 120V DUCT MOUNTED SMOKE DETECTOR AT RETURN AIR DUCT UPSTREAM OF FRESH AIR CONNECTION IN COMPLIANCE WITH THE CURRENT MECHANICAL BUILDING CODE AND ALL NFPA CODES 72/90A DETECTORS SHALL BE INTERLOCKED BY ELECTRICAL CONTRACTOR TO SHUT DOWN AIR HANDLING UNIT UPON DETECTION OF SMOKE. PER NFPA 72 – DETECTORS SHALL BE LISTED FOR OPERATION OVER THE COMPLETE RANGE OF AIR VELOCITIES, TEMPERATURE, AND HUMIDITY EXPECTED AT DETECTOR WHEN THE AIR HANDLING SYSTEM IS OPERATING. PROVIDE ACCESS THROUGH CEILING AS REQUIRED.
2. REMOTE ALARM INDICATOR FOR DUCT SMOKE DETECTOR TO BE LOCATED IN AN OCCUPIED SPACE.

## DUCT SMOKE DETECTOR

- ① STANDALONE PHOTOELECTRIC TYPE DUCT DETECTOR WITH AUXILIARY CONTACTS FOR BOTH TROUBLE AND ALARM, AND NORMALLY CLOSED CONTACT FOR SHUTDOWN OF AIR HANDLING UNIT FAN, INSTALLED IN DUCT BY HVAC CONTRACTOR, WIRING BY ELECTRICAL CONTRACTOR, SYSTEM SENSOR MODEL D4120 OR EQUIVALENT.
- RA REMOTE ALARM INDICATOR WITH KEY OPERATED TEST SWITCH, LED, AND RESET - WALL MOUNTED 60" AFF TO CENTER

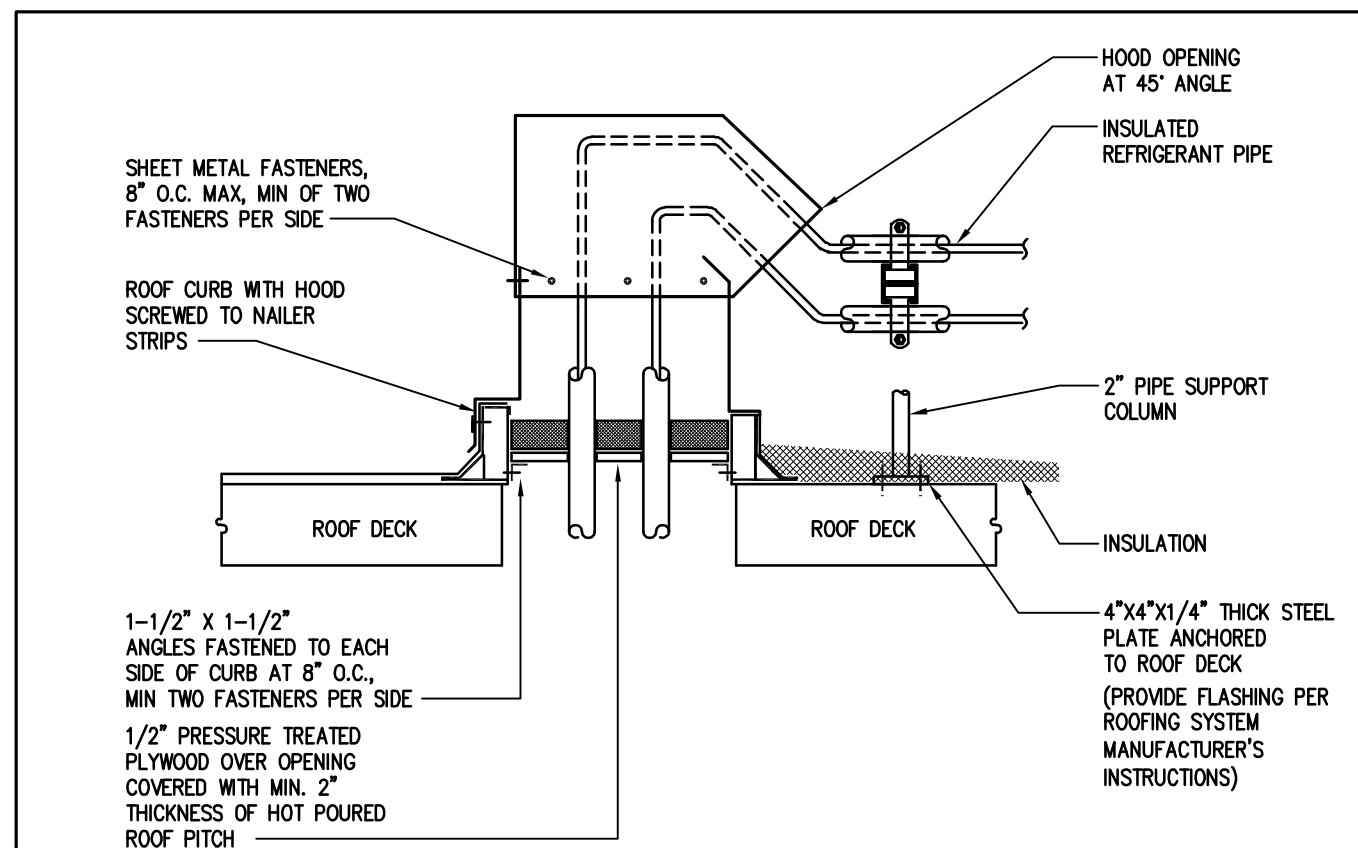
# DUCT SMOKE DETECTOR



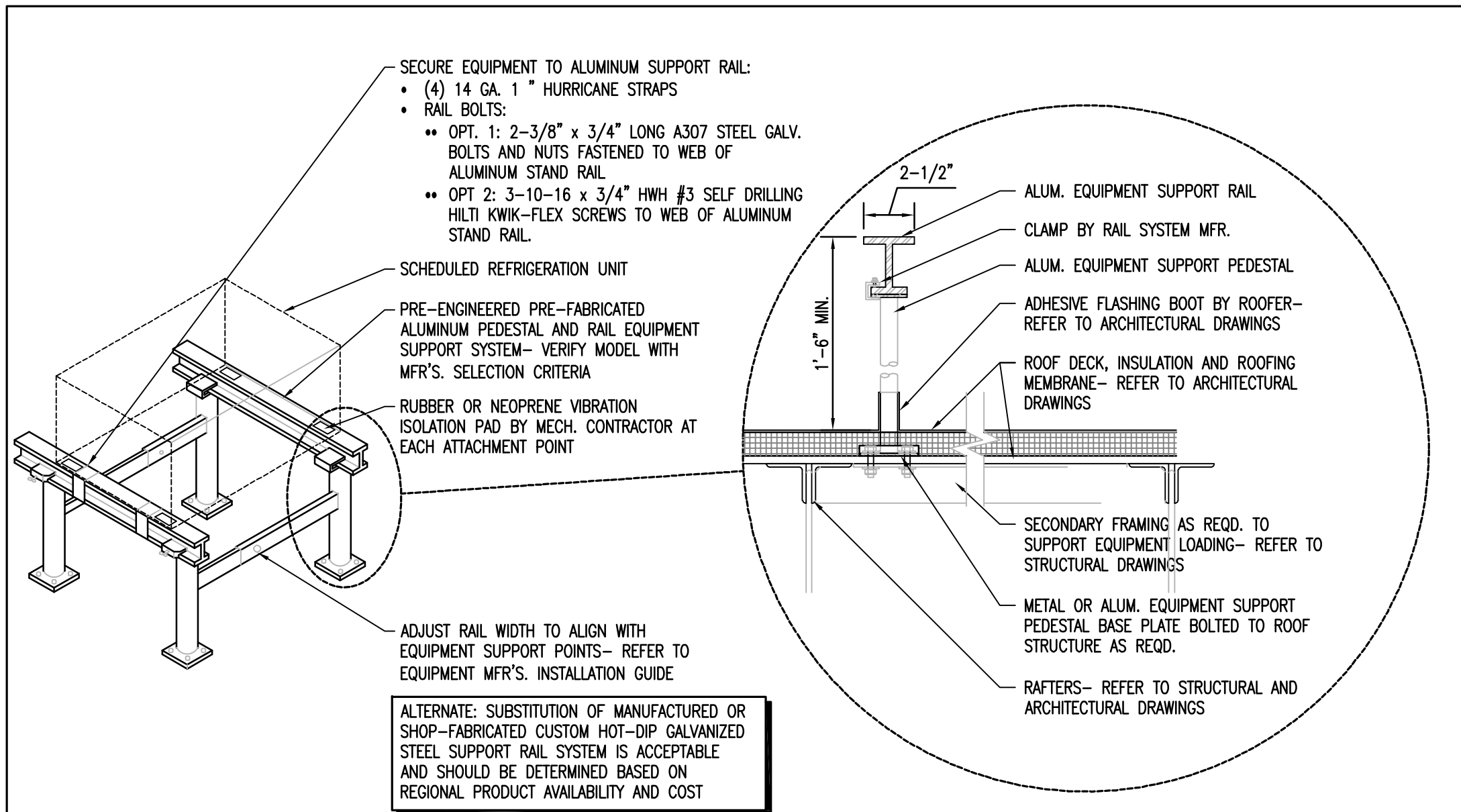
NOTE

1. HANGER SUPPORTS SHALL BE AS NOTED ABOVE FOR DUCTS UP TO 24", AND WITH TRAPEZE HANGERS FOR DUCTS 25" AND ABOVE.
2. ELBOWS SHALL BE SQUARE NECK (SAME INLET AND OUT DIMENSION) WITH 2" DOUBLE THICKNESS TURNING VANE. OFFSETS SHALL NOT EXCEED 30 DEGREE ANGLE, AND SHALL NOT REDUCE THE FREE AREA OF THE DUCT.
3. TRANSITIONS SHALL NOT EXCEED 1:3 RATIO (4" TRANSITION PER FOOT SINGLE SIZED TRANSITION, AND 8" PER FOOT DOUBLE SIZED TRANSITION).
4. RECTANGULAR BRANCH CONNECTIONS SHALL BE 45 DEGREE ENTRY TYPE, WITH METAL SLEEVE & CLINCH LOCK CONNECTION. ENTRY SHALL BE 25% OF BRANCH DUCT WIDTH.
5. ROUND BRANCH DUCT CONNECTIONS SHALL BE WITH "FLEXMASTER" FLDS SPIN-IN FITTERS, WITH SCOOP, DAMPER AND HANDLE.
6. FLEXIBLE ROUND DUCT SHALL INCLUDE: HELIX COIL FLEXIBLE DUCTING, A 1-1/2" TYPE "B" BLANKET INSULATION WITH MINIMUM R VALUE, AND A ALUMINUM FOIL OUTER VAPOR BARRIER, AND BE UL-181 APPROVED, 25 OR LESS FLAME SPREAD AND 50 OR LESS SMOKE DEVELOPED, EQUAL TO "FLEXMASTER" TYPE "M".

## DUCTWORK AND SUPPORT DETAIL



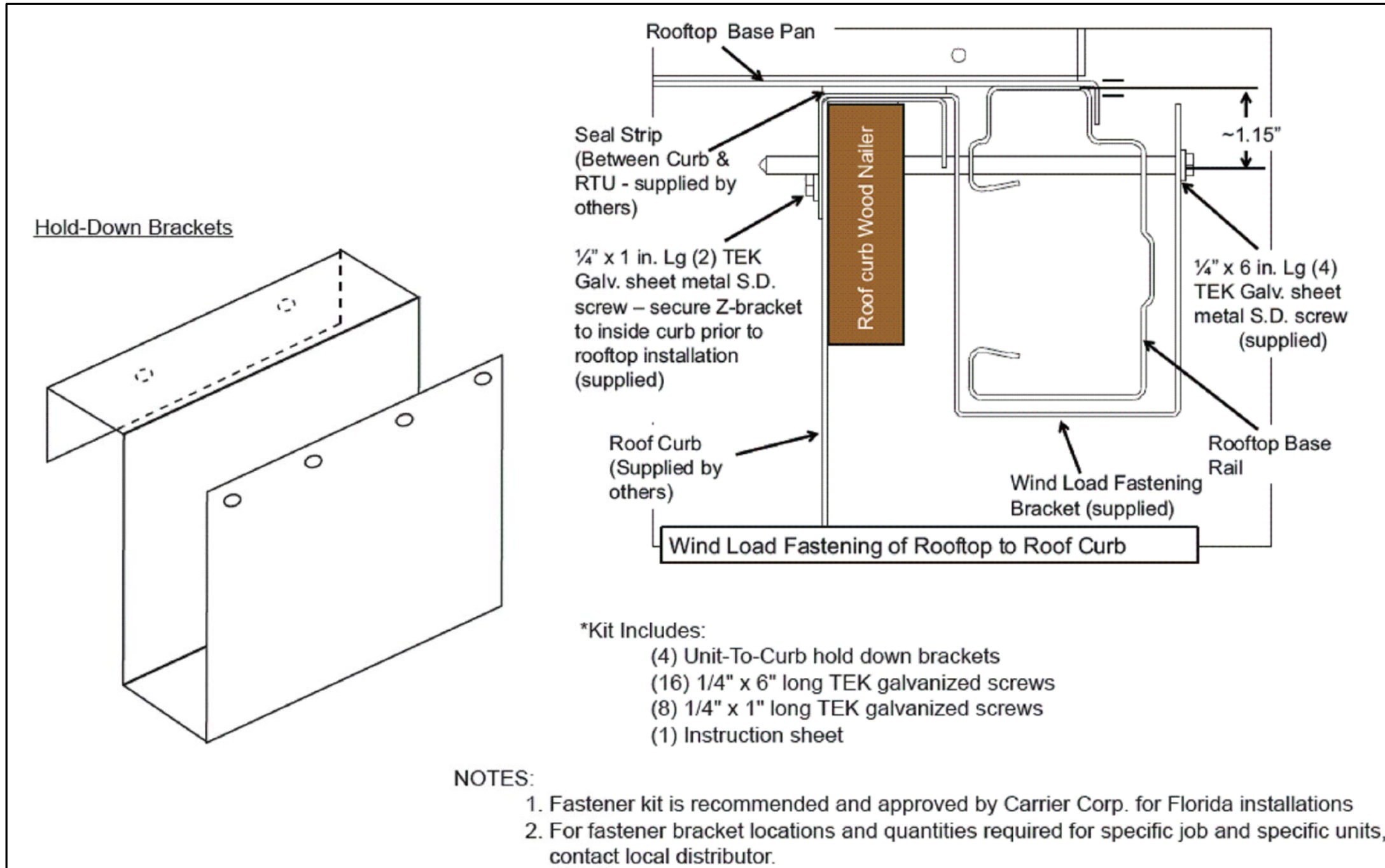
## REFRIGERANT PIPING CAP DETAIL



## NOTES:

1. ALL MATERIALS AND ASSEMBLIES SHALL COMPLY WITH CONSTRUCTION TO MEET ALUMINUM ASSOCIATION STANDARDS FOR CONSTRUCTION
2. VIBRATION ISOLATION PADS SHALL BE PRE-FABRICATED COMPONENTS DESIGNED FOR THAT PURPOSE AND SHALL PREVENT EQUIPMENT VIBRATION TRANSMISSION TO THE BUILDING STRUCTURE.
3. ALUMINUM EQUIPMENT STAND SUPPORTS SHALL HAVE AN ACTIVE MIAMI-DADE NOA. UNIT SHALL BE SIZED AND INSTALLED ACCORDING TO THE MANUFACTURERS LOAD CHARTS AND PRINTED INSTALLATION DETAILS.
4. EQUIPMENT SUPPORT RAIL INSTALLER SHALL FIELD-VERIFY ROOF MATERIAL THICKNESS AND CLEARANCES TO ADJACENT EQUIPMENT AND COORDINATE SUPPORT UNIT POSITION AS REQUIRED- REFER TO INSTALLATION MANUALS FOR SUPPORTED AND ADJACENT EQUIPMENT
5. VERIFY COMPATIBILITY OF ALL METAL COMPONENTS AND FASTENERS TO AVOID GALVANIC CORROSION OF MECHANICAL EQUIPMENT OR SUPPORT SYSTEMS

## ALUMINUM AC STAND DETAIL



## RTU HOLD DOWN BRACKET DETAIL

## AIR DEVICE SCHEDULE

MARK	TYPE	MATERIAL	FINISH	ACCESSORIES	MANUF.	MODEL	NOTES
A	SUPPLY	ALUMINUM	WHITE	ADJUSTABLE DAMPER	TITUS	TMS-AA	1,2,3,5,6
B	RETURN/EXHAUST	ALUMINUM	WHITE	LAY-IN, ALUMINUM OBD AG-75 DAMPER	TITUS	350FL	1,2,3,4

## NOTES

1. COORDINATE WITH LIGHTS FOR EXACT LOCATIONS OF ALL AIR DEVICES.
2. COORDINATE FRAME STYLES WITH CEILING OR WALL SYSTEM.
3. N.C. VALUES FOR DIFFUSERS, GRILLES AND REGISTERS SHALL NOT EXCEED 25, WITH A ROOM ABSORPTION RATE OF 10db.
4. PROVIDE AIR DEVICE IN A 24x24 OR 24x48 LAYIN PANEL (REFERENCE FLOOR PLAN).
5. PROVIDE BACK SIDE OF AIR DEVICE WITH FACTORY INSTALLED R.6 INSULATION BLANKET.
6. PROVIDE AIR DEVICE IN A 24x24 IN MODULE.

## PACKAGED ROOFTOP UNIT SCHEDULE

MARK	—	RTU-1	RTU-2
COOLING CAPACITY	BTUH	82,100	77,900
SENSIBLE COOLING CAPACITY	BTUH	67,300	64,000
ENTERING AIR TEMPERATURE	DB°F/WB°F	76.6/62.7	76.7/62.5
LEAVING AIR TEMPERATURE	DB°F/WB°F	54.5/52.4	54.5/52.2
SUPPLY AIR	CFM	2700	2630
OUTSIDE AIR	CFM	280	280
STATIC PRESSURE (EXT)	IN. WG	1.0	1.0
FAN MOTOR	HP	1.26 BHP	1.26 BHP
HEATING CAPACITY	BTUH	63,480	63,480
ELECTRIC HEATER	KW	18.6	18.6
STEPS OF CAPACITY	—	2	2
NUMBER OF COMPRESSORS	—	1	1
FILTERS	—	(4) 20x20x2	(4) 20x20x2
ELECTRICAL	V/ø/Hz	208-3	208-3
POWER SUPPLY MCA/MOCP	AMPS	74/80	74/80
EER (COOLING)	—	12.20	12.20
WEIGHT	LBS.	1250	1250
MANUFACTURER	—	CARRIER	CARRIER
MODEL	—	50HC-E08	50HC-E08

## NOTES

1. PROVIDE WITH 18" HIGH ROOF CURB.
2. PROVIDE WITH LOW AND HIGH PRESSURE SWITCHES
3. PROVIDE THRU-THE-BASE SINGLE POINT POWER CONNECTION WITH FACTORY MOUNTED STARTER. DISCONNECT TO BE PROVIDED BY DIVISION 16.
4. PROVIDE WITH FACTORY MODULATING, MOTORIZED OUTSIDE AIR DAMPER.
5. PROVIDE 5-YEAR COMPRESSOR AND HEAT EXCHANGER WARRANTY.
6. UNIT SHALL BE U.L. TESTED AND CERTIFIED IN ACCORDANCE WITH ANSI Z21.47.
7. PROVIDE FILTERS THAT BEAR THE LABEL OF AN APPROVED AGENCY.
8. PROVIDE CONDENSATE PIPE DRAIN PER MANUFACTURER'S RECOMMENDATIONS.
9. PROVIDE THERMAL OVERLOAD PROTECTION.
10. PROVIDE CONDENSER COIL HAIL GUARD GRILLE.
11. PROVIDE CARRIER CO2 SENSOR WITH ASPIRATOR BOX MOUNTED ON RETURN AIR DUCT FOR EACH UNIT. (CARRIER 33ZCPT02C02CD-01/33ZCASP02 CO2)
12. PROVIDE WITH HUMIDI-MIZER DEHUMIDIFICATION SYSTEM.
13. PROVIDE PROGRAMMABLE THERMOSTAT WITH HUMIDITY CONTROL AND REMOTE TEMP/HUMIDITY SENSOR CAPABILITY.

## EXHAUST FAN SCHEDULE

MARK	—	EF-1	EF-2
LOCATION	—	RESTROOMS (ROOF)	FOOD PREP (ROOF)
SERVICE	—	EXHAUST	EXHAUST
TOTAL AIR	CFM	350	200
TYPE	—	CENTRIFUGAL	CENTRIFUGAL
STATIC PRESSURE	IN H <sub>2</sub> O	0.25	0.25
MAX RPM	—	1479	1363
HP	—	1/20	1/30
SONES	—	6.7	3.1
DRIVE TYPE	—	DIRECT	DIRECT
ELECTRICAL	V/#/Hz	115—1—60	115—1—60
MANUFACTURER	—	GREENHECK	GREENHECK
MODEL	—	G-080-D	G-070-D
NOTES	—	1,2,3,4,5,6,7	1,3,4,5,6,7,8

## NOTES

1. PROVIDE VARIABLE SPEED CONTROLLER FOR ALL DIRECT DRIVE FANS.  
T & B CONTRACTOR SHALL MARK BALANCED POSITION ON CONTROLLER.
2. FAN SHALL BE INTERLOCKED WITH LIGHTS IN MENS/WOMENS.  
SEE ELECTRICAL DRAWINGS FOR INTERCONNECTION.
3. PROVIDE ACCESSORIES: ALUMINUM BIRD-SCREEN, GRAVITY DAMPER, HINGED CURB WITH CABLES, TIE DOWN POINTS (4), CURB SEAL.
4. FAN SHALL BE HIGH WIND RATED AND UNDER AN ACTIVE FL PRODUCT APPROVAL.
5. PROVIDE FACTORY WIRED DISCONNECT SWITCH.
6. PROVIDE THERMAL OVERLOAD PROTECTION.
7. PROVIDE GALVANIZED INSULATED ROOF CURB, GPF-17-G12.
8. PROVIDE AN INTERMATIC 2 HOUR SPRING WOUND COUNTDOWN TIMER SWITCH TO OPERATE FAN (MODEL FF2H).

**KPI ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS  
3203 QUEEN PALM DRIVE  
TAMPA, FLORIDA 33619  
PHONE (813) 241-6488  
FAX (813) 241-6498  
Board of Professional Engineers - License # 27336

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
BLW	BELOW FINISHED FLOOR
BOT	BOTTOM
BV	BALL VALVE
CP	CHROME PLATED
CLG	CEILING
CO	CLEANOUT
CW	COLD WATER
DN	DOWN
D	DRAIN
W/DST	WITH DEEP SEAL TRAP
EXIST	EXISTING
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FLR	FLOOR
FS	FLOOR SINK
GCO	GRADE CLEANOUT
GPF	GALLONS PER FLUSH
GPM	GALLONS PER MINUTE
HW	HOT WATER
HB	HOSE BIBB
INW	INVERT (VERIFY IN FIELD)
MAX	MAXIMUM
MIN	MINIMUM
S	SANITARY
TPC	TRAP PRIMER CONNECTION
TEWH	TANKLESS ELECTRIC WATER HEATER
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VENT
VO	VALVED OUTLET
VIF	VERIFY IN FIELD
VTR	VENT THRU ROOF
W	WASTE
WCO	WALL CLEANOUT

PIPING

	NEW SANITARY AND/OR WASTE PIPING
	NEW VENT PIPING
	NEW COLD WATER PIPING
	NEW HOT WATER PIPING
	HAMMER ARRESTOR (PDI SIZE INDICATED)
	FLOOR CLEANOUT
	FLOOR DRAIN
	FLOOR SINK
	WALL CLEANOUT
	VALVE IN RISER
	DIRECTION OF FLOW
	TOP CONNECTION, 45 OR 90 DEG.
	SIDE CONNECTION
	DROP IN PIPING
	RISE IN PIPING
	BALL VALVE

PLUMBING GENERAL NOTES

- ALL WORK SHALL BE DESIGNED, INSTALLED, TESTED, AND CLEANED IN ACCORDANCE WITH THE 2017 SIXTH EDITION OF THE FLORIDA PLUMBING CODE AND THE 2017 SIXTH EDITION FLORIDA BUILDING CODE.
- CONTRACTOR SHALL PROVIDE COMPLETE PLUMBING SYSTEMS AS DETAILED ON THESE DRAWINGS. WORK CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT, AND SERVICES REQUIRED FOR COMPLETE SYSTEMS. INCLUDE ANY INCIDENTAL APPARATUS, APPLIANCES, MATERIAL LABOR AND SERVICES NECESSARY TO MAKE NEW WORK COMPLETE IN ALL RESPECTS AND FULLY READY FOR OPERATION.
- VERIFY THE EXACT LOCATION OF EXISTING SANITARY SEWERS AND WATER MAINS FROM THE ACTUAL JOB SITE PRIOR TO SUBMITTING BID. SUBMISSION OF YOUR PROPOSAL SHALL BE CONSTRUED AS INDICATING SUCH KNOWLEDGE. NO ADDITIONAL PAYMENT WILL BE MADE ON CLAIMS THAT ARISE FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT.
- MAKE SUCH OFFSETS AND DEVIATIONS FROM WORK SHOWN ON THE DRAWINGS, AS MAY BE NECESSARY TO FIT THE ACTUAL SPACE CONDITIONS.
- WHERE VALVES OCCUR ABOVE DRYWALL OR PLASTER OR ARE CONCEALED BEHIND WALLS, THIS CONTRACTOR SHALL FURNISH AND INSTALL ACCESS PANELS. COORDINATE COLOR AND STYLE WITH ENGINEER/ARCHITECT.
- INSTALLER SHALL NOT CUT ANY STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE ARCHITECT.
- PROVIDE DIELECTRIC UNIONS AT ALL CONNECTIONS BETWEEN DISSIMILAR PIPING METALS.
- NO VENT THROUGH ROOF SHALL TERMINATE CLOSER THAN 10 FT. TO ANY OUTSIDE AIR INTAKE OR VENTILATION LOUVERS, DOORS, WINDOWS AND OTHER BUILDING OPENINGS.
- SANITARY SEWER AND MAIN WATER PIPING UNDERGROUND SHALL BE A MINIMUM OF 30" BELOW EXTERIOR GRADE.
- PIPING IN CONCRETE BLOCK WALLS SHALL BE INSTALLED AS BLOCK IS BEING LAID. DO NOT CUT BLOCK WALL.
- PROVIDE ALL SINKS AND LAVATORIES WITH TRAP FITTINGS FOR CLEANOUT.
- CONTRACTOR IS RESPONSIBLE TO ALSO CHECKING FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER.
- ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE(1) YEAR FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
- UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIALS, AND SCRAP. ALL IDENTIFIED EXISTING EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER.
- THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
- THE CONTRACTOR SHALL PROVIDE ALL CHROME EXPOSED TRAP PRIMER CONNECTIONS BELOW LAVATORIES

SPECIFICATIONS

- BASIC MATERIAL AND METHODS**
  - SCOPE OF WORK**

PROVIDE LABOR AND MATERIALS AS REQUIRED TO PROVIDE A FULLY FUNCTIONING AND COMPLETE SYSTEM AS INDICATED ON DRAWINGS. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND EQUIPMENT. FINAL LOCATIONS OF EQUIPMENT SHALL BE FIELD DETERMINED. ALL DISCREPANCIES ON DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IN WRITING PRIOR TO SUBMISSION OF BIDS.
  - GENERAL AND SPECIAL CONDITIONS**

ALL DIVISION 1 SPECIFICATIONS AND ARCHITECTURAL GENERAL AND SPECIAL CONDITIONS OUTLINED IN THE CONTRACT DOCUMENTS APPLY TO MECHANICAL SYSTEMS. ADDITIONAL WORK SHALL COMPLY WITH FLORIDA BUILDING CODE (2004 WITH 2005 REVISIONS), ORDINANCES AND REGULATIONS OF THE LOCAL AUTHORITY HAVING JURISDICTION, NATIONAL FIRE PROTECTION ASSOCIATION AND NATIONAL ELECTRICAL CODE. ALL EQUIPMENT SHALL CARRY THE UNDERWRITER'S LABORATORIES (UL) SEAL WHERE APPLICABLE.
  - QUALITY CONTROL**

UNLESS OTHERWISE NOTED, PROVIDE NEW MATERIALS FREE OF DEFECTS, WHERE NO SPECIFIC WEIGHTS OR GRADES ARE SPECIFIED PROVIDE MATERIALS OF AN ACCEPTED STANDARD WEIGHT AND GRADE ACCORDING TO CODE AND GOVERNING STANDARDS BY ASHRAE, SMACNA, NFPA AND UL. INSTALL ALL EQUIPMENT, PIPING, DUCTWORK AND CONTROLS IN ACCORDANCE WITH CODES, GOVERNING STANDARDS, AND MANUFACTURER'S RECOMMENDATIONS. FIRE PERFORMANCE CHARACTERISTICS OF INSTALLED MATERIALS SHALL BE RATED IN ACCORDANCE WITH ASTM E84. MAXIMUM SMOKE DEVELOPED RATING SHALL BE 50. SUPPLIED EQUIPMENT SHALL BE AS SCHEDULED OR OWNER APPROVED EQUAL IN QUALITY AND PERFORMANCE.
  - COORDINATION**

COORDINATE ALL WORK FOR PROPER LOCATION, POWER, AND UTILITY REQUIREMENTS. SCHEDULE INSTALLATIONS TO AVOID CONFLICT AMONG TRADES. ADDITIONS TO THE CONTRACT FOR COORDINATION AMONG TRADES WILL NOT BE ALLOWED.
  - PENETRATIONS, CUTTING AND PATCHING**

SEAL ALL PIPING PENETRATIONS OF WALLS IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. PIPING PENETRATIONS OF RATED FLOORS AND WALLS SHALL BE SEALED WITH FIRE STOPPING MATERIAL. FLASH ALL ROOF AND WALL PENETRATIONS IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS. PROVIDE FIRE DAMPERS AT ALL RATED PENETRATIONS.
- PIPING**

WASTE AND/OR VENT PIPING BELOW FLOOR SLAB: SCHEDULE 40 DWV PVC (SOLID CORE)  
WASTE AND/OR VENT PIPING ABOVE FLOOR SLAB: SCHEDULE 40 DWV PVC (SOLID CORE)  
WATER PIPING BELOW FLOOR SLAB: TYPE K COPPER  
WATER PIPING ABOVE FLOOR: SCHEDULE 40 CPVC WITH SOLVENT FITTINGS  
BALL VALVES: NIBCO OR EQUAL FULL PORT  
HOT WATER PIPE INSULATION: 1" FIBERGLASS OWENS CORNING SSL II, ASJ  
CONDENSATE PIPING ABOVE SLAB: TYPE L COPPER WITH 1/2" THICK ARMAFLEX INSULATION  
PIPE HANGERS: 3/8" ALL-THREAD ROD, WITH ADJUSTABLE BAND HANGER

**SUBMITTALS**  
SHOP DRAWINGS MUST BE SUBMITTED AND APPROVED PRIOR TO ORDERING EQUIPMENT. ENGINEER WILL REQUIRE 10 WORKING DAYS TO REVIEW DRAWINGS.

DRAWING INDEX

PLUMBING

- P-0 ABBREVIATIONS, LEGENDS, GENERAL NOTES
- P-1 PLUMBING SITE UTILITY PLAN
- P-2 PLUMBING SANITARY AND VENT FLOOR PLAN
- P-3 PLUMBING DOMESTIC WATER FLOOR PLAN
- P-4 PLUMBING DETAILS
- P-5 PLUMBING DETAILS AND RISERS

PLUMBING FIXTURE SCHEDULE

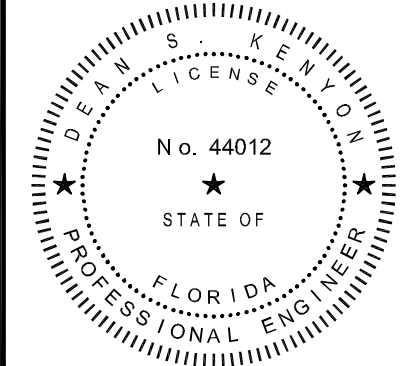
MARK	ITEM	COLD WATER	HOT WATER	SANITARY AND/OR WASTE	VENT
WC	WATER CLOSET: ADA AMERICAN STANDARD CADET 3 2386.012 RIGHT HEIGHT FLOOR MOUNTED ELONGATED BOWL, VITREOUS CHINA, TWO PIECE TOILET 12" ROUGH, (FULL FLUSH 1.6 GPF ) TRIP LEVER SHALL BE INSTALLED ON WIDE SIDE OF TOILET ROOM SEAT: BEMODEL 1055SC COMMERCIAL SOLID ELONGATED PLASTIC OPEN FRONT LESS COVER SUPPLY: BRASSCRAFT 1/2" X 3/8" X 12" CHROME PLATED FLEXIBLE SUPPLY WITH 1/4 TURN STOP COLOR/ FINISH BY ARCHITECT	1/2"	-	3"	2"
LAV	LAVATORY: AMERICAN STANDARD 0355.012 LUCERNE WALL MOUNTED 20-1/2" X 18-1/4" VITREOUS CHINA, THREE HOLE, FRONT OVERFLOW, FOR CONCEALED ARMS FAUCET: DELTA 501-HGMHDF-DST WITH CHROME 0.5 GPM AREATOR DRAIN: 1-1/4" GRID DRAIN WITH TRAP PRIMER TAILPIECE TRAP: McGUIRE 1-1/4" X 1 1/2" CHROME PLATED 17 GAUGE "P" TRAP AND CLEANOUT SUPPLIES: BRASSCRAFT 1/2" X 3/8" X 12" CHROME PLATED FLEXIBLE SUPPLY WITH 1/4 TURN STOPS CARRIER: ZURN Z1221-D FLOOR MOUNTED WALL CARRIER FOR CONCEALED ARMS INSULATE WASTE AND WATER SUPPLIES BELOW LAVATORY WITH TRUEBRO PIPE INSULATION COLOR/ FINISH BY ARCHITECT	1/2"	1/2"	2"	1-1/2"
URH	URINAL: AMERICAN STANDARD 6561.017 TRIMBROOK 3/4" TOP SPUD WALL MOUNTED, VITREOUS CHINA, LOW CONSUMPTION (1.0 GPF), INSTALL LIP AT 17" ABOVE FINISHED FLOOR FLUSH VALVE: ZURN Z6033 -WS1-VC---VJ FLOOR CARRIER: ZURN Z1222 WITH LOWER BEARING PLATE	1/2"	-	2"	1-1/2"
HS	HAND SINK: AMERICAN STANDARD 0355.012 LUCERNE WALL MOUNTED 20-1/2" X 18-1/4" VITREOUS CHINA, THREE HOLE, FRONT OVERFLOW, FOR CONCEALED ARMS FAUCET: DELTA 501-HGMHDF-DST WITH CHROME 0.5 GPM AREATOR DRAIN: 1-1/4" GRID DRAIN WITH TRAP PRIMER TAILPIECE TRAP: McGUIRE 1-1/4" X 1 1/2" CHROME PLATED 17 GAUGE "P" TRAP AND CLEANOUT SUPPLIES: BRASSCRAFT 1/2" X 3/8" X 12" CHROME PLATED FLEXIBLE SUPPLIES WITH 1/4 TURN STOPS CARRIER: ZURN Z1221-D FLOOR MOUNTED WALL CARRIER FOR CONCEALED ARMS INSULATE WASTE AND WATER SUPPLIES BELOW LAVATORY WITH TRUEBRO PIPE INSULATION COLOR/ FINISH BY ARCHITECT	1/2"	1/2"	2"	2"
FD	FLOOR DRAIN: ZURN Z415S WITH NB SQUARE STRAINER AND TRAP PRIMER CONNECTION	3"	-	2"	1-1/2"
WCO	WALL CLEANOUT: ROUND WITH SMOOTH STAINLESS STEEL COVER, CENTER SCREW, AND RECESSED BRONZE THREADED TAPPED PLUG, ZURN #Z1441	-	-	SEE DRAWINGS	-
WHA	WATER HAMMER ARRESTORS: SIOUX CHIEF 660 SERIES PISTON TYPE TYPE L COPPER TUBE SHALL CONFORM TO ASSE 1010	-	-	-	-
EWH	ELECTRIC WATER HEATER: A.O. SMITH DEL-20 20 GALLON CAPACITY ONE 4500 WATT ELEMENT 208/1/60 30 AMP BREAKER MOUNTED IN DRAIN PAN INSTALL ABOVE NEW CEILING	3/4"	3/4"	-	-

CUSTOMER:  
**AEC SERVICES INC**

3009 GULF TO BAY BLVD

SITE ADDRESS:

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DEAN S. KENYON UNDER A DIGITAL DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.



DEAN S. KENYON, P.E.  
FL Lic. No. 44012 Exp 2-28-2019

**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)884-1234  
(813)884-2660 (f)  
www.aecservicesinc.com

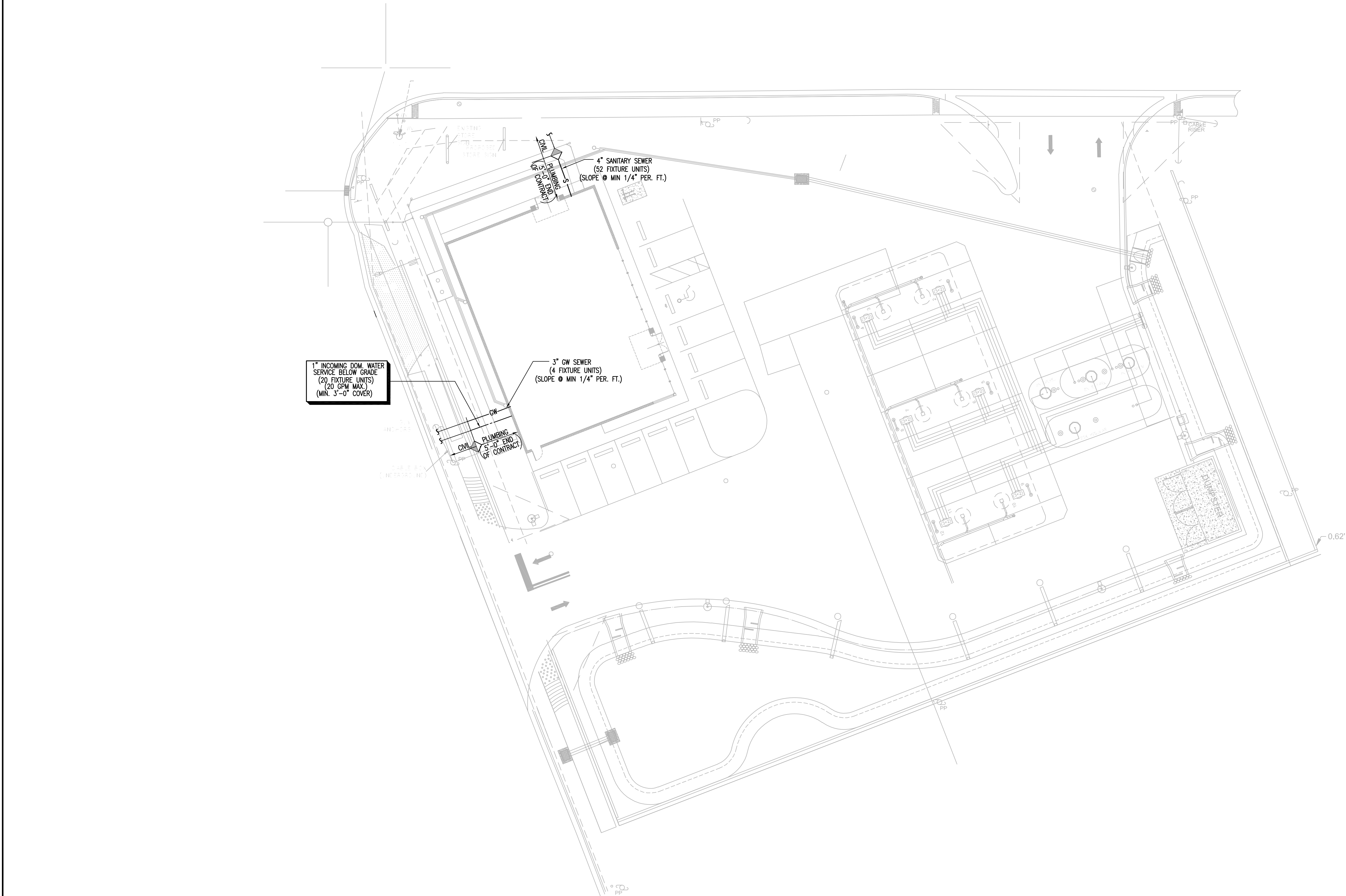
ENGINEER OF RECORD:

JOB NO.	181116
DWG Name:	PLUMBING
XREF Name:	-
SCALE:	AS NOTED
DATE:	10-19-18
DRAWN BY:	R.R.
BLDG DEPT COMMENTS	2-4-19
DESCRIPTION	DATE
REVISIONS	CHECKED: S.W.
	APPROVAL:

PLUMBING  
COVER  
PAGE

P-0

**KPI ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS  
3025 QUEEN PALM DRIVE  
TAMPA, FLORIDA 33619  
PHONE: (813) 241-6488  
FAX: (813) 241-6488  
Board of Professional Engineers - License # 27358



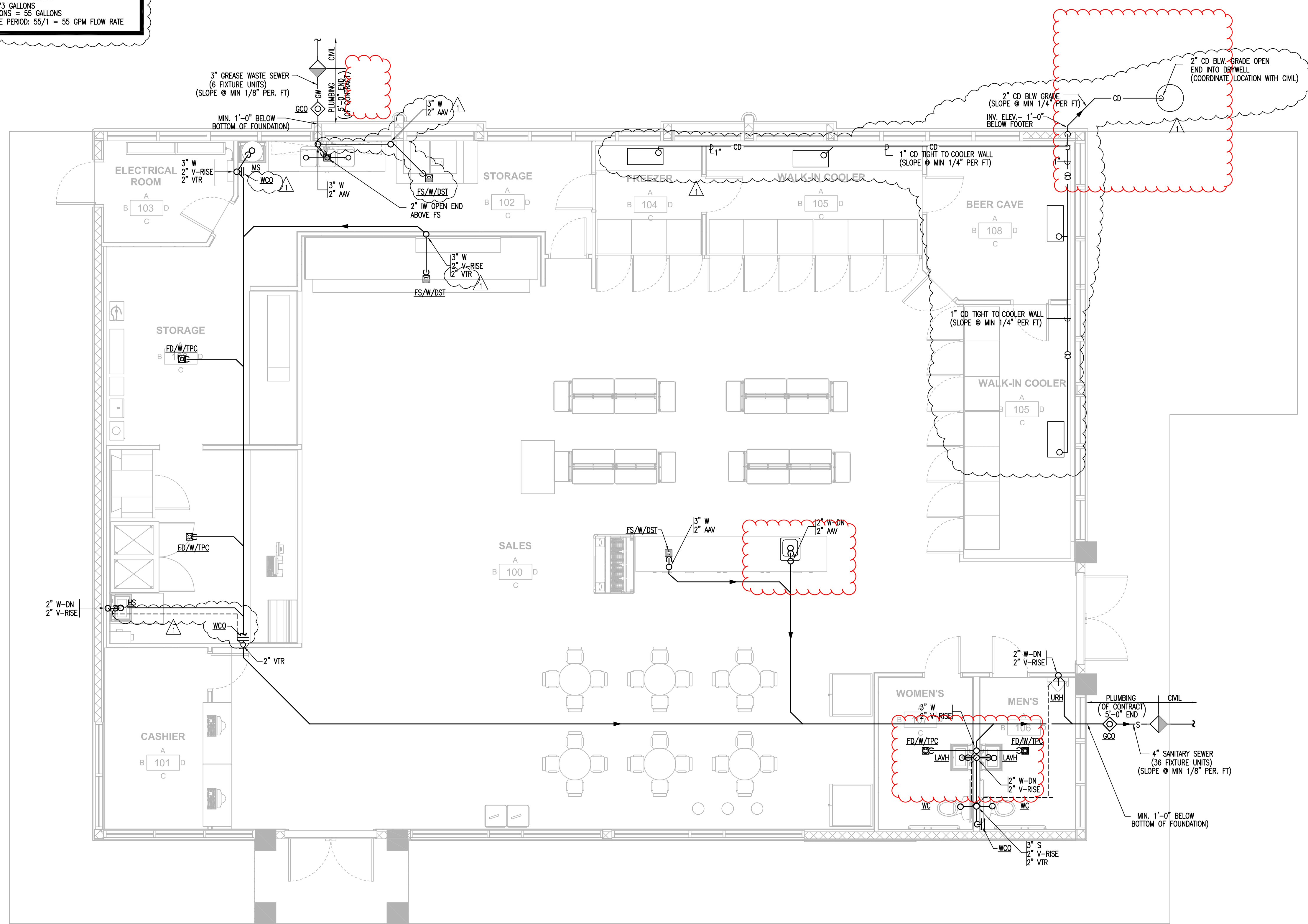
REVISIONS		NO	DESCRIPTION	DATE	CHECKED: S.W.	APPROVAL:
6	JOB NO: 181116					
5	DWG Name: PLUMBING					
4	XREF Name: -					
3	SCALE: AS NOTED					
2	DATE: 10-19-18					
1	BLDG DEPT COMMENTS					
1	2-4-19					
1	DRAWN BY: R.R.					
1	CHECKED: S.W.					
1	APPROVAL:					

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738  
1816 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 884-1234  
(813) 884-2660 (f)  
www.aecservicesinc.com

FLORIDA  
STATE OF  
N o. 44012  
PROFESSIONAL ENGINEER  
DEAN S. KENYON, P.E.  
FL Lic. No. 44012 Exp 2-28-2019

CUSTOMER:  
**AEC SERVICES INC**  
SITE ADDRESS:  
**3009 GULF TO BAY BLVD**

GREASE INTERCEPTOR SIZING  
SINK SIZE 60" LONG BY 20" WIDE X 14" DEEP  
CUBIC CONTENT 60 X 20 X 14" = 16,800 CUBIC INCHES  
CONTENTS IN GALLONS: 16,800/231 = 73 GALLONS  
ACTUAL DRAINAGE LOAD 0.75 X 73 GALLONS = 55 GALLONS  
CALCULATED FLOW RATE FOR ONE MINUTE PERIOD: 55/1 = 55 GPM FLOW RATE



PLUMBING SANITARY/VENT PLAN

SCALE: 1/4"=1'-0"

KPI ENGINEERING, INC.  
PROFESSIONAL ENGINEERS  
3025 QUEEN PALM DRIVE  
TAMPA, FLORIDA 33619  
PHONE: (813) 241-6488  
FAX: (813) 241-6488  
Board of Professional Engineers - License # 27336

CUSTOMER: AEC SERVICES INC  
SITE ADDRESS: 3009 GULF TO BAY BLVD

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DEAN S. KENYON, P.E. A PROFESSIONAL ENGINEER. THE SIGNATURE AND SEAL ARE NOT CONSIDERED VALID UNLESS THE SIGNATURE AND SEAL ARE VERIFIED ON ANY ELECTRONIC COPIES.  
FLORIDA PROFESSIONAL ENGINEER  
No. 44012  
STATE OF  
DEAN S. KENYON, P.E.  
FL Lic. No. 44012 Exp. 2-28-2019

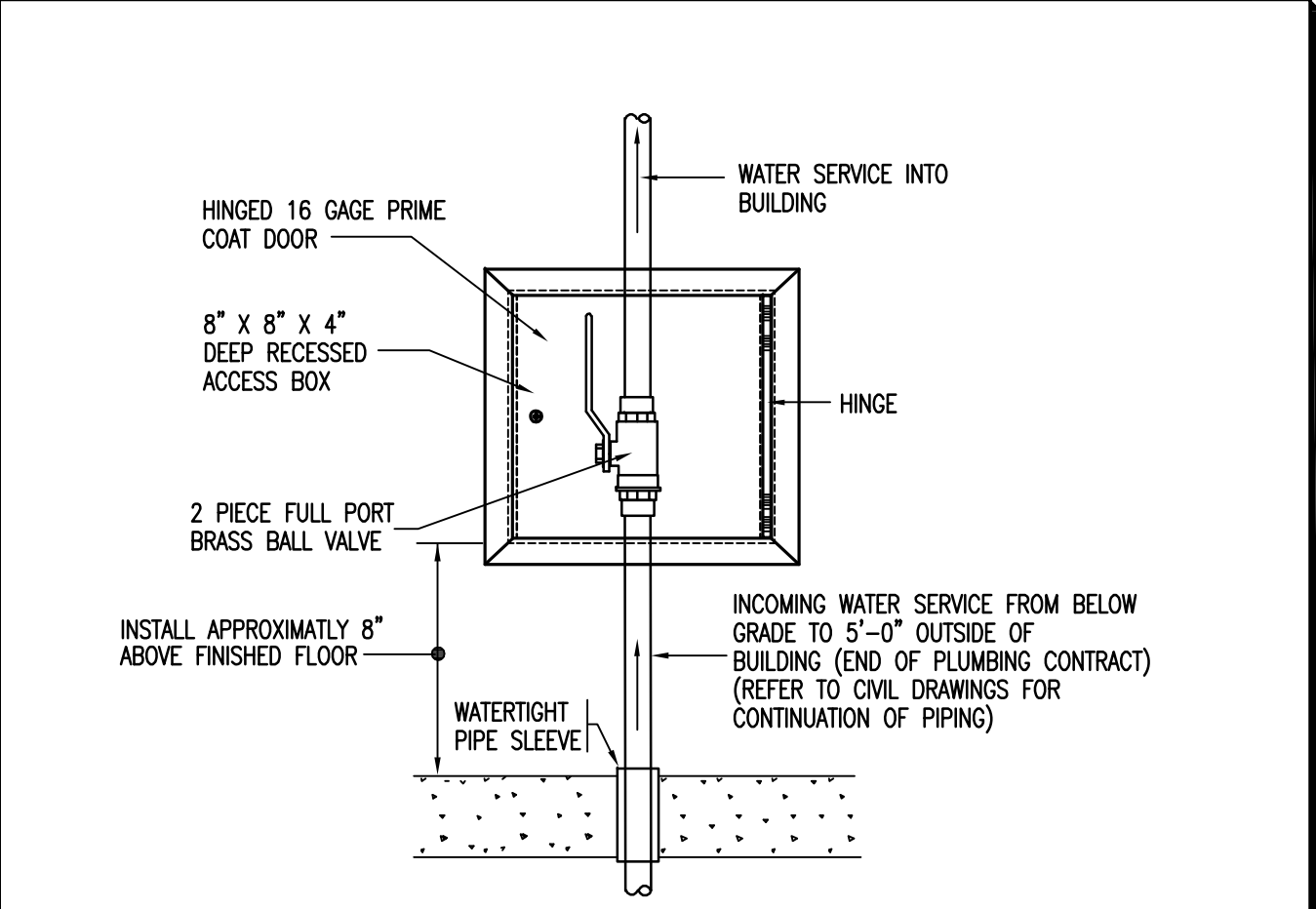
ENGINEER OF RECORD: AEC Services, Inc.  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 884-1234  
(813) 884-2660 (f)  
www.aecservicesinc.com

JOB NO.	181116	PLUMBING
DWG Name:	PLUMBING	
XREF Name:	AS NOTED	
SCALE:	AS NOTED	
DATE:	10-19-18	
BLDG DEPT COMMENTS	2-4-19	DRAWN BY: R.R.
DESCRIPTION	DATE	CHECKED: S.W.
NO		APPROVAL:

PLUMBING  
SANITARY/VENT  
PLAN

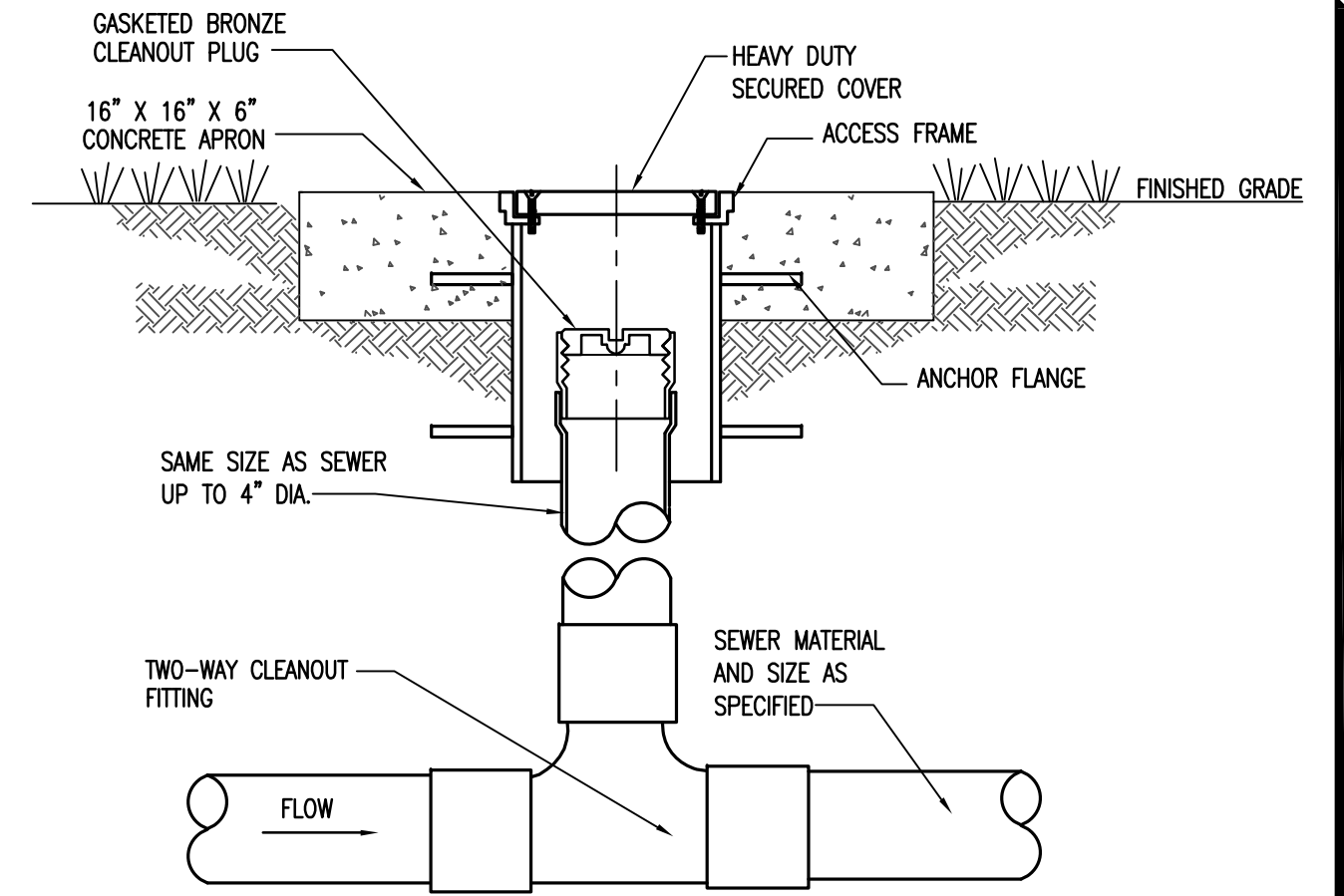
P-2





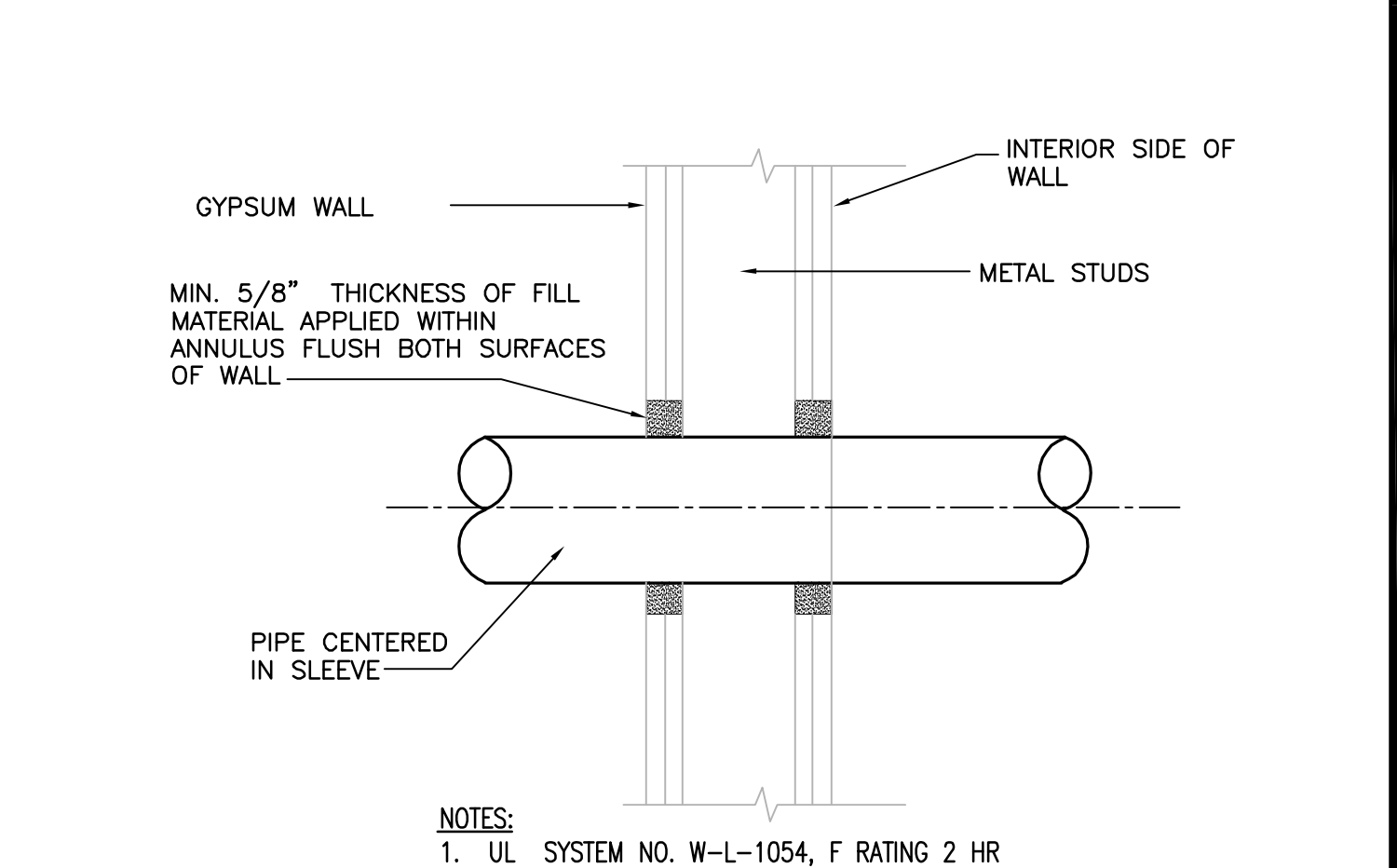
BUILDING SHUT-OFF VALVE

NOT TO SCALE



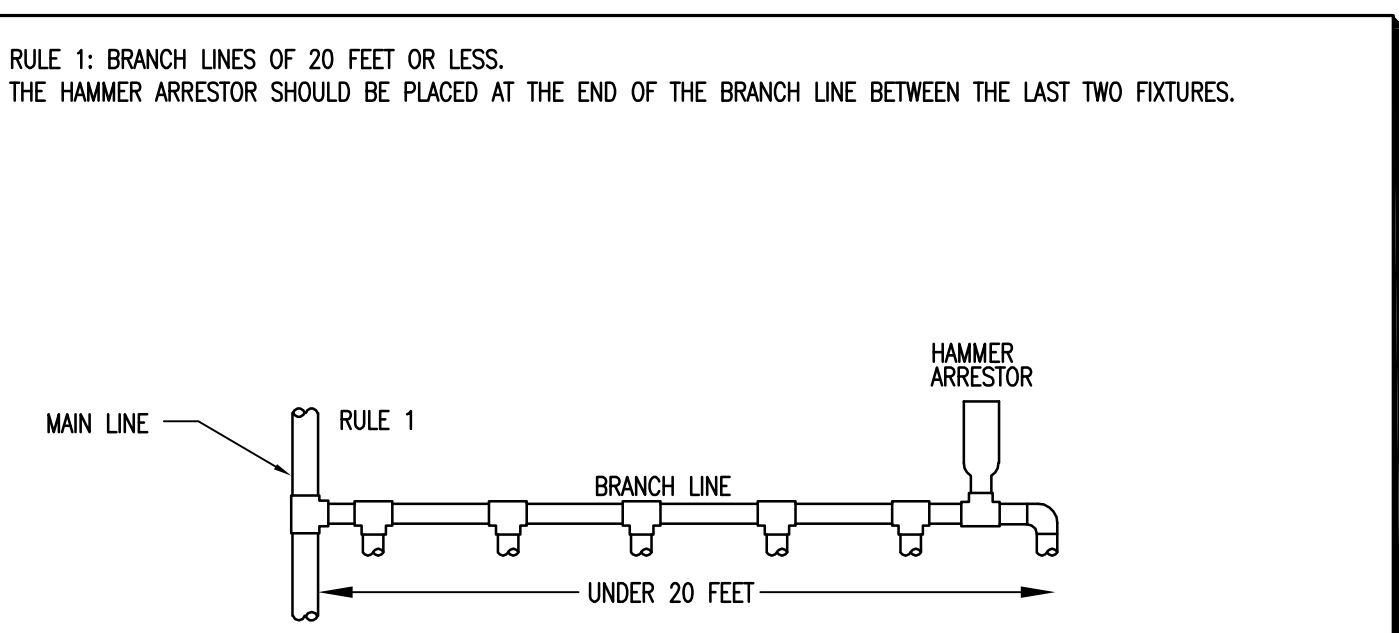
EXTERIOR GRADE CLEANOUT IN GRASS AND/OR TRAFFIC AREAS

NOT TO SCALE



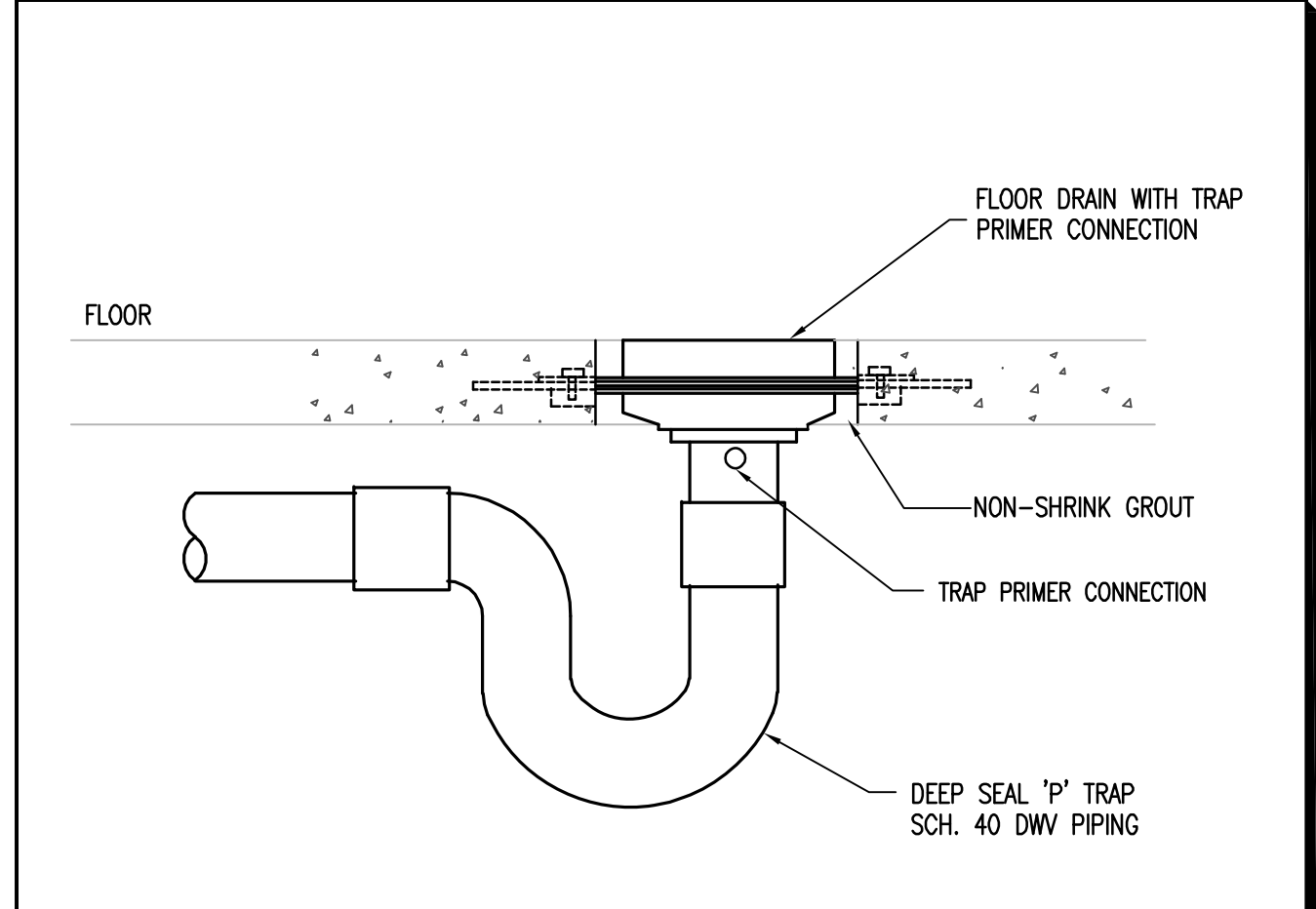
2 HOUR -WALL PENETRATION DETAIL

NOT TO SCALE



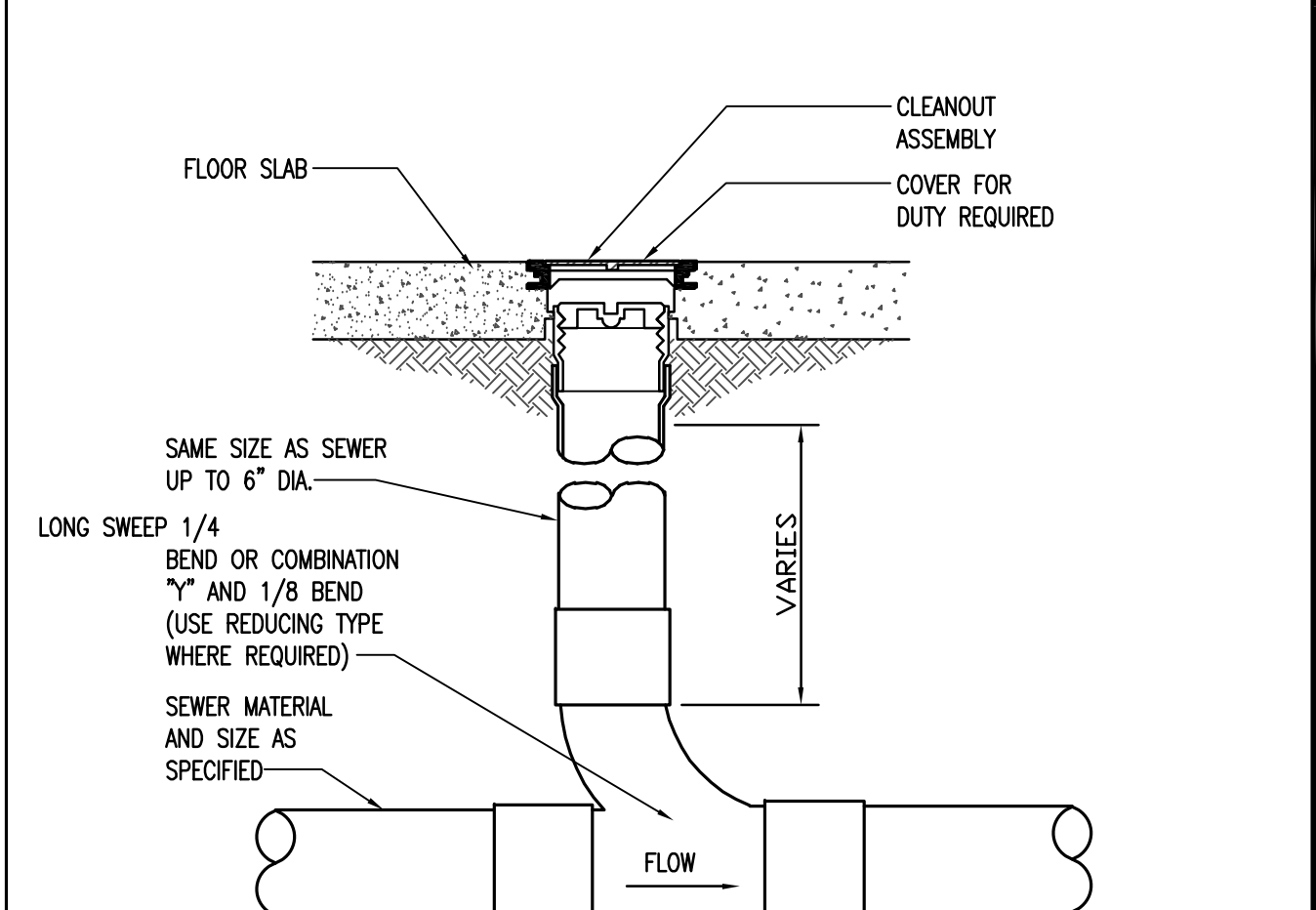
WATER HAMMER DETAIL

NOT TO SCALE



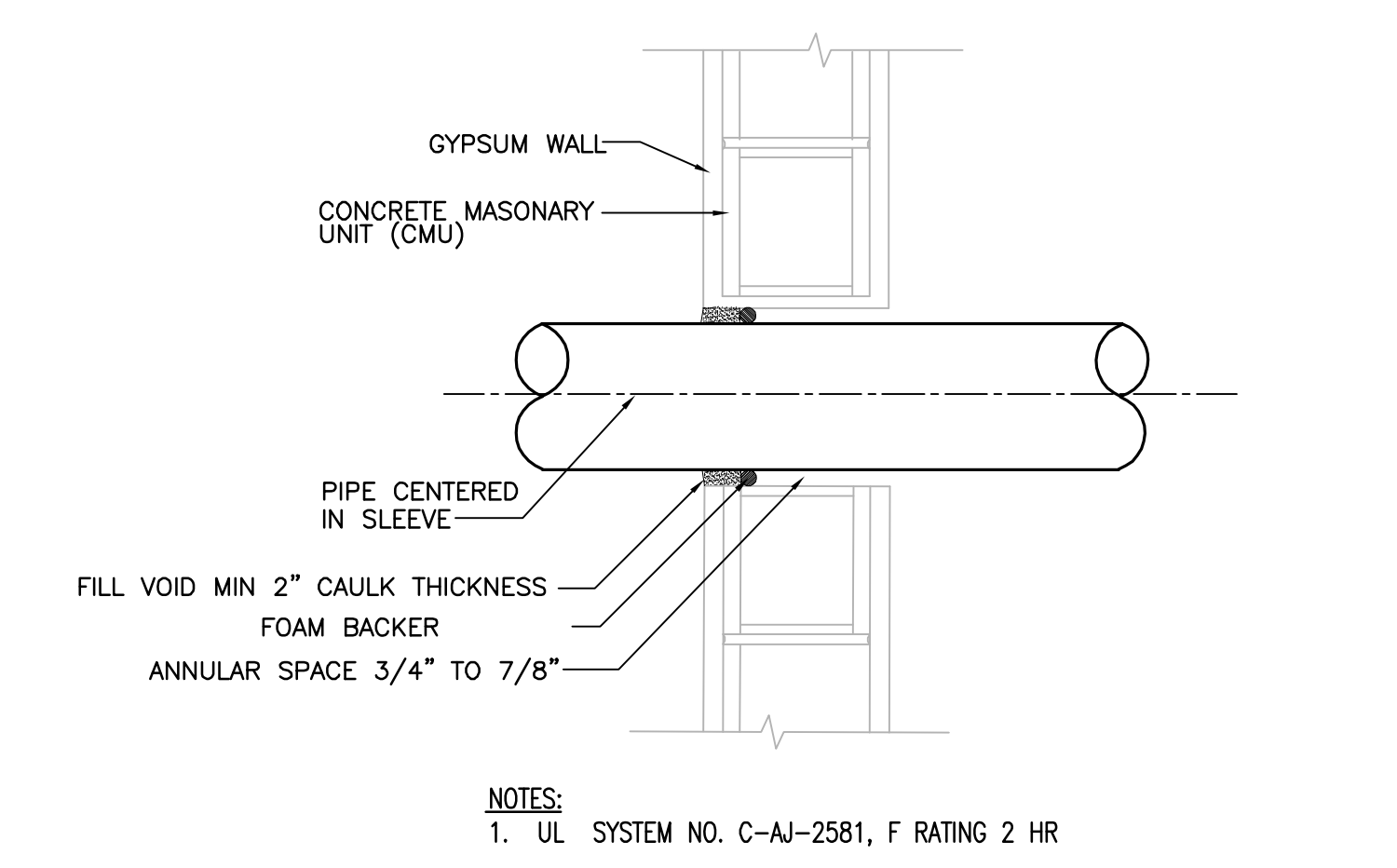
FLOOR DRAIN DETAIL

NOT TO SCALE



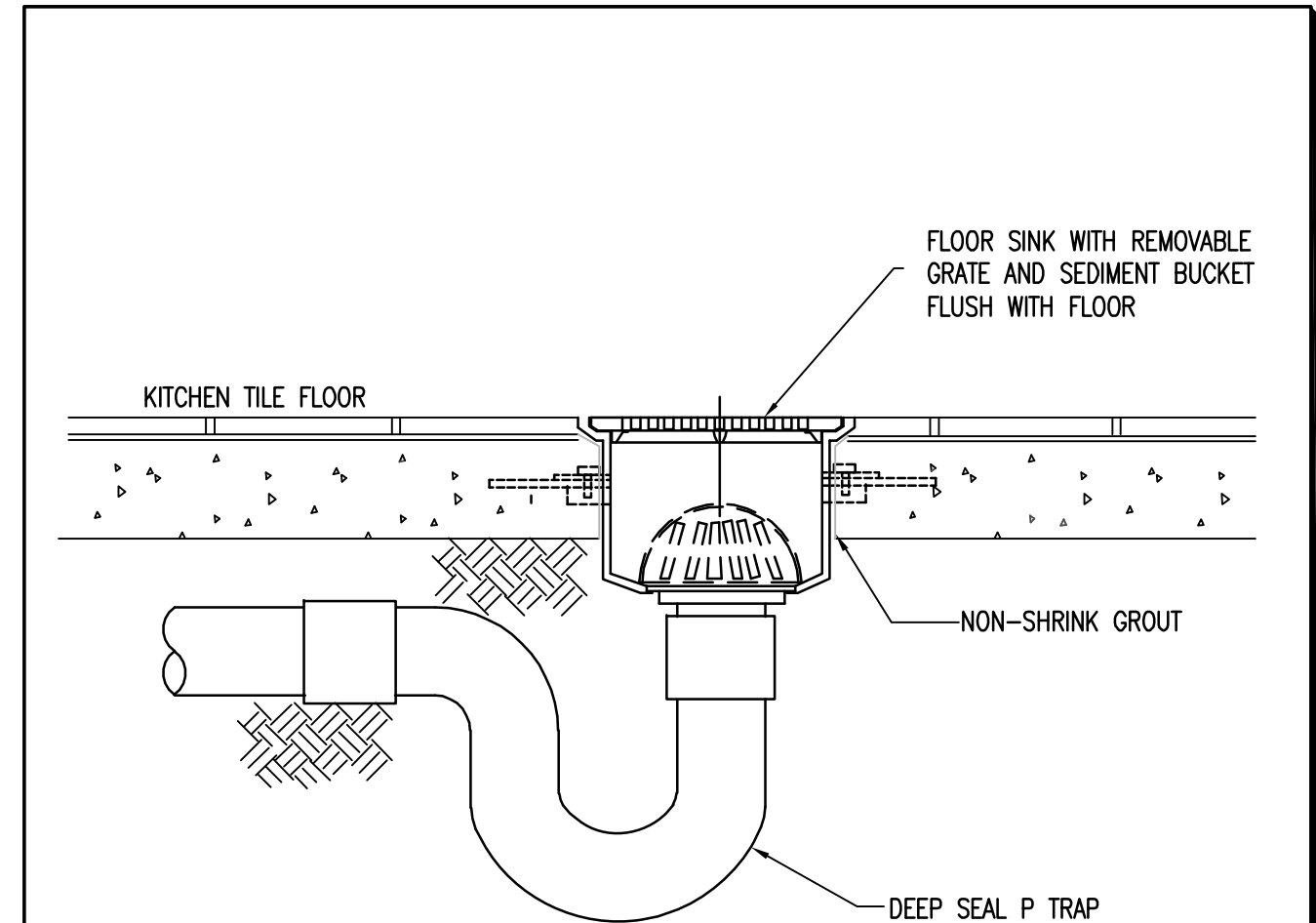
FLOOR CLEANOUT DETAIL

NOT TO SCALE



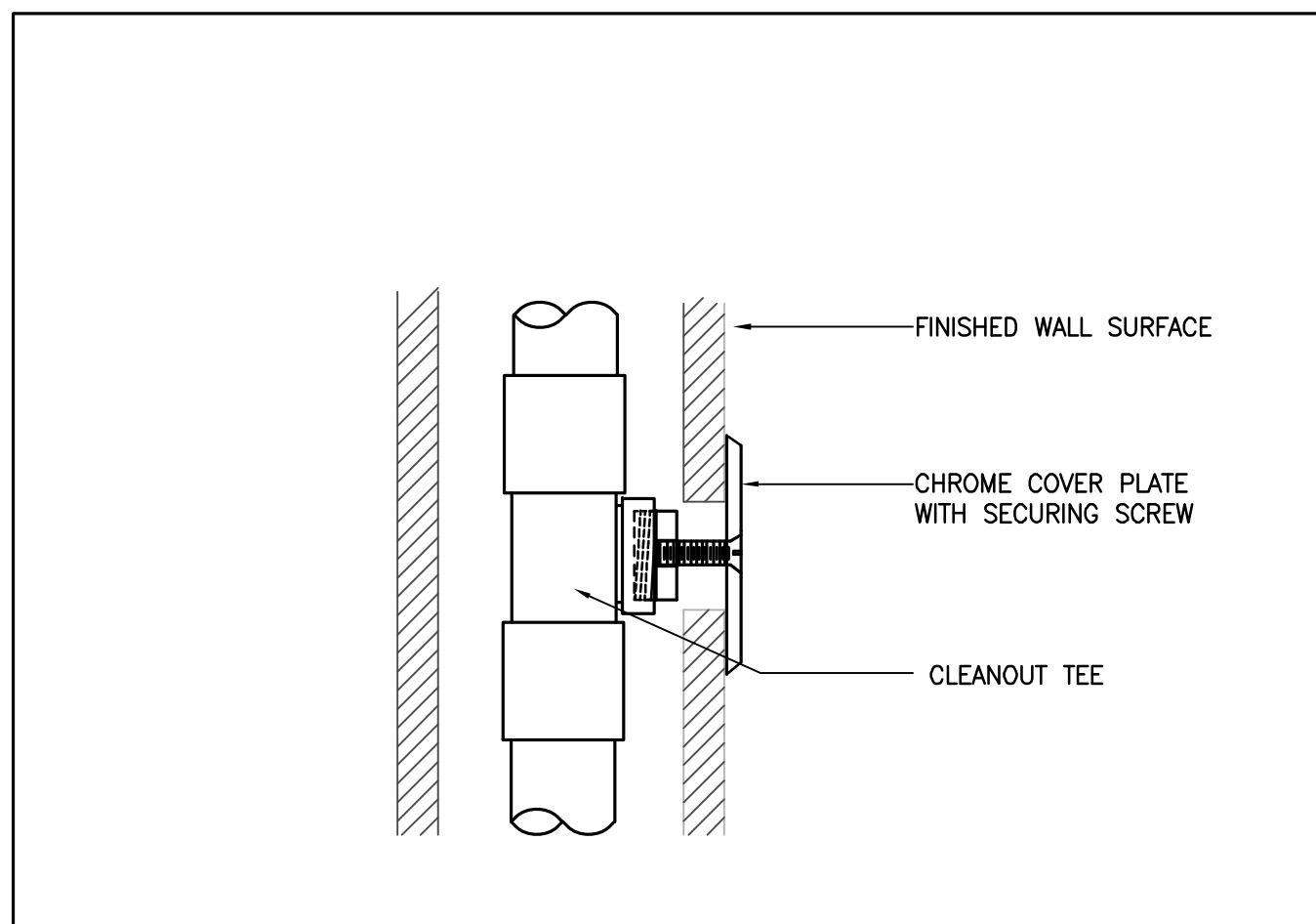
2 HOUR -WALL PENETRATION DETAIL

NOT TO SCALE



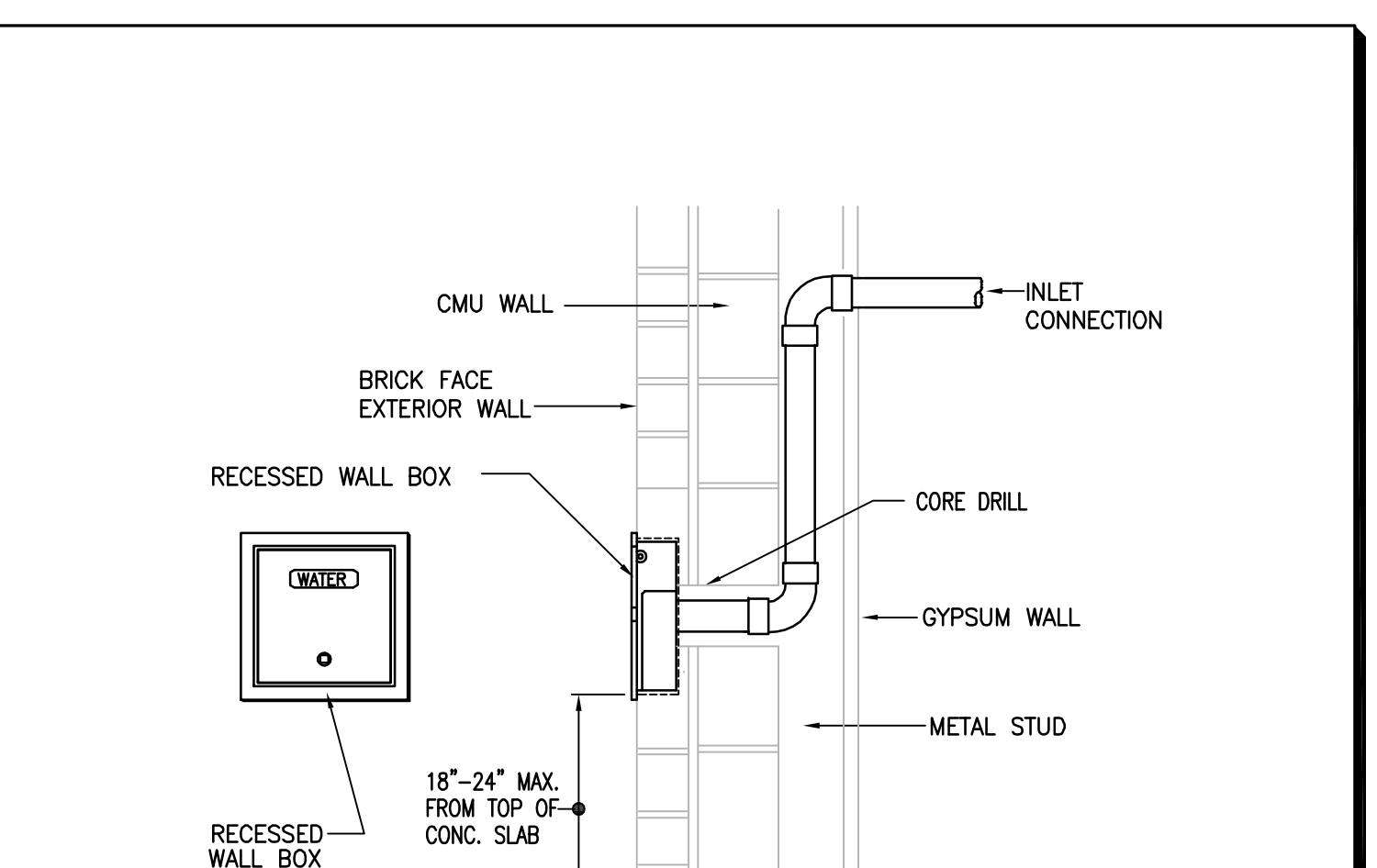
FLOOR SINK DETAIL

NOT TO SCALE



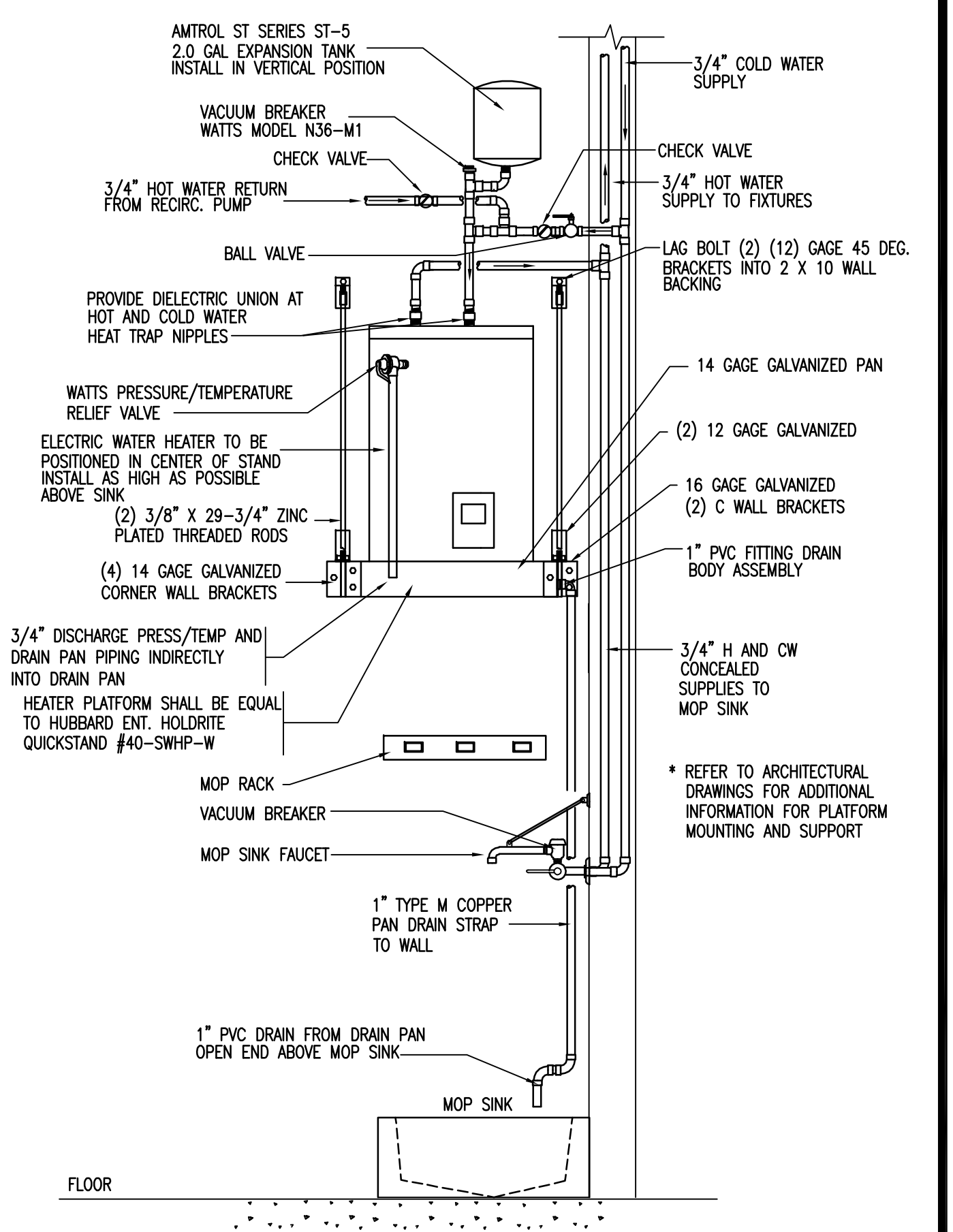
WALL CLEANOUT DETAIL

NOT TO SCALE



EXTERIOR WALL HYDRANT DETAIL

NOT TO SCALE



ELECTRIC WATER HEATER ON PLATFORM DETAIL

NOT TO SCALE

CUSTOMER: AEC SERVICES INC

SITE ADDRESS: 3009 GULF TO BAY BLVD

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DEAN S. KENYON, P.E. A PROFESSIONAL ENGINEER. THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

FLORIDA PROFESSIONAL ENGINEER

No. 44012

STATE OF

DEAN S. KENYON, P.E.

FL. Lic. No. 44012 Exp 2-28-2019

ENGINEER OF RECORD: AEC Services, Inc.

RON FAIR, P.E.

License No. 9277 QB #0011445

FL # 50738

1616 ALLISON WOODS LANE

TAMPA, FL 33619

(813) 884-1234

(813) 884-2660 (f)

www.aecservicesinc.com

JOB NO:	181116	PLUMBING
DWG Name:		
XREF Name:		
SCALE:	AS NOTED	
DATE:	10-18-18	
BLDG DEPT COMMENTS	2-4-19	DRAWN BY: R.R.
DESCRIPTION	DATE	CHECKED: S.W.
REVISIONS	APPROVAL:	

PLUMBING DETAILS

P-4

KPI ENGINEERING, INC.

PROFESSIONAL ENGINEERS

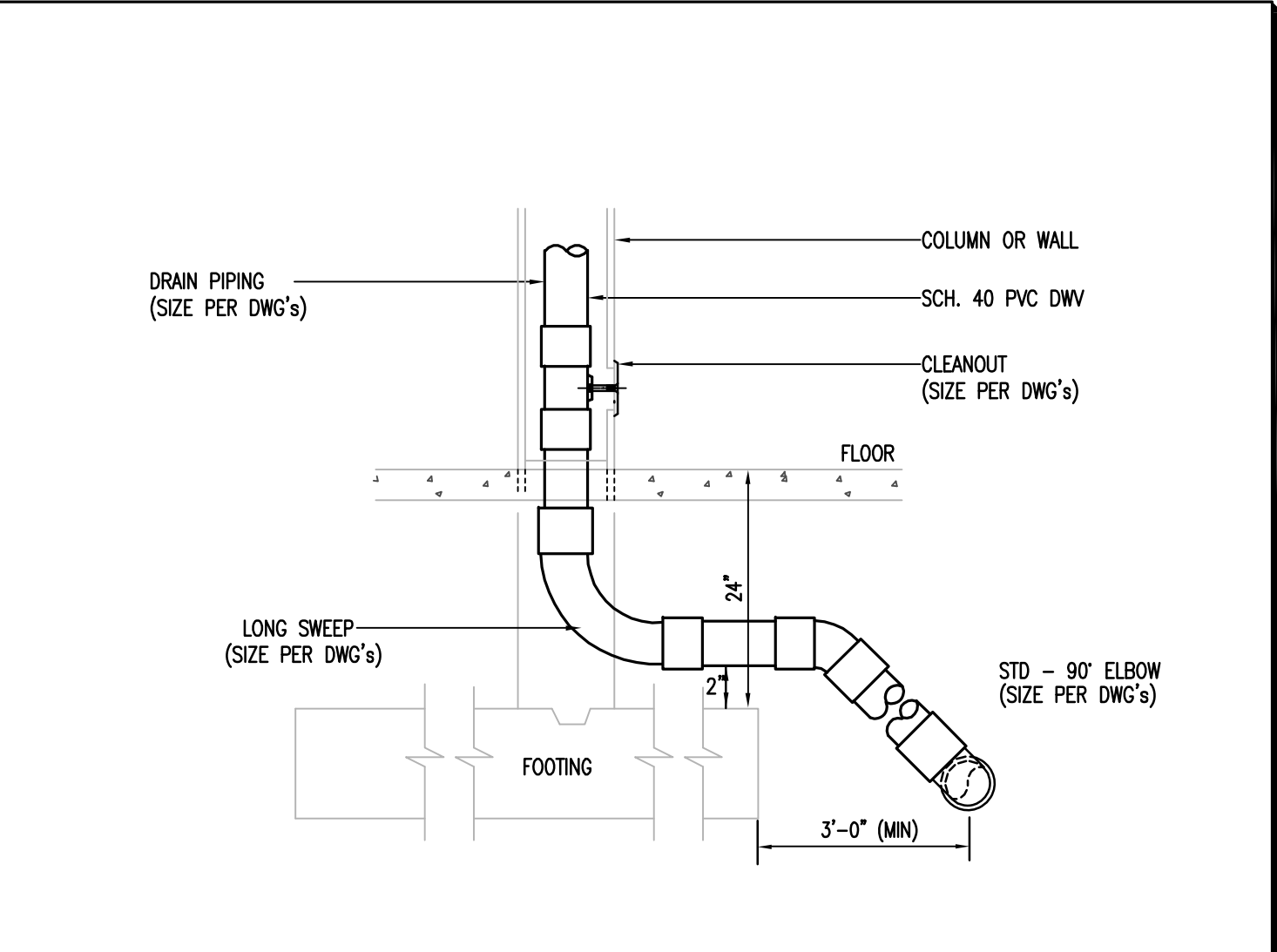
3003 QUEEN PALM DRIVE

TAMPA, FLORIDA 33619

PHONE: (813) 241-6468

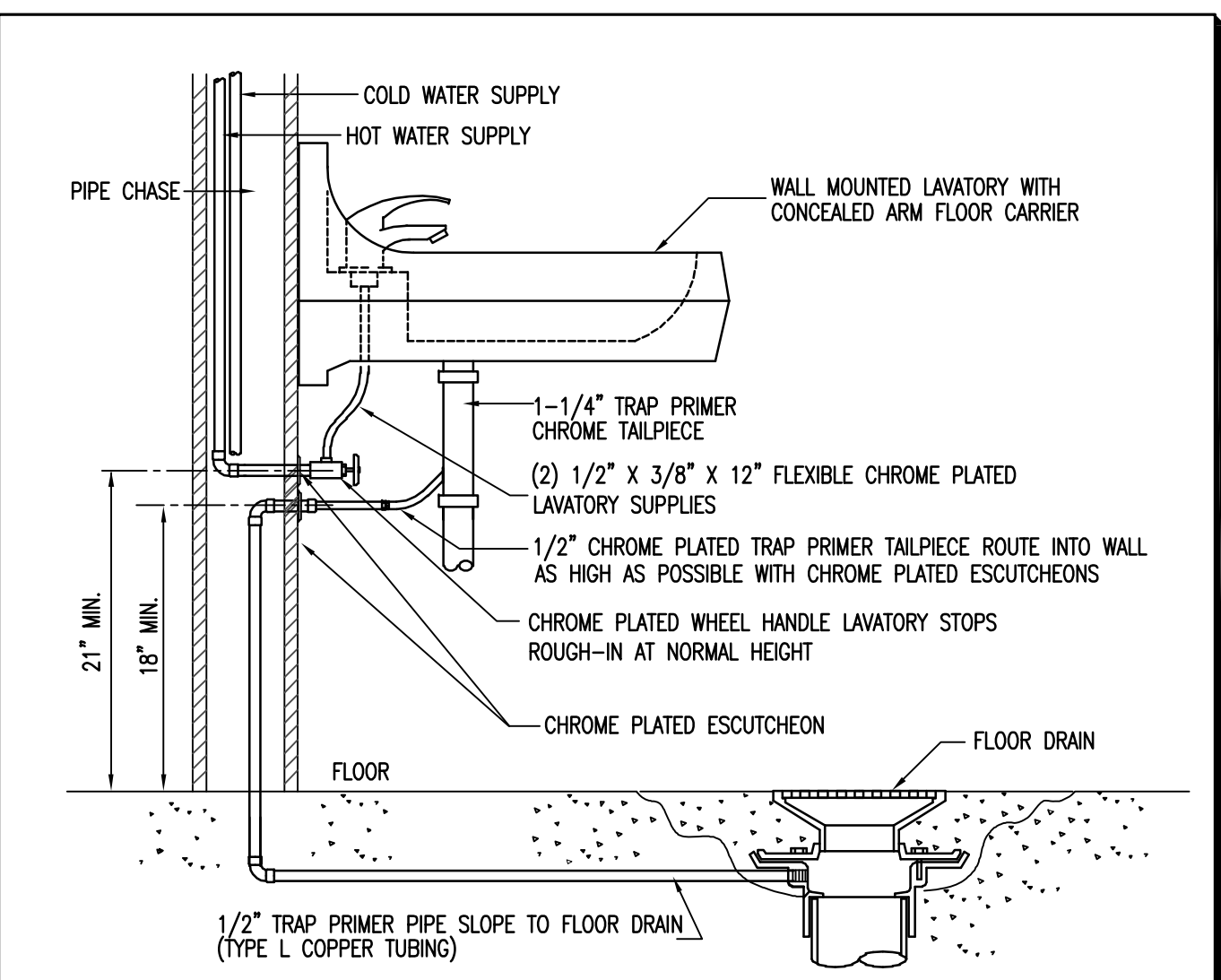
FAX: (813) 241-6468

Board of Professional Engineers - License # 87358



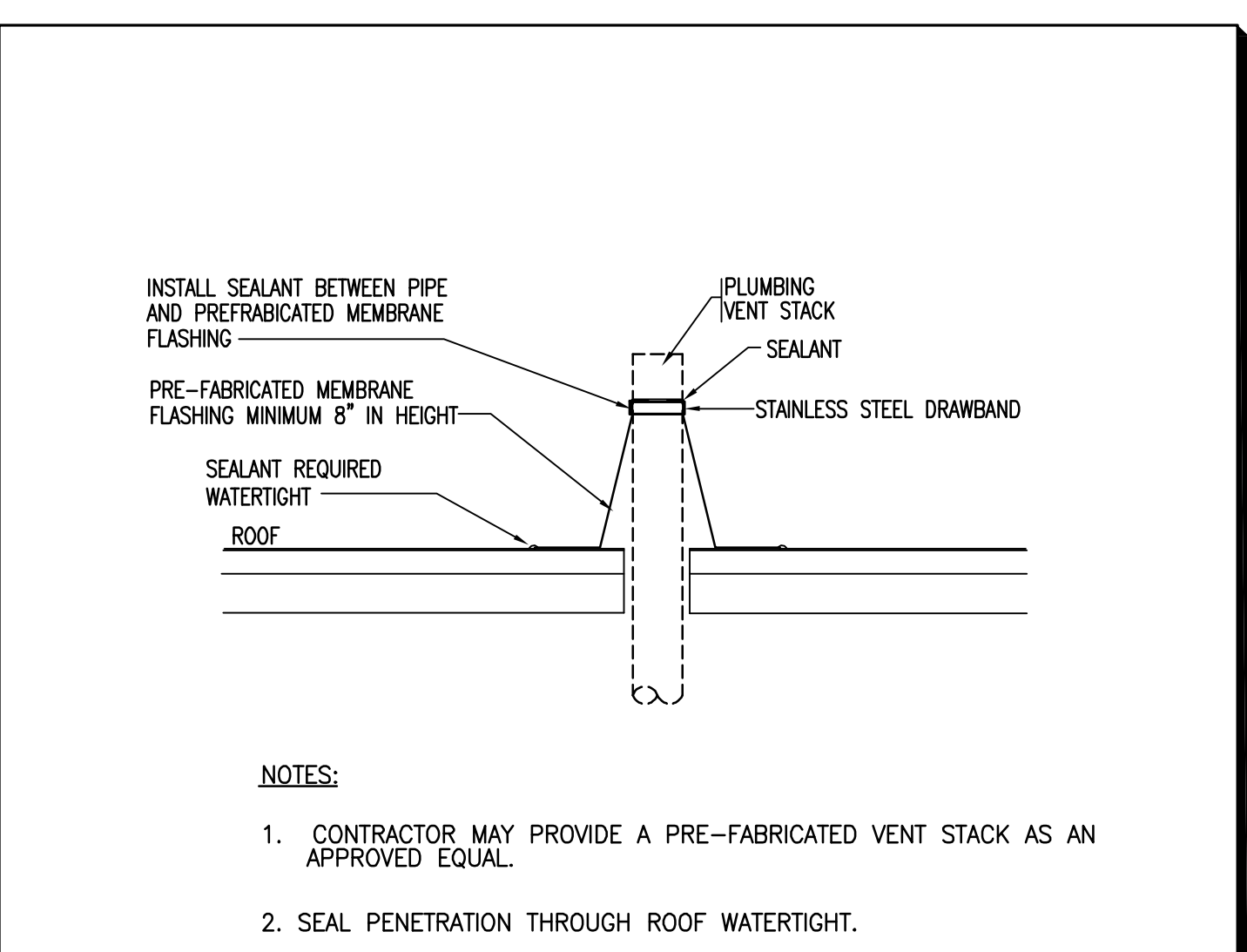
DRAINAGE PIPING DETAIL

NOT TO SCALE



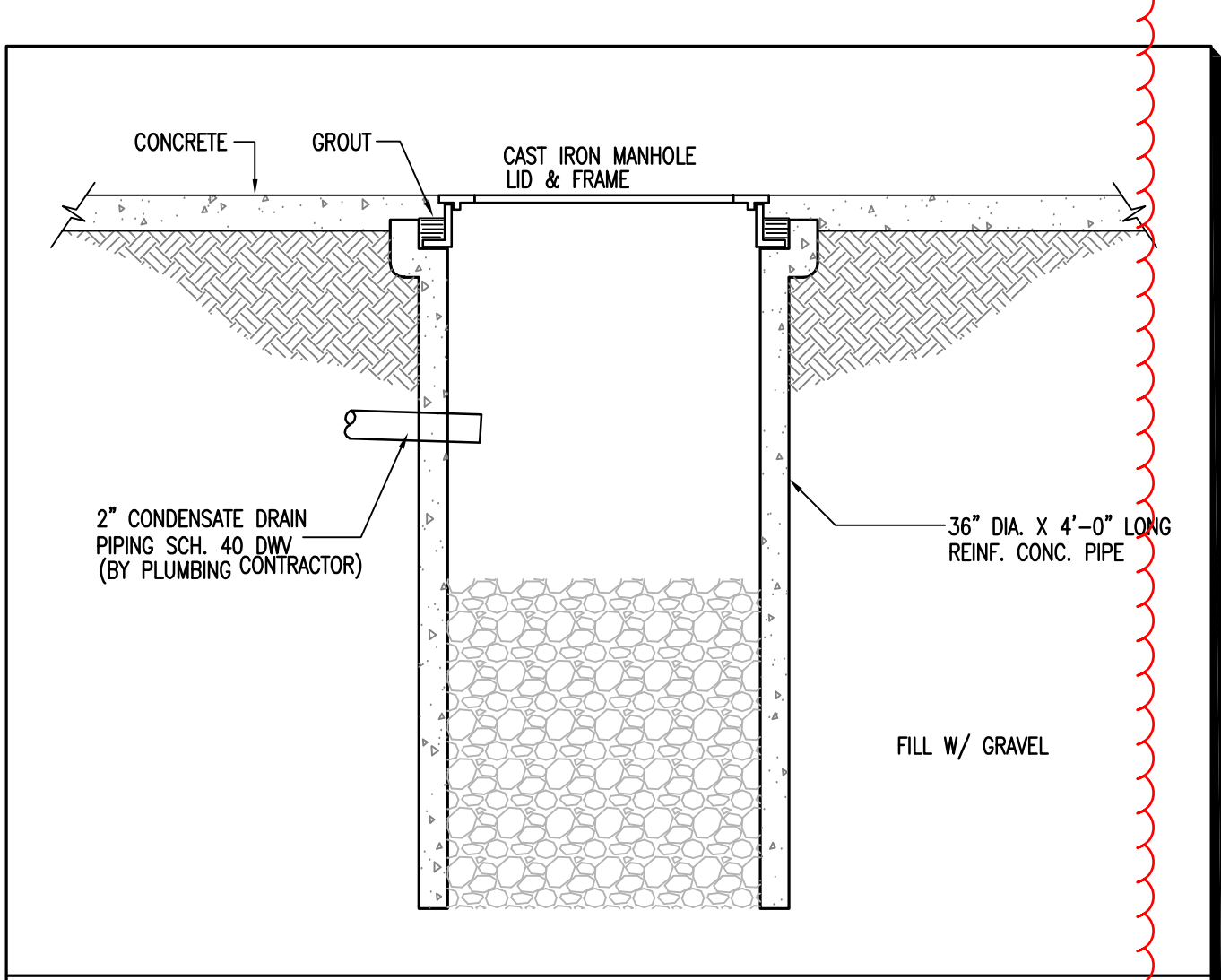
TRAP PRIMER TAILPIECE DETAIL

NOT TO SCALE



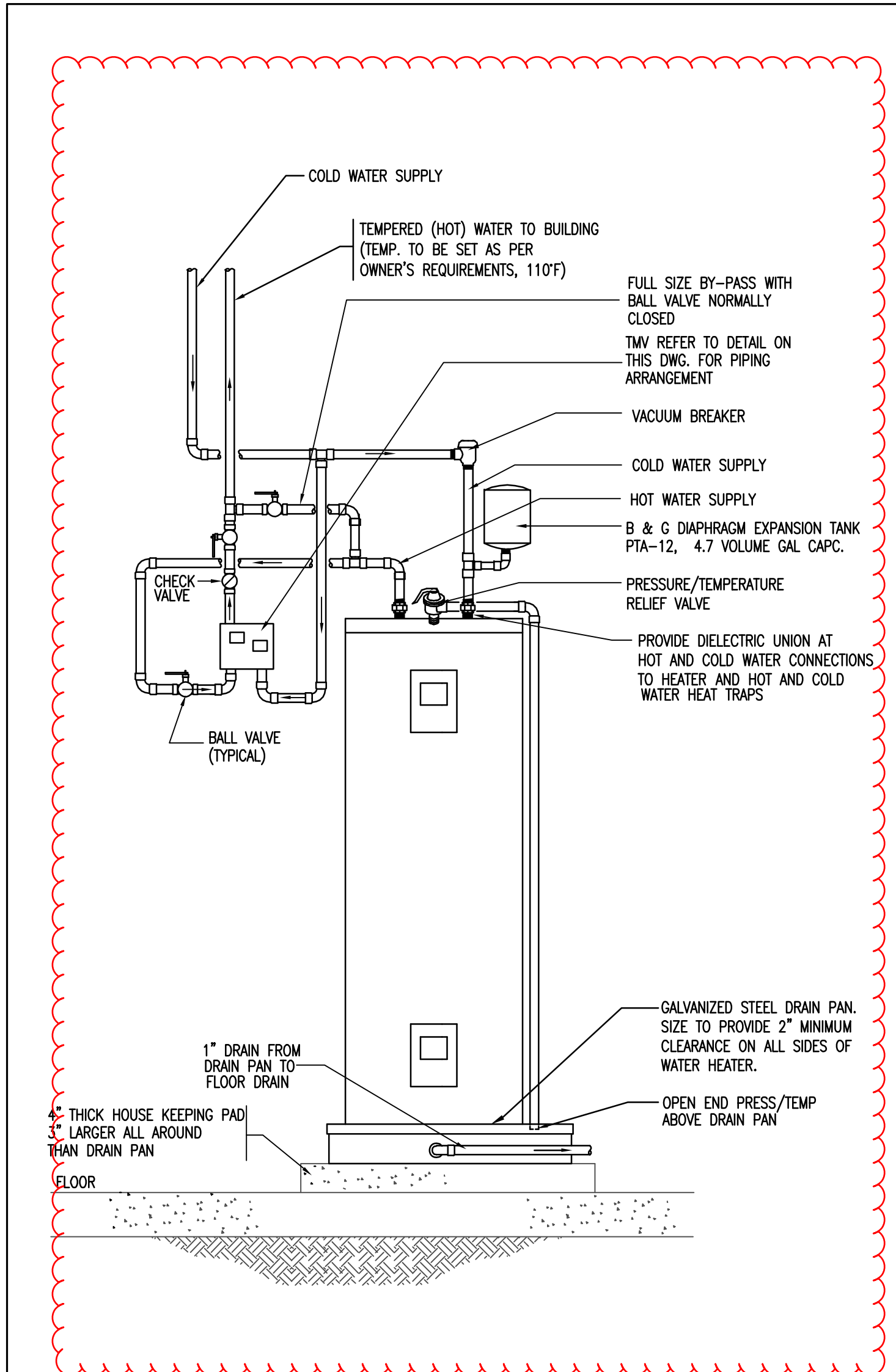
VENT THROUGH ROOF DETAIL

NOT TO SCALE



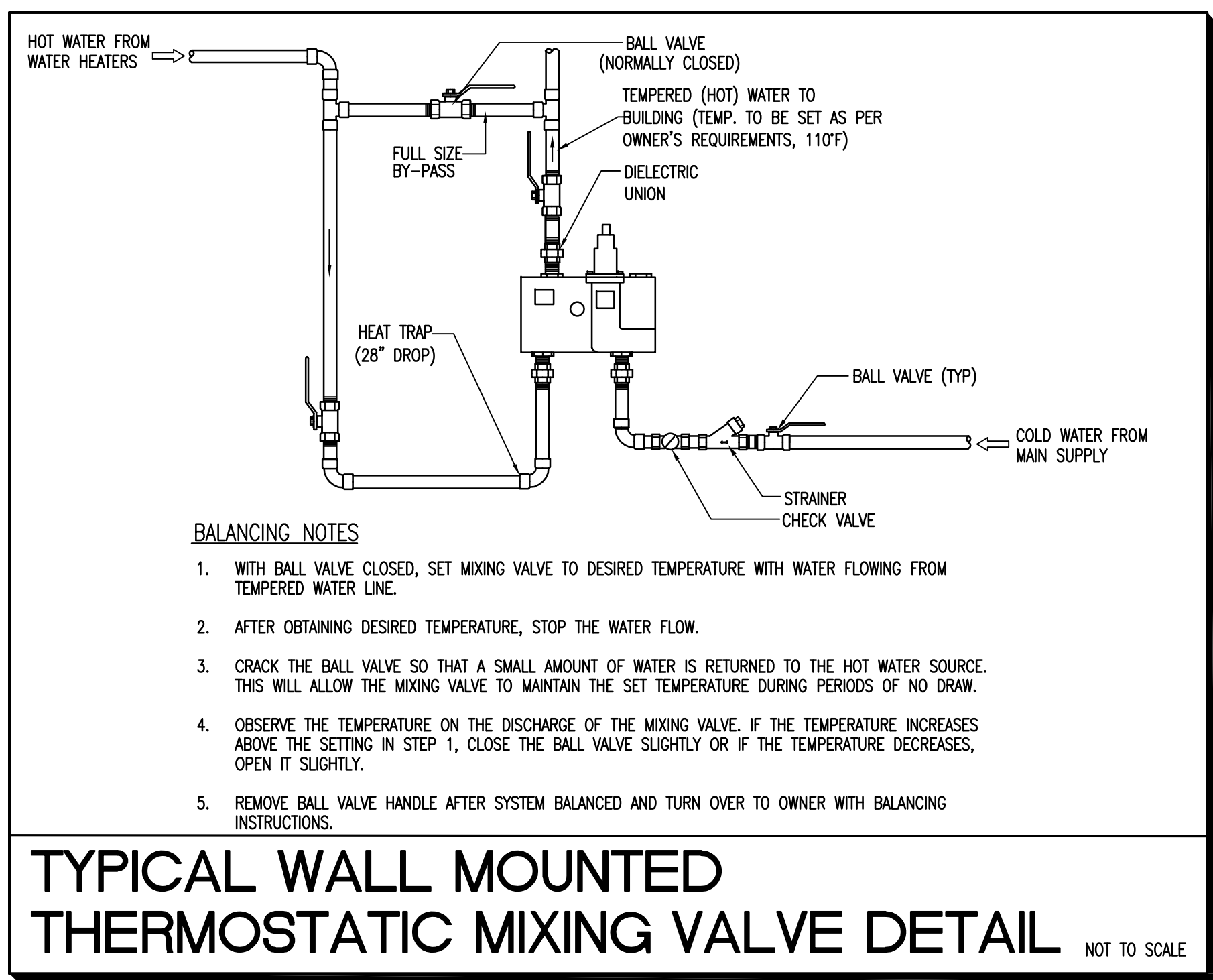
DRY WELL DETAIL

NOT TO SCALE



ELECTRIC WATER DETAIL

NOT TO SCALE



TYPICAL WALL MOUNTED THERMOSTATIC MIXING VALVE DETAIL

NOT TO SCALE

- BALANCING NOTES**
1. WITH BALL VALVE CLOSED, SET MIXING VALVE TO DESIRED TEMPERATURE WITH WATER FLOWING FROM TEMPERED WATER LINE.
  2. AFTER OBTAINING DESIRED TEMPERATURE, STOP THE WATER FLOW.
  3. CRACK THE BALL VALVE SO THAT A SMALL AMOUNT OF WATER IS RETURNED TO THE HOT WATER SOURCE. THIS WILL ALLOW THE MIXING VALVE TO MAINTAIN THE SET TEMPERATURE DURING PERIODS OF NO DRAW.
  4. OBSERVE THE TEMPERATURE ON THE DISCHARGE OF THE MIXING VALVE. IF THE TEMPERATURE INCREASES ABOVE THE SETTING IN STEP 1, CLOSE THE BALL VALVE SLIGHTLY OR IF THE TEMPERATURE DECREASES, OPEN IT SLIGHTLY.
  5. REMOVE BALL VALVE HANDLE AFTER SYSTEM BALANCED AND TURN OVER TO OWNER WITH BALANCING INSTRUCTIONS.

CUSTOMER: **AEC SERVICES INC**

SITE ADDRESS: **3009 GULF TO BAY BLVD**

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DEAN S. KENYON, P.E. A PROFESSIONAL ENGINEER. THE SIGNATURE AND SEAL ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

DEAN S. KENYON, P.E.  
FL. Lic. No. 44012 Exp 2-28-2019

ENGINEER OF RECORD: **AEC Services, Inc.**

RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 884-1234  
(813) 884-2660 (f)  
www.aecservicesinc.com

JOB NO.	181116	DWG Name	PLUMBING	XREF Name	AS NOTED	DATE	10-18-18	DRAWN BY	R.R.	CHECKED	S.W.	APPROVAL	-
6													
5													
4													
3													
2													
1													
NO													

PLUMBING DETAILS

P-5



## POWER LEGEND

	HOMERUN TO PANEL INDICATED (CONCEALED). MINIMUM 3/4" C. UNLESS OTHERWISE NOTED PROVIDE #12 CONDUCTORS AS REQUIRED BY NUMBER OF CIRCUITS SHOWN. INCLUDE #12 GROUND AND #12 NEUTRAL CONDUCTORS. FOR HOMERUNS EXCEEDING 100' IN LENGTH PROVIDE #10 CONDUCTORS IN LIEU OF #12 AS INDICATED ABOVE. THERE SHALL BE A MAXIMUM OF 3 BRANCH CIRCUITS PER HOMERUN (AS INDICATED ON PLANS). TEXT SHOWN BY HOMERUN INDICATES PANELBOARD DESIGNATION AND CIRCUIT NUMBER(S).
	CONDUIT CONCEALED IN WALL OR ABOVE CEILING SPACE. UNLESS OTHERWISE NOTED PROVIDE #12 CONDUCTORS AS REQUIRED BY NUMBER OF CIRCUITS SHOWN. INCLUDE #12 GROUND AND #12 NEUTRAL. MINIMUM 1/2" C.
	UNDERGROUND CONDUIT OR BELOW SLAB. UNLESS OTHERWISE NOTED PROVIDE #12 CONDUCTORS AS REQUIRED BY NUMBER OF CIRCUITS SHOWN. INCLUDE #12 GROUND AND #12 NEUTRAL. MINIMUM 3/4" C.
	EXISTING CONDUIT. AS INDICATED.
	UNDERGROUND POWER DUCT BANK. AS INDICATED.
	UNDERGROUND COMMUNICATIONS DUCT BANK. AS INDICATED.
	OVERHEAD LINE. AS INDICATED.
	MANHOLE. SEE SPECIFICATIONS.
	HAND HOLE. SEE SPECIFICATIONS.
	CEILING OR WALL MOUNTED JUNCTION BOX. UON SIZE AS REQUIRED BY NEC.
	FLOOR MOUNTED JUNCTION BOX. UON SIZE AS REQUIRED BY NEC.
	MOTOR. AS INDICATED.
	TRANSIENT VOLTAGE SURGE SUPPRESSION AS INDICATED
	SINGLE PUSHBUTTON. UON CENTERLINE MOUNTED 48" AFF
	PUSH PLATE. UON CENTERLINE MOUNTED 48" AFF
	480/277V, PANELBOARD.
	208/120V, PANELBOARD.
	208/120V, DISTRIBUTION PANELBOARD.
	480/277V, DISTRIBUTION PANELBOARD.
	MISCELLANEOUS PANELBOARD. AS INDICATED.
	DRY TYPE TRANSFORMER. AS INDICATED.
	HEAVY DUTY DISCONNECT SWITCH, NON FUSIBLE. SEE SPECIFICATIONS. UON MOUNT TOP OF ENCLOSURE 66" AFF
	HEAVY DUTY FUSIBLE DISCONNECT SWITCH. FUSED AS INDICATED ON PLANS. SEE SPECIFICATIONS. UON MOUNT TOP OF ENCLOSURE 66" AFF.
	HEAVY DUTY FUSIBLE COMBINATION STARTER/DISCONNECT SWITCH. SEE SPECIFICATIONS. UON MOUNT TOP OF ENCLOSURE 66" AFF. SEE SPECIFICATIONS.
	MAGNETIC MOTOR STARTER. UON MOUNT TOP OF ENCLOSURE 66" AFF. SEE SPECIFICATIONS.
	VARIABLE FREQUENCY DRIVE AS INDICATED. UON MOUNT TOP OF ENCLOSURE 72" AFF
	ENCLOSED CIRCUIT BREAKER. AS INDICATED.
	SINGLE RECEPTACLE. 20A 120V UON CENTERLINE MOUNTED 18" AFF
	DUPLEX RECEPTACLE. 20A 120V UON CENTERLINE MOUNTED 18" AFF
	DUPLEX RECEPTACLE. 20A 120V UON CENTERLINE MOUNTED 42" AFF
	50A 1P 240V RECEPTACLE. UON CENTERLINE MOUNTED 18" AFF
	DOUBLE DUPLEX RECEPTACLE OUTLET. 20A 120V UON CENTERLINE MOUNTED 18" AFF.
	DOUBLE DUPLEX RECEPTACLE OUTLET. 20A 120V UON CENTERLINE MOUNTED 42" AFF.
	SPLIT RECEPTACLE. 20A 120V UON CENTERLINE MOUNTED 18" AFF
	CONTROLLED DUPLEX RECEPTACLE. 20A 120V UON CENTERLINE MOUNTED 18" AFF.
	CONTROLLED DUPLEX RECEPTACLE OUTLET. 20A 120V UON CENTERLINE MOUNTED 42" AFF
	CONTROLLED QUAD RECEPTACLE OUTLET. 20A 120V UON CENTERLINE MOUNTED 42" AFF.
	CEILING MOUNTED POWER PACK FOR RECEPTACLES. SEE SPECIFICATIONS
	CEILING MOUNTED LOW VOLTAGE OCCUPANCY SENSOR. SEE SPECIFICATIONS
	SPECIAL RECEPTACLE, AS INDICATED. UON CENTERLINE MOUNTED 18" AFF.
	FLOOR MOUNTED DUPLEX RECEPTACLE.
	FLOOR MOUNTED DOUBLE DUPLEX RECEPTACLE.
	FLOOR MOUNTED COMBINATION (20A 120V) DUPLEX RECEPTACLE/DATA COMMUNICATION OUTLET.
	FLOOR MOUNTED COMBINATION (20A 120V) DOUBLE DUPLEX RECEPTACLE/DATA COMMUNICATION OUTLET.
	MULTI OUTLET STRIP OR POWER/DATA COMMUNICATION RACEWAY AS INDICATED.
	BUSWAY. SEE SPECIFICATIONS.
	DUCT HEATER. (FURNISHED UNDER DIV. 15). (WIRED UNDER DIVISION 16).
	MOTOR STARTING SWITCH - UON CENTERLINE MOUNTED 48" AFF

## LIGHTING LEGEND

	CEILING MTD. 2'x4' LIGHT FIXTURE (SEE SCHEDULE)
	CEILING MOUNTED 2'x2' LIGHT FIXTURE (SEE SCHEDULE)
	CEILING MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	WALL MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	CEILING MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	WALL MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	CEILING MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	WALL MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	FLUORESCENT STRIP (SEE SCHEDULE)
	POLE MOUNTED LUMINAIRE (SEE SCHEDULE)
	2 HEAD POLE MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	3 HEAD POLE MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	4 HEAD POLE MOUNTED LIGHT FIXTURE (SEE SCHEDULE)
	EXIT SIGN. SINGLE OR DOUBLE FACE (SEE SCHEDULE)
	EMERGENCY LIGHTING FIXTURE WITH BATTERY BACK-UP (SEE SCHEDULE)
	TRACK LIGHT. NUMBER OF HEADS AS SHOWN (SEE SCHEDULE).

## LIGHTING CONTROLS

	SINGLE POLE SWITCH 20A 120/277V UON CENTERLINE MOUNTED 48" AFF
	K: KEY TYPE M: MOTOR RATED
	THREE WAY 20A 120/277V SWITCH - UON CENTERLINE MOUNTED 48" AFF
	FOUR WAY WALL MOUNTED SWITCH - UON CENTERLINE MOUNTED 48" AFF
	DIMMER SWITCH - UON CENTERLINE MOUNTED 48" AFF
	TIME SWITCH AS INDICATED. UON MOUNT TOP OF ENCLOSURE 66" AFF
	CEILING MOUNTED DAYLIGHT DIMMING OCCUPANCY SENSOR. SEE SPECIFICATIONS
	CEILING MOUNTED OCCUPANCY SENSOR. SEE SPECIFICATIONS
	WALL MOUNTED OCCUPANCY SENSOR. UON CENTERLINE MOUNTED 48" AFF SEE SPECIFICATIONS.
	WALL MOUNTED DIMMING OCCUPANCY SENSOR/MANUAL DAYLIGHT DIMMING CONTROL. UON CENTERLINE MOUNTED 48" AFF SEE SPECIFICATIONS.

## GENERAL NOTES

- TEXT SHOWN ON PLANS ADJACENT TO LIGHTING FIXTURES SHALL DENOTE THE FOLLOWING:  
LOWER CASE LETTER (BY FIXTURE OR SWITCH) INDICATES LIGHT SWITCH CONTROL. UPPER CASE LETTER INDICATES FIXTURE TYPE. NUMERAL INDICATES BRANCH CIRCUIT NUMBER.
- SHADED LIGHTING FIXTURE SYMBOLS THAT APPEAR ON PLANS INDICATE EMERGENCY LIGHTING FIXTURES AND SHALL BE INTERPRETED AS FOLLOWS:  

LIFE SAFETY BRANCH CIRCUIT:		
CRITICAL BRANCH CIRCUIT:		
EMERGENCY LIGHT FIXTURE WITH BATTERY BACK UP:		

(THE ABOVE SHALL APPLY TO ALL LIGHTING FIXTURE SYMBOLS SHOWN ON LEGEND).

NUMERALS SHOWN ON PLANS ADJACENT TO WIRING DEVICES INDICATE BRANCH CIRCUIT NUMBER(S).

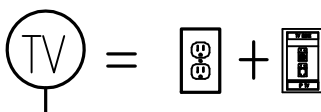
STANDARD SYMBOLS SHOWN ON LEGEND MAY NOT ALL APPEAR ON PLANS. WHERE SYMBOL APPEARS ON PLANS FURNISH AND INSTALL AS SPECIFIED.

ALL STANDARD SYMBOLS ON LEGEND THAT APPEAR ON PLANS WITH HIDDEN LINES SHALL BE EXISTING TO REMAIN (FOR REFERENCE ONLY). EXISTING SYMBOLS (AS DESCRIBED ABOVE) THAT APPEAR ON PLANS WITH AN ADJACENT ABBREVIATION SHALL BE INTERPRETED AS FOLLOWS:  
E = EXISTING TO REMAIN.  
D = EXISTING TO BE REMOVED. CONTRACTOR SHALL REMOVE DEVICE AND/OR EQUIPMENT AND UNLESS OTHERWISE NOTED REMOVE ALL UNUSED CONDUIT AND WIRING.  
RL = EXISTING TO BE RELOCATED (SHOWN AT EXISTING LOCATION ON DEMOLITION PLAN). REFER TO INSTALLATION PLAN FOR NEW LOCATION. CONTRACTOR SHALL EXTEND WIRING TO NEW LOCATION AND RECONNECT.

## ABBREVIATIONS

A	AMPERE
AC	ABOVE COUNTER
AF	AMPERE FRAME
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AIC	AMPERAGE INTERRUPTING CAPACITY
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BOB	BOTTOM OF BOX
C	CONDUIT
CAT	CATEGORY
CB	CIRCUIT BREAKER
CH	CHILLER
CKT	CIRCUIT
CL	CENTER LINE
CLB	CEILING
COB	CENTER OF BOX
CU	COPPER
DEG	DEGREE
DIS	DISCONNECT SWITCH
EQ	EQUIPMENT GROUND BAR
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EMT	EMERGENCY
ENCL	ELECTRICAL METALLIC TUBING
ENCLOSURE	ENCLOSURE
EW	ELECTRIC WATER HEATER
EX	EXISTING
FA	FIRE ALARM
FBO	FURNISHED BY OTHERS
FOP	FIRE ALARM CONTROL PANEL
FCC	FIRE CONTROL CENTER
FATC	FIRE ALARM TERMINAL CABINET
FIBER	FIBER OPTIC
GFIC	GROUND FAULT CIRCUIT INTERRUPTER
GR	GROUND
HQA	HAND-OFF-AUTOMATIC
HACR	HEATING/AIR CONDITIONING RATED
HPF	HIGH POWER FACTOR
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
IS	ISOLATED GROUND
IPTV	INTERNET PROTOCOL TELEVISION
J	JUNCTION BOX
KMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERER
KW	KILOWATT
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MU	M/A & WIT CABINET
MDP	MAIN DISTRIBUTION PANEL
MLO	MAINT LUGS ONLY
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUF. ASSOC.
NG	NON FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NTE	NORMALLY OPEN
NO	NOT TO EXCEED
PS	PUSHBUTTON
PC	PHOTOCELL
P	PHASE
POE	POWER OVER ETHERNET
P&I	PROVIDE AND INSTALL
P&I	PANEL
POTS	PLAIN OLE TELEPHONE SYSTEM
PVC	POLY VINYL CHLORIDE
RGS	RIGID GALVANIZED STEEL
SCA	SHORT CIRCUIT AMPS
SG	SINGLE GANG
SPD	SURGE PROTECTIVE DEVICE
STP	SHIELDED TWISTED PAIR
STR	STRANDED
SW	SWITCH
SWBD	SWITCHBOARD
TC	TIME CLOCK
TOB	TOP OF BOX
TP	TAMPER RESISTANT
TR	TAMPER RESISTANT
TS	TIME SWITCH
TYP	TYPICAL
UC	UNDER COUNTER
UC	UNDERGROUND
UH	UNIT HEATER
UPS	UNINTERRUPTIBLE POWER SUPPLY
UON	UNLESS OTHERWISE NOTED
VAV	VARIABLE AIR VOLUME
V	VOLT
WP	WEATHERPROOF
WR	WEATHER RESISTANT
XTMR	TRANSFORMER
2G	TWO GANG

## TV CONNECTION



EACH TV SYMBOL REPRESENTS PROVIDING AND INSTALLING A TERMINATED DATA/COAXIAL AND POWER CONNECTION.

THE DEVICES SHALL BE INSTALLED AT THE HEIGHT PER ARCHITECTURAL.

CONTRACTOR SHALL PROVIDE THE APPROPRIATE BOX AND/OR FIREPROOFING TO MAINTAIN FIRE RATING OF WALL IF APPLICABLE.

## DEVICES

- ALL DEVICES ARE WHITE W/PLASTIC COVERS UON.
- ALL SWITCHES & ABOVE COUNTER DEVICES ARE 48" TOB
- ALL RECEPTACLES & DATA OUTLETS ARE 20" TOB
- A DIFFERENT MOUNTING HEIGHT IS TOB
- EXTERIOR RECEPTACLES ARE GFIC AND WEATHER RESISTANT.
- ALL RECEPTACLES SERVICING LOCATIONS ACCESSIBLE TO CHILDREN SHALL BE TAMPER RESISTANT.

## ELECTRIC NOTES

- CONTRACTOR SHALL BE QUALIFIED TO PERFORM THE WORK SPECIFIED HEREIN AND SHALL BE REGISTERED OR LICENSED IN ACCORDANCE WITH THE LOCAL JURISDICTION REQUIREMENTS.
- CONTRACTOR SHALL PROVIDE FOR AND ACQUIRE ALL NECESSARY PERMIT(S) AND INSPECTIONS AS MAY BE REQUIRED BY THE AUTHORITY(ES) HAVING JURISDICTION.
- INSTALLATION SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS OF THE APPLICABLE CODES IN FORCE OR ADOPTED BY THE AUTHORITIES HAVING JURISDICTION.
- NO CHANGE ORDERS - THE CONTRACTOR SHALL FURNISH ALL MATERIALS AND LABOR NECESSARY FOR THE INSTALLATION OF A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM MEETING THE INTENDED PURPOSE OF THE PROJECT.
- THE CONTRACTOR SHALL MAKE A THOROUGH EXAMINATION OF THE SITE CONDITIONS AND CONTRACT DOCUMENTS.
- PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITIES FOR METERING, TRANSFORMER AND SERVICE CONNECTION REQUIREMENTS.
- CONDUIT SHALL BE INSTALLED CONCEALED OR RECESSED IN A NEAT AND WORKMANLIKE MANNER. ALL CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BUILDING LINES UNLESS OTHERWISE APPROVED BY OWNER. EXPOSED CONDUIT ON EXTERIOR WALLS OF FINISHED WALLS IS PROHIBITED UNLESS OTHERWISE REVIEWED AND APPROVED BY OWNER.
- CONDUIT SHALL BE EMT AND FITTINGS SHALL BE STEEL. FOR UNDERGROUND AND UNDER SLAB INSTALLATIONS, CONDUIT SHALL BE PVC OR IMC W/AN ASPHALTIC OR OTHER APPROVED CORROSION INHIBITING COATING.
- TO LIMIT WATER INTRUSION, SEAL ALL CONDUITS WHERE THE CONDUIT CONNECTS AN INTERIOR CONDUIT BODY TO AN EXTERIOR CONDUIT BODY OR LUMINAIRE.
- PROVIDE AN INDEPENDENT MEANS OF SUPPORT FOR CONDUIT INSTALLED ABOVE A CEILING WHERE THEY ARE DISTINGUISHABLE BY COLOR, TAGGING OR OTHER EFFECTIVE MEANS. THE CEILING SUPPORT SYSTEM SHALL BE PERMITTED TO SUPPORT BRANCH CIRCUIT WIRING WHERE INSTALLED IN ACCORDANCE WITH THE CEILING MANUFACTURER'S INSTRUCTIONS.
- PROVIDE AN INSULATED THROAT FITTING OR PLASTIC BUSHING FOR ALL 1" AND LARGER CONDUIT TERMINATIONS IN PANEL BOARDS, LOAD CENTERS, WIREWAYS AND DISCONNECT SWITCHES.
- PROVIDE GROUNDING BUSHINGS FOR ANY CONDUIT TERMINATIONS AT ECCENTRIC AND CONCENTRIC KNOCKOUTS IN DISCONNECTS, PANELBOARDS AND LOAD CENTERS OR WHEN REDUCING WASHERS ARE USED. BOND ALL JUNCTION AND PULL BOXES TO GROUND.
- WIRE/CABLES SHALL BE COPPER OR ALUMINUM AS ALLOWED BY CODE AND LISTED FRO THE INTENDED USE AND ENVIRONMENT. AMPACITIES ARE CALCULATED USING THE 75°C COLUMN.
- REFER TO BRANCH CIRCUIT SCHEDULE FOR MAXIMUM LENGTHS OF CONDUCTOR SIZE FOR HOMERUNS.
- ALL WIRING DEVICES SHALL BE TERMINATED AT THE SCREW IN A CLOCKWISE DIRECTION. THE PUSH-IN TERMINATIONS SHALL NOT BE USED.
- VERIFY DOOR SWINGS AND BACKSLASH HEIGHTS AT ROUGH IN.
- STAGGER WALL BOXES IN ALL WALLS BY AT LEAST ONE STUD FOR SOUND ATTENUATION. APPLY NECESSARY FIRE PROOFING OR SOUND INSULATION AS REQUIRED OR AS LISTED ON ARCHITECTURAL PLANS.
- PROVIDE A TYPED PANEL SCHEDULE REFLECTING INSTALLED CONDITIONS FOR ALL PANEL BOARDS WITH "SPACE" OR "SPARE" PERMANENTLY WRITTEN.
- SUPPORT WIRES FOR ELECTRICAL EQUIPMENT SHALL BE FASTENED AT BOTH ENDS SO AS TO BE TAUT. INSTALLATION OF ELECTRICAL CABLES AND CONDUIT SHALL BE SUCH THAT UNDULATIONS ARE KEPT TO A MINIMUM.
- "TYPICAL" NOTES APPLY TO ALL SIMILAR SITUATIONS.
- PERMANENTLY LABEL ALL JUNCTION BOX COVERS WITH CIRCUITS DESIGNATION (SOURCE, PHASE, ETC.) CONTAINED WITHIN.
- AT CONCLUSION OF PROJECT, PROVIDE OPERATING, INSTALLATION INSTRUCTIONS, AND WARRANTY DOCUMENTS TO THE OWNER FOR ALL INSTALLED EQUIPMENT. OPERATING, INSTALLATION, AND WARRANTY DOCUMENTS SHALL BE BOUND TOGETHER WITH INDEX INDICATING WHERE TO FIND INFORMATION ON THE VARIOUS EQUIPMENT.
- PROVIDE THE APPROPRIATE FIRE STOP SYSTEM AND/OR FIRE CAULK AT ANY PENETRATION BETWEEN RATED ASSEMBLIES.
- CONDUIT TERMINATION AT NEMA3R ENCLOSURES SHALL BE WITH MYERS HUBS FOR TOP PENETRATIONS AND LIQUID TIGHT SEALING RINGS OR SEALING LOCKNUTS FOR SIDE PENETRATIONS.
- FOR ALL LED LUMINAIRES, PERMANENTLY MARK EACH FIXTURE WITH TAG #, MANUFACTURER, MODEL NUMBER, INSTALLATION DATE, INSTALLING CONTRACTOR AND LENGTH OF MANUFACTURER'S WARRANTY.
- COORDINATE INSTALLATION OF RECEPTABLES SHOWN ADJACENT TO MILLWORK WITH ARCHITECTURAL ELEVATIONS SO THEY ARE ACCESSIBLE. LOCATIONS SHOWN ON PLAN ARE DIAGRAMMATIC.
- INSTALL ELECTRICAL HARDWARE SUPPORTING ELECTRICAL FED AND OTHER EQUIPMENT IN ACCORDANCE WITH THE WEIGHT REQUIREMENTS OF THE EQUIPMENT, FIXTURE, APPLIANCE, ETC.
- ALL CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS.
- ALL EXHAUST FANS SHALL BE POWERED FROM NEAREST LIGHTING CIRCUIT UON, AND SHALL HAVE A 20A RATED TOGGLE DISCONNECT SWITCH IN A NEMA 1 RATED ENCLOSURE.

	120/208V	277/480V
PHASE A	BLACK	BROWN
PHASE B	RED	ORANGE
PHASE C	BLUE	YELLOW

THESE ARE STANDARD SYMBOLS AND GENERAL NOTES AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

## DRAWING INDEX

E-0 LEGEND, ABBREVIATIONS AND GENERAL NOTES  
E-1 ELECTRICAL SITE PLAN  
E-2 LIGHTING FLOOR PLAN  
E-3 POWER FLOOR PLAN  
E-4 POWER ROOF PLAN  
E-5 ELECTRICAL RISER DIAGRAM AND SCHEDULES  
E-6 ELECTRICAL PANEL SCHEDULES

## APPLICABLE CODES

NFPA 1, UNIFORM FIRE CODE, FL EDITION  
NFPA 70, 2014 NATIONAL ELECTRICAL CODE  
NFPA 72, 2013 FIRE ALARM & SIGNALING  
NFPA 101, 2015 LIFE SAFETY CODE, FL EDITION  
NFPA 110, 2013 EMERGENCY & STANDBY SYSTEMS  
NFPA 720, 2015 CARBON MONOXIDE DETECTION  
2017 6TH EDITION FLORIDA BUILDING CODE

## COMMUNICATIONS LEGEND

	WALL MOUNTED TELEPHONE OUTLET. UON CENTERLINE MOUNTED 18" AFF
	WALL MOUNTED DATA COMMUNICATION OUTLET. UON CENTERLINE MOUNTED 18" AFF
	FLOOR MOUNTED COMMUNICATION OUTLET
	POWER/DATA COMMUNICATION POLE AS INDICATED. WITH (2) 20A 120V DUPLEX RECEPTABLES.
	COMMUNICATION EQUIPMENT RACK, SEE SPECIFICATIONS.

## FIRE ALARM LEGEND

	PULL STATION. UON CENTERLINE MOUNTED 48" AFF.
	HORN CENTERLINE MOUNTED 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.
	STROBE. MOUNTED 80" AFF OR 6" BELOW CEILING WHICHEVER IS LOWER
	HORN/STROBE. MOUNTED 80" AFF OR 6" BELOW CEILING WHICHEVER IS LOWER
	CHIME/STROBE. MOUNTED 80" AFF OR 6" BELOW CEILING WHICHEVER IS LOWER
	HEAT DETECTOR CEILING MOUNTED
	SMOKE DETECTOR CEILING MOUNTED
	DUCT MOUNTED SMOKE DETECTOR
	FIRE ALARM CONTROL PANEL. UON MOUNT TOP OF ENCLOSURE 72" AFF.
	FIRE ALARM POWER SUPPLY. UON MOUNT TOP OF ENCLOSURE 72" AFF.
	FIRE ALARM SYSTEM REMOTE ANNUNCIATOR. UON MOUNT TOP OF ENCLOSURE 66" AFF.
	FLOW SWITCH
	TAMPER SWITCH
	SHUT-DOWN RELAY
	MAGNETIC DOOR HOLDER
	REMOTE ALARM INDICATOR WITH TEST SWITCH. FLUSH CEILING MOUNTED. (WALL MOUNTED, CENTER LINE 48" AFF IN MECHANICAL ROOMS).
	HALON CONTROL PANEL. UON MOUNT TOP OF ENCLOSURE 66" AFF
	FIRE ALARM TRANSPONDER. UON MOUNT TOP OF ENCLOSURE 66" AFF
	FIRE SERVICE JACK. UON CENTERLINE MOUNTED 48" AFF
	FIRE SERVICE HANDSET. UON CENTERLINE MOUNTED 48" AFF
	FIRE DAMPER (FURNISHED UNDER DIV. 15.)
	SMOKE DAMPER (FURNISHED UNDER DIV. 15)
	FIRE SMOKE DAMPER. (FURNISHED UNDER DIV. 15.)

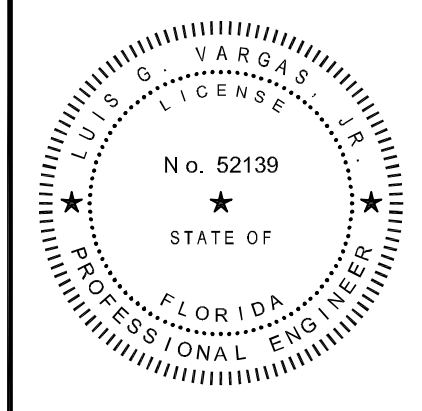
AEC SERVICES INC

3009 GULF TO BAY BLVD

CUSTOMER:

SITE ADDRESS:

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY LUIS G. VARGAS USING A DIGITAL SIGNATURE AND THE FOLLOWING CODES TO THE PROJECT. THIS DOCUMENT NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.



LUIS G. VARGAS JR, P.E.  
FL Lic. No. 52139 Exp 2-28-2019

ENGINEER OF RECORD:

**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 CB #0011445  
FL # 50738 License No. 9277 CB #0011445

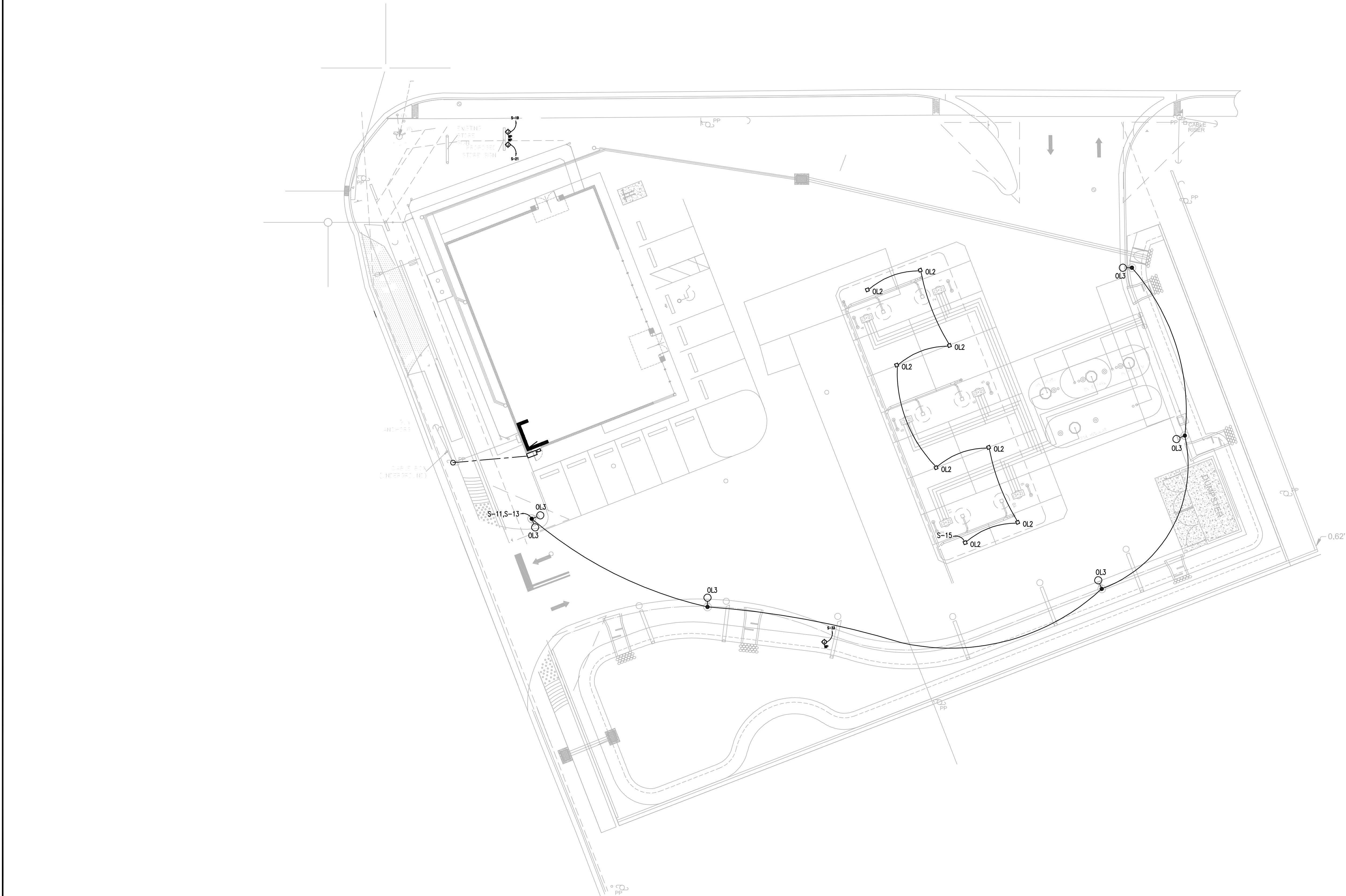
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 884-1234  
(813) 884-2660 (f)  
www.aecservicesinc.com

JOB NO.	181116	DWG Name	ELEC	XREF Name	AS NOTED	DATE	10-18-18	DRAWN BY	J.O.	CHECKED	L.V.	APPROVAL	-
6													
5													
4													
3													
2													
1													
NO													

ELECTRICAL  
COVER  
PAGE

E-0

KPI  
ENGINEERING, INC.  
PROFESSIONAL ENGINEERS  
3003 OLIVER PALM DRIVE  
TAMPA, FLORIDA 33619  
PHONE: (813) 241-6468  
FAX: (813) 241-6468  
Board of Professional Engineers - License # 27358



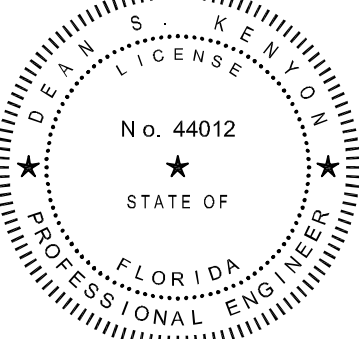
REVISIONS		NO	DESCRIPTION	DATE	CHECKED	S.W.	APPROVAL
6	JOB NO:	181116	DWG Name:	PLUMBING			
5	XREF Name:	-	SCALE:	AS NOTED			
4	DATE:	10-19-18	DRAWN BY:	R.R.			
3	BLDG DEPT COMMENTS	2-4-19					
2							
1							
NO							

ENGINEER OF RECORD:

**AEC Services, Inc.**

RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738  
1816 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 684-1234  
(813) 684-2660 (f)  
www.aecservicesinc.com

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND  
SEALED BY DEAN S. KENYON USING A DIGITAL  
SIGNATURE AND KEY. ANY COPIES OF THIS  
DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED  
UNLESS THE SIGNATURE MUST BE VERIFIED ON ANY  
ELECTRONIC COPIES.



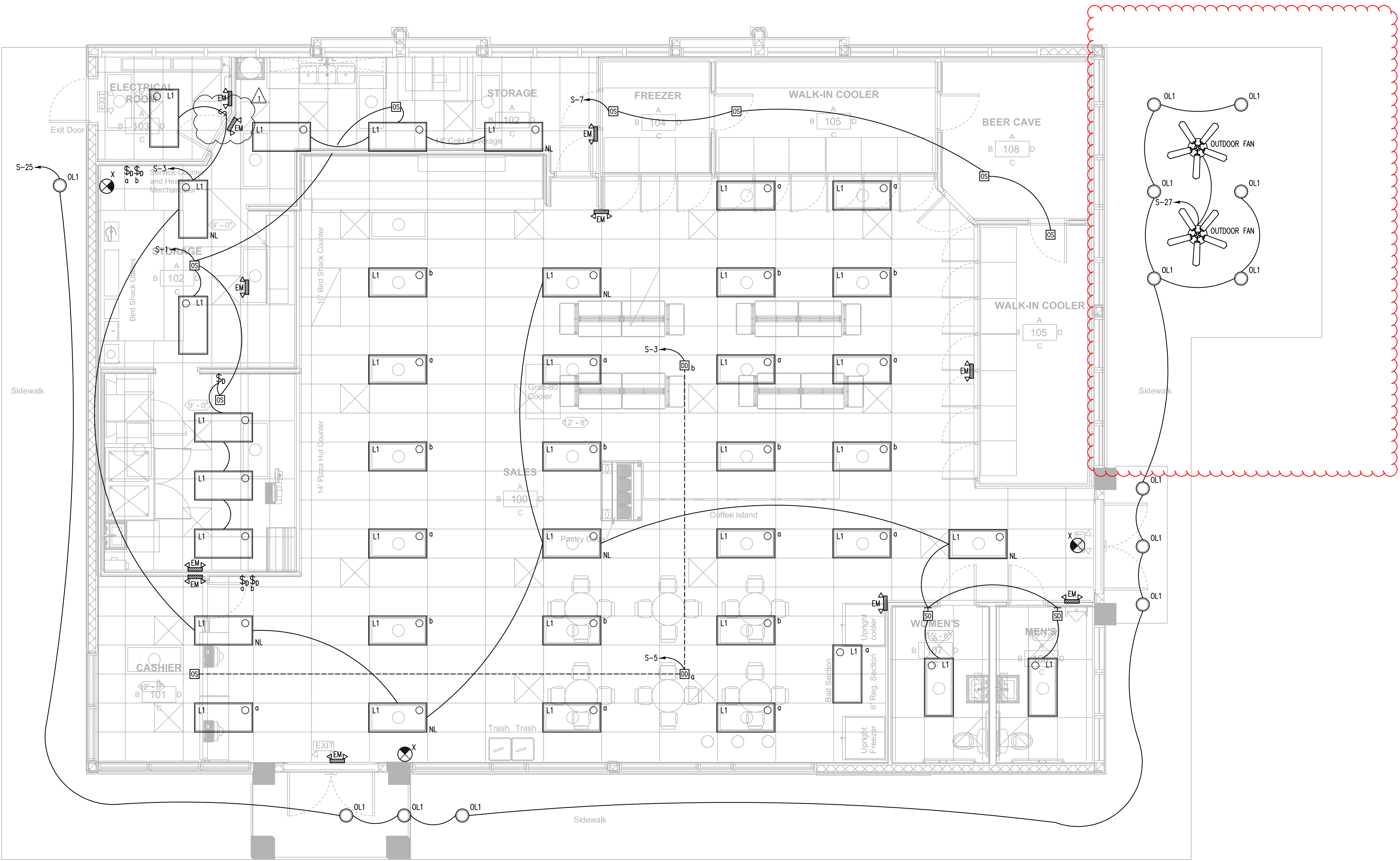
DEAN S. KENYON, P.E.  
FL Lic. No. 44012 Exp 2-28-2019

CUSTOMER:

AEC SERVICES INC

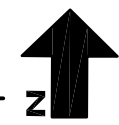
SITE ADDRESS:

3009 GULF TO BAY BLVD

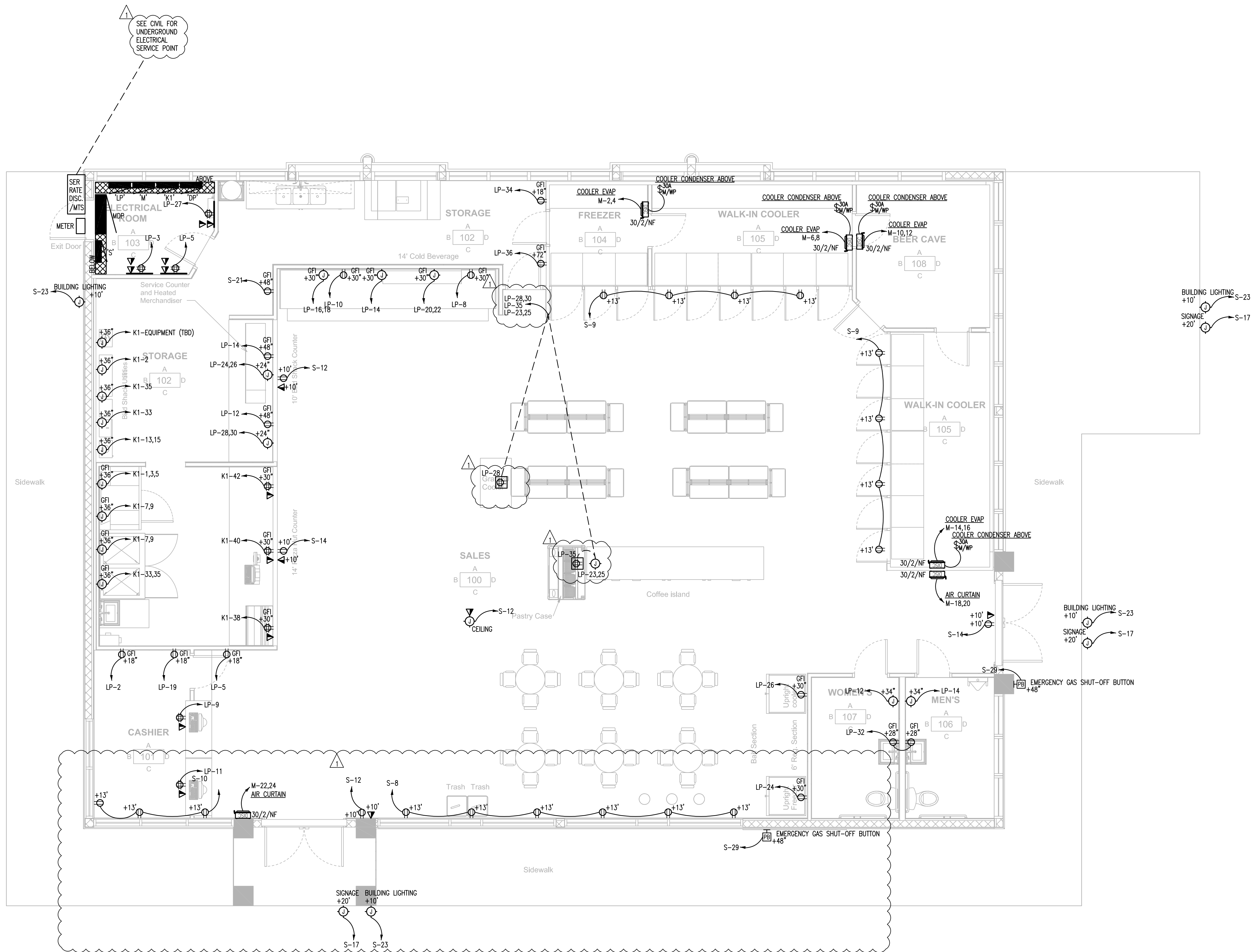


ELECTRICAL CEILING PLAN

SCALE: 1/4"=1'-0"



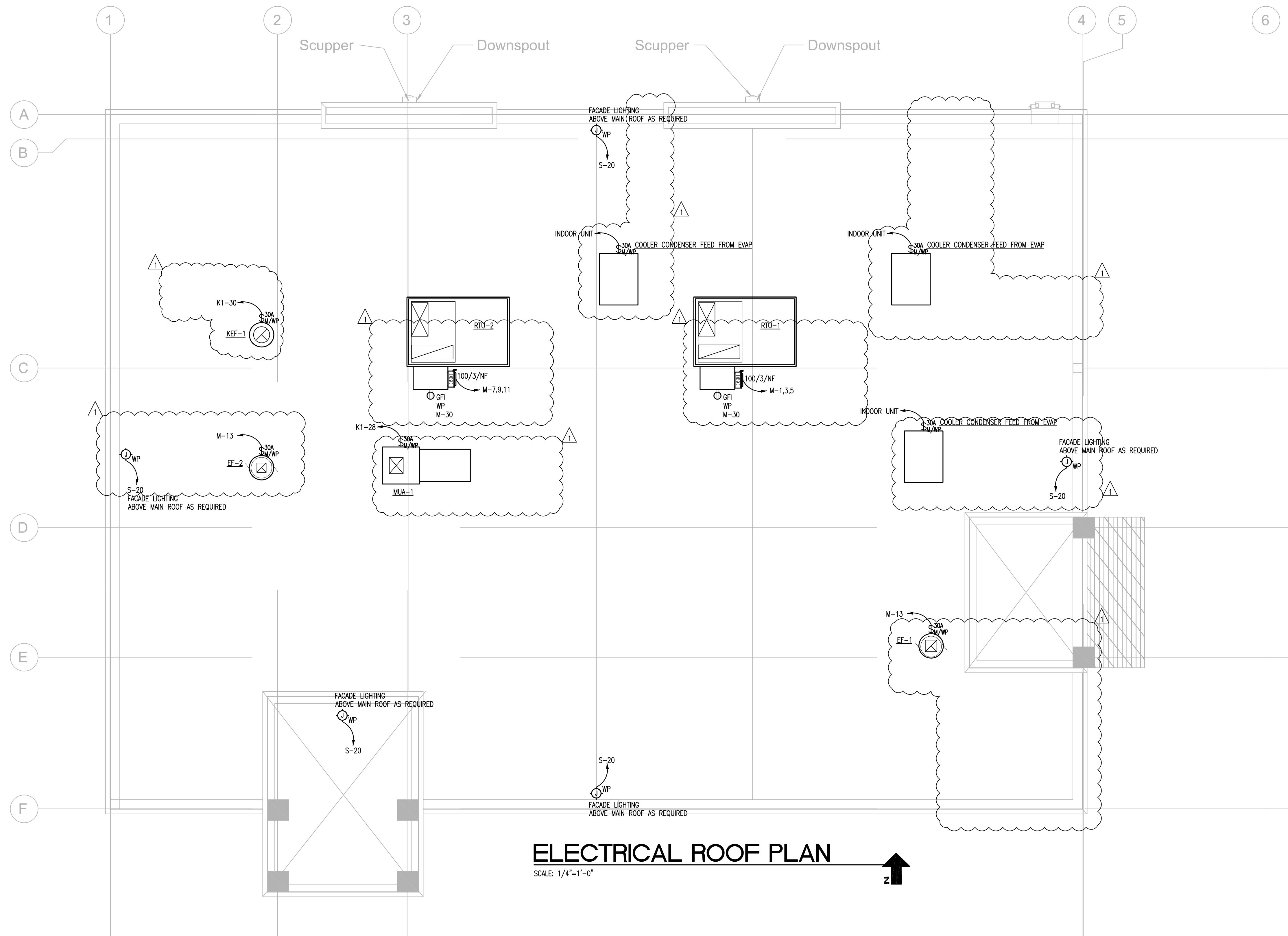
JOB NO.	181116
DWG Name	ELEC
XREF Name	AS NOTED
DATE	10-19-18
PERMIT COMMENTS	2/4/19
DRAWN BY	J.O.
CHECKED	L.V.
APPROVAL	-



# ELECTRICAL FLOOR PLAN

SCALE: 1/4"=1'-0"

JOB NO.	181116
DWG Name	ELEC
XREF Name	-
SCALE	AS NOTED
DATE	10-19-18
PERMIT COMMENTS	2/4/19
DESCRIPTION	DATE
REVISIONS	CHECKED: L.V.
APPROVAL	-



**ELECTRICAL ROOF PLAN**

SCALE: 1/4"=1'-0"



CUSTOMER: **AEC SERVICES INC**

SITE ADDRESS: **3009 GULF TO BAY BLVD**

THIS DRAWING HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY LUIS G. VARGAS JR., P.E. USING A DIGITAL SIGNATURE. ANY REVISIONS TO THIS DRAWING MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

LUIS G. VARGAS JR., P.E.  
FL. Lic. No. 52139 Exp. 2-28-2019

ENGINEER OF RECORD: **AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 QB #0011445

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 864-1234  
(813) 864-2660 (f)  
www.aecservicesinc.com

6	JOB NO:	181116
5	DWG Name:	ELEC
4	XREF Name:	-
3	SCALE:	AS NOTED
2	DATE:	10-19-18
1	PERMIT COMMENTS	DRAWN BY: J.O.
NO	DESCRIPTION	CHECKED: L.V.
REVISIONS		
APPROVAL		

**ELECTRICAL ROOF PLAN**

**E-4**

EXTERIOR LUMINAIRE SCHEDULE

TAG	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	VOLTS	LAMP TYPE	FIXTURE VA	LUMENS	MOUNT	LOCATION	NOTES	TOTAL VA	TAG
OL1	13	EXTERIOR DECORATIVE	ASL	CPO-20W-4000K-D13H5-DV-FINISH	120-277	LED	20	2200	SURFACE	ENTRANCE CANOP	2	260	OL1
OL2	8	CANOPY LIGHTING	GE	ECRA-0-C5-F-5-50-1-B-WHT	120-277	LED	110	13550	SURFACE	SPENSER CANOP	2	880	OL2
OL3	6	20' POLE LIGHTING	GE	ERS2-0-G3-D1-1-50-xxxx	120-277	LED	257	18800	SURFACE	SPENSER CANOP	1	1542	OL3

GENERAL NOTES  
1. VERIFY WIND LOAD RATING AND PROVIDE FLORIDA REGISTERED PROFESSIONAL ENGINEER LOAD CALCULATIONS AND POLE BASE DETAILS AS REQUIRED.  
2. COORDINATE MOUNTING WITH ARCHITECTURAL DETAILS.

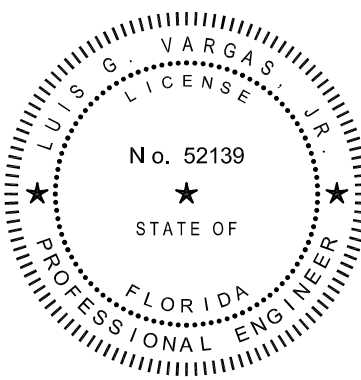
INTERIOR LUMINAIRE SCHEDULE

TAG	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	VOLTS	LAMP TYPE	FIXTURE VA	LUMENS	MOUNT	LOCATION	NOTES	TOTAL VA	TAG
L1	39	2x4 EDGE-LIT LIGHT PANEL	LSI	SFP24-LED-50-UE-DIM-35-U	120-277	LED	50	5000	SURFACE	INTERIOR		1950	L1
X	3	LIT EXIT SIGN	ASTRALITE	TP-U2-R-W-EM	120-277	LED	3	240	SURFACE	EGRESS		9	X
EM	11	EGRESS LIGHTING	ASTRALITE	EU-4-LED	120-277	LED	2	80	SURFACE	EGRESS LIGHTING		22	EM

GENERAL NOTES  
"P" SUFFIX ON A FIXTURE TAG REQUIRES A PLASTER FLANGE  
"S" SUFFIX ON A FIXTURE TAG REQUIRES A SURFACE MOUNT KIT  
"E" SUFFIX ON A FIXTURE TAG REQUIRES AN EMERGENCY BATTERY  
QTY SHOWN IN SCHEDULE IS FOR ENERGY CALCULATIONS ONLY

LIGHTING POWER DENSITY			
BUILDING		BUDGET	ACTUAL
TYPE	FT²	W/FT²	
OFFICE	3298	1.26	0.60

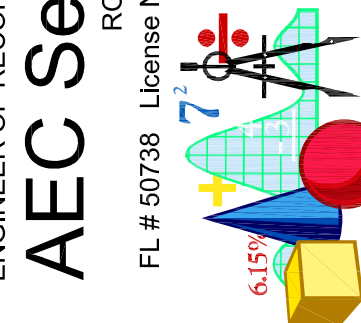
THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY LUIS G. VARGAS USING A DIGITAL SIGNATURE AND HAS BEEN VERIFIED BY THE FLORIDA BOARD OF PROFESSIONAL ENGINEERS. COPIES OF THE ORIGINAL SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.



LUIS G. VARGAS JR, P.E.  
FL Lic. No. 52139 Exp 2-28-2019

ENGINEER OF RECORD:  
AEC Services, Inc.

RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)864-1234  
(813)864-2660 (f)  
www.aecservicesinc.com



JOB NO:	181116
DWG Name:	ELEC
XREF Name:	-
SCALE:	AS NOTED
DATE:	10-18-18
DRAWN BY:	J.O.
PERMIT COMMENTS	2/4/19
DESCRIPTION	DATE
NO	CHECKED: L.V.
REVISIONS	
NO	DESCRIPTION

ELECTRICAL  
PANELS AND  
RISER PAGE

E-5

KPI ENGINEERING, INC.  
PROFESSIONAL ENGINEERS  
3025 QUEEN PALM DRIVE  
TAMPA, FLORIDA 33619  
PHONE: (813) 241-6468  
FAX: (813) 241-6468  
Board of Professional Engineers - License # 27358

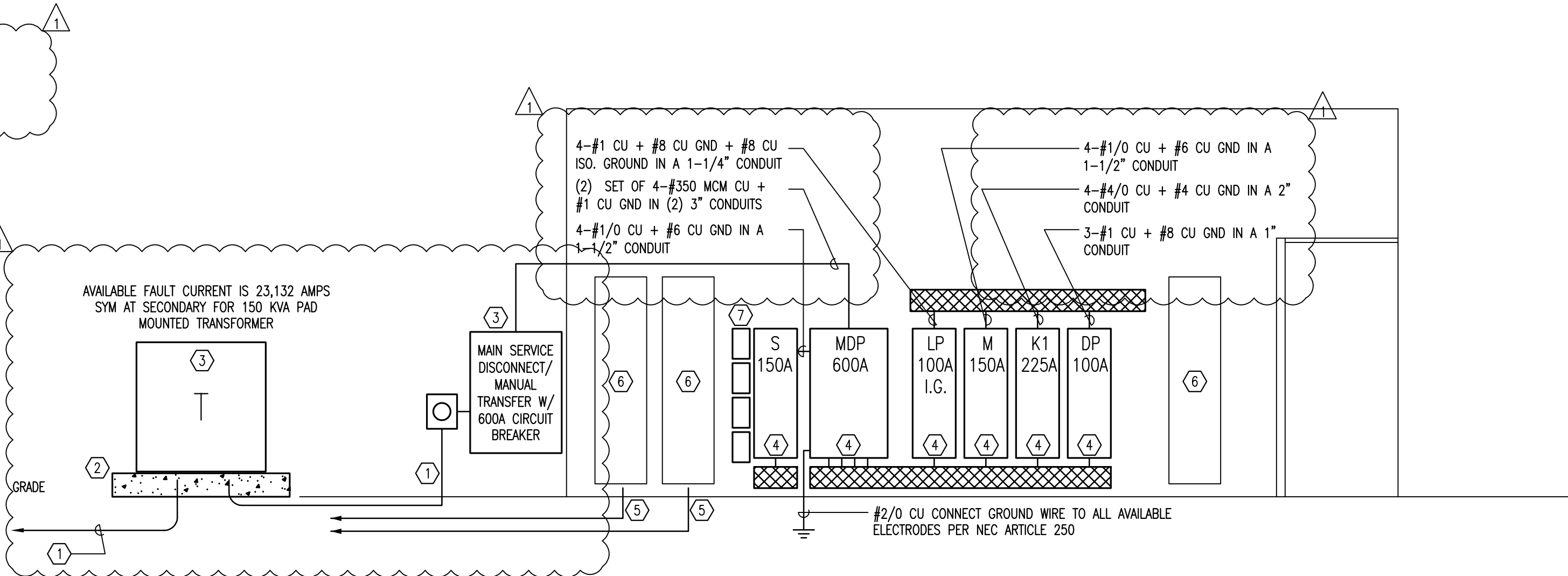
KEY NOTES

- UTILITY PRIMARY CONDUCTORS AS REQUIRED BY DUKE UTILITY. SECONDARY INCOMING SERVICE CONDUCTORS SHALL BE (2) SET OF 4-#350 MCM CU IN (2) 4" CONDUITS. COORDINATE ALL REQUIREMENTS WITH UTILITY STANDARDS PRIOR TO ANY WORK.
- CUSTOMER INSTALLED METER. COORDINATE ALL REQUIREMENTS WITH UTILITY STANDARDS.
- SERVICE RATED MAIN SERVICE DISCONNECT SWITCH AND MANUAL TRANSFER SWITCH. VERIFY UTILITY APPROVAL PRIOR TO ASSEMBLY. PROVIDE MDS - ESL TRANSFER SWITCH - SSD6-600C-600C-208-311-C OR EQUAL.
- PANELBOARD, REFER TO SCHEDULE FOR ADDITIONAL INFORMATION.
- (2) 4" INCOMING UNDERGROUND COMMUNICATIONS SERVICE WIRING BY UTILITY COMPANY.
- MAIN DEMARK FRAMEWORK, PROVIDE 2'x8'x3/4" PLYWOOD BACKBOARD.
- INTERIOR BUILDING LIGHTING CONTROL BY MEANS OF OCCUPANCY/VACANCY SENSORS WHERE REQUIRED, EXTERIOR LIGHTING CONTROL BY MEANS OF 24/7 ASTRONOMICAL SPOT TIME CLOCK WITH PHOTOCELL OVERRIDE. PROVIDE LIGHTING CONTACTORS AS SHOWN. COORDINATE TIME AND DURATION OF LIGHTING OPERATION WITH OWNER. SUGGESTED OPERATION BELOW:  
LC#1 = EXTERIOR SECURITY LIGHTING, DUSK TIL DAWN 100%  
LC#2 = EXTERIOR SECURITY LIGHTING, DUSK TIL DAWN 100%  
LC#3 = BUILDING FACADE, DUSK TIL BUILDING CLOSE TO PUBLIC 100%  
LC#4 = BUILDING FACADE, DUSK TIL BUILDING CLOSE TO PUBLIC 100%

NOTE: PROVIDE EXPLOSION PROOF SEALING COMPOUND AND DAMMING FIBER IN ACCORDANCE WITH ARTICLE 501, CLASS 1 DIVISION 2 OF THE LATEST NATIONAL ELECTRICAL CODE TYPICAL FOR ALL UNDERGROUND CONDUIT STUB-UPS INTO EQUIPMENT

SEAL OFF DETAIL

SCALE: NTS



ELECTRICAL RISER DIAGRAM

SCALE: NTS

GENERAL NOTES

- CLEARLY LABEL MAIN ELECTRICAL SERVICE DISCONNECT(S) PER NEC.
- PROVIDE ARC FLASH LABELING AS REQUIRED PER NEC 110.16 AMPACITY OF ALL CONDUCTOR SIZES SHOWN IS BASED ON 75°C RATED TERMINATIONS AND CONDUCTORS WITH 75°C TYPE INSULATION. CONTRACTOR SHALL FIELD VERIFY TERMINATION RATINGS OF ELECTRICAL EQUIPMENT AND ADJUST CONDUCTOR SIZES AS REQUIRED PER NEC 110.14(C).
- ALL NEW OVERCURRENT DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE SERIES RATING TABLE OF IDENTIFIED COMPONENTS.
- ALL PANELS ARE PROVIDED AND INSTALLED BY GC. ALL PANELBOARD FEEDERS TO BE PROVIDED AND INSTALLED BY GC.
- G.C. TO PROVIDE AND INSTALL UTILITY METER AND NEW ELECTRICAL SERVICE ENTRANCE. COORDINATE EXACT REQUIREMENTS WITH POWER UTILITY PRIOR TO COMMENCEMENT OF WORK.
- ELECTRICAL GC TO COORDINATE ALL FUEL REQUIREMENTS WITH FUELING GC. THE ELECTRICAL GC WILL PROVIDE ALL NECESSARY CONDUITS, SEAL-OFFS, TROUGHS AND RACEWAYS FROM THE ELECTRICAL ROOM OR PANEL AREA TO THE EXTERIOR OF THE BUILDING, BUT NOT TO EXCEED 10 FEET FROM THE EXTERIOR BUILDING EDGE. ALL OTHER EQUIPMENT, WIRE, LABOR FOR THE COMPLETION OF THE FUEL SYSTEM TO BE PROVIDED BY THE FUELING GC.
- ALL EQUIPMENT LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED BY GC PER MANUFACTURER RECOMMENDED INSTALLATION AND MATERIALS. COORDINATE ALL LOCATIONS WITH OWNER PROVIDED EQUIPMENT LOCATION PLANS AND SPECIFICATIONS.
- ALL LOW-VOLTAGE WIRING AND TERMINATIONS SHALL BE COORDINATED BY GC PER MANUFACTURER RECOMMENDED INSTALLATION AND MATERIALS. COORDINATE ALL LOCATIONS WITH OWNER PROVIDED EQUIPMENT LOCATION PLANS AND SPECIFICATIONS.

SERVICE: 120/ 208 V, 3 $\Phi$ , 4W

CKT NUM	DESCRIPTION	CODE	BREAKER		CONNECTED LOAD (KVA)							BREAKER		CODE	DESCRIPTION	CKT NUM		
			A	P	A	B	C	A	B	C	A	P						
1	PANEL 'S'	MISC	150	3	10.82					21.69				225	3	MISC	PANEL K1'	2
2	PANEL 'S'	MISC					3.70				23.21					MISC	PANEL K1'	4
5	PANEL 'S'	MISC						10.74					16.72			MISC	PANEL K1'	6
7	PANEL LP'	MISC	100	3	9.24					0.00							SPACE	8
9	PANEL LP'	MISC					7.89				0.00						SPACE	10
11	PANEL LP'	MISC						8.53				0.00					SPACE	12
13	PANEL M'	MISC	150	3	13.32					0.00							SPACE	14
15	PANEL M'	MISC					13.06				0.00						SPACE	16
17	PANEL M'	MISC						13.42				0.00					SPACE	18

		33.4	24.7	32.7	21.7	23.2	16.7
	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)	MIN NEC LOAD (KVA)	MIN NEC LOAD (AMPS)		
LIGHTING (LTG)	0.0	1.25	0.0	0.0		* PER NEC 215.3	
RECEPTACLES (REC)	0.0	*	0.0	0.0		* PER NEC 220.44	
AC (NON COINCID)(A) NC)	0.0	1.0	0.0	0.0		* PER NEC 220.60	
HEAT (NON COINCID)(H) NC)	0.0	1.0	0.0	0.0		* PER NEC 220.60	
HVAC (COINCID)(HVAC C)	0.0	1.0	0.0	0.0			
EQUIPMENT (EQ)	0.0	1.0	0.0	0.0			
MOTORS (MTR)	0.0	1.0	0.0	0.0			
LARGEST MOTOR	0.0	1.25	0.0	0.0		* PER NEC 430.24	
MISCELLANEOUS (MISC)	152.3	1.0	152.3	152.3			
TOTAL	152.3		152.3	152.3		422.8 AMPS	

## SERVICE: 120/ 208 V. 3Φ

CKT NUM	DESCRIPTION	CODE	BREAKER		CONNECTED LOAD (KVA)								BREAKER		CODE	DESCRIPTION	CKT NUM
			A	P	A	B	C	A	B	C	A	P					
1	RTU-1	HNC	80	3	6.53				0.00			30	2	EQ	COOLER EVAP	2	
3	RTU-1	HNC				6.53				0.00				EQ	COOLER EVAP	4	
5	RTU-1	HNC					6.53				0.00	30	2	EQ	COOLER EVAP	6	
7	RTU-2	HNC	80	3	6.53				0.00					EQ	COOLER EVAP	8	
9	RTU-2	HNC				6.53				0.00		30	2	EQ	COOLER EVAP	10	
11	RM-2	FMC					6.53				0.00			EQ	COOLER EVAP	12	
13	EF-1/EF-2	MTR	20	1	0.28				0.00			30	2	EQ	COOLER EVAP	14	
15	SPACE					0.00				0.00				EQ	COOLER EVAP	16	
17	SPACE						0.00				0.00	30	2	EQ	AIR CURTAIN	18	
19	SPACE				0.00				0.00					EQ	AIR CURTAIN	20	
21	SPACE					0.00				0.00		30	2	EQ	AIR CURTAIN	22	
23	SPACE				0.00		0.00				0.00			EQ	AIR CURTAIN	24	
25	SPACE								0.00					SPACE		26	
27	SPACE				0.00					0.00				SPACE		28	
29	SPACE					0.00					0.36	20	1	REC	RECEPTACLES (ROOF)	30	

	13.3	13.1	13.1	0.0	0.0	0.4
	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)	MIN NEC LOAD (KVA)	MIN NEC LOAD (AMPS)	
LIGHTING (LTG)	0.0	1.25	0.0	0.0		* PER NEC 215.3
RECEPTACLES (REC)	0.4	*	0.4	0.4		* PER NEC 220.44
AC (NON COINC'D)(AC NC)	0.0		0.0	0.0		* PER NEC 220.50
HEAT (NON COINC'D)(H NC)	39.2	1.0	39.2	39.2		* PER NEC 220.60
HVAC (COINC'D)(HVAC C)	0.0		0.0	0.0		
EQUIPMENT (EQ)	0.0	1.0	0.0	0.0		
MOTORS (MTR)	0.0	1.0	0.0	0.0		
LARGEST MOTOR	0.3	1.25	0.3	0.3		* PER NEC 430.24
MISCELLANEOUS (MISC)	0.0	1.0	0.0	0.0		
<b>TOTAL</b>	<b>39.8</b>		<b>39.8</b>	<b>39.9</b>	<b>110.6 AMPS</b>	

SERVICE: 120/ 208 V, 3 $\Phi$ , 4W

KKT	DESCRIPTION	CODE	BREAKER		CONNECTED LOAD (KVA)							BREAKER		CODE	DESCRIPTION	CKT NUM
			A	P	A	B	C	A	B	C	A	P				
1	B.O.H. LIGHTING	LTG	20	1	1.20				0.50			20	1	LTG	LIGHTING CONTACTOR	2
3	SALES AREA LIGHTING	LTG	20	1		1.20				0.80		20	1	EQ	ATM	4
5	SALES AREA LIGHTING	LTG	20	1			1.20				0.00	20	1		SPARE	6
7	COOLER LIGHTING	LTG	20	1	1.20				1.04			20	1	LTG	WINDOW RECEPTACLES	8
9	COOLER DOOR LIGHTING	LTG	20	1		1.20				0.50		20	1	LTG	LOTO SIGN	10
11	SITE LIGHTING	LTG	20	1			0.00				0.50	20	1	REC	SALES DISPLAY	12
13	SITE LIGHTING	LTG	20	1	0.00				0.50			20	1	REC	SALES DISPLAY	12
15	CANOPY LIGHTING	LTG	20	1		0.00				0.00					SPACE	14
17	EXTERIOR SIGN	LTG	20	1			0.00				0.00				SPACE	16
19	MONUMENT SIGN	LTG	20	1	0.00				0.00						SPACE	18
21	PRICE CHANGER	EQ	20	1		0.00				0.00					SPACE	20
23	BUILDING FAÇADE LIGHTING	LTG	20	1			0.00				0.00				SPACE	22
25	EXTERIOR LIGHTING	LTG	20	1	0.00				0.00						SPACE	24
27	EXTERIOR FANS	LTG	20	1		0.00				0.00					SPACE	26
29	E-STOP	EQ	20	1			0.00				1.20	20	1	EQ	PUMP ALARM	28
31	SPACE				0.00				0.00						SPACE	32
33	AIR VACUUM	EQ	20	1		0.00				0.00					SPACE	34
35	PANEL 'DP'	MISC	100	2				7.84			0.00				SPACE	36
37	PANEL 'DP'	MISC			6.38				0.00						SPACE	38
39	SHUNT TRIP BREAKER					0.00				0.00					SPACE	40
41	SPACE						0.00			0.00					SPACE	42

		8.8	2.4	9.0	2.0	1.3	1.7
	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)	MIN NEC LOAD (KVA)	MIN NEC LOAD (AMPS)		
LIGHTING (LTG)	8.0	1.25	8.0	10.1		* PER NEC 215.3	
RECEPTACLES (REC)	1.0	*	1.0	1.0		* PER NEC 220.44	
AC (NON COINCID)(AC NC)	0.0	0.0	0.0	0.0		* PER NEC 220.60	
HEAT (NON COINCID)(H NC)	0.0	1.0	0.0	0.0		* PER NEC 220.60	
HVAC (COINCID)(HVAC C)	0.0	1.0	0.0	0.0			
EQUIPMENT (EQ)	2.0	1.0	2.0	2.0			
MOTORS (MTR)	0.0	1.0	0.0	0.0			
LARGEST MOTOR	0.0	1.25	0.0	0.0		* PER NEC 430.24	
MISCELLANEOUS (MISC)	14.2	1.0	14.2	14.2			
TOTAL	25.3		25.3	27.3		75.7 AMPS	

SERVICE: 120V 208 V 3 $\phi$  4W

CKT NUM	DESCRIPTION	C/CODE	BREAKER		CONNECTED LOAD (KVA)							BREAKER		C/CODE	DESCRIPTION	CKT NUM
			A	P	A	B	C	A	B	C	A	P				
1	FRYER	EQ	100	3	6.67				0.80			20	1	EQ	EQUIPMENT (TBO)	2
3	FRYER	EQ				5.67				0.80		20	1	EQ	EQUIPMENT (TBO)	4
5	FRYER	EQ					5.67				0.80	20	1	EQ	EQUIPMENT (TBO)	6
7	OVEN	EQ	30	2	2.40				0.80			20	1	EQ	EQUIPMENT (TBO)	8
9	OVEN	EQ				2.40				0.80		20	1	EQ	EQUIPMENT (TBO)	10
11	SPACE						0.00				0.80	20	1	EQ	EQUIPMENT (TBO)	12
13	ICE MAKER	EQ	30	2	1.44				0.80			20	1	EQ	EQUIPMENT (TBO)	14
15	ICE MAKER	EQ				1.44				0.80		20	1	EQ	EQUIPMENT (TBO)	16
17	SPACE						0.00				0.80	20	1	EQ	EQUIPMENT (TBO)	18
19	WATER HEATER	EQ	50	3	3.00				0.80			20	1	EQ	EQUIPMENT (TBO)	20
21	WATER HEATER	EQ				3.00				0.80		20	1	EQ	EQUIPMENT (TBO)	22
23	WATER HEATER	EQ					3.00				1.50	20	1	LTG	HOOD LIGHTING	24
25	SANDWICH CASE	EQ	30	2	1.72				0.50			20	1	EQ	HOOD CONTROL UNIT	26
27	SANDWICH CASE	EQ				1.72				1.22		20	1	EQ	MAU HOOD FAN	28
29	SANDWICH CASE LTG	LTG	20	1			0.93				1.06	20	1	EQ	EXHAUST HOOD FAN	30
31	SPACE				0.00					0.00					SPACE	32
33	EQUIPMENT (TBO)	EQ	20	1		0.80				0.00					SPACE	34
35	EQUIPMENT (TBO)	EQ	20	1			0.80				0.00				SPACE	36
37	OVEN	EQ	30	2	2.40				0.36			20	1	REC	SALES COUNTER	38
39	OVEN	EQ				2.40				0.36		20	1	REC	SALES COUNTER	40
41	SPACE						0.00				0.36	20	1	REC	SALES COUNTER	42

		17.6	18.4	11.4	4.1	4.8	5.3
	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)	MIN NEC LOAD (KVA)	MIN NEC LOAD (AMPS)		
LIGHTING (LTG)	2.4	1.25	2.4	3.0			
RECEPTACLES (REC)	1.1	*	1.1	1.1			* PER NEC 215.3
AC (NON COINCID)(AC NC)	0.0	0.0	0.0	0.0			* PER NEC 220.44
HEAT (NON COINCID)(H NC)	0.0	1.0	0.0	0.0			* PER NEC 220.50
HVAC (COINCID)(HVAC C)	0.0	1.0	0.0	0.0			* PER NEC 220.60
EQUIPMENT (EQ)	58.1	1.0	58.1	58.1			
MOTORS (MTR)	0.0	1.0	0.0	0.0			
LARGEST MOTOR	0.0	1.25	0.0	0.0			* PER NEC 430.24
MISCELLANEOUS (MISC)	0.0	1.0	0.0	0.0			
<b>TOTAL</b>	<b>61.6</b>		<b>61.6</b>	<b>62.2</b>		<b>172.7 AMPS</b>	

SERVICE: 120/ 208 V, 3 $\Phi$ , 4

CKT NUM	DESCRIPTION	CODE	BREAKER		CONNECTED LOAD (KVA)							BREAKER		CODE	DESCRIPTION	CKT NUM	
			A	P	A	B	C	A	B	C	A	P					
1	DATA EQUIPMENT	REC	20	1	0.18				0.21				20	1	EQ	VEEDER ROOT TLS-450	2
3	DATA EQUIPMENT	REC	20	1		0.18				0.00						SPACE	4
5	INTERCOM	REC	20	1			0.18				0.00					SPACE	6
7	MONEY ORDER	REC	20	1	0.18				1.00				20	1	REC	EQUIPMENT (TBD)	8
9	SALES COUNTER	REC	20	1		0.72				1.00			20	1	REC	EQUIPMENT (TBD)	10
11	SALES COUNTER	REC	20	1			0.72				1.50		20	1	EQ	HAND DRYERS	12
13	CASH REGISTER	REC	20	1	0.72				1.50				20	1	EQ	HAND DRYERS	14
15	SPARE					0.00				1.00			30	2	EQ	EQUIPMENT (TBD)	16
17	SPARE						0.00				1.00				EQ	EQUIPMENT (TBD)	18
19	WORKSTATION	REC	20	1	0.72				1.25				40	2	EQ	EQUIPMENT (TBD)	20
21	MANAGER STATION	REC	20	1		0.72				1.25			30	2	EQ	EQUIPMENT (TBD)	22
23	EQUIPMENT (TBD)	EQ	40	2			1.25				1.00		30	2	EQ	EQUIPMENT (TBD)	24
25	EQUIPMENT (TBD)	EQ			1.25					1.00					EQ	EQUIPMENT (TBD)	26
27	TELEPHONE BOARD	REC	20	1		0.36				1.25			40	2	EQ	EQUIPMENT (TBD)	28
29	ATM	REC	20	1			0.36				1.25				EQ	EQUIPMENT (TBD)	30
31	EMS PANEL	REC	20	1	0.18				0.80				20	1	REC	RESTROOM FLUSH VALVE	32
33	EBT	REC	20	1		0.80				0.36			20	1	REC	COOLER SERVICE	34
35	COFFEE ISLAND	REC	20	1			0.50				0.08		20	1	REC	HEAT TRANCE	36
37	SPACE				0.00				0.25				20	3	EQ	TVSS	38
39	SPACE				0.00					0.25					EQ	TVSS	40
41	SPACE					0.00					0.25				EQ	TVSS	42

	3.2	2.8	3.5	6.0	5.1	5.1
	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)	MIN NEC LOAD (KVA)	MIN NEC LOAD (AMPS)	
LIGHTING (LTG)	0.0	1.25	0.0	0.0		* PER NEC 215.3
RECEPTACLES (REC)	10.2	*	10.1	10.1		* PER NEC 220.44
AC (NON COND) (AC NC)	0.0	0.0	1.0	0.0		* PER NEC 220.60
HEAT (NON COND) (H NC)	0.0	0.0	0.0	0.0		* PER NEC 220.60
HVAC (COND) (HVAC C)	0.0	1.0	0.0	0.0		
EQUIPMENT (EQ)	15.5	1.0	15.5	15.5		
MOTORS (MTR)	0.0	1.0	0.0	0.0		
LARGEST MOTOR	0.0	1.25	0.0	0.0		* PER NEC 430.24
MISCELLANEOUS (MISC)	0.0	1.0	0.0	0.0		
<b>TOTAL</b>	<b>25.7</b>		<b>25.6</b>	<b>25.6</b>	<b>70.9 AMPS</b>	

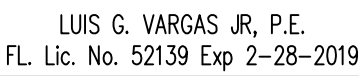
SERVICE: 120/ 208 V 1 $\Phi$  3 $\phi$

CKT NUM	DESCRIPTION	CODE	BREAKER		CONNECTED LOAD (KVA)				BREAKER		CODE	DESCRIPTION	CKT NUM
			A	P	A	B	A	B	A	P			
1	DISPENSER #1	MTR	20	1	1.08		1.08		20	1	EQ	DISPENSER #2	2
3	SWITCHED NEUTRAL				0.00		0.00					SWITCHED NEUTRAL	4
5	DISPENSER #3	MTR	20	1	1.08		1.08		20	1	EQ	DISPENSER #2	6
7	SWITCHED NEUTRAL				0.00		0.00					SWITCHED NEUTRAL	8
9	DISPENSER #5	MTR	20	1	1.08		1.08		20	1	EQ	DISPENSER #2	10
11	SWITCHED NEUTRAL				0.00		0.00					SWITCHED NEUTRAL	12
13	SPACE				0.00		0.00					SPACE	14
15	SPACE				0.00		0.00					SPACE	16
17	RUL STOP	EQ	20	2	1.21		1.21		20	2	EQ	PUL STOP	18
19	RUL STOP	EQ			1.21		1.21				EQ	PUL STOP	20
21	D-BOX CONTROLLER	EQ	20	1	0.36		1.09		20	2	EQ	DSL STP	22
23	SPACE				0.00		1.09				EQ	DSL STP	24
25	SPACE				0.00		0.00					SPACE	26
27	LOW-VOLTAGE DISCONNECT	EQ	20	1	0.36		0.00					SPACE	28
29	SPACE				0.00		0.00					SPACE	30

		4.8	1.6	5.5	2.3	
	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)	MIN NEC LOAD (KVA)	MIN NEC LOAD (AMPS)	
LIGHTING (LTG)	0.0	1.25	0.0	0.0		* PER NEC 215.3
RECEPTACLES (REC)	0.0	*	0.0	0.0		* PER NEC 220.44
AC (NON COINCID)(AC NC)	0.0	1.0	0.0	0.0		* PER NEC 220.60
HEAT (NON COINCID)(H NC)	0.0	1.0	0.0	0.0		* PER NEC 220.60
HVAC (COINCID) HVAC C)	0.0	1.0	0.0	0.0		
MISC. EQUIPMENT (EQ)	11.0	1.0	11.0	11.0		
MOTORS (MTR)	2.2	1.0	2.2	2.2		
LARGEST MTR	1.1	1.25	1.1	1.4		* PER NEC 430.24
MISCELLANEOUS (MISC)	0.0	1.0	0.0	0.0		
					22.7 AMPS	

3009 GULF TO BAY BLVD

SITE ADDRESS:



**ENGINEER OF RECORD:**

6		JOB NO:	181116
5		DWG Name:	ELEC
4		XREF Name:	-
3		SCALE:	AS NOTED
2		DATE:	10-19-18
1	PERMIT COMMENTS	DRAWN BY:	J.O.
NO	DESCRIPTION	DATE	CHECKED:
			L.V.
		APPROVAL:	
<b>REVISIONS</b>			

# E-6

**KPI ENGINEERING, INC**  
PROFESSIONAL ENGINEERS  
3203 QUEEN PALM DRIVE  
TAMPA, FLORIDA 33619  
PHONE (813) 241-6488  
FAX (813) 241-6498  
Board of Professional Engineers - License # 27336

I:\2017\17288 Gulf To Bay FL\Structural\DWG\17288 SO-1-SO-3.dwg, Plotted 8/7/2018 5:14 PM, By Buell Moody  
THIS DRAWING IS THE PROPERTY OF RICHARD ADAMS ENGINEERS AND MAY NOT BE REPRODUCED OR USED FOR ANY OTHER PROJECT IN WHOLE OR IN ANY PART WITHOUT WRITTEN PERMISSION. COPYRIGHT © 2017

STRUCTURAL NOTES:

I. GOVERNING CODES:

This design is based on the following codes:

- A. Florida Building Code 2014 (5th Edition)
- B. Building Code Requirements for Structural Concrete ACI 318
- C. Specification for the Design, Fabrication, and Erection of Structural Steel for Building, ASD Design method.
- D. Building Code Requirements for Masonry Structures, ACI 530 / ASCE 5 / TMS 402
- E. Structural Welding Code D1.1

II. DESIGN LOADS:

- A. Wind load based on ASCE 7-10 "Minimum Design Loads for Buildings and Other Structures" methods of calculation for wind pressures and the following factors:
  - 1. Mean Roof Height of less than 30'-0"
  - 2. Wind speed of V(ULT)=145 MPH, V(ASD)=112 MPH
  - 3. This building is IN A WIND BORNE DEBRIS REGION as defined by Florida Building Code. All glazing is assumed to be protected in accordance with Section 1609.1.2.3 of the Florida Building Code.
  - 4. Exposure Category 'C'.
  - 5. Internal Pressure Coefficient of +/- 0.18 ("Enclosed" building).
  - 6. Base Velocity Pressure of 44.9 PSF
- B. Roof live load of 20 PSF with allowable load reductions based on area as outlined in the Florida Building Code. Roof drainage shall conform to the requirements of the Code Section Florida Building Code. Overflow drains shall be located so that, in the event of the primary drains being blocked, no more than 3-1/2" of water can accumulate before entering the overflows.
- C. Roof dead load of 20 PSF.
- D. Handrails and guardrails shall be designed for 50 pounds per linear foot or a 200 pound concentrated load at any direction.
- E. Allowable soil bearing of 2,000 PSF.

III. SHOP DRAWINGS:

- A. Contractor shall allow for (10) ten business days for shop drawing review.
- B. Our office will accept shop drawings in both electronic and paper format.
- C. If the Shop Drawings are in a paper format, we will require (3) three copies minimum submitted with (1) one copy to be retained by our office.
- D. If the Shop Drawings are in electronic format the following shall apply:
  - 1. The only accepted electronic format shall be Adobe PDF format.
  - 2. If the electronic files are e-mailed to our office, the e-mail address is Mail@Adams-Engineers.com and a faxed transmittal shall be sent to our office informing us that the drawings were sent via e-mail.
  - 3. If the electronic files are sent to our office on a CD or DVD a transmittal shall be included in the package.
  - 4. The reviewed shop drawings shall be returned to Project Architect (or directed party) in either electronic format or paper format as directed by Client. If paper format is requested, it shall be blackline copies with any comments generated by our office in contrasting font or "boxed". Additionally we will invoice for the printing costs associated with the production of these drawings based on the prevailing prints costs in the Tampa Bay Area.

IV. DRAWINGS AND SPECIFICATIONS:

- A. Do not scale these drawings for dimensions that are not given. Advise the Project Architect of any conflicts between these drawings and the Architectural drawings. Verify all field conditions and confirm column locations in respect to architectural wall alignment prior to the start of work.
- B. These drawings are to be used in combination with the architectural, mechanical, plumbing and civil drawings. Refer to these other drawings for details that relate to structural components.
- C. These construction documents have been prepared from the most complete information available to the engineer. All data on existing construction conditions are approximate and shall be verified prior to commencing work.
- D. The contractor shall comply with the manufacturer's instructions and recommendations to the extent-printed information are more detailed or stringent than the requirements contained in the plans.
- E. The plans show the location of all fixtures and equipment and are intended to convey the general intent of the work in scope and layout. They are not intended to show in minute detail every and all of the accessories intended for the purpose of execution of the work, but it is understood that such details are part of this work.
- F. The Contractor shall not perform any portion of the work at any time without Contract Documents or, where required, approved shop drawings, product data or supplemental details for such portion of the work.
- G. The Contractor is responsible for means and methods of construction to ensure the safety of the building until the structural system is completed. The structural system is unstable until all connections have been made and all concrete has reached the minimum design strength as specified in these drawings.
- H. The use of electronic files or reproductions of these contract documents by any contractor, subcontractor, erector, fabricator or material supplier in lieu of prepared shop drawings signifies their acceptance of all information shown hereon as correct, and obligates themselves to any job expense, real or implied, arising due to any error that may occur hereon.

V. CONCRETE:

- A. Concrete strength requirement:
  - 1. 3,000 psi: Foundations, block fill, slab-on-ground, sidewalks
  - 2. 4,000 psi: Columns
- B. Maximum Slump: 4" (+/- 1") for all concrete, except use 8"-11" for filling cells in block. Fly ash, if used, shall not exceed 20% by weight of total cementitious content. Slump limits shall be strictly adhered to.
- C. The concrete shall contain the maximum size aggregate permitted by ACI Code up to 1 1/2" maximum. The guidelines for maximum aggregate size are not greater than 1/5 the narrowest opening in the forms, and/or 1/3 the depth of the slab.
- D. Concrete formwork: Concrete formwork shall be in clean condition for use as finished surface forms. Forms shall not be removed until the concrete is of sufficient strength to support its own weight and proposed construction loads.
- E. Minimum Concrete Cover
  - 1. Concrete cast against and permanently exposed to earth = 3 inches.
  - 2. Concrete exposed to earth or weather = 1-1/2 inches
  - 3. Concrete not exposed to earth or weather = 3/4 inches
- F. Concrete must be batched, mixed, and transported in accordance with The Specifications for Ready-Mixed Concrete ASTM C94. Concrete shall be placed with-in 90 minutes of batch time.
- G. The addition of water in the field is acceptable ONLY where the concrete supplier provides a "Water Stamp" on the mix ticket indicating how much additional water can be added to the mix without exceeding the design water / cement ratio.
- H. A qualified testing laboratory shall be retained to perform the following concrete tests. The concrete samples shall be taken in accordance with ASTM C 172 and specimens made in accordance with ASTM C 31. Testing of specimens shall be in accordance with ASTM C 39. Each test shall consist of a minimum of 5 cylinders. One sample shall be tested at 7 days, 14 days, and two at 28 days. Reports showing the results of testing shall be submitted at the earliest possible date following testing and shall indicate date, time, weather conditions (temperature), composition of mix (per delivery ticket), slump, location of concrete, compressive strength, type of break, and other pertinent information helpful in the evaluation of the tests. All tests shall be sequentially numbered for easy identification. The concrete test cylinders shall be taken for each type of class of concrete and not less than once per daily pour, nor less than the following intervals:
  - 1. Footings and sidewalks: One set of samples for each 100 cubic yards of concrete placed, nor less than once per daily pour.
  - 2. Floor slabs: One set of samples for each 50 cubic yards of concrete placed, nor less than once per daily pour.
  - 3. Concrete beams and Columns: One set of samples for each 50 cubic yards of concrete placed, nor less than once per daily pour.
  - 4. Tilt wall panels: One set of samples for each 50 cubic yards of concrete placed, nor less than once per daily pour.
- I. Concrete Mix submittals shall include any relevant information regarding the use of fiber (Poly and/or Steel) reinforcing that will be added at the batch plant. Fiber shall not be added at the job site.
- J. The addition of Calcium Sulfate to a mix design to increase the Heat of Hydration to offset cold weather pours where freezing is possible is not permitted.
- K. Concrete pours where freezing is possible shall follow the recommendations of ACI 306.
- L. Expansion and Contraction Joints: Floor (contraction) joints shall be saw cut or prefabricated at a maximum spacing of 2 to 3 times the slab thickness in feet (i.e. 8'-12' o/c for a 4" thick slab). These contraction joints shall be approximately 1/8" wide and extend to a minimum depth of 1/4 the slab thickness. A 1/4" perimeter expansion (isolation) joint shall be used at floors adjoining walls and around all columns. These isolation joints shall be formed by installing an asphalt impregnated fiber sheet that extends the entire thickness of the slab.

VI. CONCRETE SLAB ON GROUND:

- A. The concrete slab for this project is prescriptive. No structural design has been provided.
- B. The concrete slab on grade has been designed upon the following assumptions:
  - 1. Soil Bearing pressure of 2,000 PSF
  - 2. Soil constant k value of 150psi/in
- C. The slab on grade can accommodate a working uniform load based on the following slab thicknesses:
  - 1. 300 PSF for 4" slabs
- D. The following guidelines should apply to the slab layout:
  - 1. Contraction joints shall be spaced at no more than:
    - a) 11'-0" o.c. for 4" slabs
  - 2. The slab on grade shall meet the following Flatness/Levelness (FF/FL) ACI 117 requirements listed as Overall/Local
    - a) Conventional: 25/15 - 20/15 (office)
- E. The following limitations to the water to cement ratio and admixtures shall apply:
  - 1. The addition of water in the field is acceptable ONLY where the concrete supplier provides a "Water Stamp" on the mix ticket indicating how much additional water can be added to the mix without exceeding the design water / cement ratio.
  - 2. The use of admixtures such as high range water reducers and super plasticizers in the slab mix to obtain the required slump and performance is acceptable. The GC shall take the responsibility of any admixtures beyond those required by these structural drawings.

VII. UNDERSLAB VAPOR BARRIER:

- A. Provide all labor, products and equipment required to properly install an underslab vapor barrier under interior warehouse concrete floor slabs on grade. Refer to drawings for locations.
- B. Vapor barrier material shall be a multilayer polyolefin sheet material complying with ASTM E 1745, Class A, for a 10 mil thickness. Vapor barrier shall act as a vapor retarder having a water vapor permeance less than 0.0254 perms according to ASTM F 1249. Provide "Stego Wrap Class A Vapor Retarder" by Stego Industries, LLC or an approved equal.
- C. Provide all required accessory materials by the vapor barrier manufacturer, including seam tape and mastic. Accessory materials shall have a water vapor permeance of 0.3 perms or lower according to ASTM E 96.
- D. Installer shall proceed with application of the vapor barrier only after substrate construction and penetrating work have been completed and any unsatisfactory conditions have been corrected.
- E. As a general installation requirement, the installer shall comply with the vapor barrier manufacturer's written installation instructions and ASTM E 1643.
- F. Unroll the vapor barrier material with the longest dimension parallel with the direction of the concrete pour. Lap over footings or seal to foundation walls.
- G. Overlap joints 6 inches and seal with the seam tape.
- H. Seal all penetrations according to the manufacturer's written instructions.
- I. No penetration of vapor barrier material is allowed except for reinforcing steel and permanent utilities.
- J. Installer shall repair damaged areas by cutting patches of the vapor barrier material, overlapping the damaged area 6 inches and taping all four sides with specified tape.

VIII. CONCRETE REINFORCEMENT:

- A. Reinforcing steel bars shall be Grade 60 (60 KSI ASTM A615) steel and tied with drawn steel wire.
- B. Welded Wire Fabric shall conform to ASTM A185.
- C. Placement of reinforcing steel shall be as shown on plans and per the "Manual of Standard Practice for Detailing Reinforced Concrete Structures", ACI 315 manual on placing steel reinforcing.
- D. Provide minimum lap splice of 48 bar diameters, but not less than 18 inches, for all reinforcing bars, unless noted otherwise. Stagger splices in adjacent bars at least 24 inches, except in strip footings, masonry tie beams (top of wall) and as noted otherwise.
- E. In wall footings, grade beams and bond beams, provide bent bars at corners and intersections of the same number and size as the straight bars.

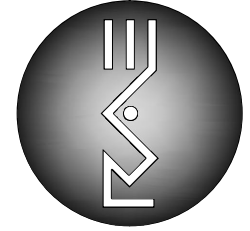
IX. CAST IN PLACE CONCRETE:

- A. The concrete supplier shall provide mix designs of all concrete used in structural applications to Richard Adams Engineers.
- B. When pouring against earth, the embankment shall be wetted first and all pours on direct sun days will be misted at least twice following initial set. Isolation joints shall be provided at all columns and expansion felt at the perimeter of the slab.
- C. Finish on the surface of floor shall be machined troweled followed by hand finishing as required.
- D. Exterior walks and parking areas to be light brushed finished.
- E. Curing of concrete shall be in accordance with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

X. TERMITE TREATMENT OF SOIL AND STRUCTURE:

- A. All buildings shall have pre-construction treatment protection against subterranean termites. A certification of compliance must be issued to the building department by a licensed pest control company before a certificate of occupancy will be issued. The certificate of compliance shall state: "The building has received a complete treatment for the prevention of subterranean termites. The treatment is in accordance with the rules and laws of Florida Department of Agriculture and Consumer Services." All of this work shall be in conformance with Florida Building Code Section 1816.
- B. A permanent sign that identifies the termite treatment provider and the need for re-inspection and treatment contract renewal shall be provided. The sign shall be posted near the water heater or electrical panel. The sign and the posting method shall be in accordance with Florida Building Code Section 105.1.1
- C. All condensate and roof downspouts shall discharge at least 1'-0" away from the structure sidewall, whether by underground piping, tail extensions, or splash blocks. Gutter with downspouts are required on all buildings with eaves of less than 6" horizontal projection (except gable end rakes or a roof above another roof). Irrigation/ sprinkler systems and risers for spray heads shall not be installed within one foot of the building sidewall. This placement of these water sources close to the building sidewall shall be in accordance with Florida Building Code Section 1503.6.
- D. The exterior wall covering shall terminate not closer than 6" from the final earth grade to allow for inspection for termite infestation. The exception to this is paint or decorative cementitious finishes less than 5/8" thick adhered directly to the masonry foundation sidewall. The termination of exterior wall coverings shall be in accordance with Florida Building Code Section 1403.7.
- E. If soil treatment is used for subterranean termite protection, the initial treatment shall be performed after ALL excavation, backfilling and compaction is complete. Any soil area that is disturbed after initial soil treatment shall be retreated with chemical treatment including spaces boxed or formed. This is required under Florida Building Code Section 1816.1.
- F. If soil treatment is used for subterranean termite protection, space in concrete floors boxed out or formed for subsequent installation of plumbing traps, drains, or any other purpose shall be created by using plastic or metal permanently placed forms of sufficient depth to eliminate any planned soil disturbance after initial chemical soil treatment. The placement and construction of the permanent forms shall be in accordance with Florida Building Code Section 1816.1.13.
- G. If soil treatment is used for subterranean termite protection, the chemical treated soil shall be protected against rainfall dilution by a 6 mil (min.) vapor barrier. If rainfall occurs prior to placement of the vapor barrier, chemical re-treatment is required.
- H. If soil treatment is used for subterranean termite protection, concrete overpour and mortar accumulation along the foundation perimeter shall be removed prior to exterior soil treatment.
- I. If soil treatment is used for subterranean termite protection, chemical soil treatments shall also be applied under all exterior concrete or grade within one foot of primary structure sidewalls. Also, a vertical chemical treatment barrier shall be applied promptly after construction is completed, including initial landscaping and irrigation / sprinkler installation. Any soil disturbed after the chemical vertical barrier is applied shall be promptly retreated. This exterior chemical treatment shall be in accordance with Florida Building Code Section 1816.1.6.
- J. After all work is completed, loose wood and debris shall be completely removed from under the building and within one foot of the structure. All wood forms and supports shall be completely removed. This includes, but is not limited to: wooden grade stakes, forms, contraction spacers, tub trap boxes, plumbing supports, bracing, shoring, forms, or other cellulose-containing material place in any location where such materials are not clearly visible and readily removal prior to completion of the work.
- K. At contractor's option, the building may be termite protected by "Centricron" (or equivalent) termite protection system in lieu of simple termite treated compacted subgrade.
  - 1. If a registered termiticide formulated and registered as a bait system is used for subterranean termite prevention, Sections 1816.1.1 through 1816.16 of the Florida Building Code do not apply; however, a signed contract assuring the installation, maintenance and monitoring of the baiting system for a minimum of 5 years from the issue of the certificate of occupancy shall be provided to the building official prior to the pouring of the slab, and the system must be installed prior to the final building approval. If the baiting system, directions for the use require a monitoring phase prior to installation of the pesticide active ingredient, the installation of the monitoring phase components shall be deemed to constitute installation of the system. This is required under Florida Building Code Section 1816.7.

RICHARD ADAMS ENGINEERS  
& CONSULTANTS, INC.  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985.4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7565



PROJECT NAME :  
STRUCTURAL DESIGN FOR:  
SHELL STATION  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

CLIENT :  
AEC SERVICES, INC.  
1616 ALISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

DAVID S. HAAS, P.E.  
FLORIDA REG. # 71860  
(NOT VALID WITHOUT SEAL)

I CERTIFY TO THE BEST OF MY  
KNOWLEDGE THAT THE  
DRAWINGS & SPECIFICATIONS  
COMPLY WITH THE APPLICABLE  
MINIMUM BUILDING CODES.

JOB NO :  
RAE 17288  
DRAWN/REVIEWED:  
TPE / DM  
ISSUE DATE :  
NOV. 22, 2017

REVISIONS   
1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_  
4 \_\_\_\_\_

SHEET NUMBER  
S0.1

I:\2017\17288 Gulf To Bay FL\Structural\DWG\17288 SO-1-SO-3.dwg, Plotted 8/7/2018 5:14 PM, By Buell Moody

THIS DRAWING IS THE PROPERTY OF RICHARD ADAMS ENGINEERS AND MAY NOT BE REPRODUCED OR USED FOR ANY OTHER PROJECT IN WHOLE OR IN ANY PART WITHOUT WRITTEN PERMISSION. COPYRIGHT 2017

STRUCTURAL NOTES CONT.:

XI. FOUNDATIONS:

- A. Maximum soil bearing pressure used for design.....2000 PSF
- B. Notify Engineer if footing excavation reveals unsuitable or unstable soils, or materials or conditions not anticipated in the area.
- C. Concrete placement shall occur immediately after footing excavation and placement of reinforcing steel. Any freestanding water shall be pumped out of footing excavation prior to concrete placement
- D. A qualified testing laboratory shall be retained to perform the following minimum in-place density tests: This suggested testing shall be used in the absence of a soil report or in the absence of a testing program suggested by a soil engineer as contained in a soil report.
  - 1. One density test for each 2,500 square feet of compacted subgrade.
  - 2. One density test at each column.
  - 3. One density test per 50 feet of wall footing.
- E. In the absence of a soil report the soil compaction shall adhere to the following minimum requirements for the Modified Proctor dry density test:
  - 1. Slab-on-Ground: Shall be compacted to a minimum depth of one (1) foot below stripped grade. Any loose, soft or undesirable material shall be removed and replaced with structural fill is placed in loose lifts not exceeding 12" in depth:
    - a) Slabs 4" to 5" thick - 93%
    - b) Slabs greater than 5" thick - 95%
  - 2. Foundations: For foundations excavations that appear to have suitable bearing materials compaction shall be to one (1) foot below the bottom of the footing depth. When structural fill material is required sand fills shall be placed in loose lifts not exceeding 12" in depth.
    - a) Strip footings 24" wide or less, and pad footings with a footprint not exceeding 16 sq. ft.: 93%
    - b) Strip footings greater than 24" wide and pad footings exceeding 16 sq. ft.: 97%
    - c) Back fill soils placed adjacent to footings, walls, or otherwise providing footing restraint shall be compacted in loose lifts not exceeding 6" in depth to 95%. To avoid damage the compaction shall be carefully done using either a light tired roller or vibratory plate compactor.

XII. STEEL BAR JOISTS:

- A. The design, fabrication and erection of steel joists shall conform to the " Steel Joist Institute (SJI) "Standard Specifications and Load and Weight Table for Steel Joists" " (latest edition).
- B. Joists supplied under this section shall be fabricated by a recognized manufacturer, using cord or web sections fabricated from steel having a yield strength of at least 36 KSI but not exceeding 50 KSI.
- C. Bridging per the applicable SJI Specification shall be used and shall be installed before construction loads are applied to the joists. The ends of all bridging lines terminating at walls or beams shall not be anchored until all the roof dead loads are applied.
- D. Ends of joists resting on steel supports shall be connected with the equivalent of two 1/8-inch fillet welds 2" long or with two 1/2" diameter bolts. Field welding shall not damage the joists.
- E. All bar joists shall be designed with a 150 pound Bend-Check (not additive) for both cords unless noted otherwise in drawings.
- F. All joists on column centerlines shall be secured by 1/2" inch diameter A325 bolts at the top chord bearing. The bottom chord shall be extended to the column.
- G. Joists shall bear 4" minimum on masonry and 2 1/2" minimum on steel U.N.O. Joists bearing on masonry shall bear on an embedded steel plate.
- H. Steel joists shall be primed painted with one coat of gray primer meeting the minimum requirements of SSPC-Paint 25 or Steel Structures Painting Council Specification 15-68T, Type I.
- I. Joist girders shall be proportioned such that they can be erected without bridging. The strutted ends of the bottom chord shall be restrained from lateral movement to brace the girder from overturning.
- J. Bar joists and truss girders shall have manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inches per 12 inches.
- K. Steel joists shall be designed to resist net uplift as shown on wind diagram shown in contract drawings.

XIII. STRUCTURAL STEEL:

- A. Fabrication and erection of structural steel shall be in accordance with AISC 360 "Specification for Structural Steel for Buildings" (latest edition).
- B. Structural steel team qualifications, unless otherwise approved, shall be:
  - 1. Fabricator Qualifications: A qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC Certified Plant, Category "Standard for Steel Building Structures" (STD) at time of bid.
  - 2. Erector Qualifications: A qualified installer who participates in the AISC Quality Certification Program, in conjunction with the National Erectors Association of America, and is designated an AISC Certified Erector, Category "Certified Steel Erector" (CSE) at time of bid.
- C. Structural steel shapes (used as beams and columns) shall conform to ASTM A 992 Grade 50 KSI unless otherwise noted on the contract drawings.
- D. Plates, channels, rods and angles shall conform to ASTM A36 unless otherwise noted on the contract drawings.
- E. Anchor rod (bolts) shall conform to ASTM F1554 Grade 36, washers shall conform to ASTM F436 Type 1, and nuts shall conform to ASTM A563. These rods shall be able to be welded.
- F. Steel pipe shall conform to ASTM A53 Grade B or ASTM A501.
- G. Structural tubing shall conform to ASTM A500 Grade B (46 KSI minimum).
- H. All bolts (except anchor bolts) shall be high strength (HSB) shall conform to ASTM A325, 3/4" diameter unless noted otherwise. High strength bolts shall be used unless specifically noted on the drawings.
- I. All welding shall be performed by certified welders in accordance with AWS "Structural Welding Code-Steel" (D1.1-2010). The minimum electrode used shall be E70xx Low Hydrogen electrodes unless otherwise specified.
- J. Structural steel shall be primed painted with one coat of light gray primer meeting the minimum requirements of SSPC-Paint 25. All members to receive spray on fire proofing shall not be painted.
- K. All beams shall be fabricated and erected natural camber up
- L. Connections may be single shear plate (or double angle) framed beam connections per AISC unless noted otherwise. All bolts shall be 3/4" diameter A-325-N unless noted otherwise. Shop connections may be bolted or welded, with welded connections equal to bolted connections. All bolts shall be tightened snug tight with suitable nuts and hardened washers unless noted otherwise. Design connections for the larger of either the shear value shown on the drawings or 75% of the maximum shear listed in the tables for "Allowable uniform load in Kips for beams laterally supported" at the bottom of each page in the "Properties And Reaction Values" Part 2 of the latest edition of the AISC "Manual Of Steel Construction".
- M. Before erection proceeds, and with the steel erector present, verify elevations of concrete and masonry bearing surfaces and locations of anchorages for compliance with requirements. Do not proceed with erection until unsatisfactory conditions have been corrected.
- N. Do not enlarge unfair holes in members by burning or by using drift pins. Ream holes that must be enlarged to admit bolts.
- O. Splicing of structural steel where not detailed is not permitted with out prior written approval of the structural engineer.
- P. Structural openings, supports, anchors, etc. around or affected by mechanical, electrical and plumbing equipment shall be verified with the equipment purchased before proceeding with structural work affected.
- Q. The General Contractor shall obtain the services of a certified steel inspector to review all steel connections. This includes bolted connections, welded connections, and metal deck attachment. The certified inspection reports shall be provided to Richard Adams Engineers and the Local Jurisdiction Having Authority as required.

XIV. METAL ROOF DECK:

- A. Metal roof deck shall be 1-1/2" thick, 22 Ga. Type B (as identified by the Steel Deck Institute) painted gray steel deck conforming to ASTM A611 with minimum yield stress of 80 ksi. Deck finish shall be shop primed with baked-on, lead- and chromate-free rust-inhibitive primer complying with performance requirements of SSPC-Paint 25.
- B. The deck shall be placed on the supporting framework with a minimum end lap of two inches centered over supports. The deck shall be attached to the supports, and the side lap of adjacent units in the pattern shown on the contract drawings.
- C. All roof deck openings 12" diameter or larger are to have support angles per typical deck opening detail, including openings for roof sump pans.
- D. Roof deck shall be laid out such that decking shall span three spans without interruption wherever possible.
- E. Deck and supporting members damaged by excess welding heat shall be repaired or replaced as determined by Engineer.
- F. Puddle welds shall be at least 5/8" in effective diameter or an elongated weld having an equal perimeter. Fillet and seam welds when used shall be a minimum of 1 1/2" long. Weld metal shall penetrate all layers of deck material at end laps and side joints and have good fusion to the supporting members.

XV. LIGHT GAUGE STEEL FRAMING:

- A. The light gauge steel framing members specified are based on structural properties of Dietrich Industries. Members may be supplied by other manufacturers provided the members meet or exceed the structural properties as specified in Dietrich Industries' catalog.
- B. Structural properties and capacities of steel framing components are as computed in accordance with the latest edition of the A.I.S.I. Cold-Formed Design Specification.
- C. All stud and joist members 16 gage (54 mils) and heavier shall be formed from steel corresponding to a type listed in the A.I.S.I Specification for the Design of Cold-Formed Steel Structural Members, with the minimum yield strength of 50 ksi.
- D. All 18 gage (43 mils) and lighter members, and all track, bridging, and accessory items shall be formed from steel meeting the criteria as listed above, with the minimum yield strength of 33 ksi unless specifically noted otherwise.
- E. All welded connections are to be performed in accordance with the latest version of AWS D1.3 Specifications for Welding Sheet Steel in Structures. Consult AWS D19.0 Welding Zinc Coated Steel and ANSI standard Z49.1 for information regarding safe welding procedures.
  - 1. Suggested weld metal and process for shop welding are: 60 ksi weld metal strength (minimum) - MIG.
  - 2. Suggested methods for field welding: 1/8" (unless noted otherwise) E60XX (minimum) electrode - SMAW; or "gasless" MIG.
  - 3. Minimum weld throat thickness (t) must match or exceed the base steel thickness of the thinnest connected part unless noted otherwise.
- F. The light gauge clips and hangers noted in these drawings are manufactured by Dietrich Metal Framing. Contractor may submit other manufacturer's clips for approval provided the alternate clips meet or exceed the structural properties of the specified clips.
- G. Unless noted otherwise, refer to literature published by Hilti Fastening Systems, Inc. for expansion bolt, or powder driven fastener information; Buildex, Inc. for TEKS screw data. Alternate manufacturer's fasteners of comparable specifications and load capacities are acceptable.
- H. All framing components shall be cut squarely for attachment to perpendicular members or as required for an angular fit against abutting members. Members shall be held positively in place until properly fastened.
- I. All field cutting of studs must be done by sawing or shearing. Torch cutting of cold-formed members is unacceptable.
- J. Track shall be securely anchored to the supporting structures as shown using the specified fasteners. Concrete anchors shall be installed after full compressive strength has been achieved.
- K. Studs shall be plumbed, aligned and securely attached to the flange or webs of both upper and lower tracks. Wall studs that contain bridging in the stud punchout, the framing fabricator is to ensure punchout alignment when assembling framing and field cutting studs to length.
- L. No splices in studs, joists, or other load carrying members may be made without prior engineering review and specific details for any such splice(s).
- M. Wall studs bridging shall be attached in a manner to prevent stud rotation.
- N. Temporary bracing shall be provided until erection is completed.
- O. Details of wall finishes are for arrangement and location. For specific requirements, methods, materials, and execution standards, refer to technical data from product manufacturer. In the event of conflict, manufacturer's instructions shall dictate.

CLIENT :

AEC SERVICES, INC.  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

PROJECT NAME :

STRUCTURAL DESIGN FOR:  
SHELL STATION  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

DAVID S. HAAS, P.E.  
FLORIDA REG. # 11860  
(NOT VALID WITHOUT SEAL)

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE DRAWINGS & SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.

JOB NO :

RAE 17288

DRAWN/REVIEWED:

TPE / DM

ISSUE DATE :

NOV. 22, 2017

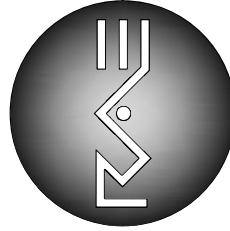
REVISIONS

- 1
- 2
- 3
- 4

SHEET NUMBER

S0.2

RICHARD ADAMS ENGINEERS  
& CONSULTANTS, INC.  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985.4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7565



I:\2017\17288 Gulf To Bay FL\Structural\DWG\17288 S0.1-S0.3.dwg, Plotted 8/7/2018 5:14 PM, By Buell Moody  
THIS DRAWING IS THE PROPERTY OF RICHARD ADAMS ENGINEERS AND MAY NOT BE REPRODUCED OR USED FOR ANY OTHER PROJECT IN WHOLE OR IN ANY PART WITHOUT WRITTEN PERMISSION. COPYRIGHT © 2017

STRUCTURAL NOTES CONT.:

XVI. CONCRETE MASONRY UNITS:

- A. Concrete block work under this section shall be as per plans and shall be plumb, true to line with level courses accurately placed. Where no pattern is indicated, masonry shall be laid in a running bond.
- B. The masonry work preformed under this section shall be constructed under the quality assurance program meeting or exceeding "Level 2 Quality Assurance" as defined in the latest edition of the ACI 530 Building Code Requirements for Masonry Structures. The visual inspection portions of Level 2 shall be preformed by the local building code authority and / or a qualified testing laboratory. The verification of f'm shall be performed by the material supplier's laboratory or qualified testing laboratory. The cost of this testing shall be paid by the contractor and reports shall be distributed to the Owner, Project Architect and Structural Engineer of Record.
- C. All concrete blocks shall have a minimum f'm of 1,900 PSI and be of standard weight conforming to ASTM C-90 Type N-2. Concrete masonry units shall be dry when laid.
- D. Mortar shall be used within 2 1/2 hours after initial mixing. Mortar that has stiffened due to evaporation within this period shall not be retempered or restored to workability. Mortar shall be Type S Type S (f'm = 1800 PSI at 28 days) for above grade work, and Type M (f'm = 2500 PSI at 28 days) for below grade (and retaining walls).
- E. Hollow units shall be laid with full mortar coverage of horizontal and vertical face shells. Webs shall also be bedded in all courses of piers, columns, and pilasters, and in the starting courses on footings, and where adjacent to cells or cavities to be filled with coarse grout. Mortar joints shall be 3/8" thick except where otherwise indicated. Exterior walls to be covered shall have flush joints, and interior wall joints shall be tooled with a round jointer.
- F. Horizontal joint reinforcing (wire type with 9 gage equal to Dur-o-wal) shall be placed at 16" o/c. vertically and shall extend at least 6" into vertical columns or pilasters. Horizontal reinforcement shall not be continuous across control joints and shall be placed fully embedded in face-shell mortar beds for their entire length (minimum mortar cover of 5/8").
- G. Vertical reinforcement (where required) shall be placed in the center of masonry cores unless shown otherwise. This reinforcement shall be lapped (where required) a minimum of 48 bar diameters or 2'-1" whichever is greater. Masonry cores shall be filled with coarse grout conforming to ASTM C476.
1. 3000 PSI at 28 days
2. 3/8" aggregate
3. 8" - 11" slump
- H. Provide 8 inches x 8 inches precast concrete lintel rated for a uniform load of at least 750 lbs. per foot over all openings 10'-0 or less in width, where steel or other lintels are not specified.
- I. Provide preformed Power Steel Lintels (or equal) as shown on drawings for a uniform load of at least 750 lbs. per foot over all openings. Install lintels per manufacturer's recommendations.
- J. Bond beams shall consist of load-bearing units filled with coarse grout and reinforced as indicated unless noted other wise in contract drawings. Reinforcement shall be continuous except through expansion (control) joints. Where bond beam is not broken at control joint, a dummy control joint shall be formed in the bond beam.
- K. Unfinished work shall be stepped back for tooling with new work. Toothing may be employed only when specifically approved. Before laying new work, loose mortar shall be removed and the exposed joint thoroughly cleaned.
- L. Use masonry saws to cut block as required.
- M. If wall reinforcing is not shown plans, place one #5 bar in a cell filled with coarse grout at a maximum spacing of 48". Also fill the first cell adjacent to any opening, and located three filled cells at any wall corner or intersection.
- N. Provide clean-outs for filling cells in lifts exceeding 4 ft, but lifts shall not exceed 12'-0.
- O. At the completion of the work all holes in joints of masonry surfaces to be exposed or painted (except weep holes) shall be filled with mortar and suitably tooled. Masonry walls shall be dry brushed at the end of each day's work and also after final pointing, and shall be left clean and free from mortar spots and droppings. Any cracks in masonry shall be repaired. Defective joints shall be cut out and repointed.
- P. Space masonry control joints at a maximum of 40'-0" o.c. (U.N.O.).
- Q. All masonry that is retaining earth, as in a retaining wall or stem wall shall be filled solid for portion in contact with earth.

XVII. DELEGATED (SPECIALTY) ENGINEERING REQUIREMENTS:

- A. GENERAL REQUIREMENTS:
1. See "Submittal Requirements Table" in these drawings for structural elements / products which require submittals.
2. Definition of Delegated (Specialty) Engineer: A Professional Engineer, who is licensed in the same state as the Project, not the Structural Engineer of Record, who specializes in and who undertakes the design of structural components prepared for this Project.
3. Submittals for custom designed, manufactured or fabricated load-carrying items and custom fabricated items that are required by codes or standards to resist forces and stresses, including their connections, anchorages, and attachments require a Delegated Engineer.
4. For each category of submittal requiring input from a Delegated Engineer, the Contractor shall attach to the first submittal a signed and sealed letter from the responsible Delegated Engineer stating "I certify that the design and drafting of the shop drawings which are signed and sealed by me were prepared under my direct supervision and control and to the best of my knowledge the shop drawings comply with the applicable minimum building codes and contract drawings."
5. Review by the Structural Engineer of Record of submittals is LIMITED TO the following:
- a) The specified structural submittals have been furnished.
- b) The structural submittals have been signed and sealed by the Delegated Engineer.
- c) The Delegated Engineer has understood the design intent and has used the specified structural criteria. No detailed check of calculations will be made.
- d) The configuration set forth in the structural submittals is consistent with the contract documents. No detailed check of dimensions or quantities will be made.
6. SUBMITTALS NOT MEETING THE ABOVE CRITERIA WILL NOT BE REVIEWED.

XVIII. POST-INSTALLED ANCHORS:

The below Products are the design basis for this project. Substitution requests for products other than those listed below may be submitted by the contractor to the Engineer-of-Record (EOR) for review. Substitutions will only be considered for products having a code Report recognizing the product for the appropriate application and project building code. Substitution submittals shall demonstrate that the substituted product is capable of achieving the equivalent performance values of the design basis product.

- A. Adhesive Anchors (Epoxy):
1. Into Concrete: Adhesive for rebar and anchors shall have been tested in accordance with ACI 355.4 and ICC-ES AC308 for cracked concrete and seismic applications. Pre-approved products include:
- a) HILTI HIT-200 (ICC-ES ESR-3187)
- b) SIMPSON STRONG-TIE "SET-XP" (ICC-ES ESR-2508)
- c) SIMPSON STRONG-TIE "AT-XP" (IAPMO-UES ER-0268)
2. Into Solid Grouted CMU: Adhesive for rebar and anchors shall have been tested in accordance ICC-ES AC58. Pre-approved products include:
- a) HILTI HIT-HY 70 Masonry Adhesive Anchoring System (ICC-ESR-3342)
- b) SIMPSON STRONG-TIE "SET-XP" (IAPMO-UES ER-265)
- c) SIMPSON STRONG-TIE "AT-XP" (IAPMO-UES ER-0281)
3. Into Hollow/ Multi-Wythe Masonry: Adhesive for rebar and anchors shall have been tested in accordance with ICC-ES AC58. The appropriate screen tube shall be used as recommended by the adhesive manufacturer. Pre-approved products include:
- a) HILTI HIT-HY 70 Masonry Adhesive Anchoring System (ICC-ESR-3342)
- b) SIMPSON STRONG-TIE "SET" (ICC-ES ESR-1772)
4. Anchoring System shall utilize traditional preparation of the anchor hole (Blowing and brushing) per the manufactures requirements. Other methods (i.e. no cleaning with HIT-Z rods or hollow drill bits/vacuum for the Hilti HIT-200 system) may not be used without EOR approval.
5. Anchoring adhesive shall be a two-part component 100% solid epoxy based system supplied through a static-mixing nozzle supplied by the manufacturer. This requirement shall be met regardless of which epoxy product or manufacturer that is used on this project.
6. The threaded rods to be used in combination with Epoxy system shall be fabricated from steel meeting or exceeding the properties of ASTM A36.
- B. Mechanical Anchors (Expansion/Screw Anchors)
1. Into Concrete: Anchors shall have been tested in accordance with ACI 355.2 and ICC-ES AC193 for cracked concrete and seismic applications. Adhesive anchors shall be installed by a certified adhesive anchor installer Where designated on the contract documents. Pre-approved products include:
- a) Screw Anchor- HILTI "KWIK HUS-EZ" (ICC-ES ESR 3027)
- b) Expansion Anchor- HILTI "KWIK BOLT TZ" (ICC-ES ESR 1917)
- c) Screw Anchor- SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR 2713)
- d) Expansion Anchor- SIMPSON STRONG-TIE "STRONG-BOLT 2" (ICC ES ESR-3037) OR "WEDGE-ALL" (ICC-ES ESR-1396)
2. Into Solid Grouted CMU: Anchors shall have been tested in accordance with ICC-ES AC01 or ICC-ES AC106. Pre-approved products include:
- a) Screw Anchor- HILTI KWIK HUS-EZ (AC 106-ESR Pending)
- b) Expansion Anchor- HILTI "KWIK BOLT 3" (ICC-ES ESR 1385)
- c) Screw Anchor- SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR 1056)
- d) Expansion Anchor- SIMPSON STRONG-TIE "STRONG-BOLT 2" (IAPMO UES ER-240)

RAE ABBREVIATION KEY

ADDL	-ADDITIONAL	K.O.	-KNOCK OUT
ARCH	-ARCHITECT	K.O.B.	-KNOCK OUT BLOCK
B.O.	-BOTTOM OF	LG	-LONG
BOT	-BOTTOM	L.L.H.	-LONG LEG HORIZONTAL
BRG	-BEARING	L.L.V.	-LONG LEG VERTICAL
C.J.	-CONSTRUCTION JOINT	L.P.	-LOW POINT
E.J.M.	-EXPANSION JOINT MATERIAL	P.E.M.B.	-PRE ENGINEERED METAL BUILDING
C.L.	-CENTER LINE	P.I.F.	-POURED IN PLACE
CLR	-CLEAR	M.C.	-MOMENT CONNECTION
CMU	-CONCRETE MASONRY UNIT	MIN	-MINIMUM
COL	-COLUMN	N.I.C.	-NOT IN CONTRACT
CONC	-CONCRETE	NS.	-NEAR SIDE
CONT	-CONTINUOUS	N.T.S.	-NOT TO SCALE
DBL	-DOUBLE	O.C.	-ON CENTER
DIA	-DIAMETER	O/C	-ON CENTER
(E)	-EXISTING	O.H.	-OPPOSITE HAND
EXIST	-EXISTING	P.D.F.	-POWDER DRIVEN FASTENER
EA	-EACH	P.J.F.	-PREMOLDED JOINT FILLER
E.E.	-EACH END	PL	-PLATE
E.F.	-EACH FACE	REINF	-REINFORCEMENT
E.W.	-EACH WAY	R.D.	-ROOF DRAIN
E.J.	-EXPANSION JOINT	S.B.J.	-STEEL BAR JOIST
EL	-ELEVATION	S.C.J.	-SAVED CONTRACTION JOINT
ELEV	-ELEVATOR	S.O.G.	-SLAB ON GRADE
E.O.S.	-EDGE OF SLAB	T4B	-TOP AND BOTTOM
EQ	-EQUAL	T.D.S.	-TURN DOWN SLAB
EXP	-EXPANSION	T.E.S.	-THICKENED EDGE SLAB
F.D.	-FLOOR DRAIN	T.E.M.S.	-THICKENED EDGE MONOLITHIC SLAB
F.F.	-FINISHED FLOOR	THK	-THICK
FND	-FOUNDATION	T.O.C.	-TOP OF CONCRETE
F.S.	-FAR SIDE	T.O.F.	-TOP OF FOOTING
FTG	-FOOTING	T.O.S.	-TOP OF STEEL
F.V.	-FIELD VERIFY	T.O.T.B.	-TOP OF TIE BEAM
GA	-GAUGE	T.O.W.	-TOP OF WALL
GALV	-GALVANIZED	T.O.M.	-TOP OF MASONRY
HD	-HEADED	TYP	-TYPICAL
H.D.G.	-HOT DIPPED GALVANIZED	U.N.O.	-UNLESS NOTED OTHERWISE
HORIZ	-HORIZONTAL	V	-SHEAR VALUE
H.P.	-HIGH POINT	VERT	-VERTICAL
H.R.	-HAND RAIL	V.I.F.	-VERIFY IN FIELD
H.S.S.	-HOLLOW STEEL SECTION	W	-WITH
H.S.	-HIGH STRENGTH	W/O	-WITHOUT
INV	-INVERTED	WP	-WORK POINT
JST	-JOIST	W.W.F.	-WELDED WIRE FABRIC

NOTE:  
THIS KEY PERTAINS TO THIS JOB ONLY AND MAY DIFFER FROM OTHER PROJECTS  
PRODUCED BY THIS OFFICE AND THOSE USED BY OTHER FIRMS AND DISCIPLINES

ALLOWABLE STRESS DESIGN (ASD)

POSITIVE WIND PRESSURES ON GLAZING & WALL COMPONENTS ASD				
LOCATION ON BUILDING	POS. PRESSURE < 10 SQ. FT.	POS. PRESSURE < 20 SQ. FT.	POS. PRESSURE < 50 SQ. FT.	POS. PRESSURE < 100 SQ. FT.
FIELD AREA ZONE 4	29.12 PSF	27.91 PSF	26.21 PSF	25 PSF
CORNER AREA ZONE 5	29.12 PSF	27.91 PSF	26.21 PSF	25 PSF

NEGATIVE WIND PRESSURES ON GLAZING & WALL COMPONENTS ASD				
LOCATION ON BUILDING	NEG. PRESSURE < 10 SQ. FT.	NEG. PRESSURE < 20 SQ. FT.	NEG. PRESSURE < 50 SQ. FT.	NEG. PRESSURE < 100 SQ. FT.
FIELD AREA ZONE 4	31.55 PSF	30.34 PSF	28.63 PSF	27.42 PSF
CORNER AREA ZONE 5	38.83 PSF	36.4 PSF	33 PSF	30.34 PSF

ROOF UPLIFT WIND PRESSURES ASD					
LOCATION ON ROOF	NEG. PRESSURE < 10 SQ. FT.	NEG. PRESSURE < 20 SQ. FT.	NEG. PRESSURE < 50 SQ. FT.	NEG. PRESSURE < 100 SQ. FT.	NET UPLIFT PRESSURE ON BAR JOISTS
FIELD AREA ZONE 1	31.82 PSF	31.01 PSF	29.93 PSF	29.12 PSF	20.118 PSF
EDGE AREA ZONE 2	53.39 PSF	47.72 PSF	40.45 PSF	34.51 PSF	25.512 PSF
CORNER AREA ZONE 3	80.35 PSF	66.6 PSF	48.53 PSF	34.51 PSF	25.512 PSF

WIND LOAD BASED ON USING ASCE 7-10 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES" METHODS OF CALCULATIONS FOR WIND PRESSURES BASED ON THE FOLLOWING FACTORS. NOTE THESE PRESSURES ARE "ALLOWABLE DESIGN STRESS" OR NOT FACTORED LOADS.

1. BASED ON ASD WIND SPEED OF 112 MPH AND ULTIMATE WIND SPEED OF 145 MPH.
2. BUILDING RISK CATEGORY II PER ASCE-7.
3. "ENCLOSED" BUILDING CLASSIFICATION (Gcpl = +/- 0.18).
4. BUILDING EXPOSURE CATEGORY OF C PER ASCE-7.
5. MEAN ROOF HEIGHT OF LESS THAN 30 FEET.
6. ROOF ANGLE OF LESS THAN 10 DEGREES.
7. ALL GLAZING IS ASSUMED PROTECTED IN ACCORDANCE WITH SECTION 1606.1.4 OF THE FLORIDA BUILDING CODE.

STRENGTH DESIGN (LRFD)

POSITIVE WIND PRESSURES ON GLAZING & WALL COMPONENTS				
LOCATION ON BUILDING	POS. PRESSURE < 10 SQ. FT.	POS. PRESSURE < 20 SQ. FT.	POS. PRESSURE < 50 SQ. FT.	POS. PRESSURE < 100 SQ. FT.
FIELD AREA ZONE 4	48.53 PSF	46.51 PSF	43.68 PSF	41.66 PSF
CORNER AREA ZONE 5	48.53 PSF	46.51 PSF	43.68 PSF	41.66 PSF

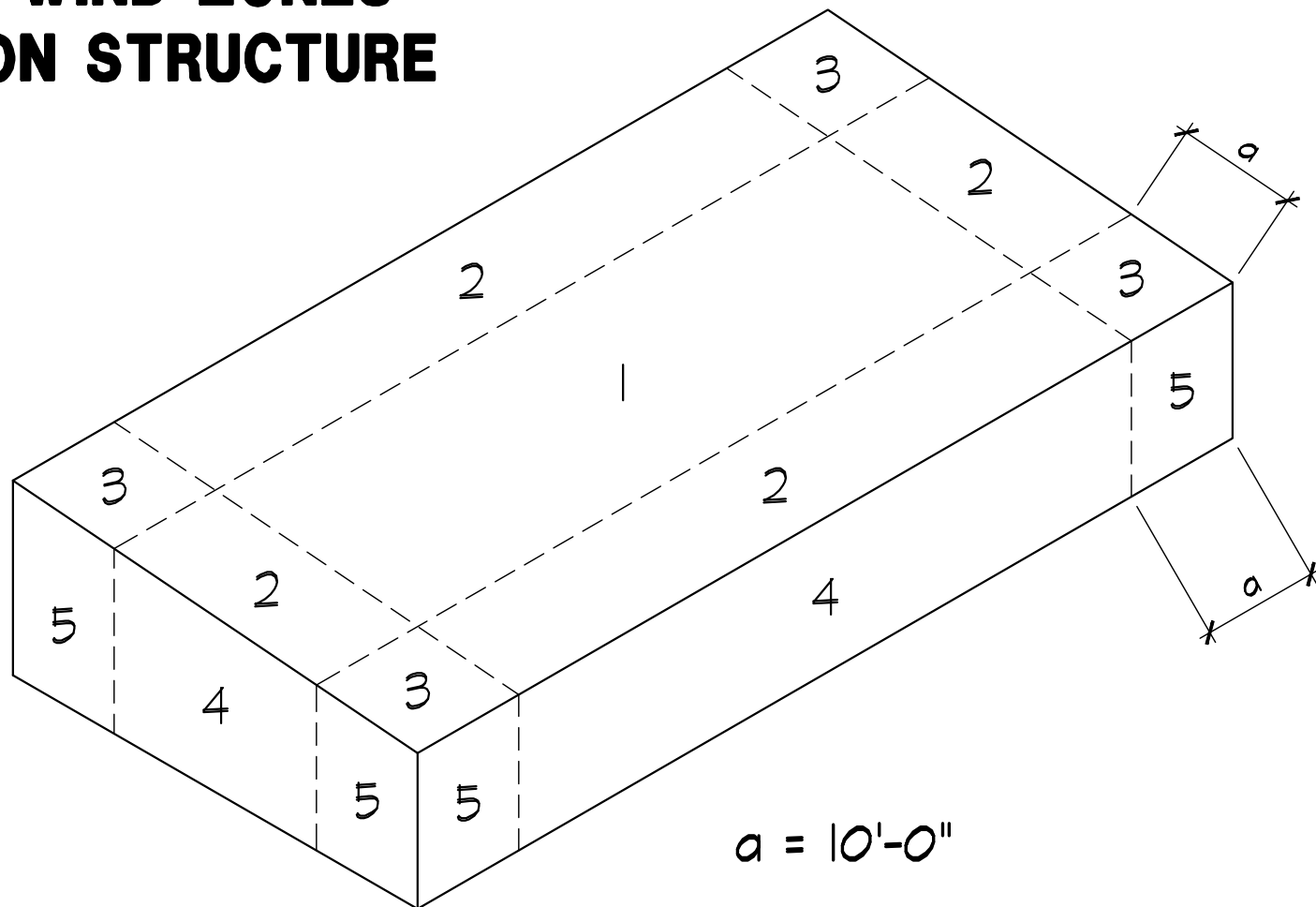
NEGATIVE WIND PRESSURES ON GLAZING & WALL COMPONENTS				
LOCATION ON BUILDING	NEG. PRESSURE < 10 SQ. FT.	NEG. PRESSURE < 20 SQ. FT.	NEG. PRESSURE < 50 SQ. FT.	NEG. PRESSURE < 100 SQ. FT.
FIELD AREA ZONE 4	52.58 PSF	50.56 PSF	47.72 PSF	45.7 PSF
CORNER AREA ZONE 5	64.71 PSF	60.67 PSF	55 PSF	50.56 PSF

ROOF UPLIFT WIND PRESSURES					
LOCATION ON ROOF	NEG. PRESSURE < 10 SQ. FT.	NEG. PRESSURE < 20 SQ. FT.	NEG. PRESSURE < 50 SQ. FT.	NEG. PRESSURE < 100 SQ. FT.	NET UPLIFT PRESSURE ON BAR JOISTS
FIELD AREA ZONE 1	53.03 PSF	51.68 PSF	49.88 PSF	48.53 PSF	35.03 PSF
EDGE AREA ZONE 2	88.98 PSF	79.54 PSF	67.41 PSF	57.52 PSF	44.02 PSF
CORNER AREA ZONE 3	133.92 PSF	111 PSF	80.89 PSF	57.52 PSF	44.02 PSF

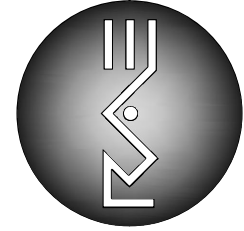
WIND LOAD BASED ON USING ASCE 7-10 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES" METHODS OF CALCULATIONS FOR WIND PRESSURES BASED ON THE FOLLOWING FACTORS:

1. WIND SPEED OF 145 MPH. ASD VELOCITY OF 112 MPH.
2. BUILDING RISK CATEGORY II PER ASCE-7.
3. "ENCLOSED" BUILDING CLASSIFICATION (Gcpl = +/- 0.18).
4. BUILDING EXPOSURE CATEGORY OF C PER ASCE-7.
5. MEAN ROOF HEIGHT OF LESS THAN 30 FEET.
6. ROOF ANGLE OF LESS THAN 10 DEGREES.
7. ALL GLAZING IS ASSUMED PROTECTED IN ACCORDANCE WITH SECTION 1609.1.2 OF THE FLORIDA BUILDING CODE.

WIND ZONES  
ON STRUCTURE



RICHARD ADAMS ENGINEERS  
& CONSULTANTS, INC.  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985.4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7565



PROJECT NAME :  
STRUCTURAL DESIGN FOR:  
SHELL STATION  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

CLIENT :  
AEC SERVICES, INC.  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

DAVID S. HAAS, P.E.  
FLORIDA REG. # 11860  
(NOT VALID WITHOUT SEAL)

I CERTIFY TO THE BEST OF MY  
KNOWLEDGE THAT THE  
DRAWINGS & SPECIFICATIONS  
COMPLY WITH THE APPLICABLE  
MINIMUM BUILDING CODES.

JOB NO :  
RAE 17288

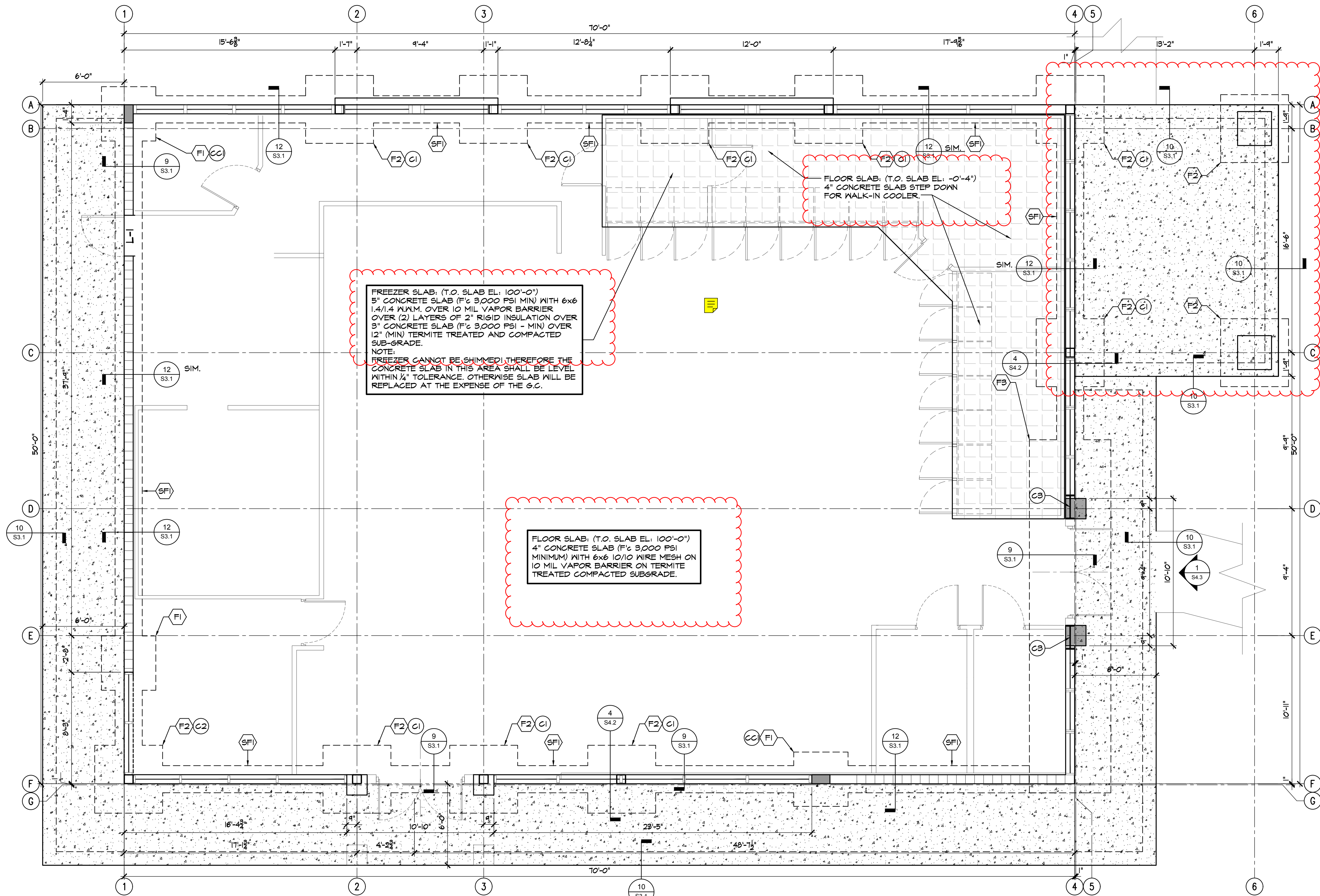
DRAWN/REVIEWED:  
TPE / DM

ISSUE DATE :  
NOV. 22, 2017

REVISIONS  
1  
2  
3  
4

SHEET NUMBER  
S0.3

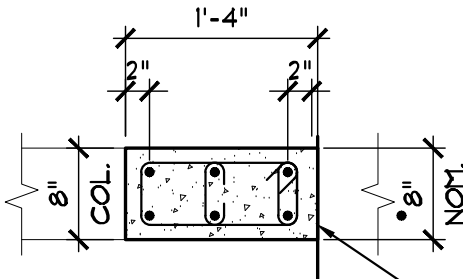
I:\2017\17288 Gulf To Bay FL\Structural\DWG\17288 S1.1.dwg, Plotted:9/7/2018 5:14 PM, By:Buell Moody  
THIS DRAWING IS THE PROPERTY OF RICHARD ADAMS ENGINEERS AND MAY NOT BE REPRODUCED OR USED FOR ANY OTHER PROJECT IN WHOLE OR IN PART WITHOUT WRITTEN PERMISSION. COPYRIGHT 2017




COLUMN SCHEDULE			
MARK	TYPE	BASE PLATE	NOTE
C1	HSS 8x8x3/8"	16"x16"x3/4" THICK BASE PLATE W/ (4) 3/4" DIA. ANCHOR RODS	REFER TO DETAILS 2/53.1 & 4/53.1
C2	HSS 8x8x1/4"	16"x16"x3/4" THICK BASE PLATE W/ (4) 3/4" DIA. ANCHOR RODS	REFER TO DETAILS 2/53.1 & 4/53.1
C2	W12x57	28"x12"x1" THICK BASE PLATE W/ (4) 3/4" DIA. ANCHOR RODS	REFER TO DETAILS 2/53.1 & 4/53.1

LINTEL SCHEDULE					
MARK	LOCATION	TYPE	MIN. LOAD/FT.	MAX. LENGTH*	REMARK
L-1	DOORS/WINDOWS	8F8-1B/1T	1663	5'-4"	REFER TO DETAIL 5/53.1

NOTES:  
1. ALL LINTELS ARE 8" WIDE PRECAST LINTELS AS MANUFACTURED BY CAST-CRETE OR APPROVED EQUAL.  
2. \*LENGTH REPRESENTS THE OVERALL LENGTH OF THE LINTEL WITH A MINIMUM 4" BEARING AT EACH END.  
3. ALTERNATE LINTELS WILL BE ACCEPTED BASED ON REQUIRED LOAD CAPACITY AS STATED IN CHART.

COLUMN & BEAM SCHEDULE			
MARK	TYPE	REINFORCING	NOTE
CC1	FOURED CONC. COL. 8"x16"	(6) #7 VERTICAL BARS W/ #3 TIES @ 8" O.C.	REFER TO DETAIL 1B/51.1
			
1B S1.1	COLUMN TYPE CC1		
2 S1.1	CONCRETE COLUMN & BEAM SCHEDULE		
			SCALE: N.T.S.

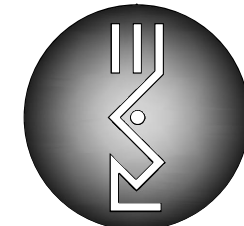
MASONRY WALL SCHEDULE		
WALL TYPE	REINFORCING SPACING & TYPE	
	8" THICK MASONRY WALL	
8" THICK		

MASONRY WALL REINFORCING
<b>GENERAL NOTES:</b> 1. USE (1) #5 BAR IN FILLED CELL @ 24" O.C. AT JAMBS LESS THAN 7'-0" WIDE, #5 BAR AT 24" O.C. AT BALANCE OF BUILDING. 2. USE ADDITIONAL BAR(S) ON EACH SIDE OF OPENINGS AND USE (3) #5 BARS AT CORNERS PER DETAIL 7/53.1 3. REFER TO 9/53.1 FOR CONTROL JOINTS IN MASONRY. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS. 4. USE 1 GA. DUR-O-WAL @ 16" O.C. FOR HORIZONTAL REINFORCING. 5. REFER TO 8/53.1 FOR BOND BEAM CORNER REINFORCING. 6. REFER TO DETAIL 10/53.1 FOR STEP IN MASONRY BOND BEAM.

STRIP FOOTING SCHEDULE						
MARK <div>FX</div>	SIZE			REINFORCEMENT		REMARKS
	LENGTH	WIDTH	DEPTH	TOP	BOTTOM	
<div>SF1</div>	CONT	2'-0"	2'-0"	-	(3) #5 BARS CONTINUOUS	#4 TIES @ 30" O.C.
FOOTING SCHEDULE						
MARK <div>FX</div>	SIZE			REINFORCEMENT		REMARKS
	LENGTH	WIDTH	DEPTH	TOP	BOTTOM	
<div>F1</div>	4'-0"	4'-0"	1'-0"	-	(5) #5 BARS EACH WAY	-
<div>F2</div>	5'-0"	5'-0"	1'-0"	-	(6) #5 BARS EACH WAY	-
<div>F3</div>	26'-0"	6'-0"	3'-0"	(8) #5 BARS W/ #5 TRANSVERSE BAR @ 12" O.C.	(8) #5 BARS W/ #5 TRANSVERSE BAR @ 12" O.C.	-

NOTES:  
1. THE BOTTOM OF ALL FOOTINGS SHALL BE (1'-4") MIN. BELOW FINISHED EARTH GRADE (ACTUAL DEPTH MAY VARY).  
2. THE TOP OF ALL INTERIOR FOOTINGS SHALL BE (10") BELOW FINISHED FLOOR U.N.O. (UNLESS NOTED OTHERWISE).  
3. THE TOP OF ALL EXTERIOR FOOTINGS SHALL BE (11'-0") BELOW FINISHED FLOOR - U.N.O.  
4. REFER TO DETAIL 7/53.1 FOR FOOTING STEP INFORMATION.

RICHARD ADAMS ENGINEERS & CONSULTANTS, INC.  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985.4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 7565



PROJECT NAME :  
STRUCTURAL DESIGN FOR:  
SHELL STATION  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

CLIENT :  
AEC SERVICES, INC.  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

DAVID S. MAAS, P.E.  
FLORIDA REG. # 11860  
(NOT VALID WITHOUT SEAL)

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE DRAWINGS & SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.

JOB NO :  
RAE 17288

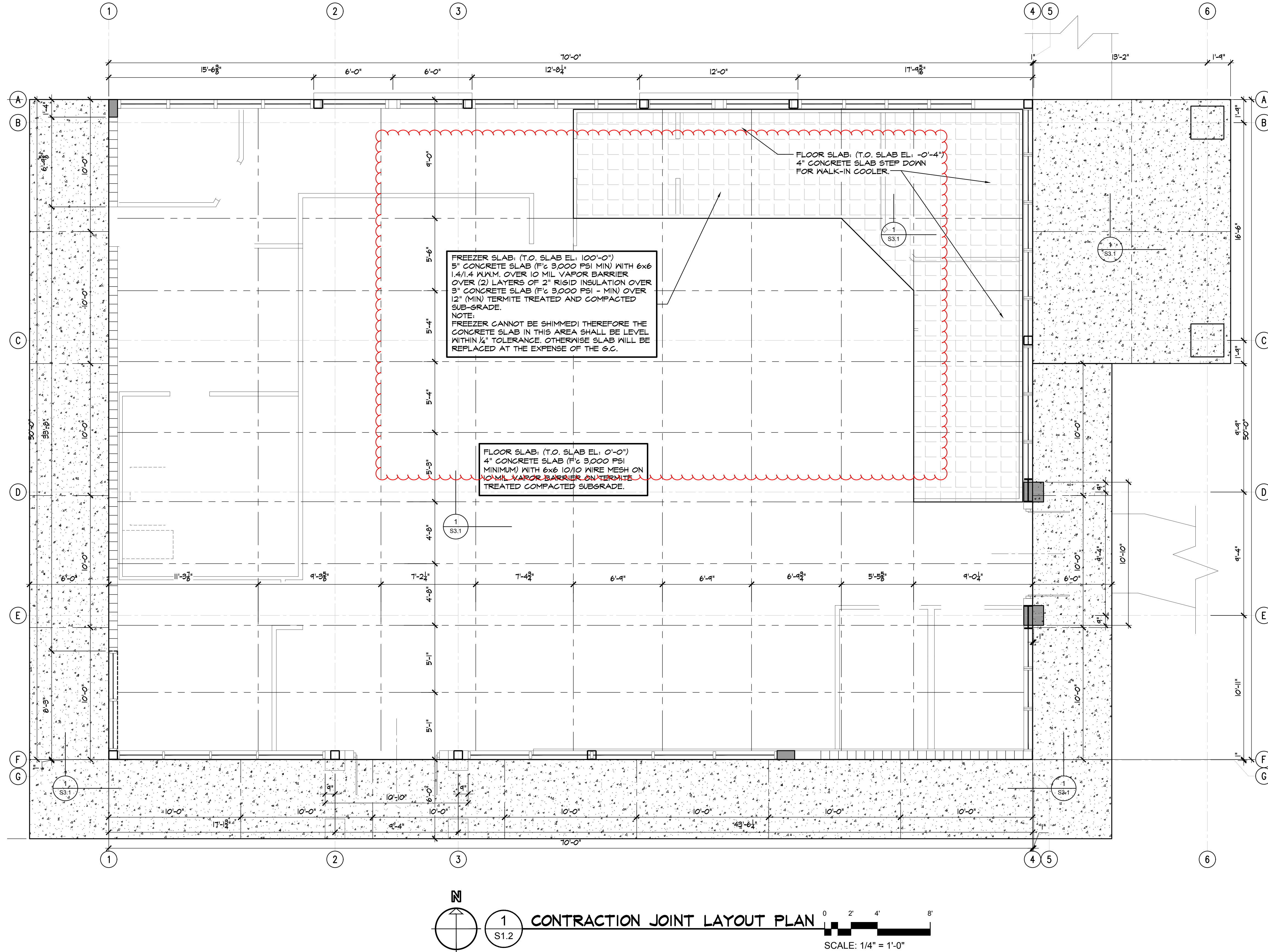
DRAWN/REVIEWED:  
TPE / DM

ISSUE DATE :  
NOV. 22, 2017

REVISIONS  
1  
2  
3  
4

SHEET NUMBER  
S1.1

I:\2017\17288 Gulf To Bay FL\Structural\DWG\17288 S1.2.dwg, Plotted 9/7/2018 5:14 PM, By: Buell Moody  
THIS DRAWING IS THE PROPERTY OF RICHARD ADAMS ENGINEERS AND MAY NOT BE REPRODUCED OR USED FOR ANY OTHER PROJECT IN WHOLE OR IN PART WITHOUT WRITTEN PERMISSION. COPYRIGHT 2017



CLIENT :  
**AEC SERVICES, INC.**  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

PROJECT NAME :  
**STRUCTURAL DESIGN FOR:  
SHELL STATION**  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

**RICHARD ADAMS ENGINEERS  
& CONSULTANTS, INC.**  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985-4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7565

DAVID S. HAAS, P.E.  
FLORIDA REG. # 11860  
(NOT VALID WITHOUT SEAL)

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE DRAWINGS & SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.

**JOB NO :**  
RAE 17288

**DRAWN/REVIEWED:**  
TPE / DM

**ISSUE DATE :**  
NOV. 22, 2017

REVISIONS	
1	
2	
3	
4	

**SHEET NUMBER**  
**S12**



**DESIGN FOR:**

**CLIENT :**  
**AEC SERVICES, INC.**  
**1616 ALLISON WOODS LANE**  
**TAMPA, FLORIDA 33619**

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE DRAWINGS & SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

**JOB NO**  
**RAE 17288**

---

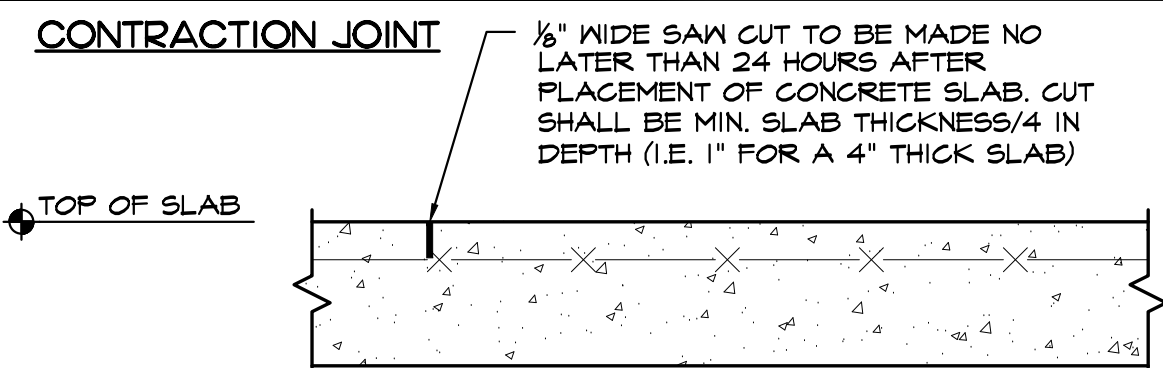
**DRAWN/REV**  
**TPE / DM**

---

**ISSUE DATE**  
**NOV. 22, 2011**

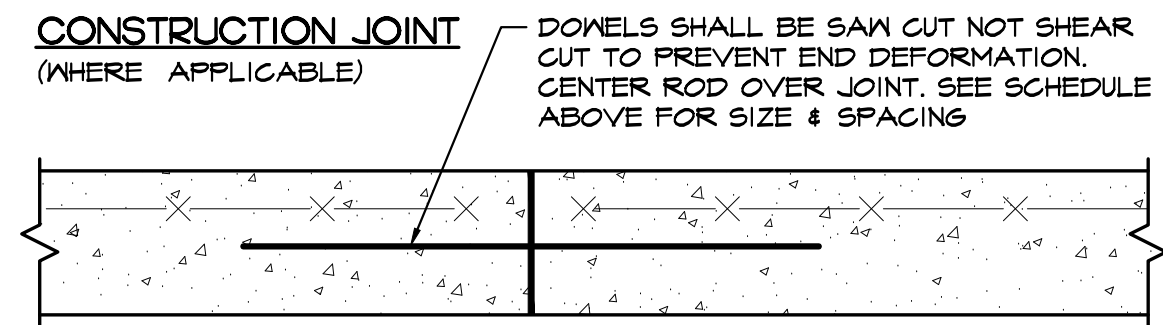
REVISIONS	
1	
2	
3	
4	

**SHEET NUMBER**  
**S2.1**



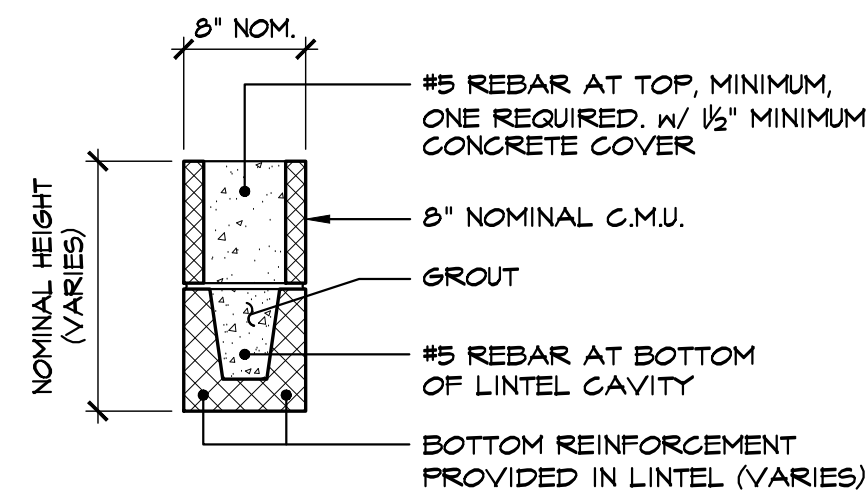
**SMOOTH DOWEL SCHEDULE**

SLAB DEPTH (IN.)	DIAMETER (IN.)	TOTAL LENGTH (IN.)	SPACING C TO C (IN.)
4	1/2	18	12
5	5/8	18	12
6	3/4	18	12
7	7/8	24	12
8	1	24	12
9	1 1/8	24	12
10	1 1/4	24	12



1 **CONTRACTION & CONSTRUCTION JOINTS**  
S3.1 SCALE: N.T.S.

ALL LINTELS SHALL HAVE A MINIMUM LOAD BEARING CAPACITY AS STATED IN LINTEL SCHEDULE, UNLESS NOTED OTHERWISE.



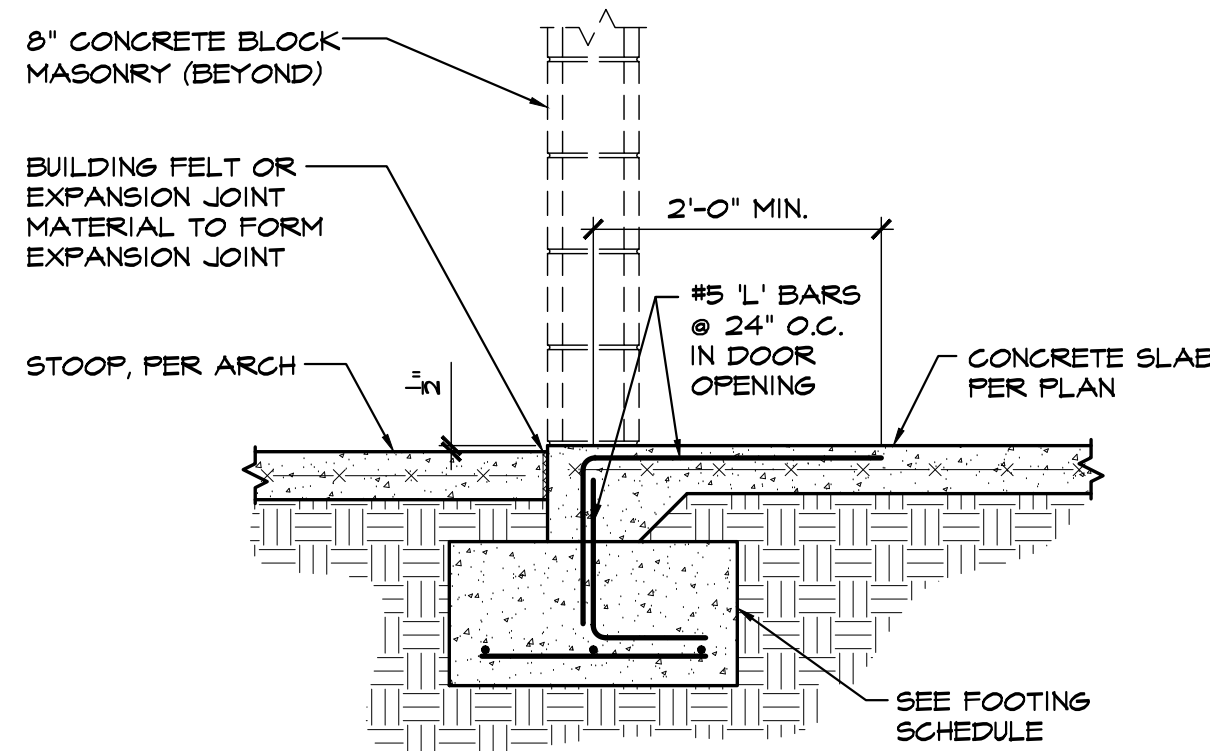
NOMINAL WIDTH  
F = FILLED W/ GROUT  
NOMINAL HEIGHT

8F16-1B/1T

QUANTITY OF #5 REBAR AT TOP

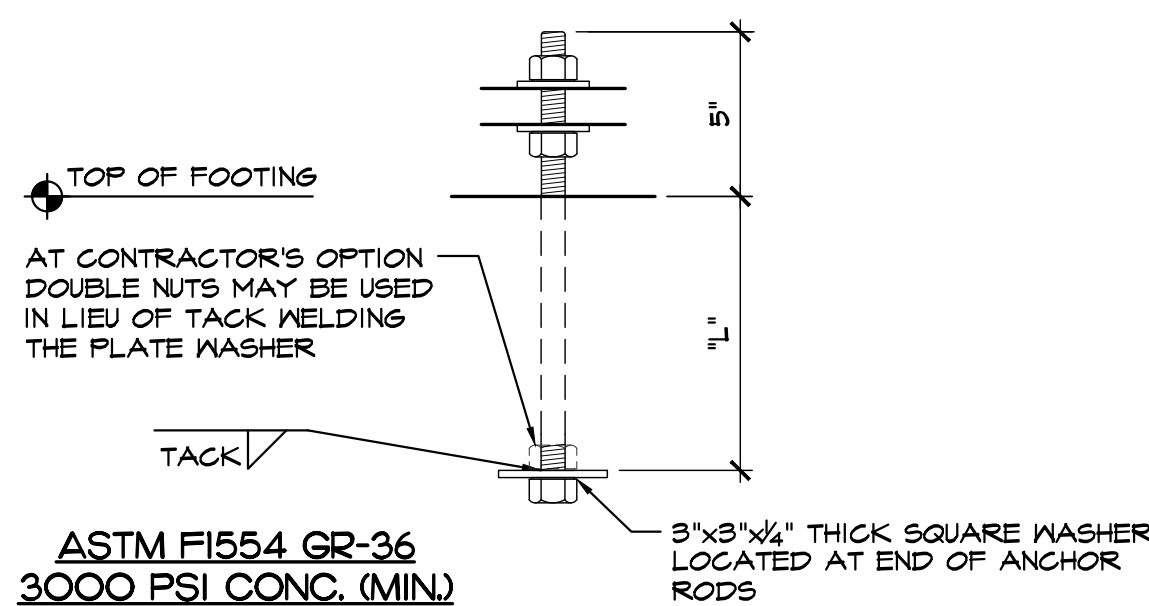
QUANTITY OF #5 REBAR AT BOTTOM OF CAVITY

5 **PRECAST LINTEL DESIGN**  
S3.1 SCALE: N.T.S.

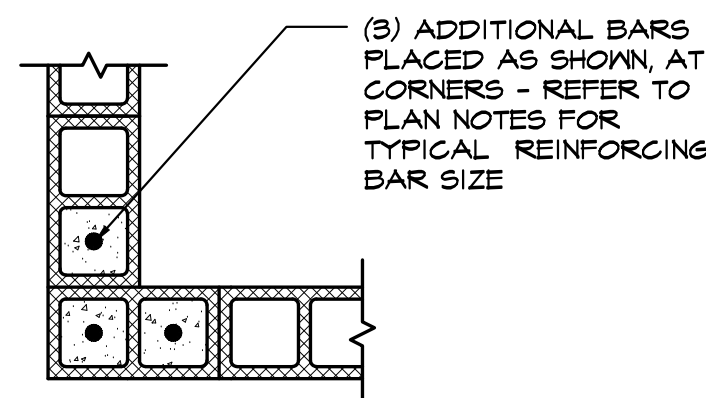


9 **SLAB EDGE AND FOOTING (DOOR OPENING LOCATIONS)**  
S3.1 SCALE: 3/4" = 1'-0"

ANCHOR ROD SCHEDULE			
COLUMN MARK	ANCHOR ROD	LENGTH (L)	REMARKS
C1/C2	(4) 3/4" DIA.	9"	



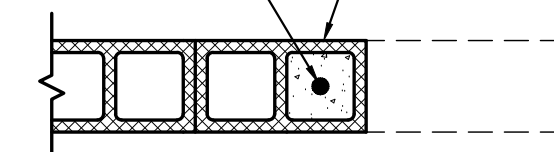
2 **ANCHOR ROD SCHEDULE**  
S3.1 SCALE: N.T.S.



**CORNERS**

ADDITIONAL REINFORCING BAR, (1) EACH SIDE OF OPENING.

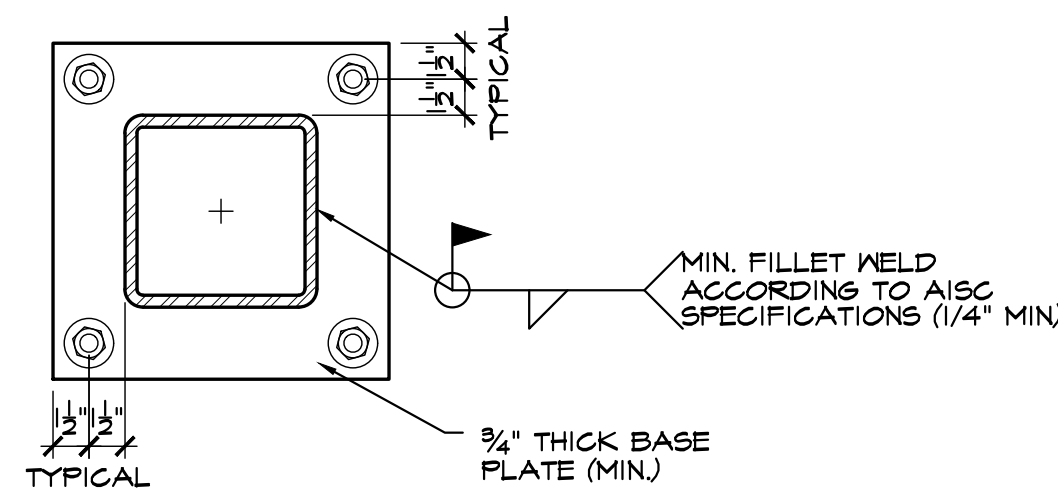
GROUT JAMB SOLID TO LINTEL BEARING ELEVATION.



**OPENINGS**

6 **TYPICAL MASONRY REINFORCING (8" CMU BLOCKS)**  
S3.1 SCALE: 3/4" = 1'-0"

**TUBE SECTION**



**NOTES:**

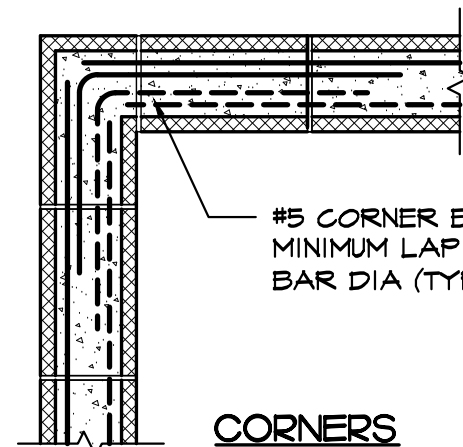
1. USE OVERSIZED HOLES FOR ANCHOR RODS ACCORDING TO AISC.

2. PLATE WASHERS SHALL BE INSTALLED OVER OVERSIZED HOLES.

3. CONTRACTOR SHALL PROVIDE 1/8" THICK TEMPLATE FOR ANCHOR ROD INSTALLATION.

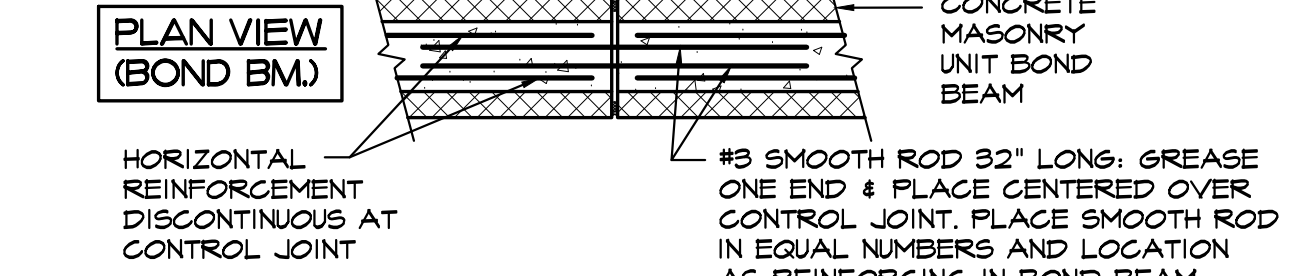
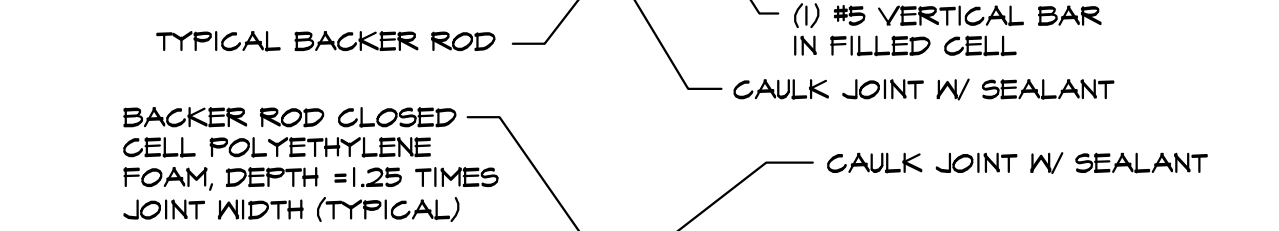
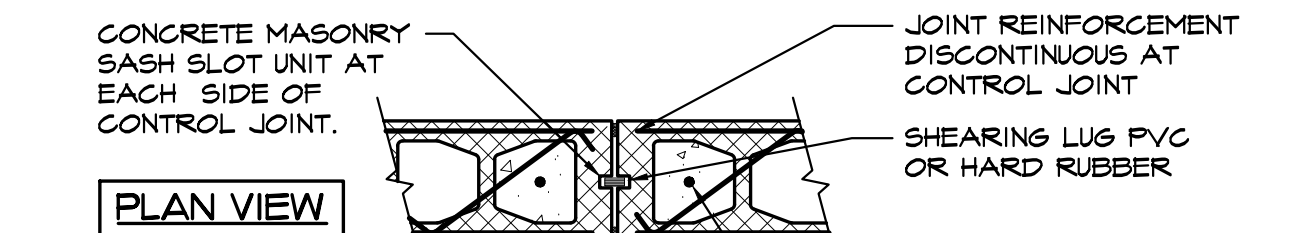
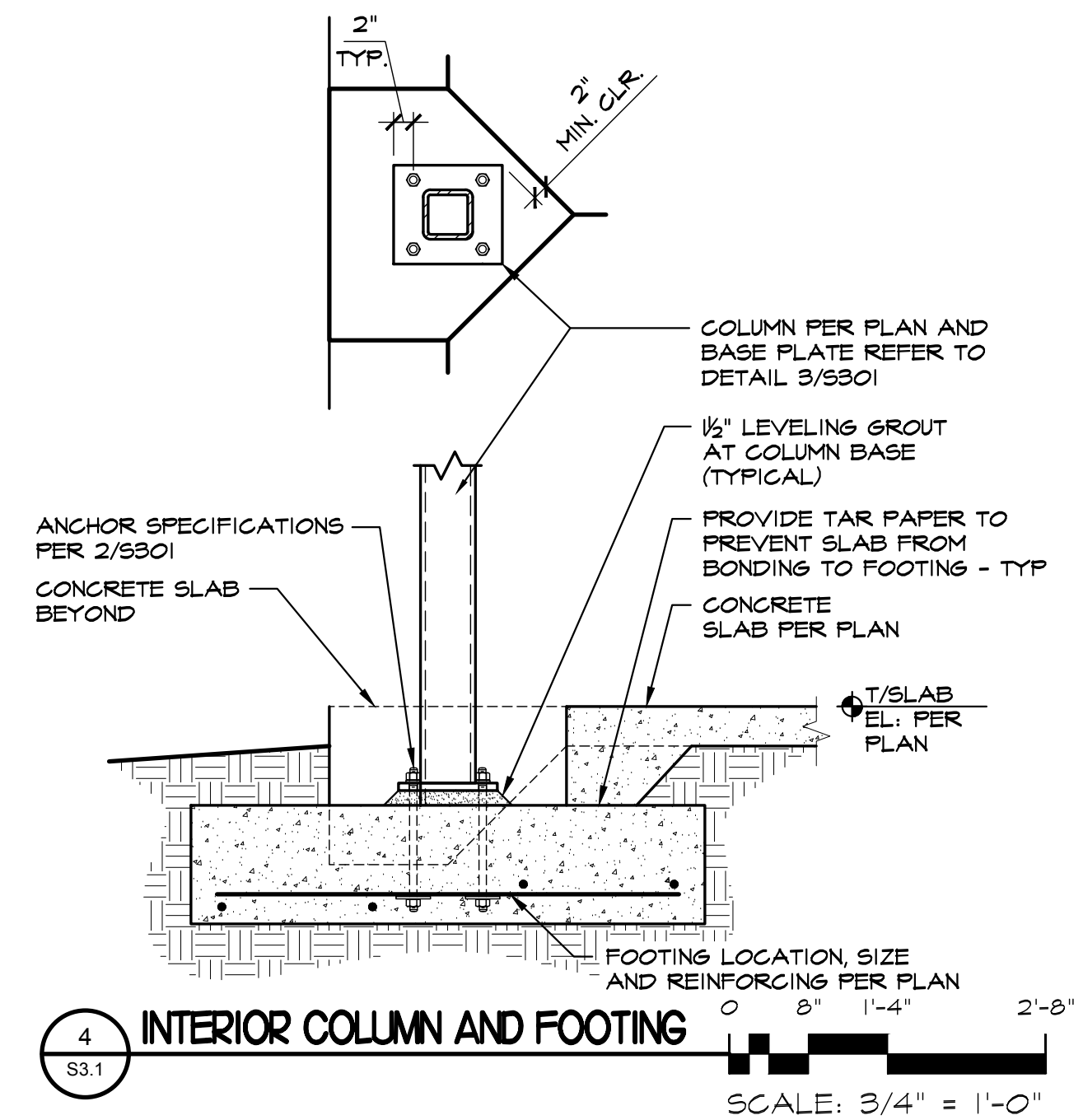
4. MINIMUM GROUT THICKNESS OF 1 1/2" UNLESS NOTED OTHERWISE ON DRAWINGS.

3 **COLUMN BASE PLATE**  
S3.1 SCALE: N.T.S.

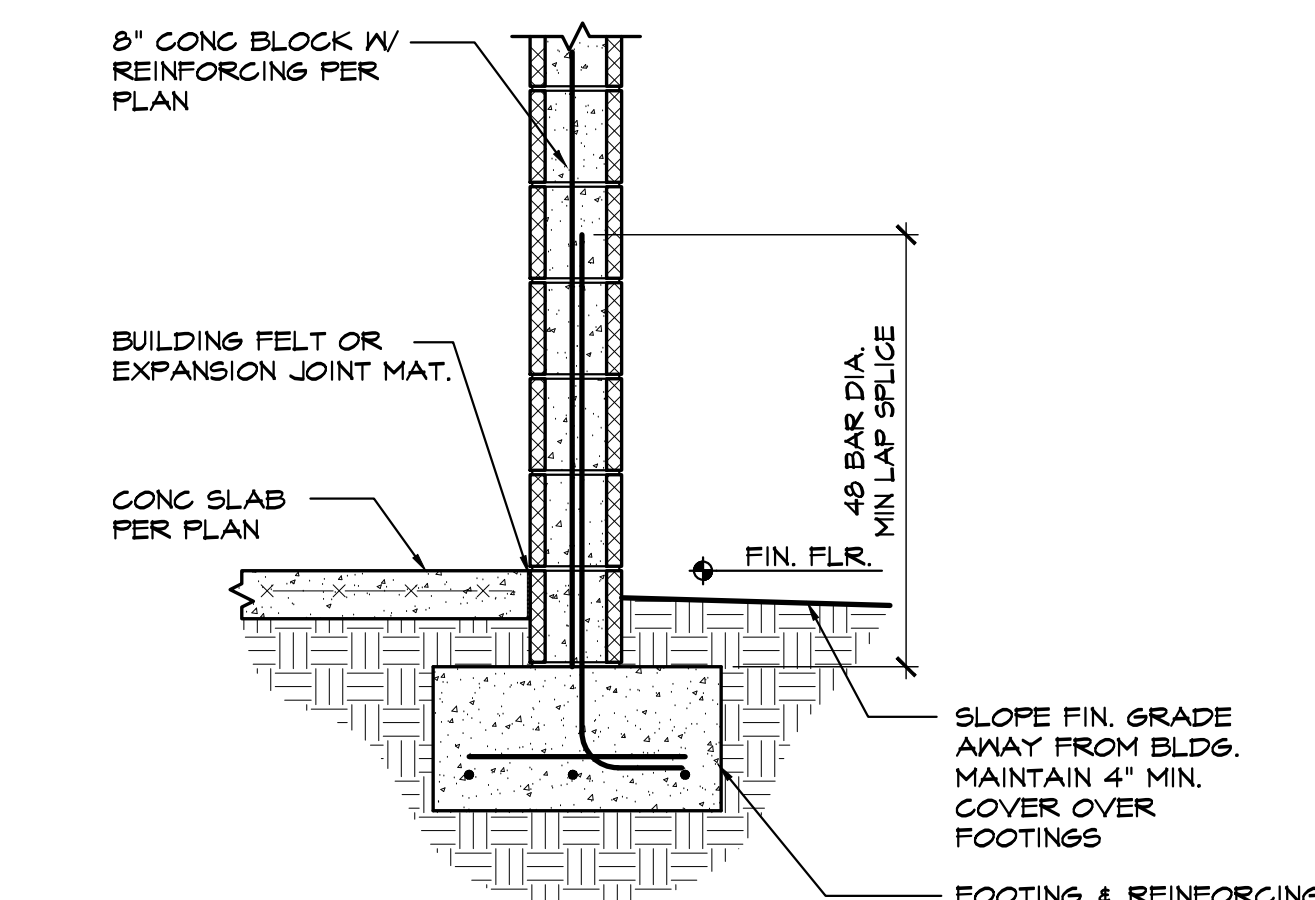


**CORNERS**

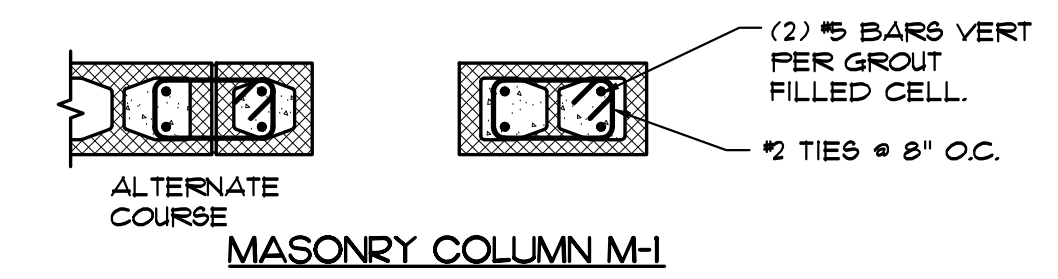
7 **BOND BEAM REINFORCING (CONTINUITY AT CORNERS)**  
S3.1 SCALE: 3/4" = 1'-0"



8 **CONTROL JOINT (MASONRY, BOND BEAM & PIP)**  
S3.1 SCALE: 1" = 1'-0"

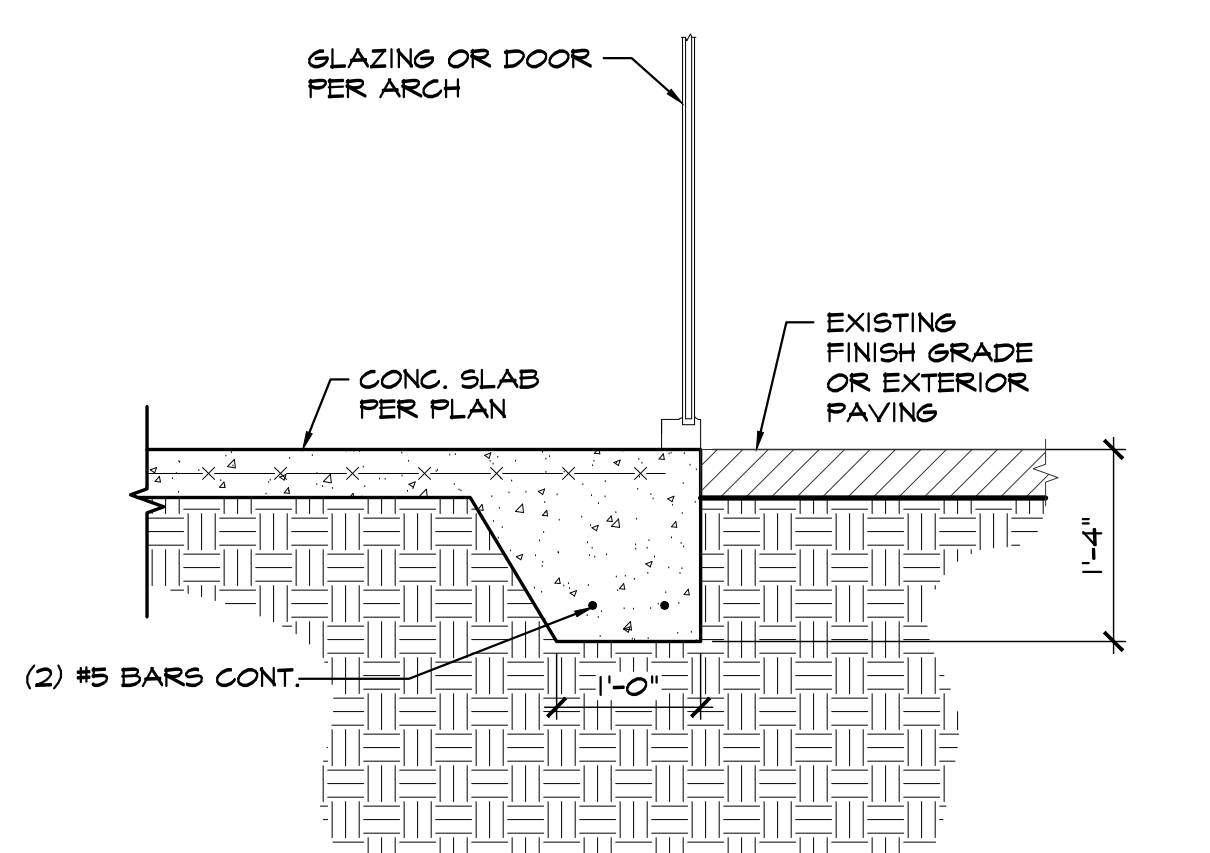


12 **SECTION AT STRIP FOOTING**  
S3.1 SCALE: 3/4" = 1'-0"

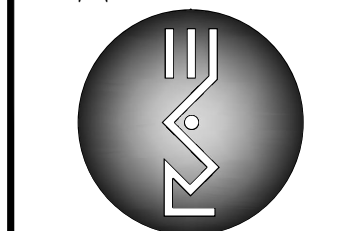


11 **MASONRY COLUMN DETAILS (M-1, M-2 & M-3)**  
S3.1 SCALE: 3/4" = 1'-0"

10 **THICKENED SLAB EDGE**  
S3.1 SCALE: 3/4" = 1'-0"



RICHARD ADAMS ENGINEERS & CONSULTANTS, INC.  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985.4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 7565



PROJECT NAME :  
STRUCTURAL DESIGN FOR:  
**SHELL STATION**  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

CLIENT :  
**AEC SERVICES, INC.**  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

DAVID S. MAAS, P.E.  
FLORIDA REG. # 11860  
(NOT VALID WITHOUT SEAL)

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE DRAWINGS & SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.

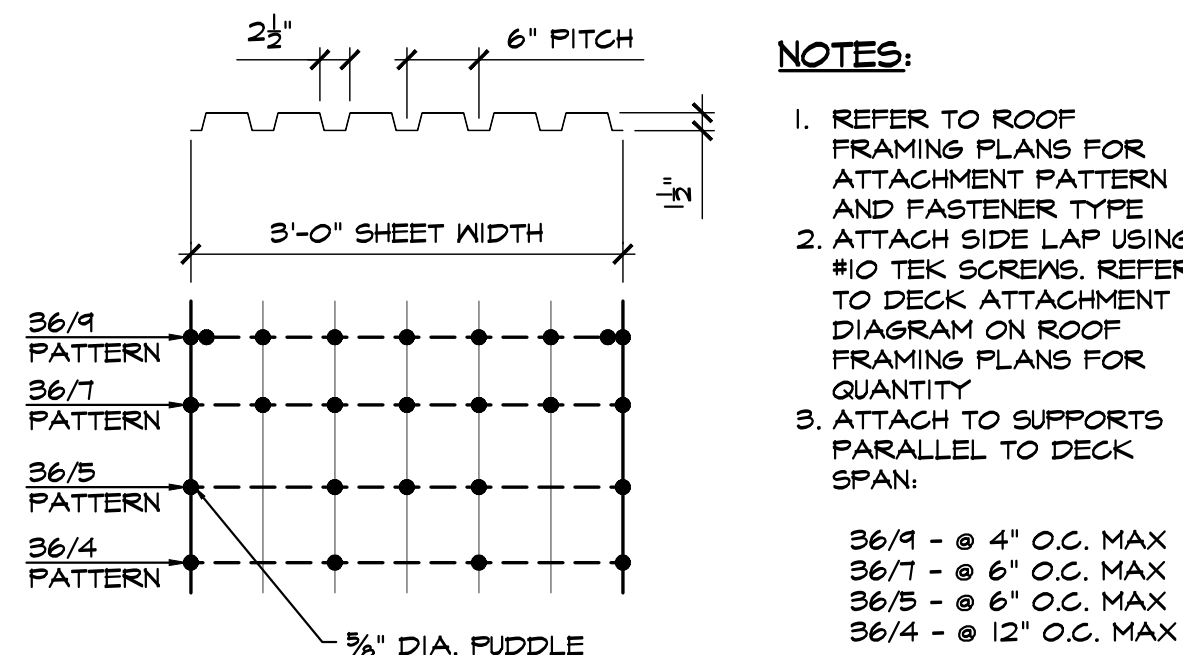
JOB NO :  
**RAE 17288**

DRAWN/REVIEWED:  
**TPE / DM**

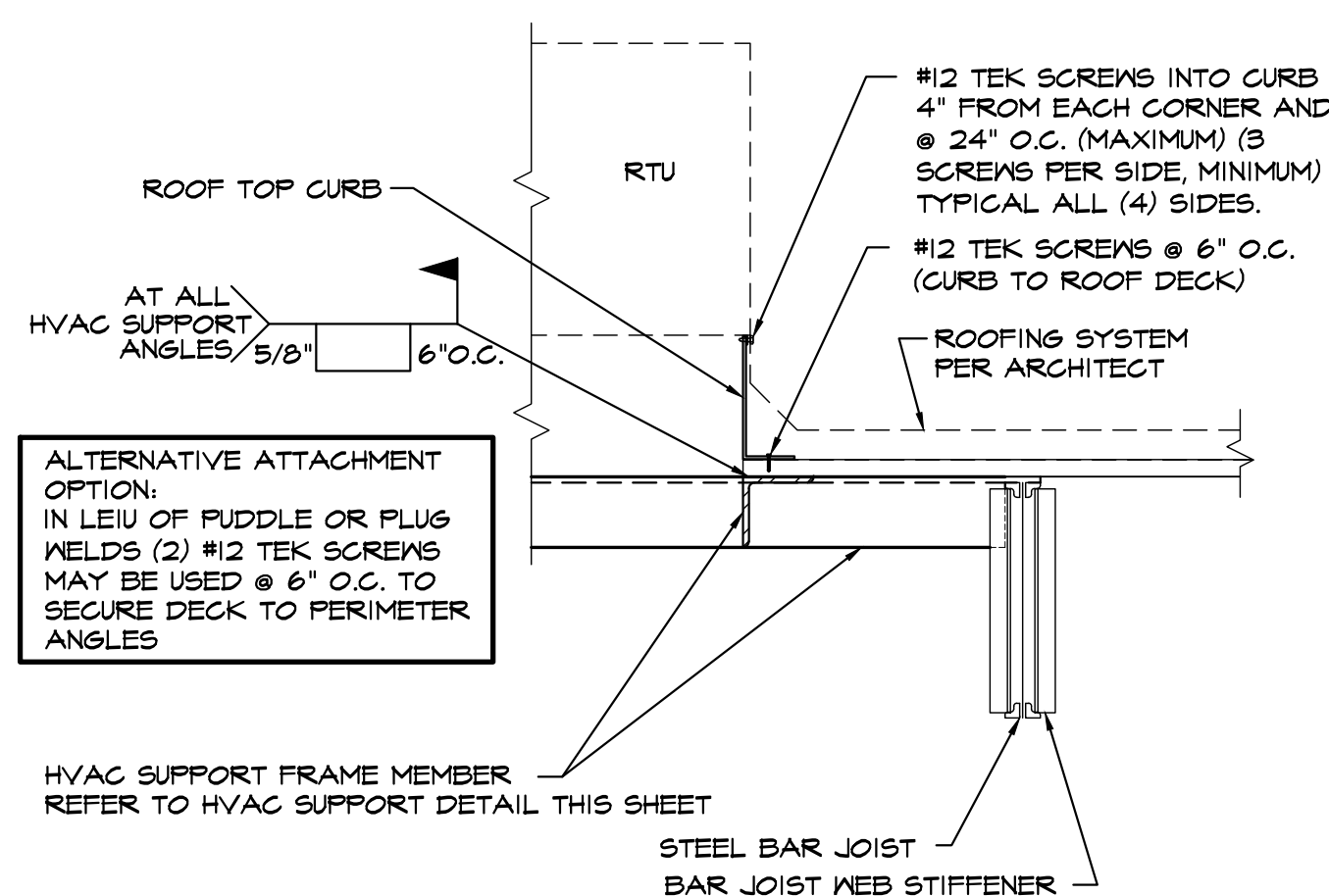
ISSUE DATE :  
**NOV. 22, 2017**

REVISIONS	
1	
2	
3	
4	

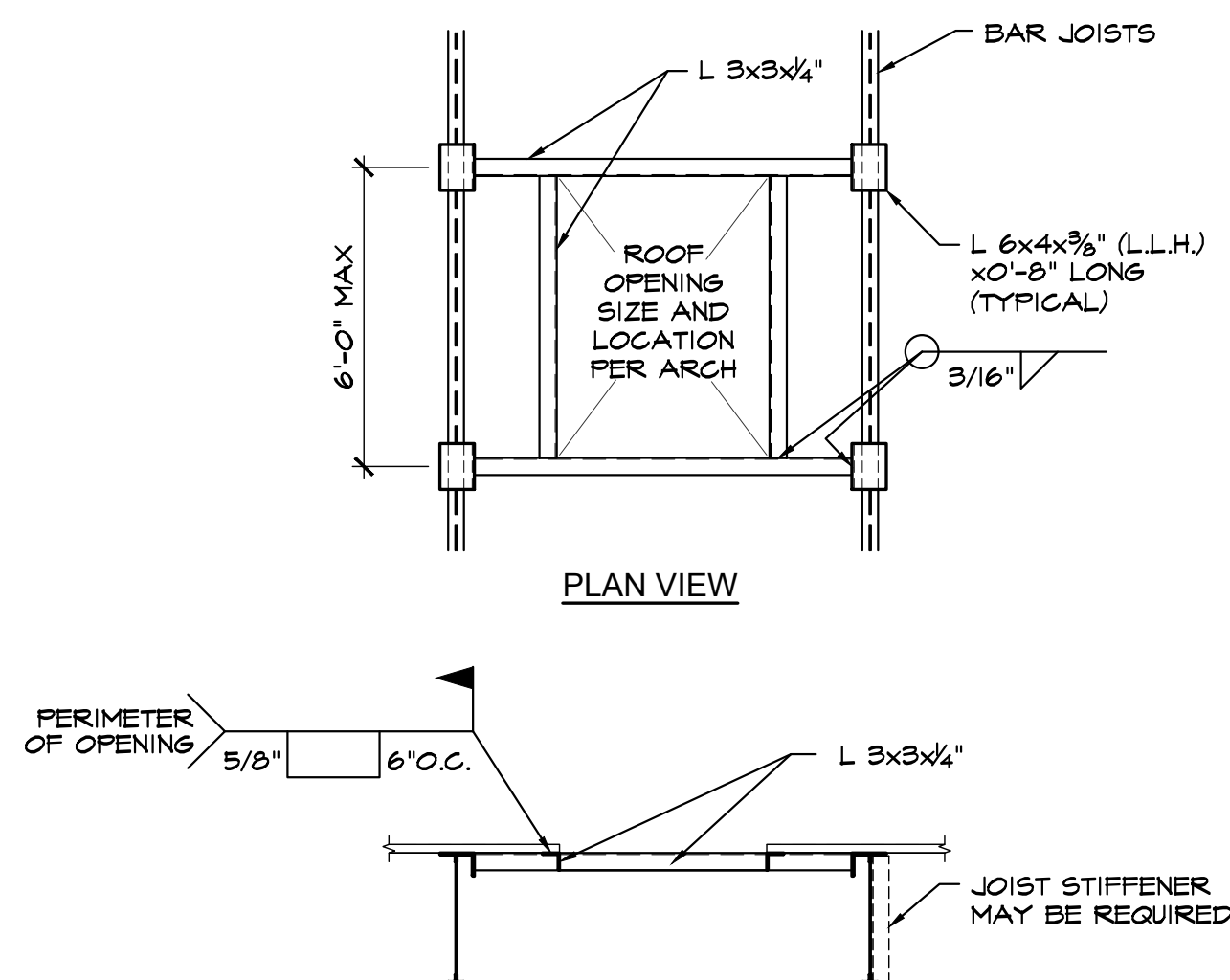
SHEET NUMBER  
**S3.1**



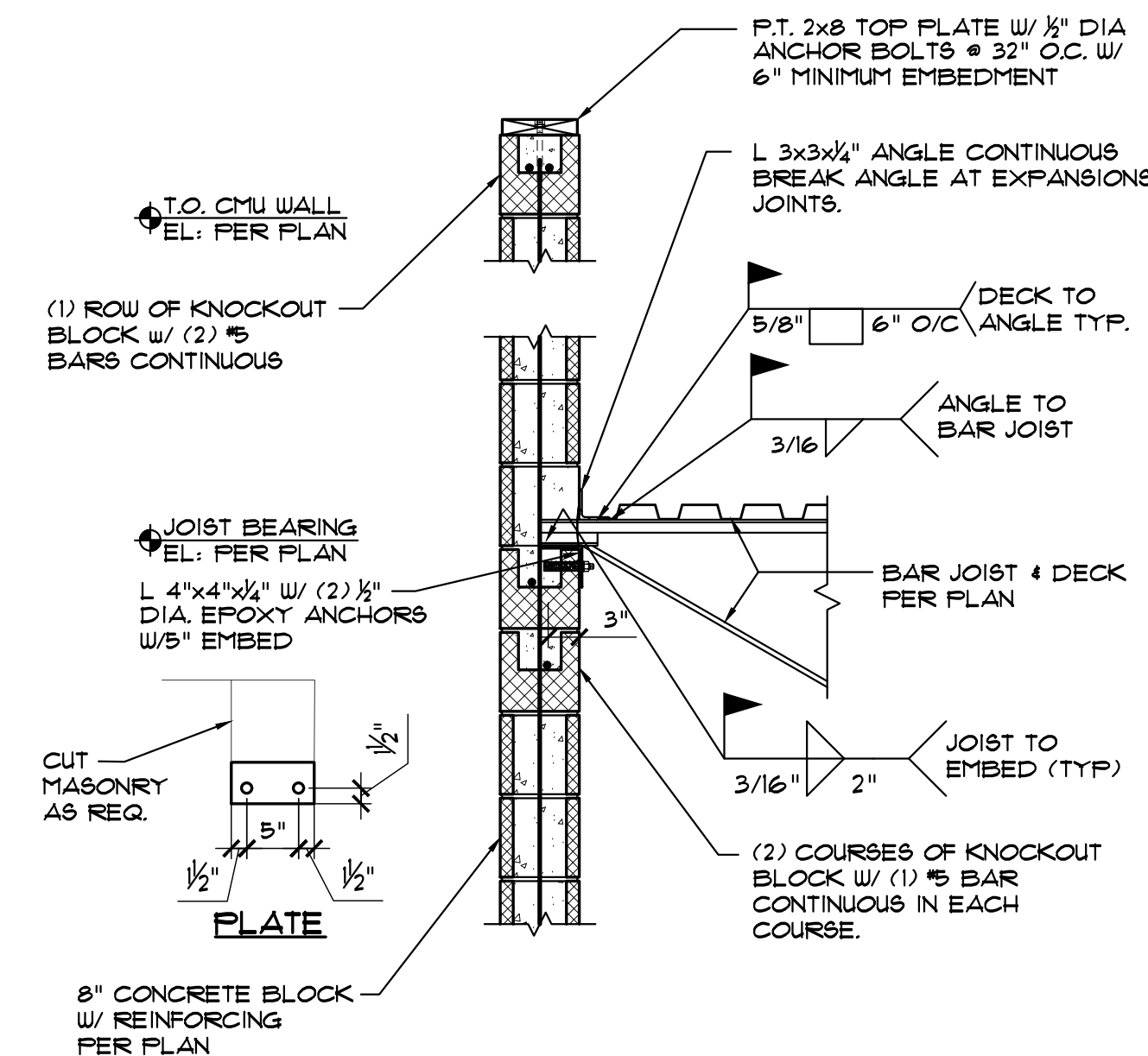
1 DECKING ATTACHMENT  
SCALE: N.T.S.



5 CURB ATTACHMENT  
SCALE: 3/4" = 1'-0"

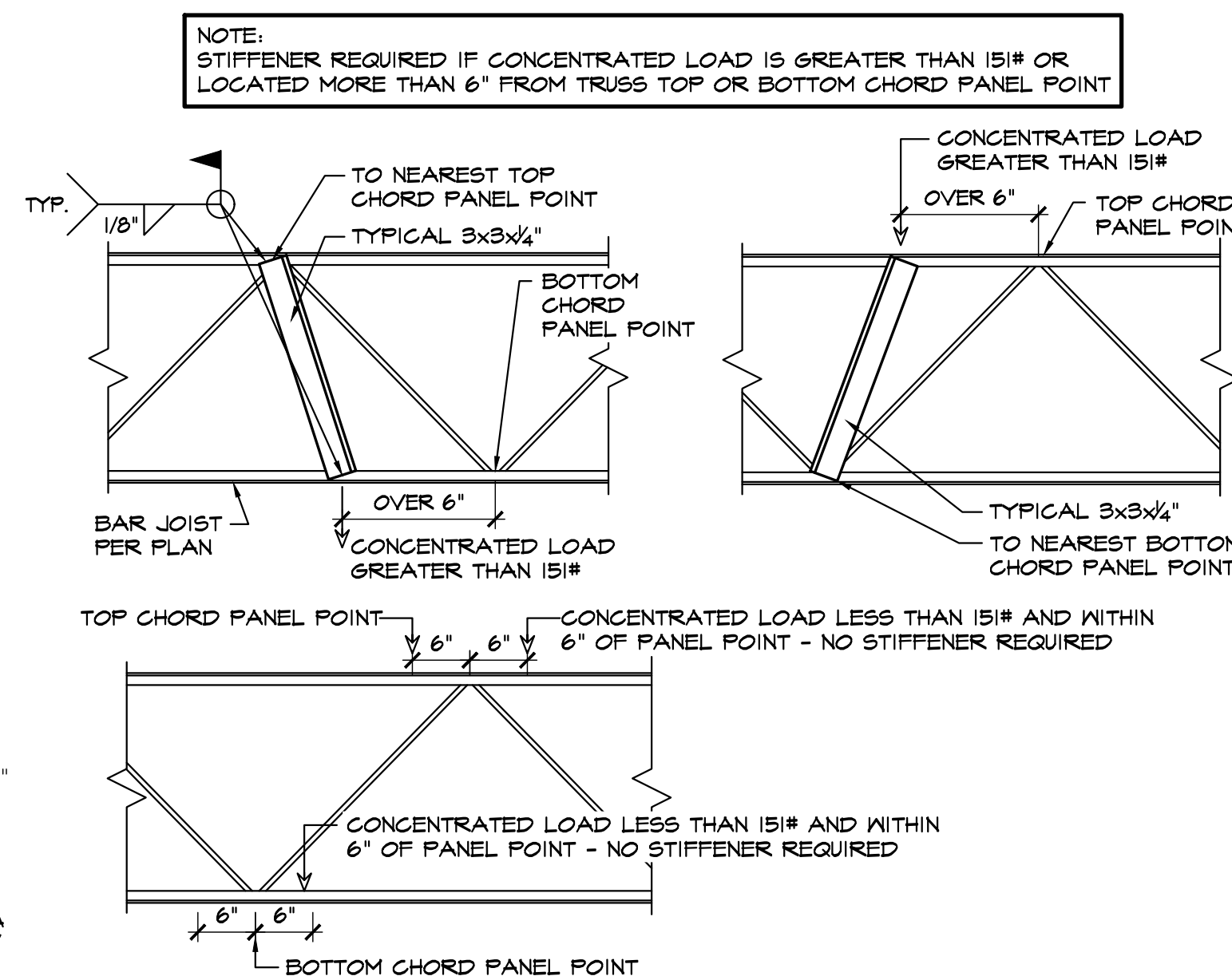


2 TYPICAL ROOF OPENING FRAMING  
SCALE: 3/8" = 1'-0"

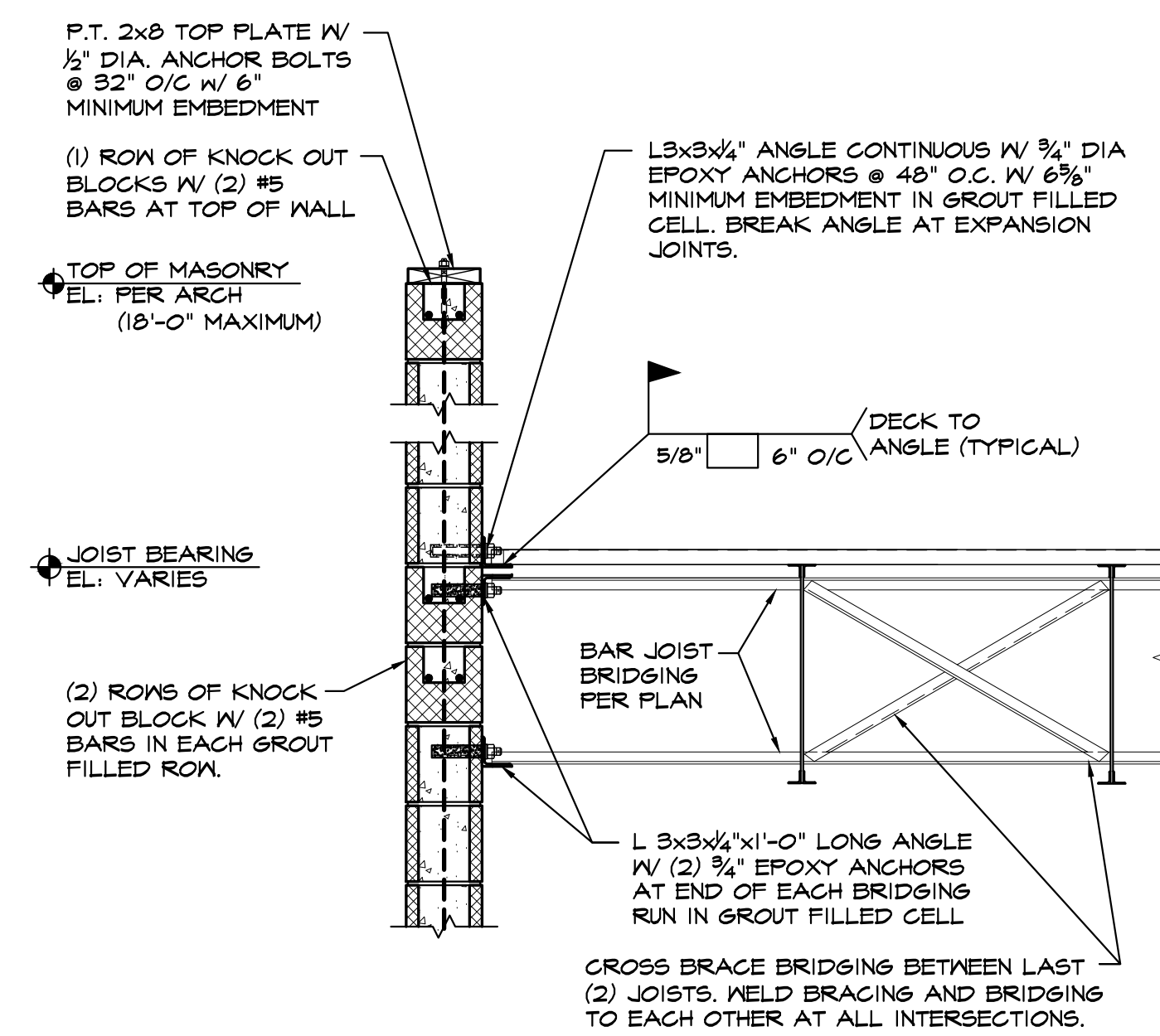


6 BAR JOIST TO MASONRY CONN.  
SCALE: 3/4" = 1'-0"

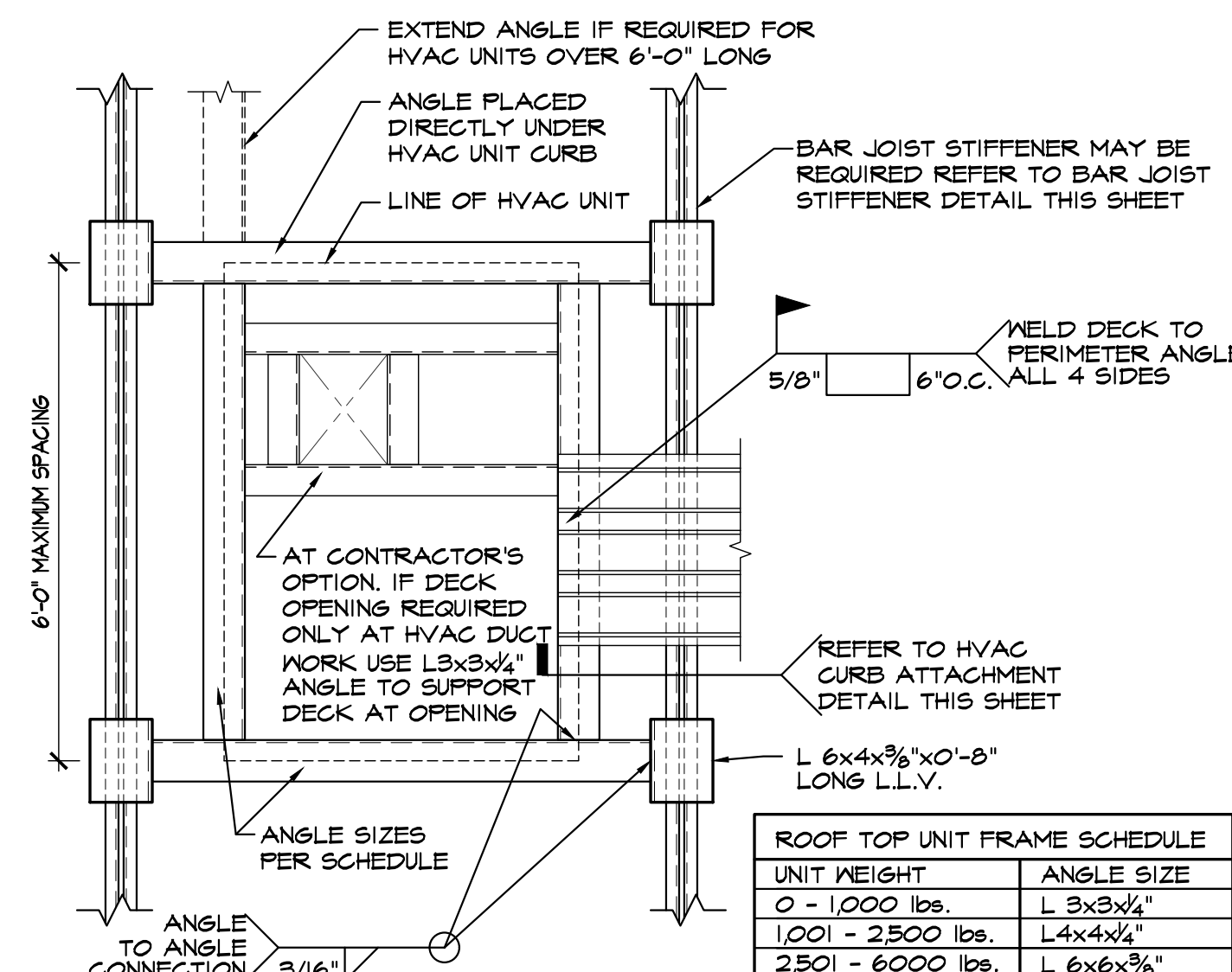
NOTE:  
ALL CONCENTRATED LOADS APPLIED TO THE TRUSS SHALL BE INSTALLED WITHIN 6" OF THE TRUSS PANEL POINT AT THE CHORD TO WHICH THAT LOAD IS BEING APPLIED WHENEVER POSSIBLE. WHERE LOAD DISTANCE FROM PANEL POINT EXCEEDS 6", A WEB STIFFENER WILL BE REQUIRED CONNECTING THE POINT OF LOAD TO THE NEAREST PANEL POINT AT THE OPPOSITE CHORD



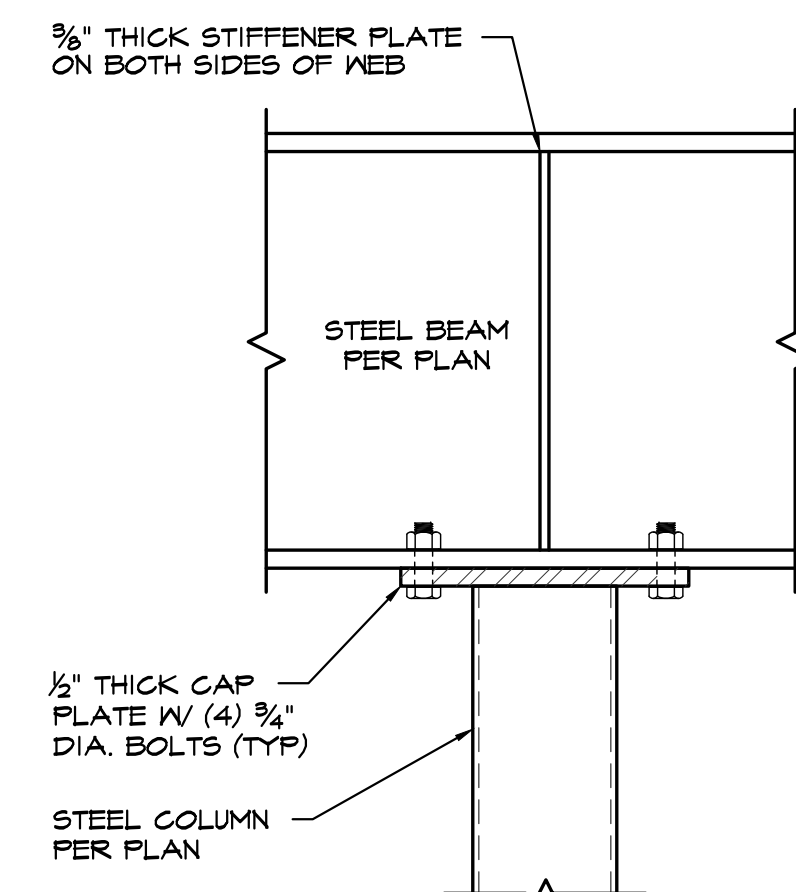
3 BAR JOIST STIFFENER  
SCALE: 3/4" = 1'-0"



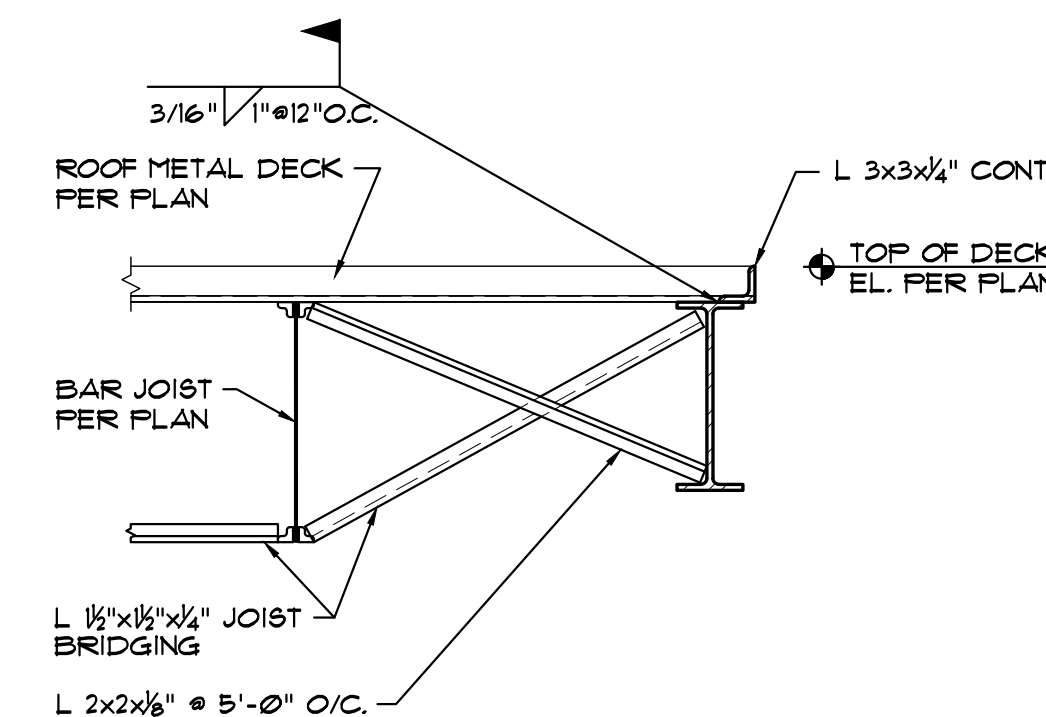
7 BAR JOIST BRIDGING TO BLOCK  
SCALE: 3/4" = 1'-0"



4 HVAC SUPPORT FRAME  
SCALE: 3/4" = 1'-0"

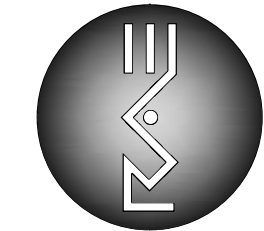


8 STEEL BEAM TO COLUMN CONN.  
SCALE: 1 1/2" = 1'-0"



12 DECK EDGE  
SCALE: 3/4" = 1'-0"

RICHARD ADAMS ENGINEERS  
& CONSULTANTS, INC.  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985.4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 7565



PROJECT NAME :  
STRUCTURAL DESIGN FOR:  
SHELL STATION  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

CLIENT :  
AEC SERVICES, INC.  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

DAVID S. MAAS, P.E.  
FLORIDA REG. # 71860  
(NOT VALID WITHOUT SEAL)

I CERTIFY TO THE BEST OF MY  
KNOWLEDGE THAT THE  
DRAWINGS & SPECIFICATIONS  
COMPLY WITH THE APPLICABLE  
MINIMUM BUILDING CODES

JOB NO :

RAE 17288

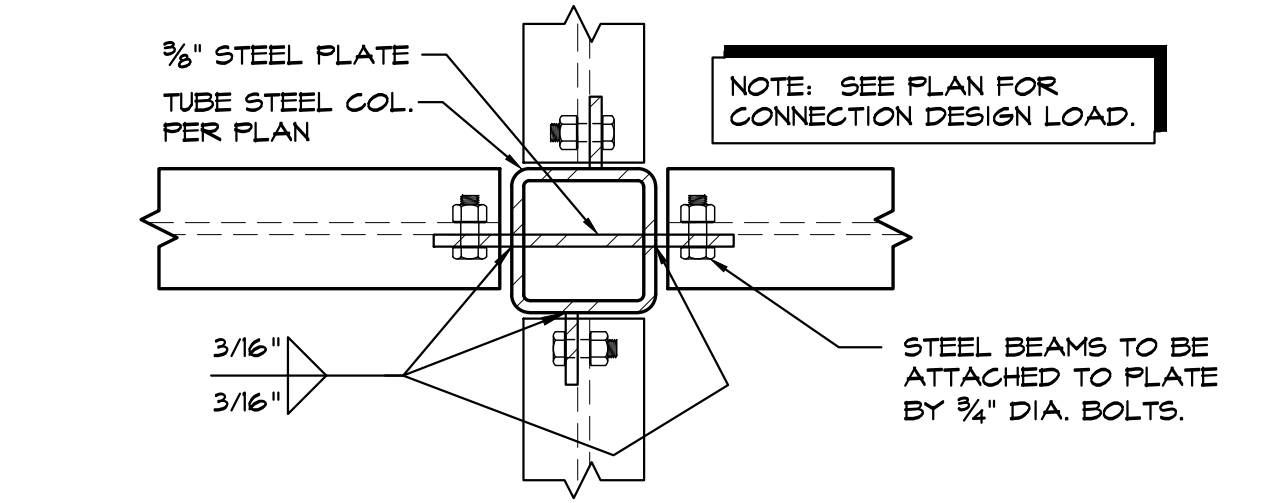
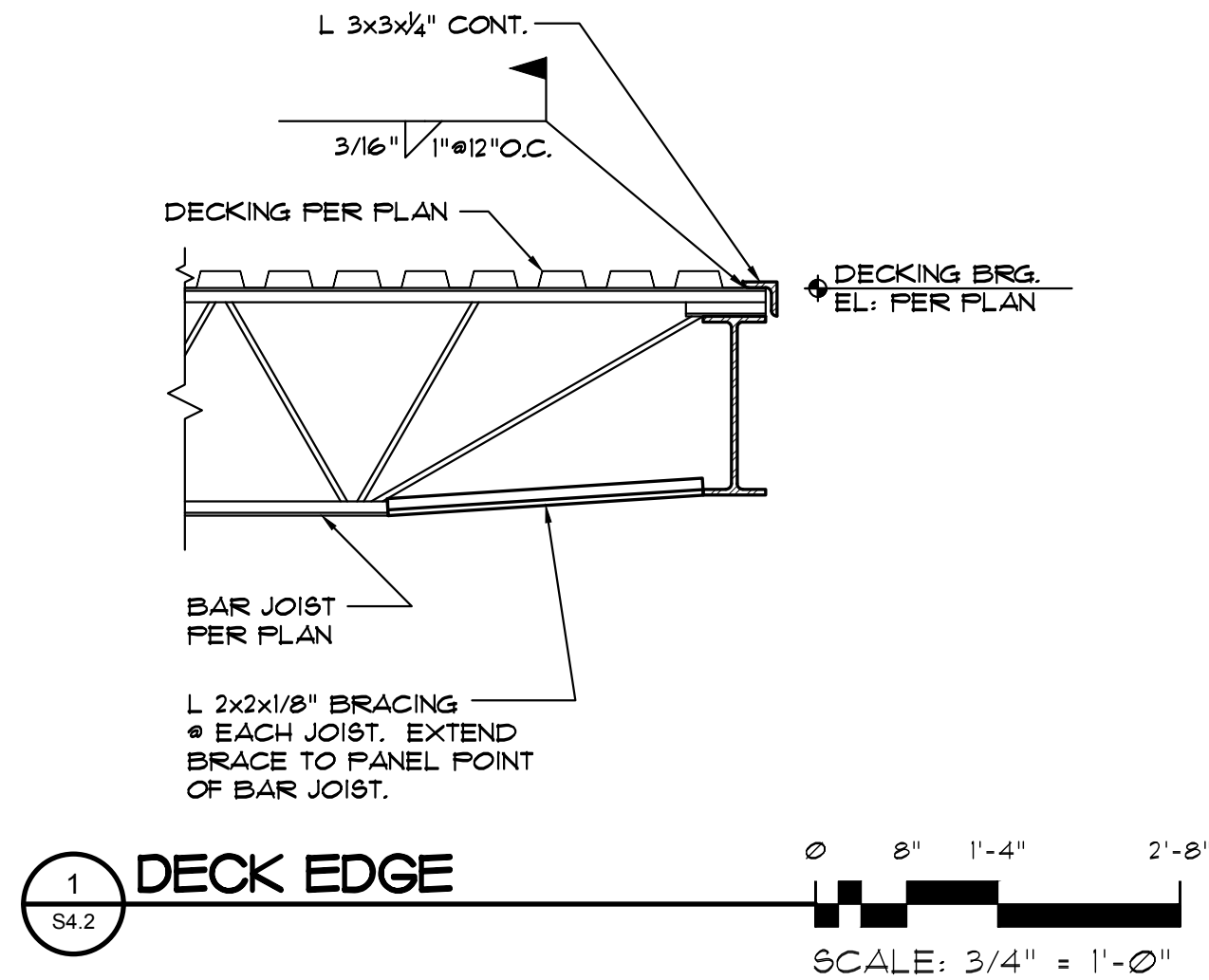
DRAWN/REVIEWED:  
TPE / DM

ISSUE DATE :  
NOV. 22, 2017

REVISIONS  
1  
2  
3  
4

SHEET NUMBER  
S4.1

I:\2017\17288 Gulf To Bay FL\Structural\DWG\17288 S4.2.dwg, Plotted 8/7/2018 5:15 PM, By: Buell Moody  
THIS DRAWING IS THE PROPERTY OF RICHARD ADAMS ENGINEERS AND MAY NOT BE REPRODUCED OR USED FOR ANY OTHER PROJECT IN WHOLE OR IN ANY PART WITHOUT WRITTEN PERMISSION. COPYRIGHT © 2017



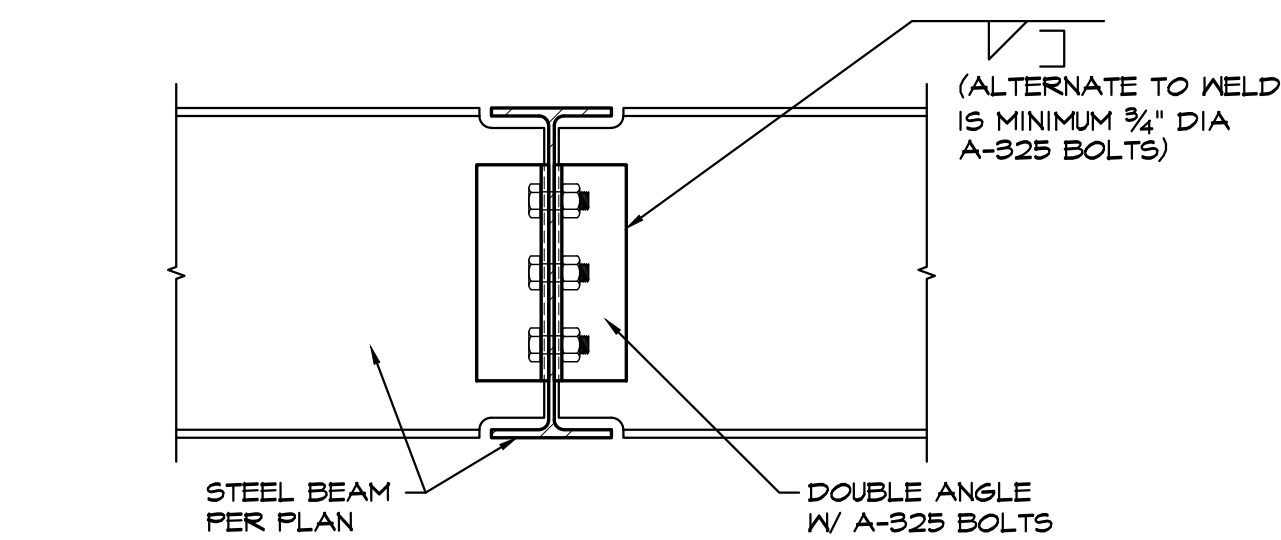
MINIMUM SHEAR CONNECTION REQUIREMENT				
BEAM DEPTH	MINIMUM DIA. BOLT	MINIMUM NO. OF BOLTS	MINIMUM ANGLE THICKNESS	MINIMUM WELD
8" → 12"	3/4"	2	3/8"	1/4"
14" → 18"	3/4"	3	3/8"	1/4"
21" → 27"	1"	5	3/8"	3/8"
30" → 36"	1"	8	3/8"	3/8"

- NOTES:
1. PROVIDE CONNECTION CALCULATIONS SIGNED AND SEALED BY A REGISTERED ENGINEER, WHO IS LICENSED IN THE SAME STATE AS THE PROJECT.
  2. DESIGN CONNECTIONS FOR EITHER THE SHEAR VALUE SHOWN ON THE DRAWINGS OR 75% OF MAXIMUM SHEAR LISTED IN THE TABLES FOR "ALLOWABLE UNIFORM LOAD IN KIPS" FOR BEAMS LATERALLY SUPPORTED. BASED ON THE BEAM SIZE AND LENGTH. THE GREATER OF THESE TWO VALUES SHALL CONTROL.
  3. REFER TO "STRUCTURAL STEEL" PORTION OF THE GENERAL NOTES FOR FURTHER INFORMATION.

5  
S4.2

TYPICAL BEAM TO COLUMN CONN (HSS TUBE COLUMN)

SCALE: N.T.S.



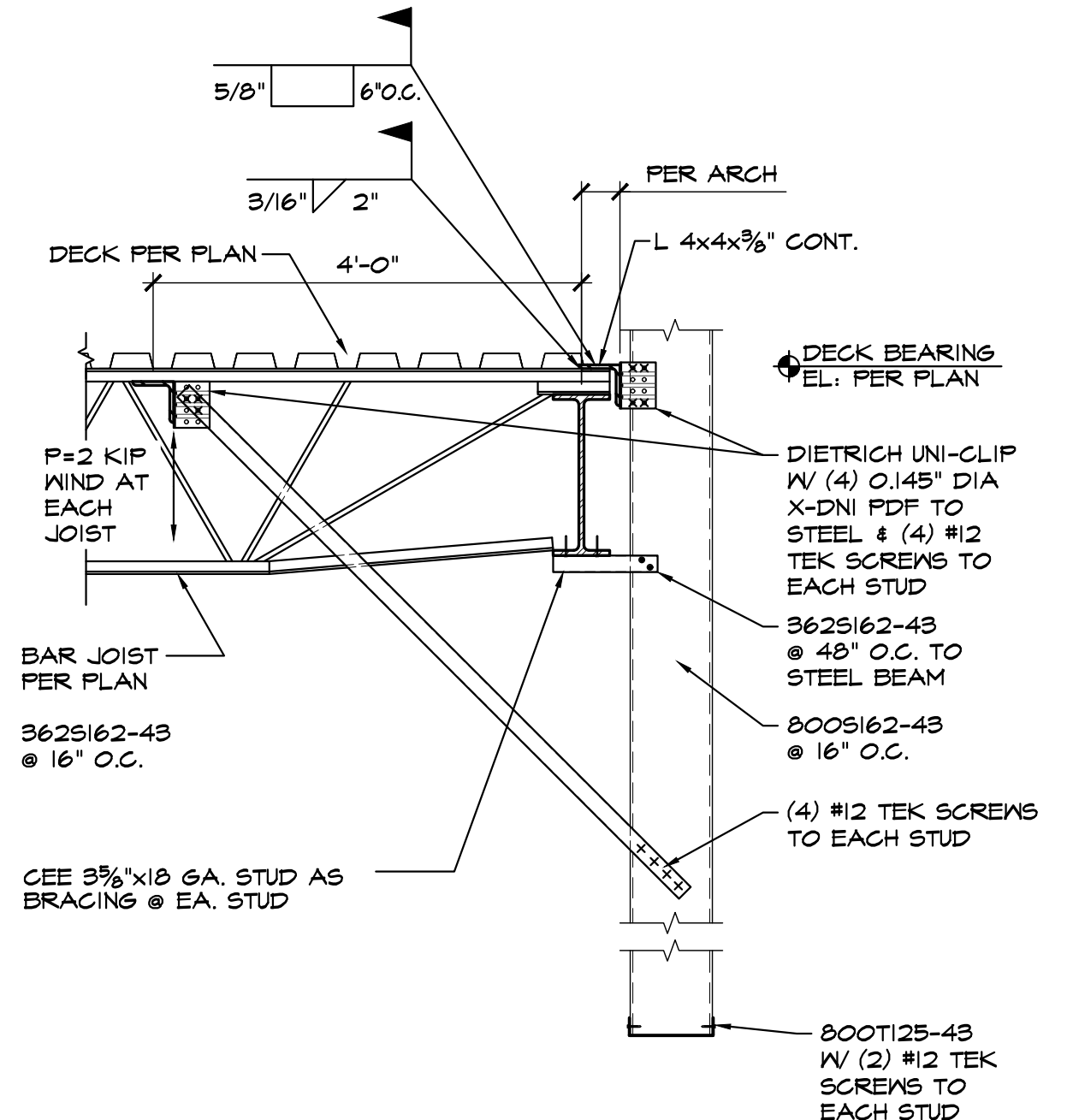
MINIMUM SHEAR CONNECTION REQUIREMENT				
BEAM DEPTH	MINIMUM DIA. BOLT	MINIMUM NO. OF BOLTS	MINIMUM ANGLE THICKNESS	MINIMUM WELD
8" → 12"	3/4"	2	3/8"	1/4"
14" → 18"	3/4"	3	3/8"	1/4"
21" → 27"	1"	5	3/8"	3/8"
30" → 36"	1"	8	3/8"	3/8"

- NOTES:
1. PROVIDE CONNECTION CALCULATIONS SIGNED AND SEALED BY A REGISTERED ENGINEER, WHO IS LICENSED IN THE SAME STATE AS THE PROJECT.
  2. DESIGN CONNECTIONS FOR EITHER THE SHEAR VALUE SHOWN ON THE DRAWINGS OR 75% OF MAXIMUM SHEAR LISTED IN THE TABLES FOR "ALLOWABLE UNIFORM LOAD IN KIPS" FOR BEAMS LATERALLY SUPPORTED. BASED ON THE BEAM SIZE AND LENGTH. THE GREATER OF THESE TWO VALUES SHALL CONTROL. REFER TO "STRUCTURAL STEEL" PORTION OF THE GENERAL NOTES FOR FURTHER INFORMATION.
  - 3.

2  
S4.2

TYPICAL BEAM TO BEAM CONN

SCALE: N.T.S.



6  
S4.2

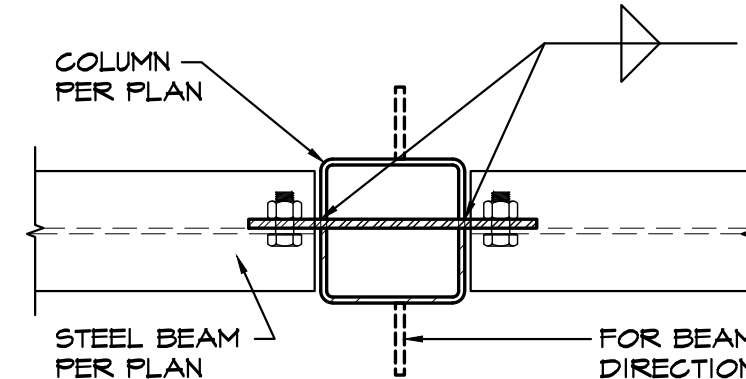
STEEL STUD SUPPORT

0 8" 1'-4" 2'-8"

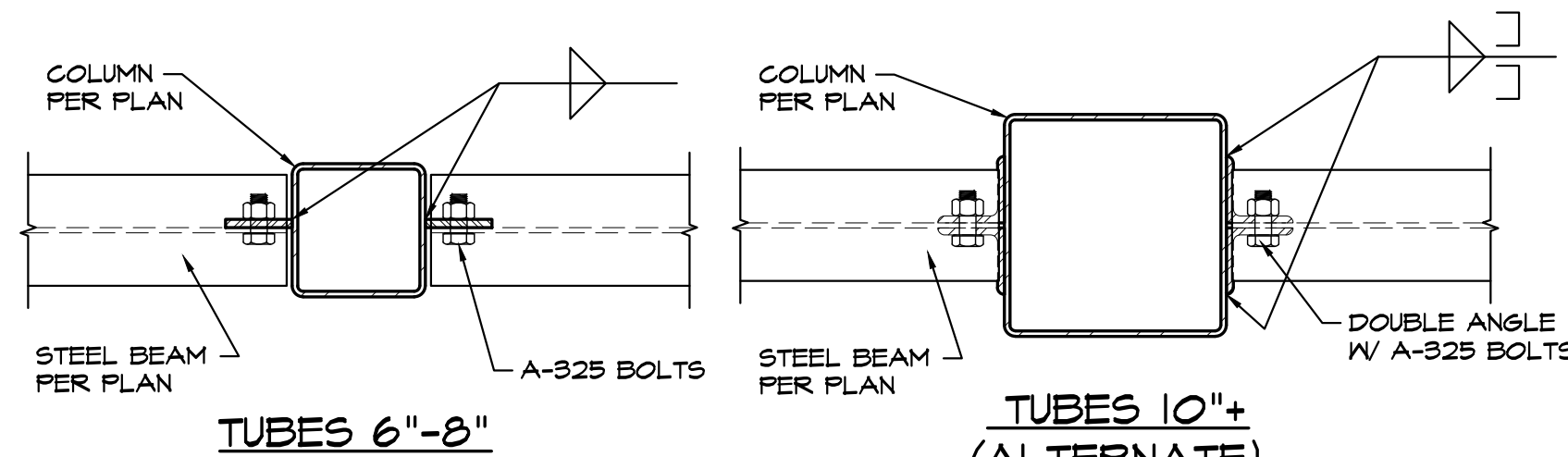
SCALE: 3/4" = 1'-0"

MINIMUM SHEAR CONNECTION REQUIREMENT					
BEAM DEPTH	MINIMUM DIA. BOLT	MINIMUM NO. OF BOLTS	MINIMUM PLATE THICKNESS	MINIMUM ANGLE THICKNESS	MINIMUM WELD
8" → 12"	3/4"	2	3/8"	3/8"	1/4"
14" → 18"	3/4"	3	3/8"	3/8"	1/4"
21" → 27"	1"	5	3/8"	3/8"	3/8"
30" → 36"	1"	8	3/8"	3/8"	3/8"

- NOTES:
1. PROVIDE CONNECTION CALCULATIONS SIGNED AND SEALED BY A REGISTERED ENGINEER, WHO IS LICENSED IN THE SAME STATE AS THE PROJECT.
  2. DESIGN CONNECTIONS FOR EITHER THE SHEAR VALUE SHOWN ON THE DRAWINGS OR 75% OF MAXIMUM SHEAR LISTED IN THE TABLES FOR "ALLOWABLE UNIFORM LOAD IN KIPS" FOR BEAMS LATERALLY SUPPORTED. BASED ON THE BEAM SIZE AND LENGTH. THE GREATER OF THESE TWO VALUES SHALL CONTROL. REFER TO "STRUCTURAL STEEL" PORTION OF THE GENERAL NOTES FOR FURTHER INFORMATION.
  - 3.



KNIFE PLATE CONNECTION AT TOP OF COLUMN

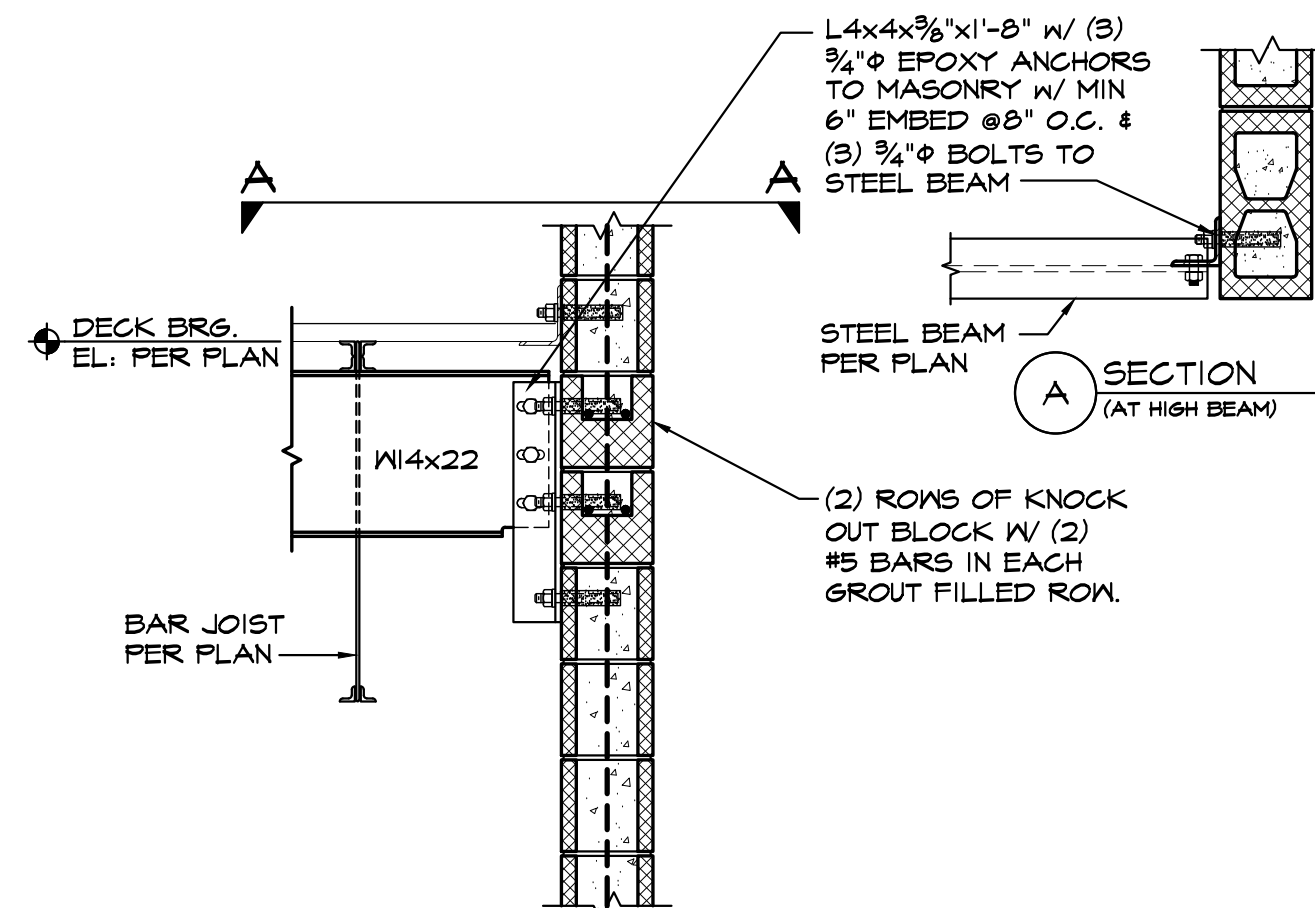


SHEAR TAB CONNECTION AT MID POINT OF COLUMN

3  
S4.2

TYPICAL BEAM TO COLUMN CONN (TUBE COLUMN)

SCALE: 1 1/2" = 1'-0"

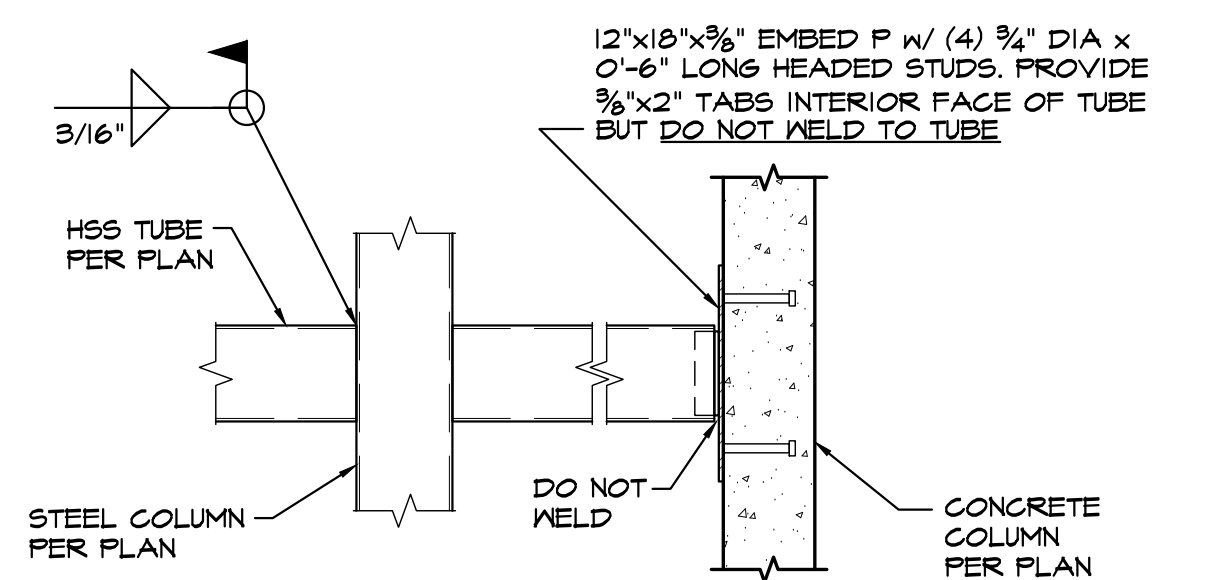
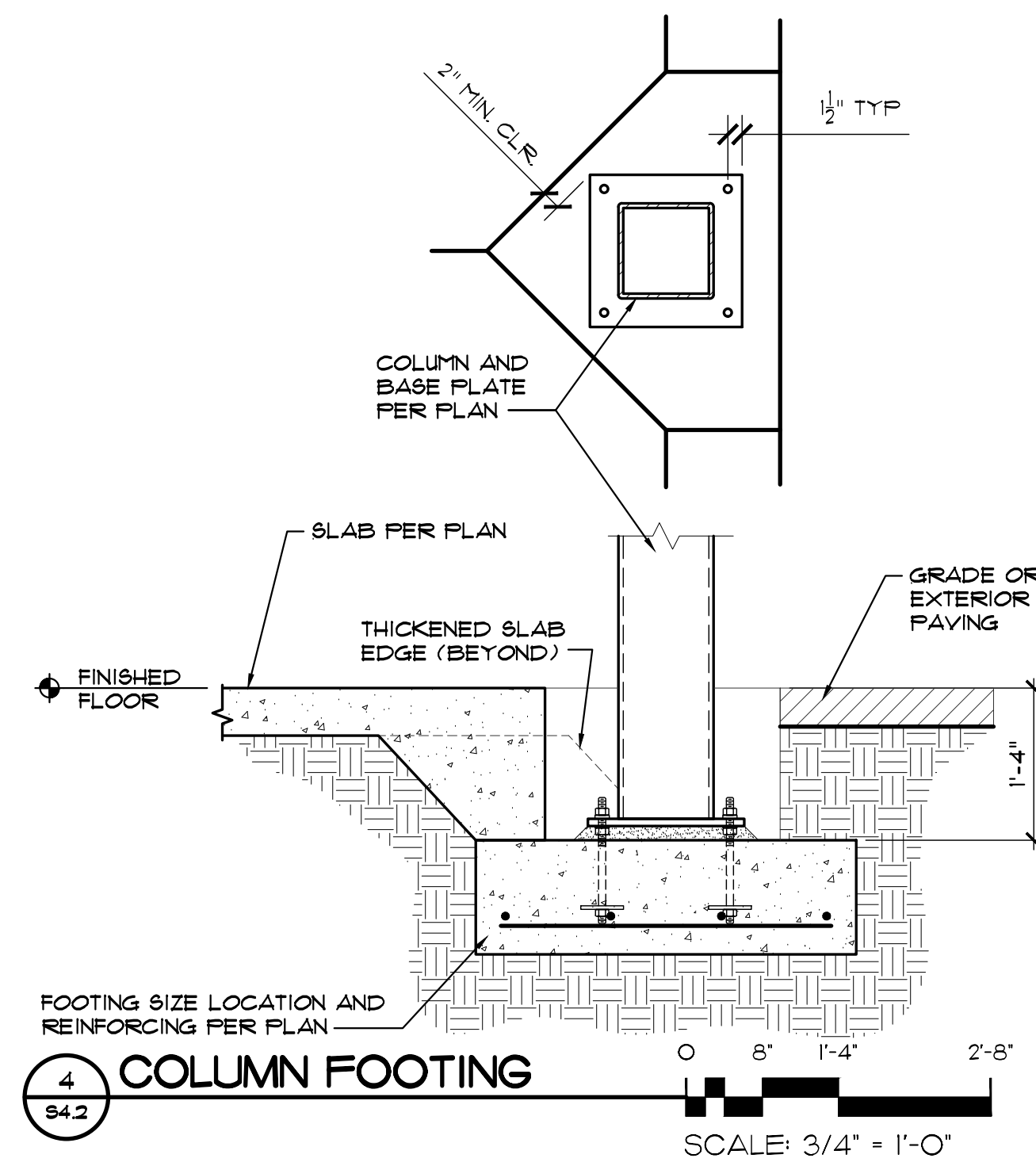


7  
S4.2

STEEL CONNECTION TO MASONRY

0 8" 1'-4" 2'-8"

SCALE: 3/4" = 1'-0"



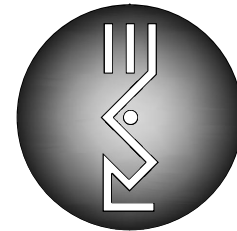
8  
S4.2

STEEL TUBE CONNECTION

0 8" 1'-4" 2'-8"

SCALE: 3/4" = 1'-0"

RICHARD ADAMS ENGINEERS & CONSULTANTS, INC.  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985.4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 7565



PROJECT NAME :  
STRUCTURAL DESIGN FOR:  
SHELL STATION  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

CLIENT :  
AEC SERVICES, INC.  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

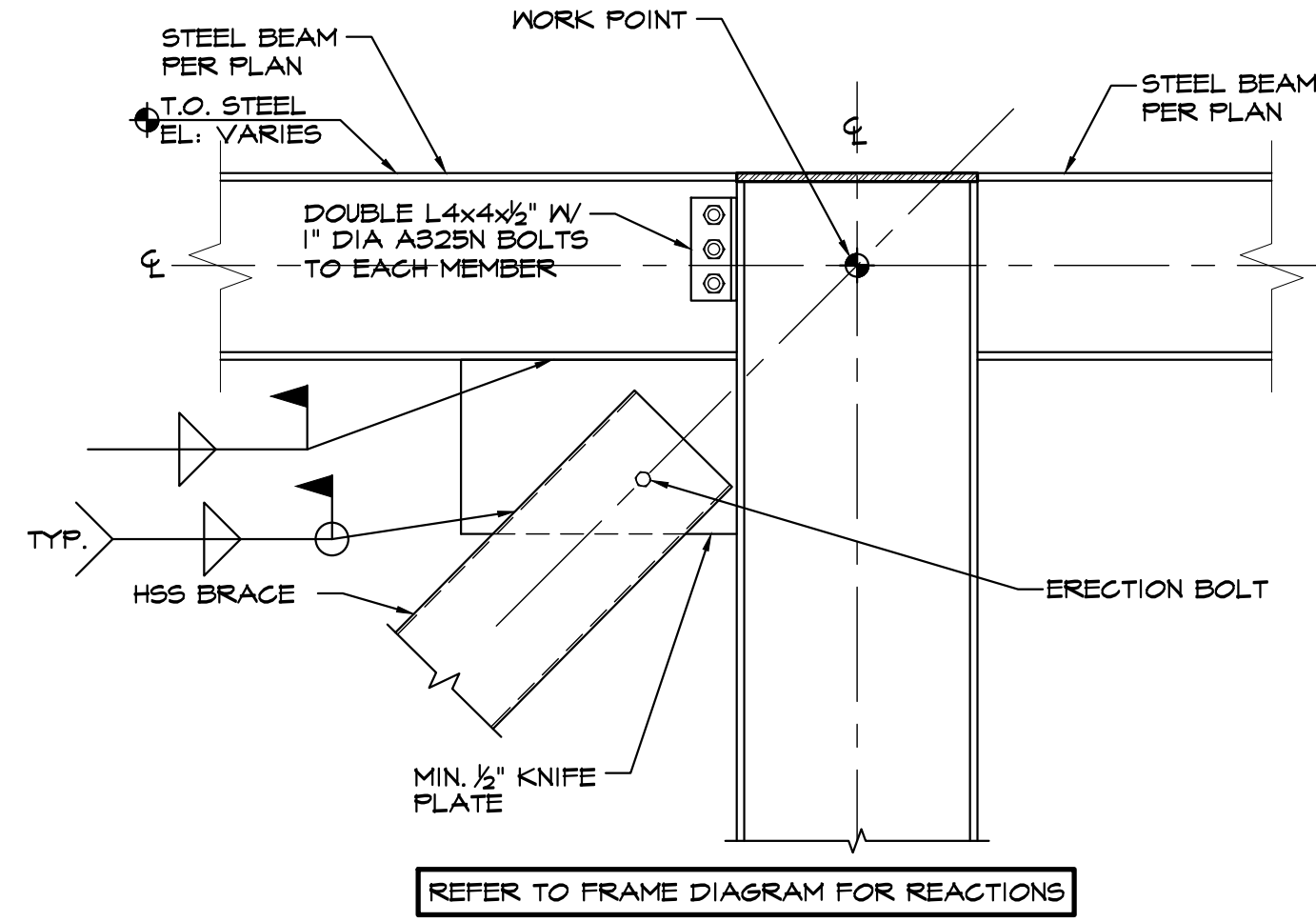
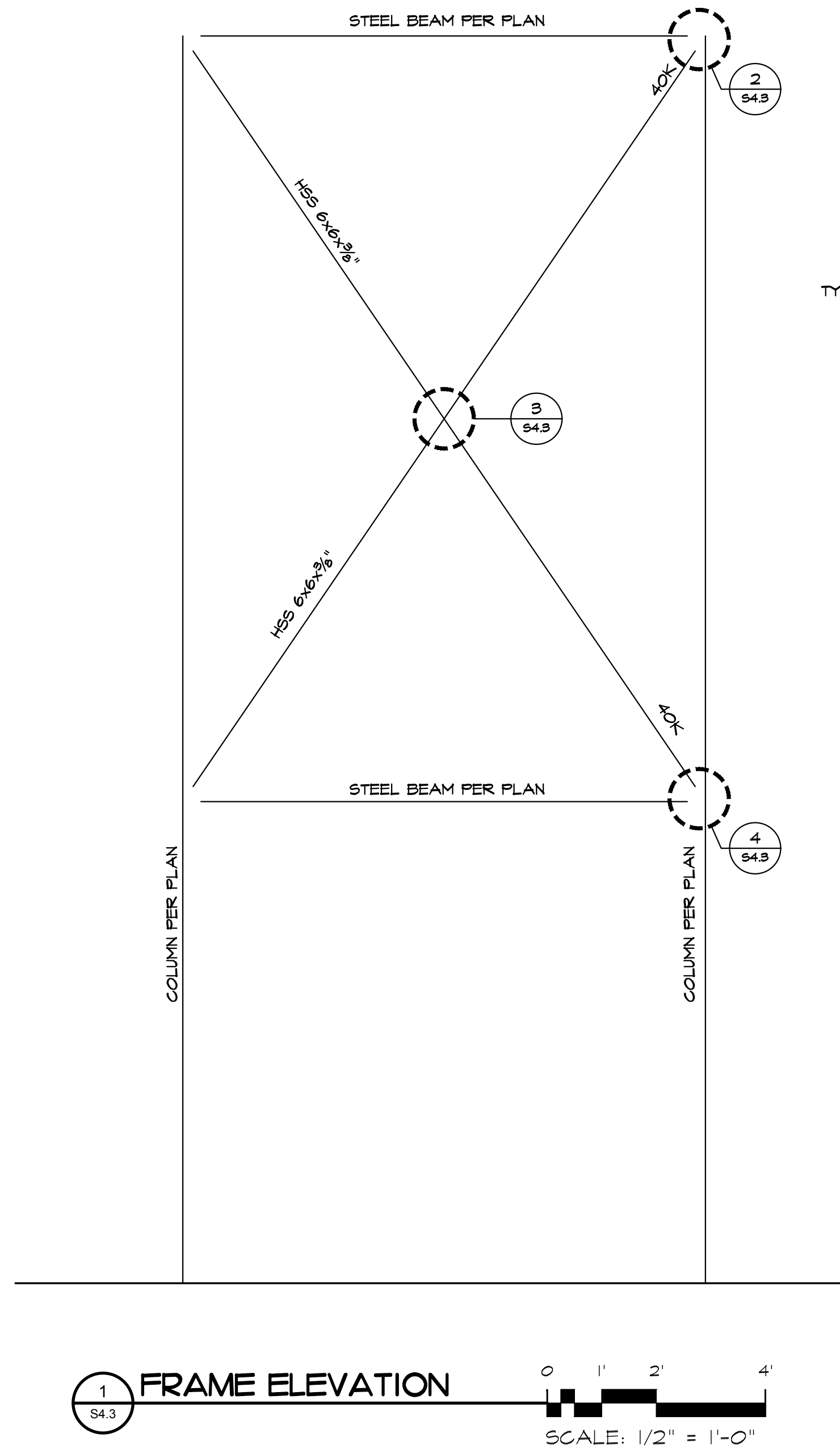
DAVID S. MAAS, P.E.  
FLORIDA REG. # 71860  
(NOT VALID WITHOUT SEAL)

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE DRAWINGS & SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.

JOB NO :  
RAE 17288  
DRAWN/REVIEWED:  
TPE / DM  
ISSUE DATE :  
NOV. 22, 2017

REVISIONS  
1  
2  
3  
4

SHEET NUMBER  
S4.2

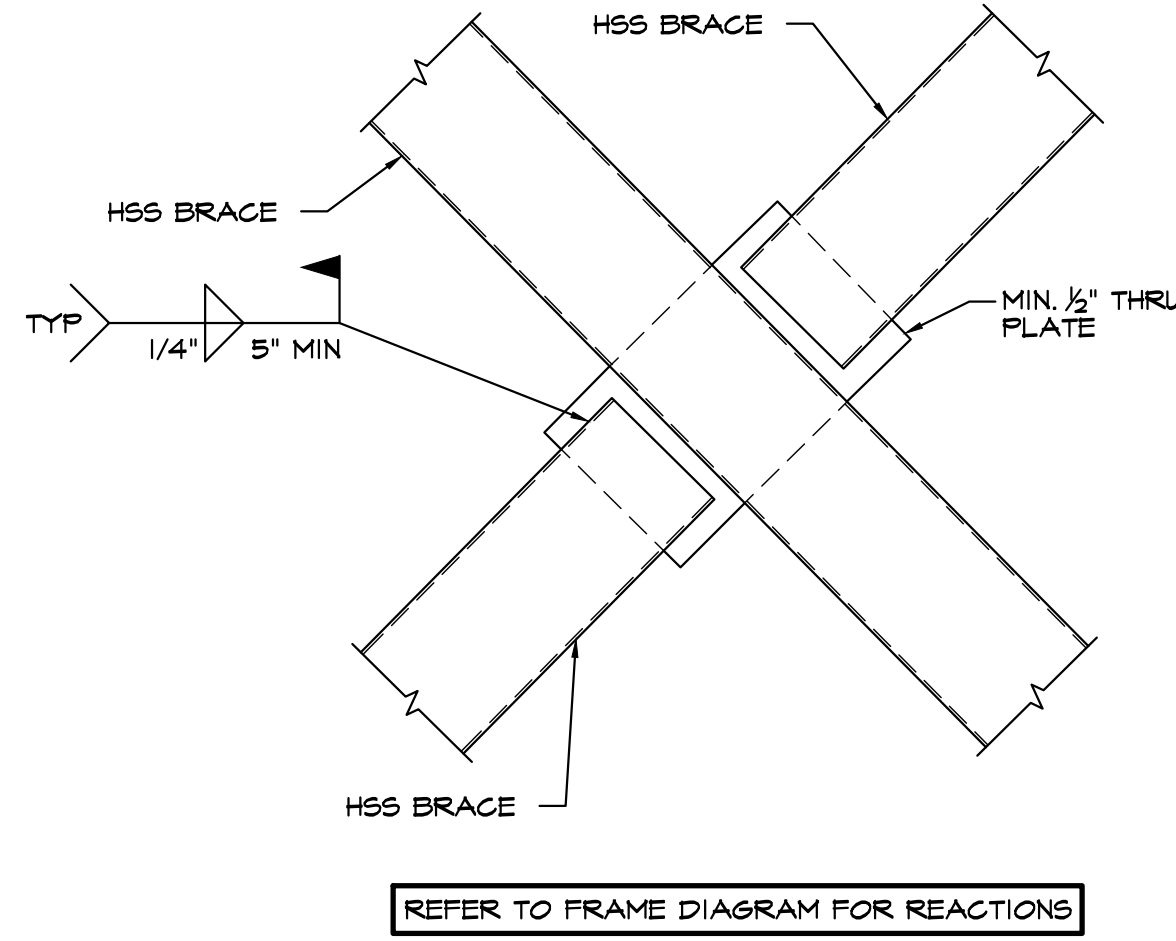


2  
S4.3

BRACE FRAME TOP

0 8" 1'-4" 2'-8"

SCALE: 3/4" = 1'-0"

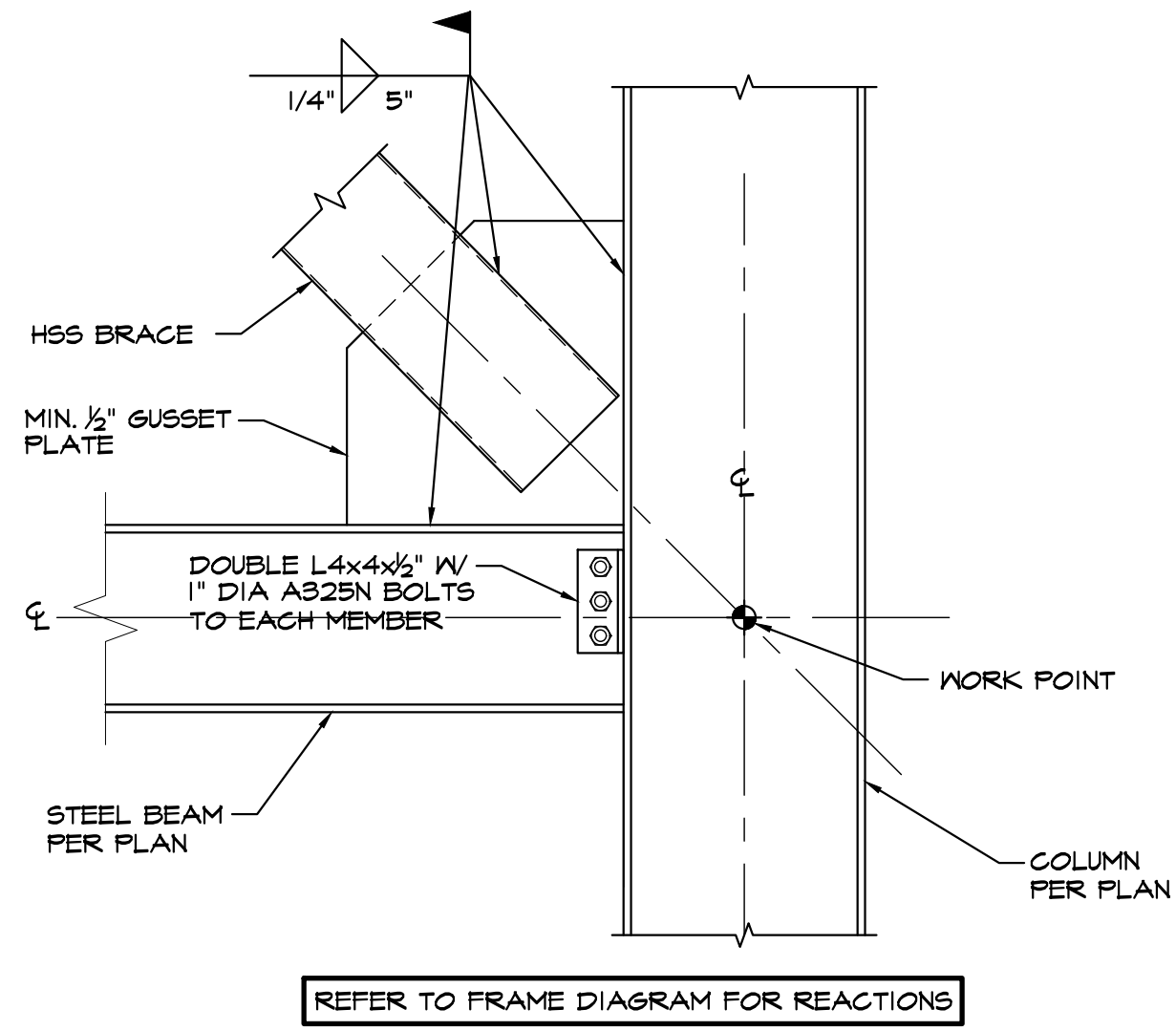


3  
S4.3

BRACE FRAME

0 8" 1'-4" 2'-8"

SCALE: 3/4" = 1'-0"



4  
S4.3

BRACE FRAME

0 8" 1'-4" 2'-8"


SCALE: 3/4" = 1'-0"

CLIENT :  
**AEC SERVICES, INC.**  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

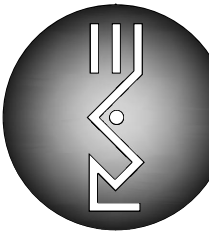
PROJECT NAME :  
**STRUCTURAL DESIGN FOR:  
SHELL STATION**  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

DAVID S. HAAS, P.E.  
FLORIDA REG. # 11860  
(NOT VALID WITHOUT SEAL)  
I CERTIFY TO THE BEST OF MY  
KNOWLEDGE THAT THE  
DRAWINGS & SPECIFICATIONS  
COMPLY WITH THE APPLICABLE  
MINIMUM BUILDING CODES.

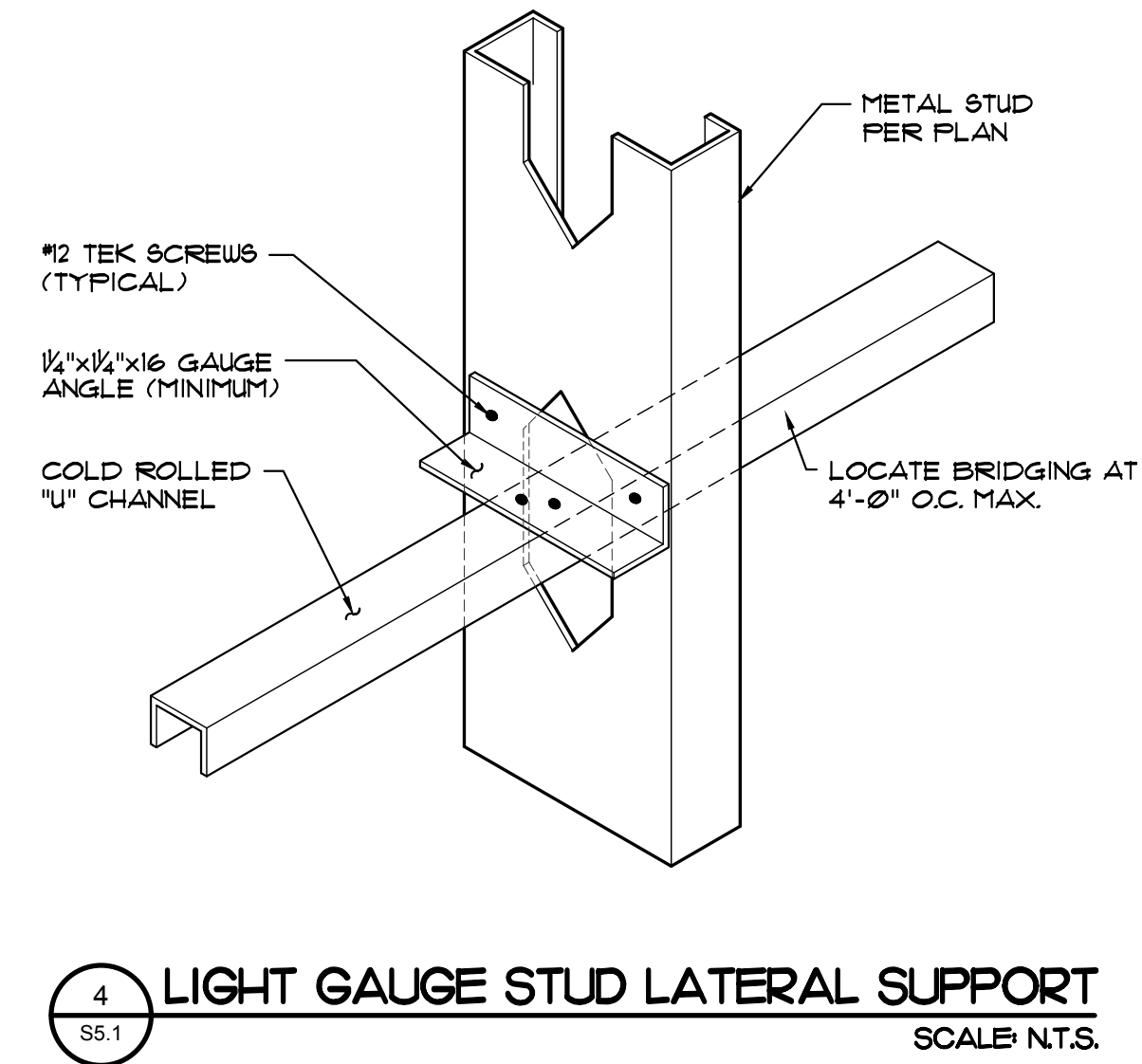
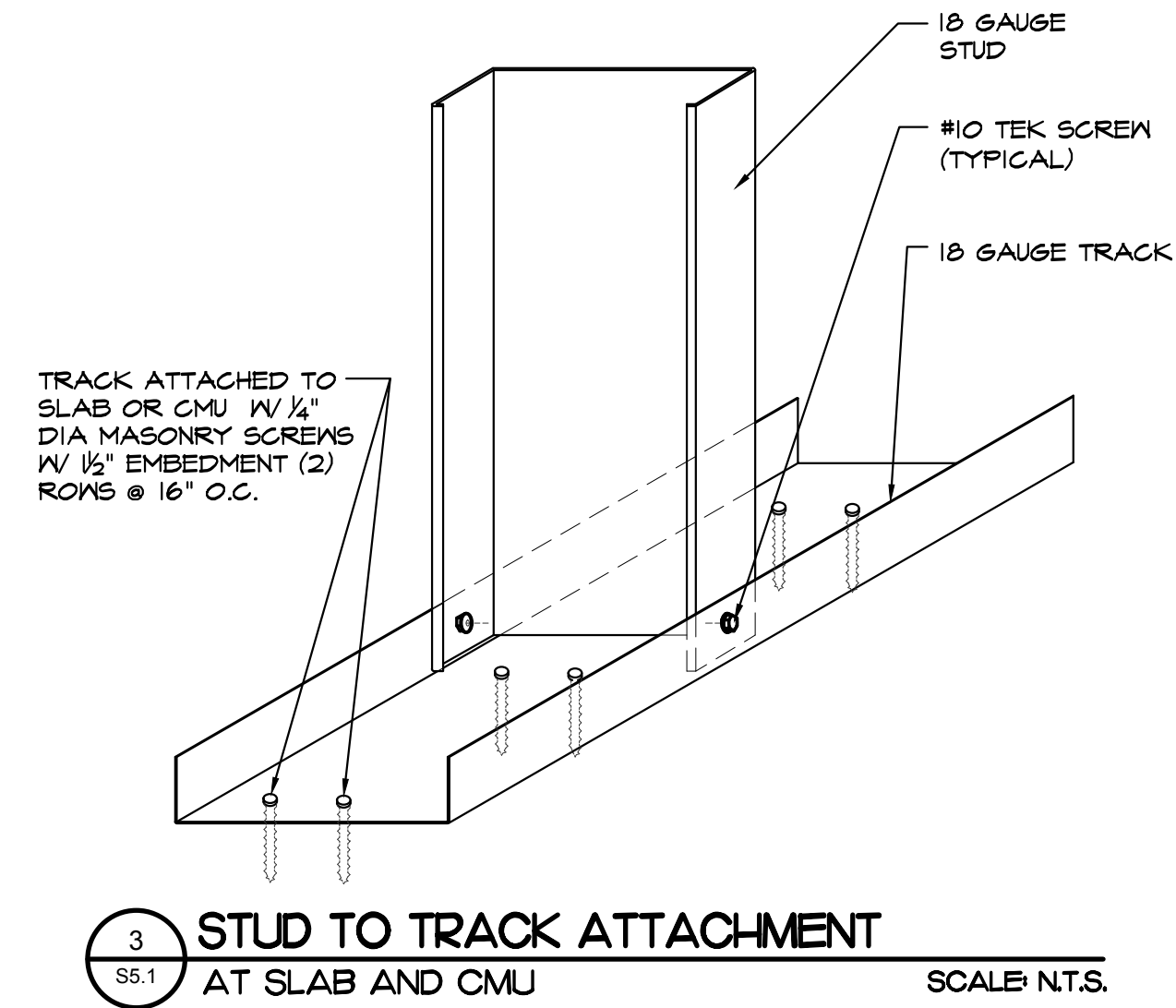
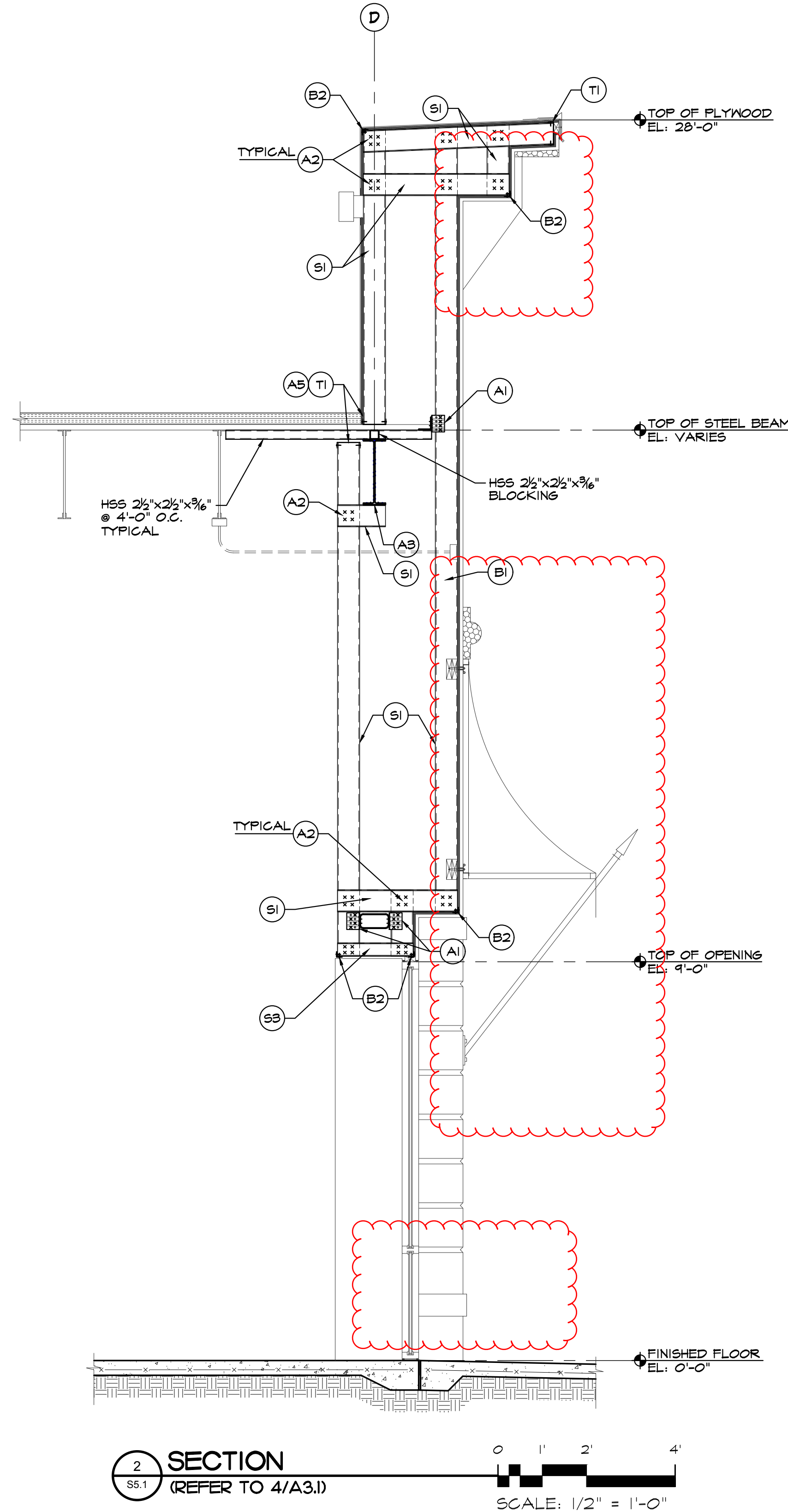
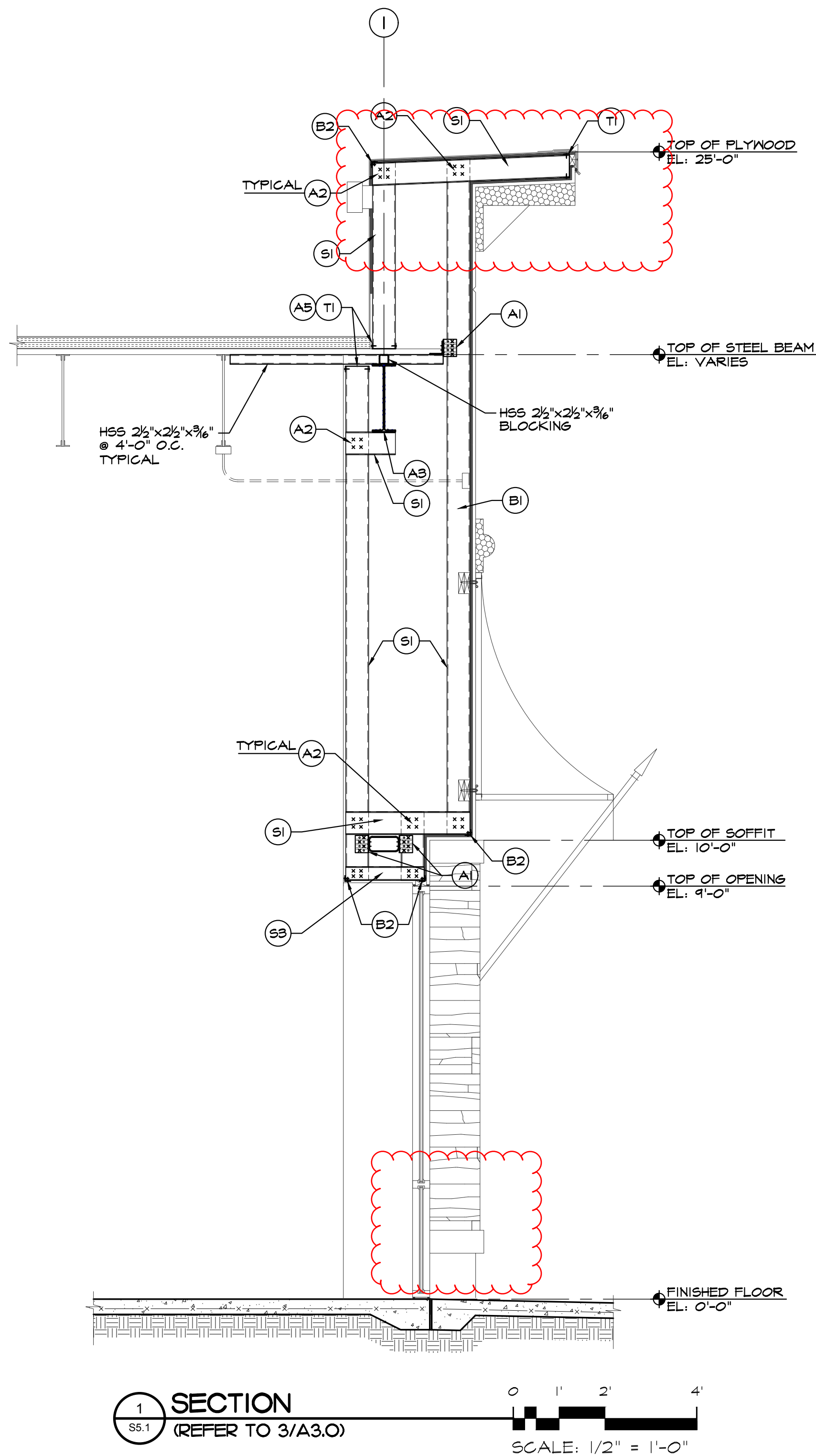
JOB NO :  
**RAE 17288**  
DRAWN/REVIEWED:  
**TPE / DM**  
ISSUE DATE :  
**NOV. 22, 2017**

REVISIONS   
1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_  
4 \_\_\_\_\_

SHEET NUMBER  
**S4.3**

  
**RICHARD ADAMS ENGINEERS  
& CONSULTANTS, INC.**  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985-4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7565

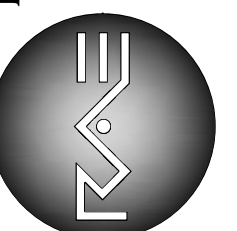
I:\2017\17288 Gulf To Bay FL\Structural\DWG\17288 SS.1.dwg, Plotted:8/7/2018 5:15 PM, By:Buell Moody  
THIS DRAWING IS THE PROPERTY OF RICHARD ADAMS ENGINEERS AND MAY NOT BE REPRODUCED OR USED FOR ANY OTHER PROJECT IN WHOLE OR IN ANY PART WITHOUT WRITTEN PERMISSION. COPYRIGHT © 2017



LIGHT GAUGE FRAMING KEY NOTES	
MK#	STUD NOTE
(S1)	600S162-43 AT 16" O.C.
(S2)	600S162-54 AT 16" O.C.
(S3)	362S162-43 AT 16" O.C.
MK#	TRACK NOTE
(T1)	600T125-43 W/ (2) #12 TEK SCREWS TO EACH STUD.
(T2)	800T125-54 W/ (2) #12 TEK SCREWS TO EACH STUD.
(T3)	362T125-54 W/ (2) #12 TEK SCREWS TO EACH STUD.
MK#	ATTACHMENT / FASTENER NOTE
(A1)	DIETRICH UNI-CLIP OR EQUAL W/ (4) #12 TEK SCREWS TO EACH STUD & (4) 0.145" DIA. X-EDNI PDF TO STEEL
(A2)	(4) #12 TEK SCREWS FOR STUD TO STUD CONNECTION
(A3)	(2) 0.145" DIA X-EDNI PDF TO STEEL AT EACH STUD.
(A4)	(2) 0.145" DIA. X-DNI PDF TO CONCRETE AT EACH STUD
(A5)	(2) #12 TEK SCREWS TO DECK AT EACH STUD
MK#	ATTACHMENT / FASTENER NOTE
(B1)	BRIDGING REFER TO DETAIL 4/S5.1
(B2)	CONTINUOUS 1/4"x1/4"x1/8 GA W/ (1) #10 TEK SCREW TO EACH STUD
(B3)	3/8" PLYWOOD W/ #8 SCREWS @ 8" O.C.

NOTE:  
REFER TO 3/S5.1 FOR TRACK ATTACHMENT

RICHARD ADAMS ENGINEERS  
& CONSULTANTS, INC.  
5507 E BUSCH BLVD TAMPA, FL 33617  
PH: 813.985.4600  
MAIL@ADAMS-ENGINEERS.COM  
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7565



PROJECT NAME :  
STRUCTURAL DESIGN FOR:  
**SHELL STATION**  
3009 GULF TO BAY BLVD., CLEARWATER, FLORIDA

CLIENT :  
**AEC SERVICES, INC.**  
1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 684-1234

DAVID S. MAAS, P.E.  
FLORIDA REG. # 11860  
(NOT VALID WITHOUT SEAL)  
I CERTIFY TO THE BEST OF MY  
KNOWLEDGE THAT THE  
DRAWINGS & SPECIFICATIONS  
COMPLY WITH THE APPLICABLE  
MINIMUM BUILDING CODES

JOB NO :  
**RAE 17288**  
DRAWN/REVIEWED:  
**TPE / DM**  
ISSUE DATE :  
**NOV. 22, 2017**

REVISIONS  
1  
2  
3  
4

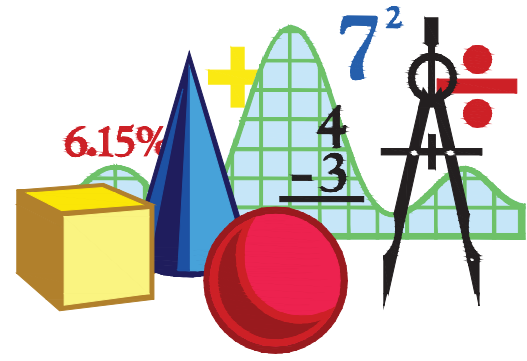
SHEET NUMBER  
**S5.1**

DRAWING LIST:

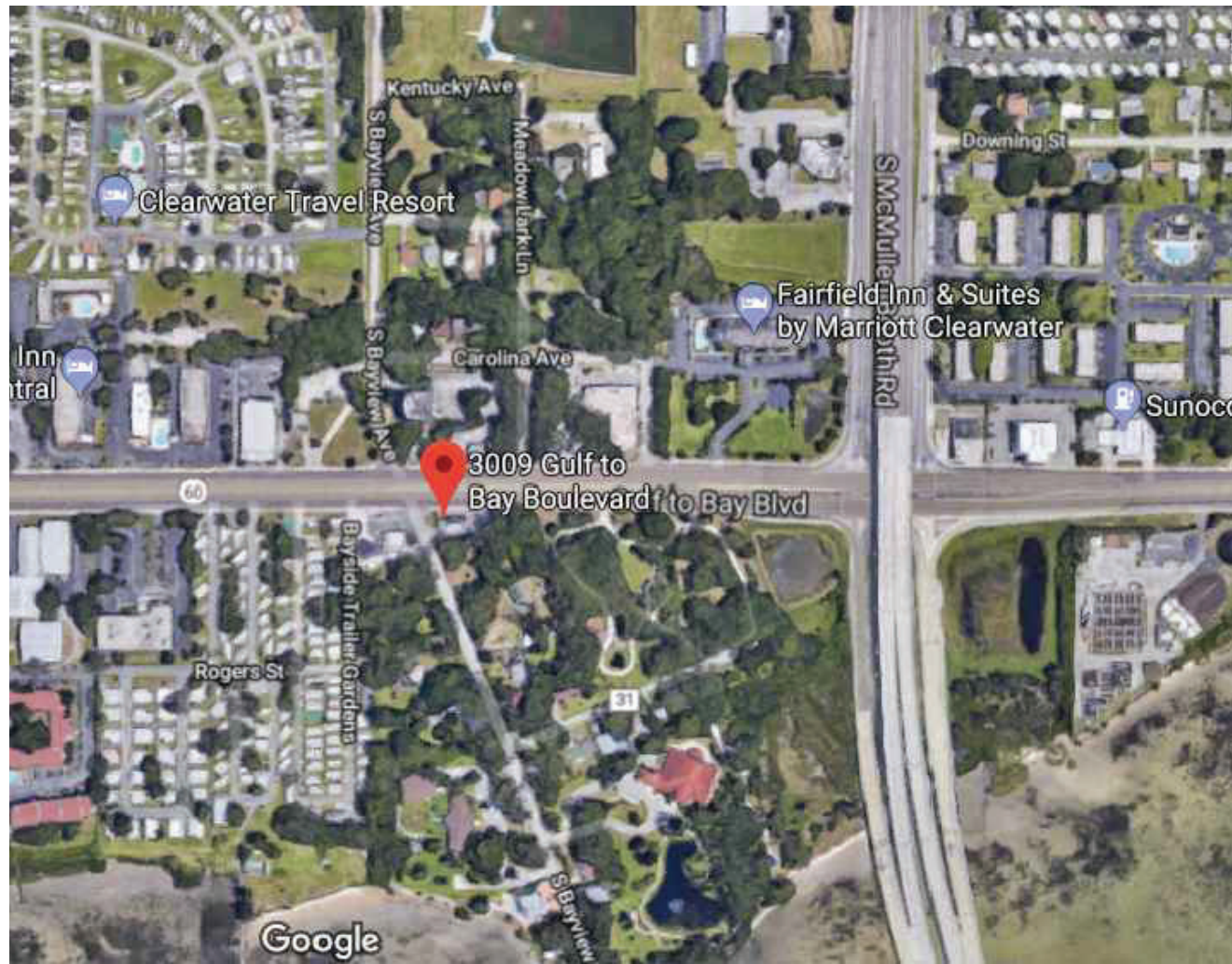
DRAWING NUMBER	TITLE
C-1	COVER SHEET
C-2	DEMOLITION AND EROSION CONTROL PLAN
C-2.1	DEMOLITION AND EROSION CONTROL DETAILS
C-3	SITE PLAN
C-3.1	SITE PLAN DETAILS
C-3.2	SITE PLAN DETAILS
C-3.3	SITE PLAN DETAILS
C-3.4	ADA SITE PLAN DETAILS
C-4	PAVING,GRADING AND DRAINAGE PLAN
C-4.1	PAVING, GRADING AND DRAINAGE DETAILS
C-4.2	CROSS SECTIONS
C-4.3	STORMTRAP DETAILS
C-4.4	STORMTRAP DETAILS
C-4.5	STORMTRAP DETAILS
C-5	UTILITY PLAN
C-5.1	UTILITY DETAILS
C-5.2	UTILITY DETAILS
C-5.3	UTILITY DETAILS
C-6	CONSTRUCTION NOTES
RW-1	EXISTING CONDITIONS
RW-2	PROPOSED RIGHT WAY
RW-3	FDOT INDEX
RW-4	FDOT INDEX
RW-5	FDOT INDEX
RW-6	FDOT INDEX
RW-7	FDOT INDEX
TA-1	TANKER ACCESS PLAN
MOT	MAINTENANCE OF TRAFFIC

BUILDING PLANS FOR  
GIANT OIL INC.  
BP  
3009 Gulf to Bay  
Clearwater, Florida 34619

PREPARED BY  
ENGINEER OF RECORD:  
AEC Services, Inc.  
RON FAIR, P.E. FL #50738 QB0011445 License #9277

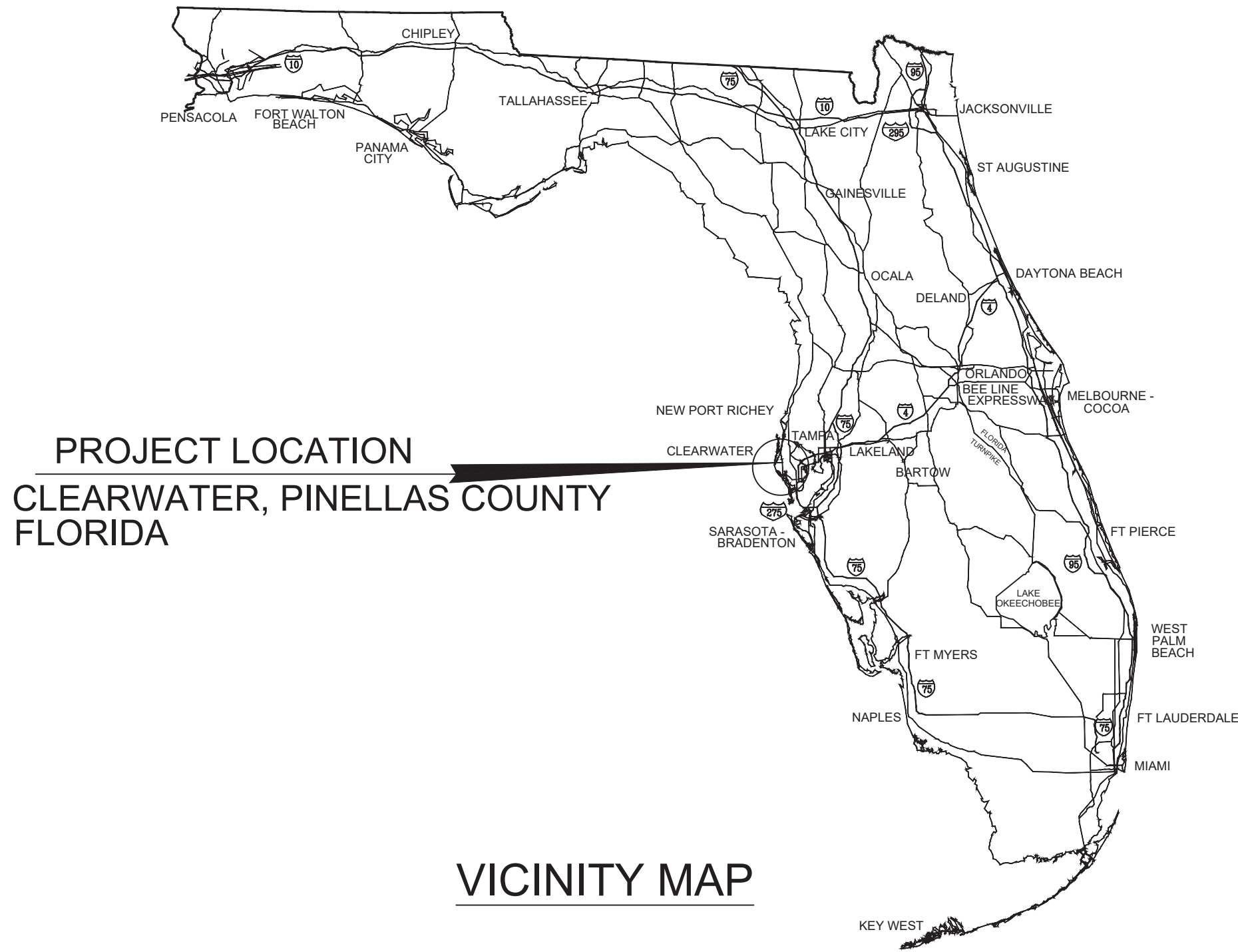


1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
(813)684-2660 (f)  
www.aecservicesinc.com



PROJECT LOCATION MAP  
NOT TO SCALE

PINELLAS COUNTY  
PARCEL IDS: 16-29-16-05292-008-0130  
16-29-16-53892-003-0010  
16-29-16-53892-003-0020  
BAY VIEW CITY SUB BLK 8, LOT A AND  
1/2 VAC ST ON S LESS RD R/W ON N



REVISIONS LEGEND:

DATE ISSUED: 5-14-2018	DATE
REVISION No. 1	
REVISION No. 2	
REVISION No. 3	
REVISION No. 4	
REVISION No. 5	
REVISION No. 6	

Florida Design Criteria:

- Applicable Codes:
  - Florida Building Code-Building 2017 Edition.
  - Florida Building Code-Plumbing 2017 Edition.
  - Florida Building Code-Mechanical 2017 Edition.
  - Florida Building Code-Fuel Gas 2017 Edition.
  - Florida Building Code-Energy Conservation 2017 Edition.
  - Florida Building Code-Accessibility 2017 Edition.
  - Florida Fire Prevention Code 6th Edition.
  - National Electrical Code (NEC) 2014 Edition.
  - ACI 318-05: American Concrete Institute.
  - AISC 360-05: American Institute of Steel Construction.
  - ASCE: 7-10
  - IESNA: Illuminating Engineering Society of North America.
  - NFPA 30: Flammable & Combustible Liquids.
  - NFPA 30A: Motor Fuel Dispensing Facilities.
  - NFPA 37: Stationary Combustion Engines & Gas Turbines.
  - NFPA 70: National Electrical Code 2008 Edition.
  - NFPA 90A: Installation of Air-Conditioning & Ventilation Systems.
  - NFPA 90B: Installation of Warm Air Heating & Air-Conditioning Systems.
  - NFPA 101: Safety to Life from Fire in Buildings & Structures.
  - NFPA 110: Emergency and Standby Power Systems.
  - NFPA 700: Standards for the Installation of Lighting Protection System.
  - NESC: National Electrical Safety Code 2014 Edition.
  - PEI / RP 100-05: Petroleum Equipment Institute / Recommended Practice.
  - CHAPTER 62-761: Florida Administrative Code.
  - FDEP: Florida Department of Environmental Protection.

Building Design Data:

1. BUILDING AREA: C-STORE	3500 S.F.
2. CONSTRUCTION TYPE: C-STORE OCCUPANCY: C-STORE	II-B (UNSPRINKLERED) "M" MERCANTILE GROUP
3. OCCUPANCY LOAD: C-STORE	157 OCCUPANTS (30 S.F./PER OCCUPANT)
4. WIND LOAD: 5. RISK CATEGORY: 6. EXPOSURE CATEGORY: 7. MAXIMUM ALLOW BUILDING HEIGHT: 8. PROPOSED BUILDING HEIGHT: C-STORE	168 MPH CATEGORY II "C" 55 FT. 23'-0" T.O. ROOF

Always call 811 two full business days before you dig to  
have underground utilities located and marked.

Sunshine811.com

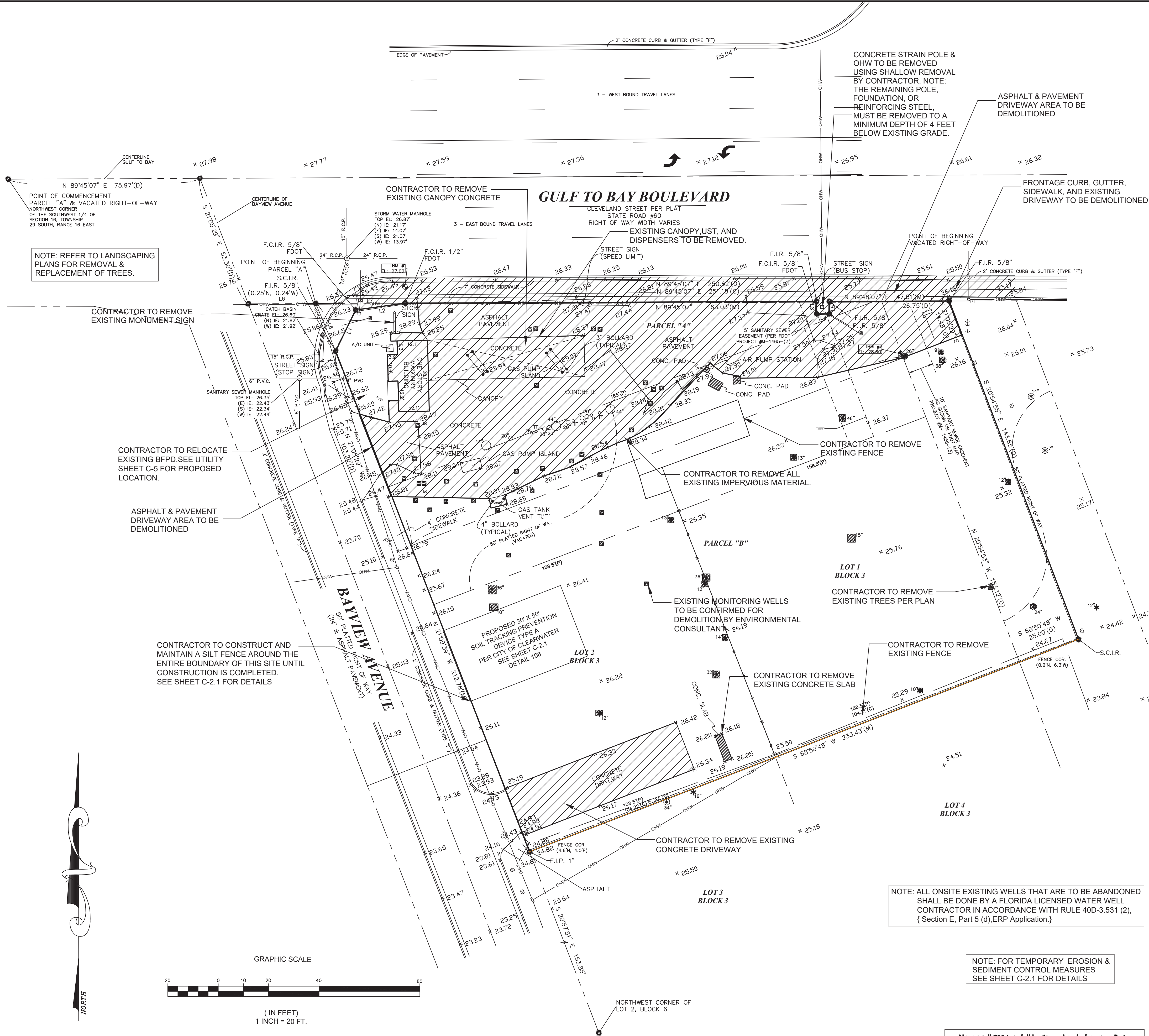
CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602  
SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:  
AEC Services, Inc.  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
www.aecservicesinc.com

JOB NO.	GO161712	DWG Name	CIVIL	XREF Name	NONE	SCALE	N.T.S.	DATE	7/8/18	DRAWN BY	PAZ	CHECKED	GEP	DATE	DESCRIPTION	REVISIONS	APPROVAL	RAF
6																		

COVER SHEET

C-1



SEQUENCE OF MAJOR EVENTS:	
1. INSTALL STAKED SILT FENCE AS INDICATED ON THE CONSTRUCTION PLANS. 2. CLEAR AND GRUB POND TO BE USED AS SEDIMENTATION BASIN. 3. EXCAVATE POND FOR SEDIMENT TRAPS FOR SITE RUNOFFS. 4. BEGIN BUILDING CONSTRUCTION. 5. CONSTRUCT DIVERSION SHALES AROUND PERIMETER OF SITE TO POND, AS NECESSARY. 6. INSTALL STORM SEWER SYSTEM AND ITS SILTATION PROTECTION, UTILITIES AND OUT FILL STRUCTURE. 7. EXCAVATE THE REMAINDER OF THE PONDS INCLUDING REMOVAL OF SILT DEPOSITS. 8. STABILIZE PARKING LOT. 9. CONSTRUCT CURB, BASE AND ASPHALT. 10. COMPLETE FINAL SITE GRADING. 11. INSTALL PERMANENT LANDSCAPING ON SITE. REPAIR ANY WASHED OUT AREAS. 12. WHEN CONSTRUCTION ACTIVITY IS COMPLETE AND THE SITE IS STABILIZED, REMOVE EROSION PROTECTION DEVICES AND PLACE SOD AS NECESSARY.	
STABILIZATION PRACTICES	
WIND EROSION STABILIZATION - THE CONTRACTOR SHALL DENUDE ONLY AREAS WHERE IT IS EXPECTED TO BE GRADED OR ALTERED WITHIN A TWO (2) WEEK TIME FRAME. ALL PVIOUS AREAS OF THE SITE INCLUDED IN GRADING THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE GRADED AND PREPARED WITH A COMBINATION OF SOD AND/OR SEEDING AND MULCHING. PAID AREAS WITHIN FUTURE UNITS WHERE EARTHWORK IS COMPLETED SHALL BE COMPLETELY SEEDED AND MULCHED. AREAS WHERE CONSTRUCTION OPERATIONS WILL BE CONTINUOUS, FUGITIVE DUST SHALL BE MANAGED BY APPLYING A WATER SPRAY TO SATURATE THE SURFACE SOILS ON A DAILY BASIS (OR AS NEEDED) TO MAINTAIN MINIMAL DUST TRANSPORT. FUGITIVE DUST SHALL BE MONITORED CONTINUOUSLY AND ADDITIONAL MEASURES MAY NEED TO BE TAKEN TO CONTROL OFF SITE TRANSPORT OF UNACCEPTABLE LEVELS OF DUST. TEMPORARY STABILIZATION - TOP OF SOIL STOCK PILES AND DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR AT LEAST 21 DAYS SHALL BE STABILIZED WITH TEMPORARY GRASS AND MULCH NO LATER THAN 14 DAYS FROM THE LAST CONSTRUCTION ACTIVITY. GRASS SEED SHALL BE A MIXTURE OF 20 PARTS OF BERMOUDA AND 80 PARTS OF PENSACOLA BAHIA. THE SEPARATE TYPES OF SEED USED SHALL BE THOROUGHLY DRY MIXED IMMEDIATELY BEFORE SOWING. SEED WHICH HAS BECOME WET SHALL NOT BE USED. THE MULCH MATERIAL USED SHALL NORMALLY BE DRY MULCH. DRY MULCH SHALL BE STRAW OR HAY CONSISTING OF OAT, RYE OR WHEAT STRAW, OR OF PANGOLA, PEANUT, COASTAL BERMUDA OR BAHIA GRASS HAY. ONLY UNDETERIORATED MULCH WHICH CAN BE READILY CUT INTO THE SOIL SHALL BE USED. AREAS OF THE SITE WHICH ARE TO BE PAVED WILL BE TEMPORARILY STABILIZED BY APPLYING STABILIZATION AND BASE. PERMANENT STABILIZATION - DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY PERMANENTLY CEASES SHALL BE STABILIZED WITH SOD NO LATER THAN 14 DAYS AFTER LAST CONSTRUCTION ACTIVITY.	
STRUCTURAL PRACTICES	
EROSION PROTECTION - DURING THE CONSTRUCTION PHASES, APPROPRIATE PRACTICES INCLUDING, BUT NOT LIMITED TO SILT FENCE BARRIERS, HAY BALES AND WATERING OR OTHER METHODS NECESSARY WILL BE IMPLEMENTED TO CONTROL FUGITIVE DUST. SEDIMENT BASINS - THE STORM WATER MANAGEMENT AREAS (RETENTION AREA(S)) WILL SERVE AS SEDIMENT BASINS DURING THE CONSTRUCTION PERIOD. AT THE CONTRACTOR'S DISCRETION, THE SEDIMENT BASINS WILL BE CONSTRUCTED TO THE DESIGN CROSS-SECTION OR A MINIMUM OF 2'-FEET BELOW EXISTING GROUND TO ALLOW THE SILT TO BE COLLECTED AND REMOVED PRIOR TO COMPLETION OF THE GRADING.	
STORM WATER MANAGEMENT	
STORM WATER DRAINAGE WILL BE PROVIDED BY AN INVERTED CROWN PAVEMENT, STORM WATER AND CATCH BASIN SYSTEM FOR THE DEVELOPED AREAS. THE AREAS NOT DEVELOPED SHALL BE GRADED TO LESS THAN 2% SLOPES AND HAVE PERMANENT SEEDING OR PLANTINGS WHEN CONSTRUCTION IS COMPLETE. THE SITE WILL DRAIN TO STORM WATER PONDS THAT WERE UTILIZED AS THE TEMPORARY SEDIMENT BASINS DURING THE CONSTRUCTION PROCESS. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE SEDIMENT BASINS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSTRUCT ALL RETENTION/DETENTION AREAS IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PLANS.	
WASTE DISPOSAL	
WASTE MATERIALS - ALL WASTE MATERIAL SHALL BE COLLECTED AND CONTAINED IN A CONTROLLED AREA PURSUANT TO STATE AND LOCAL SOLID WASTE REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS GENERATED FROM CONSTRUCTION IS TO BE REMOVED FROM THE SITE AND DISPOSED OF APPROPRIATELY. NO CONSTRUCTION MATERIALS SHALL BE BURIED ON SITE. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTRACTING THE PRACTICES IN THE ON SITE OFFICE TRAILER AND THE CONSTRUCTION MANAGER RESPONSIBLE FOR THE DAY TO DAY SITE OPERATIONS SHALL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED. HAZARDOUS WASTE - IF ENCOUNTERED, ALL WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY STATE AND/LOCAL REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED. SANITARY WASTE - ALL SANITARY WASTE SHALL BE COLLECTED FROM PORTABLE UNITS BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR AS REQUIRED BY STATE AND LOCAL CODES AND REGULATIONS.	
OFF SITE VEHICLE TRACKING	
STABILIZED CONSTRUCTION ENTRANCES SHALL BE PROVIDED TO HELP REDUCE OFF SITE VEHICLE TRACKING OF SEDIMENTS. THE PAVED STREETS SHALL BE CLEANED AS NEEDED TO REMOVE ANY EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE SITE SHALL BE COVERED WITH A TARP/AULIN AT ALL TIMES.	
TIMING OF CONTROL MEASURES	
AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, STAKED SILT FENCE, STABILIZED CONSTRUCTION ENTRANCES AND SEDIMENT BASINS SHALL BE CONSTRUCTED PRIOR TO CLEARING OR GRADING OF ANY OTHER PORTIONS OF THE SITE. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN 21 DAYS SHALL BE STABILIZED WITH A TEMPORARY GRASS AND MULCH WITHIN 14 DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY THAT AREA SHALL BE STABILIZED WITH PERMANENT SOD. AFTER THE ENTIRE SITE IS STABILIZED, THE ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE TRAPS AND THE STAKED SILT FENCES SHALL BE REMOVED.	
EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES	
THESE ARE THE INSPECTION AND MAINTENANCE PRACTICES THAT SHALL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROL: 1. LESS THAN ONE HALF OF THE SITE SHALL BE DENUDE AT ONE TIME. 2. ALL CONTROL MEASURES SHALL BE INSPECTED AT AT THE END OF EACH WORK DAY AND FOLLOWING ANY STORM EVENT OF 0.5-INCHES OR GREATER BY A CONTRACTOR'S REPRESENTATIVE. 3. ALL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER; IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT. 4. BUILT UP SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE SILT FENCE. 5. SILT FENCE SHALL BE INSPECTED REGULARLY FOR DEPTH OF SEDIMENT AND TEARS TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS AND TO SEE IF THE FENCE POSTS ARE FIRMLY IN THE GROUND. 6. THE SEDIMENT BASINS SHALL BE INSPECTED, DEPTH OF SEDIMENT AND BUILD UP OF SEDIMENT SHALL BE REMOVED WHEN IT REACHES 10% OF THE DESIGN CAPACITY OR AT THE END OF THE JOB. 7. TEMPORARY AND PERMANENT GRASSING AND SOODING SHALL BE INSPECTED FOR BARE SPOTS, WASHOUTS AND HEALTHY GROWTH. 8. A MAINTENANCE INSPECTION REPORT SHALL BE MADE AFTER EACH INSPECTION BY THE CONTRACTOR AND SHALL BE KEPT IN AN ACTIVE LOG READILY AVAILABLE AT THE JOB SITE. 9. EITHER THE SITE SUPERINTENDENT OR HIS DESIGNEES SHALL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE, REPAIR ACTIVITIES AND COMPLETING THE INSPECTION AND MAINTENANCE REPORT. 10. PERSONNEL SELECTED FOR INSPECTION AND MAINTENANCE RESPONSIBILITIES SHALL RECEIVE TRAINING FROM THE SITE SUPERINTENDENT. THEY SHALL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS USED ON SITE IN GOOD WORKING ORDER.	
NON-STORM WATER DISCHARGE	
IT IS EXPECTED THAT THE FOLLOWING NON-STORM WATER DISCHARGES WILL OCCUR FROM THE SITE DURING THE CONSTRUCTION PERIOD: 1. WATER FROM WATER LINE FLUSHING. 2. UNCONTAMINATED GROUNDWATER (FROM Dewatering EXCAVATION). 3. UNCONTAMINATED GROUNDWATER (FROM Dewatering EXCAVATION). ALL NON-STORM WATER DISCHARGES SHALL BE DIRECTED TO THE SEDIMENT BASIN PRIOR TO DISCHARGE.	
NON-STORM WATER DISCHARGE	
IT IS EXPECTED THAT THE FOLLOWING NON-STORM WATER DISCHARGES SHALL NOT OCCUR FROM THE SITE DURING THE CONSTRUCTION PERIOD: CONCRETE SAND CLEANING SOLVENTS STONE DETERGENTS PAINTS (ENAMEL AND LATEX) FERTILIZERS WOOD MASONRY BLOCK METAL STUDS PETROLEUM BASED PRODUCTS AND FUELS ROOFING SHINGLES	
SPILL PREVENTION	
THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. GOOD HOUSEKEEPING: THE FOLLOWING GOOD HOUSEKEEPING PRACTICES SHALL BE FOLLOWED ON SITE DURING THE CONSTRUCTION PROJECT. AN EFFORT SHALL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO COMPLETE THE PROJECT. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND IF POSSIBLE, UNDER A ROOF OR OTHER CONTAINED ENCLOSURE. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL MANUFACTURERS LABELED CONTAINER. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER. WHENEVER POSSIBLE, ALL OF THE PRODUCT SHALL BE USED BEFORE DISPOSING OF THE CONTAINER. MANUFACTURERS RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ON SITE. HAZARDOUS PRODUCTS: THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS. PRODUCTS SHALL BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED. THEY CONTAIN IMPORTANT PRODUCT INFORMATION. IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURERS OR LOCAL AND STATE RECOMMENDED METHODS OF PROPER DISPOSAL SHALL BE FOLLOWED. PETROLEUM PRODUCTS: ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDINGLY TO THE MANUFACTURERS RECOMMENDATIONS. FERTILIZERS: FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNT RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. STORAGE SHALL BE IN A COVERED SHED. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS. PAINTS: ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT SHALL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURERS INSTRUCTIONS OR STATE AND LOCAL REGULATIONS. CONCRETE TRUCKS: DISCHARGE OF SURPLUS CONCRETE OR DRUM WASH WATER IS STRICTLY PROHIBITED. HARD DEBRIS SHALL BE DISPOSED OF BY CONTRACTOR UPON COMPLETION OF THE PROJECT.	
SPILL CONTROL PRACTICES	
IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTIONS OF THIS PLAN, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP: THE MANUFACTURERS RECOMMENDED METHODS FOR SPILL CLEAN UP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEAN UP SUPPLIES. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEAN UP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE, BUT NOT BE LIMITED TO, BROOMS, DUST PANS, MOPS, GLOVES, GOGGLES, KITTY LITTER, SAND, SANDUST AND PLASTIC AND METAL TRASH CONTAINERS. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY. THE SPILL SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH HAZARDOUS SUBSTANCE. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE. THE SPILL PREVENTION PLAN SHALL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND THE CLEAN UP PROCEDURES FOR FUTURE USE. A DESCRIPTION OF THE SPILL, ITS CAUSE AND THE CLEAN UP MEASURES SHALL ALSO BE INCLUDED. THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY TO DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEAN UP COORDINATOR. HE OR SHE SHALL DESIGNATE OTHER SITE PERSONNEL WHO WILL RECEIVE SPILL PREVENTION AND CLEAN UP TRAINING. THESE INDIVIDUALS SHALL EACH BECOME RESPONSIBLE FOR A PARTICULAR PART OF PREVENTION AND CLEAN UP. THE NAMES OF THE RESPONSIBLE SPILL PERSONNEL SHALL BE POSTED IN THE MATERIAL STORAGE AREA OR IN THE OFFICE TRAILER ON SITE, IF APPLICABLE.	

**CUSTOMER:**  
GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

**SITE ADDRESS:**  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

**ENGINEER OF RECORD:**  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 92777 QB #0011445  
FL # 50738

**1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 984-1234  
(813) 984-2660 (f)  
www.aecservicesinc.com**

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	1"=20'-0"
DATE	7/8/18
DRAWN BY	PAZ
CHECKED	GEF
APPROVAL	RAF
DESCRIPTION	NO
REVISIONS	

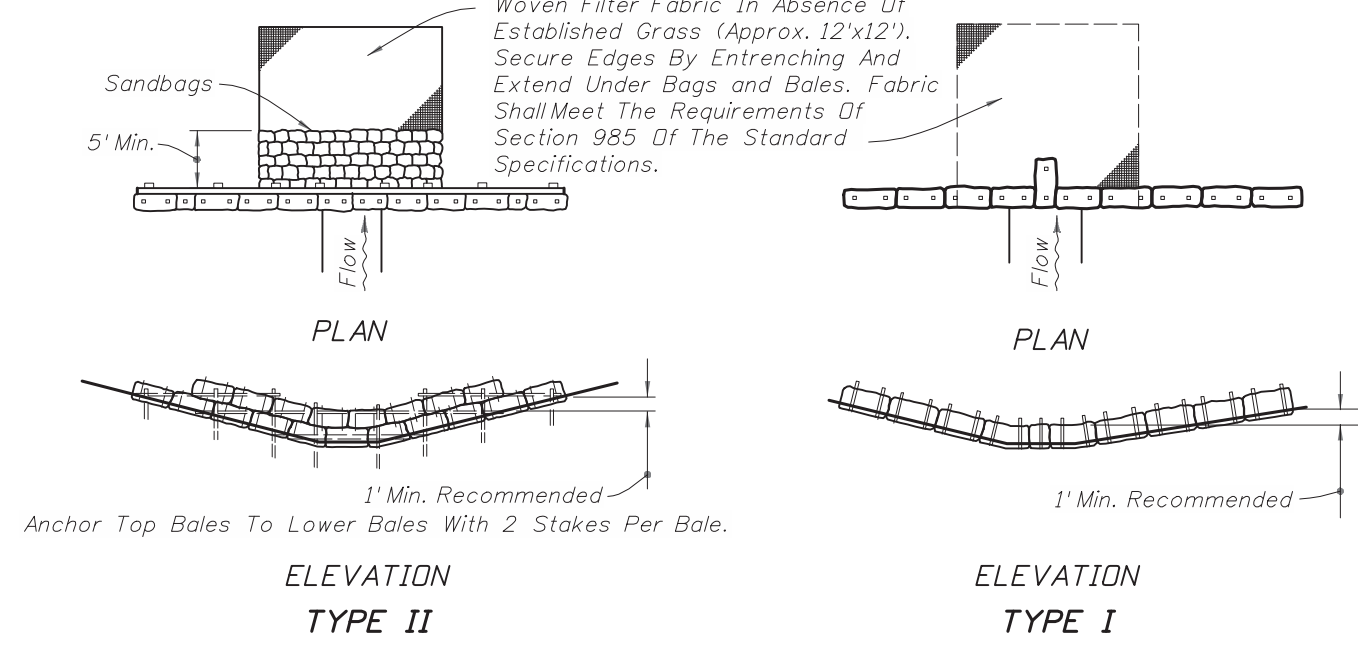
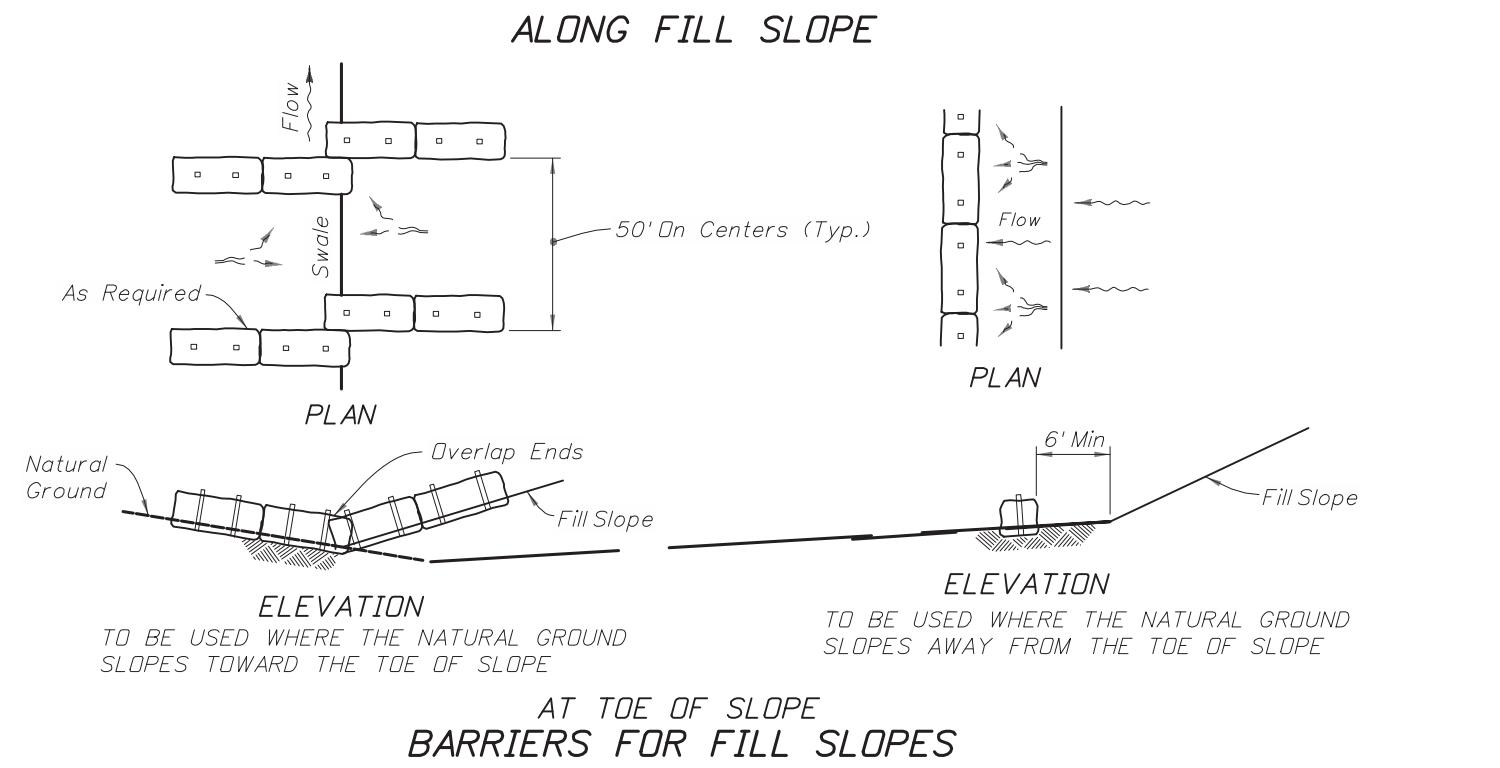
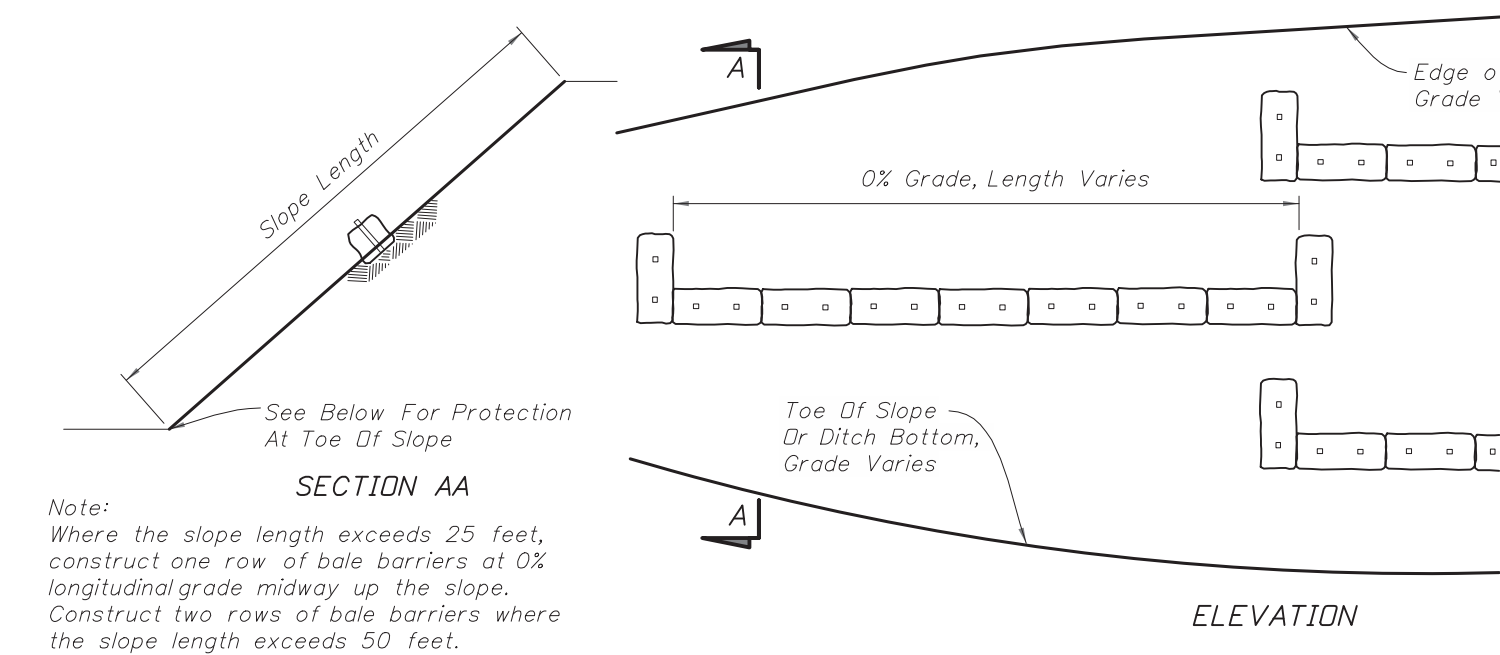
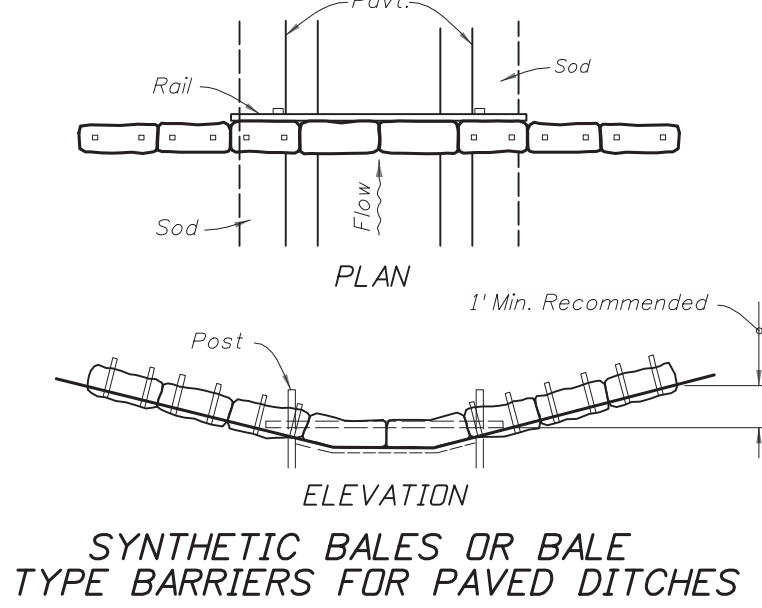
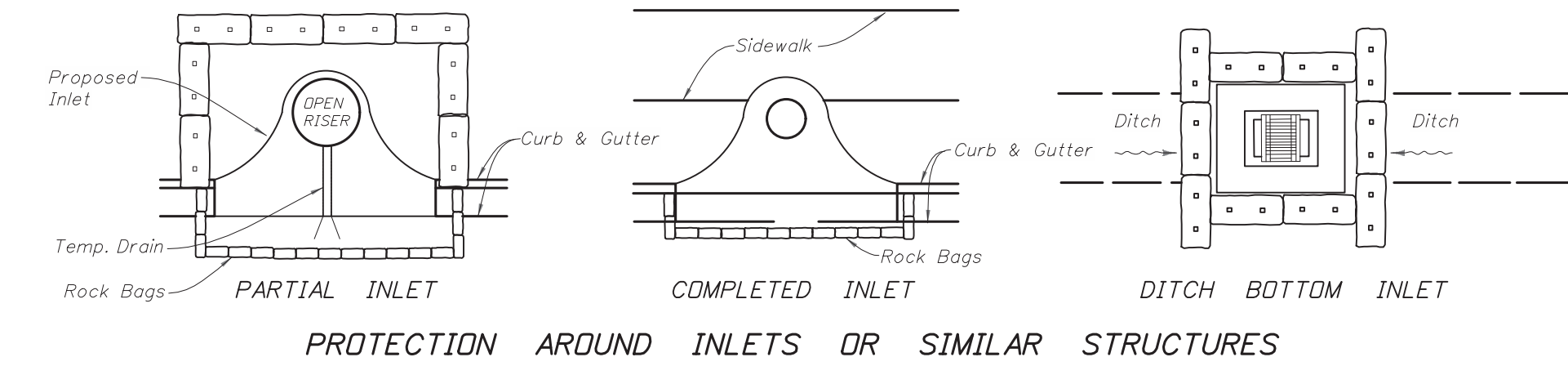
**DEMO PLAN**

**C-2**

Always call 811 two full business days before you dig to have underground utilities located and marked.

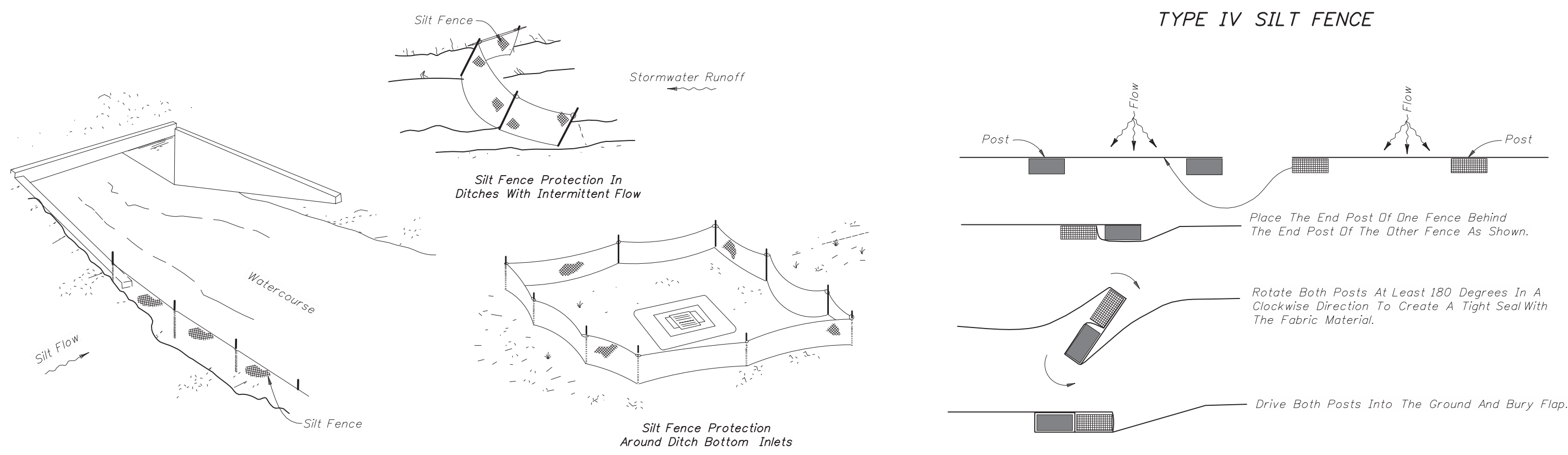
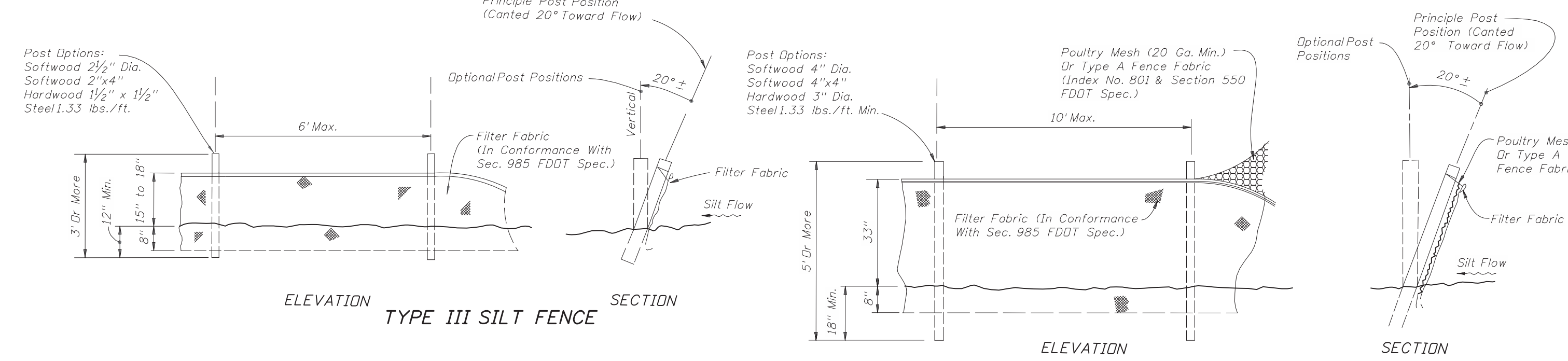
**Sunshine811.com**

THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.



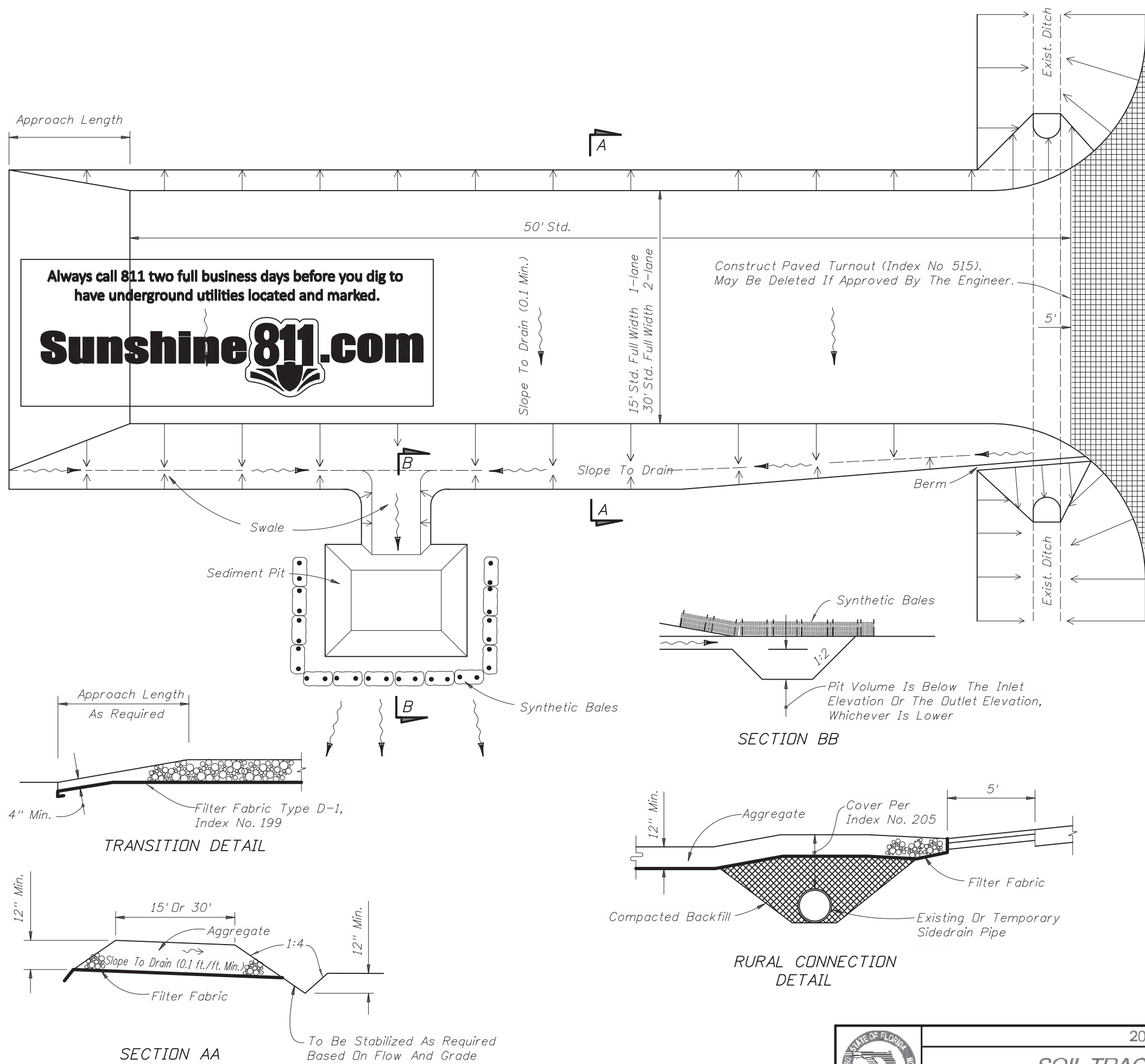
- NOTES FOR SYNTHETIC BALES OR BALE TYPE BARRIERS**
- Type I and II Synthetic Barrier should be spaced in accordance with Chart I, Sheet I.
  - Bales shall be paid for under the contract unit price for Synthetic Bales, LF. The unit price shall include the cost of filter fabric for Type I and II Barriers. Sandbags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.
  - Rolls and posts shall be 2" x 4" wood. Other materials providing equivalent strength may be used if approved by the Engineer.
  - Adjacent bales shall be butted firmly together.
  - Where used in conjunction with silt fence, bales shall be placed on the upstream side of the fence.
  - Bales to be paid for under the contract unit price for Synthetic Bales, LF. The unit price shall include the cost of filter fabric for Type I and II Barriers. Sandbags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.

	2010 FDOT Design Standards		Last Revision	Sheet No.
	TEMPORARY EROSION AND SEDIMENT CONTROL		07/01/08	2 of 3
			Index No.	102



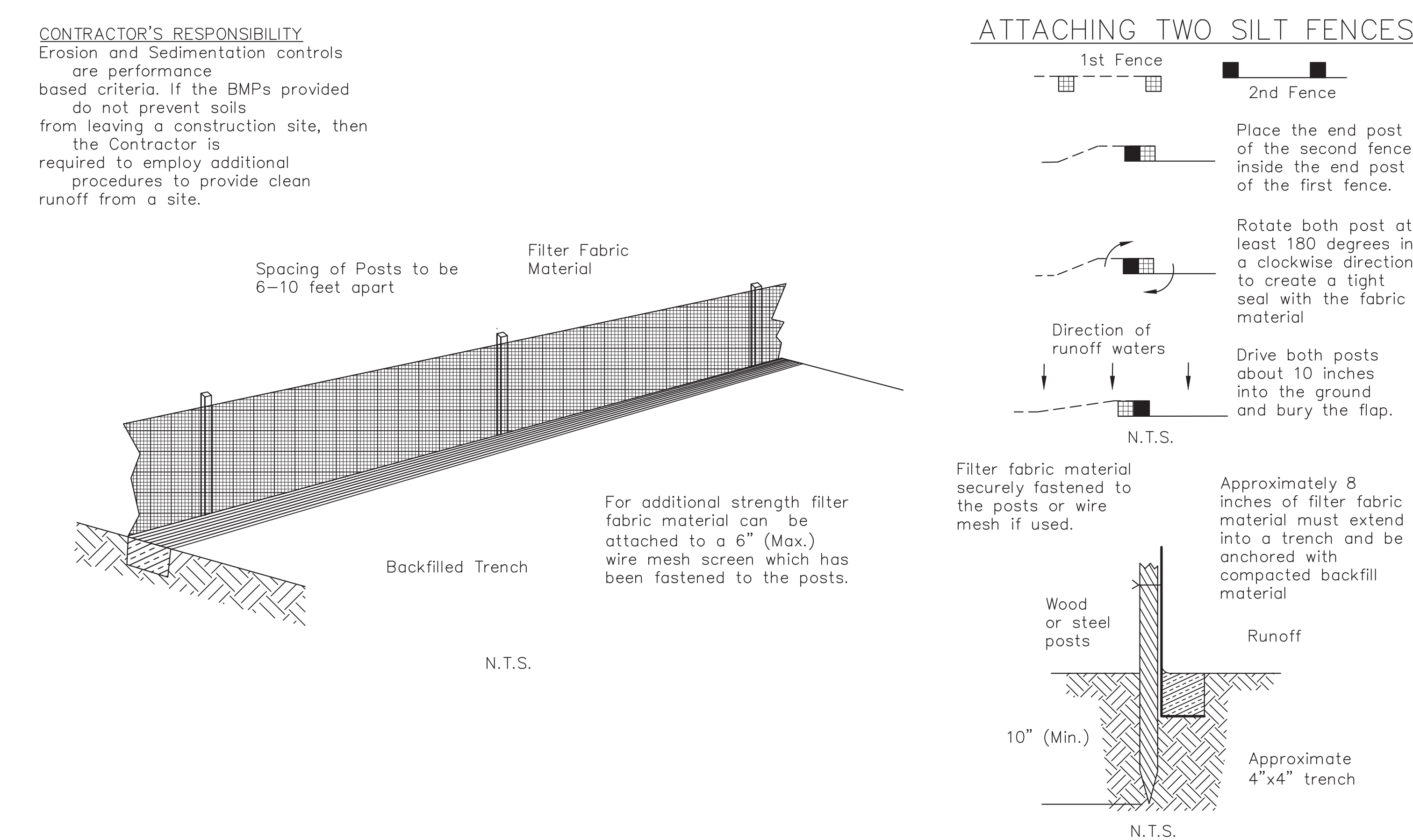
- NOTES FOR SILT FENCES**
- Type III Silt Fence to be used at most locations. Where used in ditches, the spacing for Type III Silt Fence shall be in accordance with Chart I, Sheet I.
  - Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet. Avoid use where the detained water may back into travel lanes or off the right of way.
  - Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
  - Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grade to avoid channeling runoff along the length of the fence.
  - Silt Fence to be paid for under the contract unit price for Staked Silt Fence, (LF).

	2010 FDOT Design Standards		Last Revision	Sheet No.
	TEMPORARY EROSION AND SEDIMENT CONTROL		07/01/08	3 of 3
			Index No.	102



- GENERAL NOTES**
- A Soil Tracking Prevention Device (STPD) shall be constructed at locations designated by the engineer for points of egress from unstabilized areas of the project to public roads where off-site tracking of mud could occur. Traffic from unstabilized areas of the construction project shall be directed thru a STPD. Barriers, flagging, or other positive means shall be used as required to limit and direct vehicular egress across the STPD.
  - The Contractor may propose an alternative technique to minimize off-site tracking of sediment. The alternative must be reviewed and approved by the Engineer prior to its use.
  - All materials spilled, dropped, or tracked onto public roads (including the STPD aggregate and construction mud) shall be removed daily, or more frequently if so directed by the Engineer.
  - Aggregates shall be as described in Section 901 excluding 901-2.3. Aggregates shall be FDOT size #1. If this size is not available, the next available smaller size aggregate may be substituted with the approval of the Engineer. Sizes containing excessive small aggregate will track off the project and are unsuitable.
  - The sediment pit should provide a retention volume of 3600 cubic feet/acre of surface area draining to the pit. When the STPD is isolated from other drainage areas, the following pit volumes will satisfy this requirement:  
15' x 50' = 100 ft.<sup>3</sup> 30' x 50' = 200 ft.<sup>3</sup>  
As an option to the sediment pit, the width of the swale bottom can be increased to obtain the volume. When the sediment pit or swale volume has been reduced to one half, it shall be cleaned. When a swale is used, synthetic bales or silt fence shall be placed along the entire length.
  - The swale ditch draining the STPD shall have a 0.02% minimum and a 1.0% maximum grade along the STPD and to the sediment pit.
  - Mitered end sections are not required when the sidedrain pipe satisfies the clear zone requirements.
  - The STPD shall be maintained in a condition that will allow it to perform its function. To prevent off-site tracking, the STPD shall be rinsed (daily when in use) to move accumulated mud downward thru the stone. Additional stabilization of the vehicular route leading to the STPD may be required to limit the mud tracked.
  - A STPD shall be paid for under the contract unit price for Soil Tracking Prevention Device, EA. The unit price shall constitute full compensation for construction, maintenance, replacement of materials, removal, and restoration of the area utilized for the STPD including but not limited to excavation, grading, temporary pipe (including MES when required), filter fabric, aggregate, paved turnout (including asphalt and base construction), ditch stabilization, approach route stabilization, sediment removal and disposal, water, rising and cleaning of the STPD and cleaning of public roads, grassing and sod. Synthetic Bale or Bale Type Barrier shall be paid for under the contract unit price for Synthetic Bales, LF. Silt fence shall be paid for under the contract unit price for Staked Silt Fence, LF.
  - The nominal size of a standard STPD is 15' x 50' unless otherwise shown in the plans. If the volume of entering and existing vehicles warrant, a 30' width STPD may be used if approved by the Engineer. When a double width (30') STPD is used, the pay quantity shall be 2 for each location.

	2010 FDOT Design Standards		Last Revision	Sheet No.
	SOIL TRACKING PREVENTION DEVICE TYPE A		07/01/07	1 of 1
			Index No.	106



				CITY OF CLEARWATER ENGINEERING DEPARTMENT		INSTALLING A		INDEX NO. 607		PAGE NO. 1 OF 3	
5/18/15	CONTRACTOR NOTE ADDED	S.R.		EROSION AND SILTATION CONTROL POLICY		FILTER FABRIC SILT FENCE		LATEST REVISION		2/22/2016	
DATE	REVISION DESCRIPTION	APP									

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD: AEC Services, Inc.  
RON FAIR, P.E.  
License No. 9277 CB #0011445

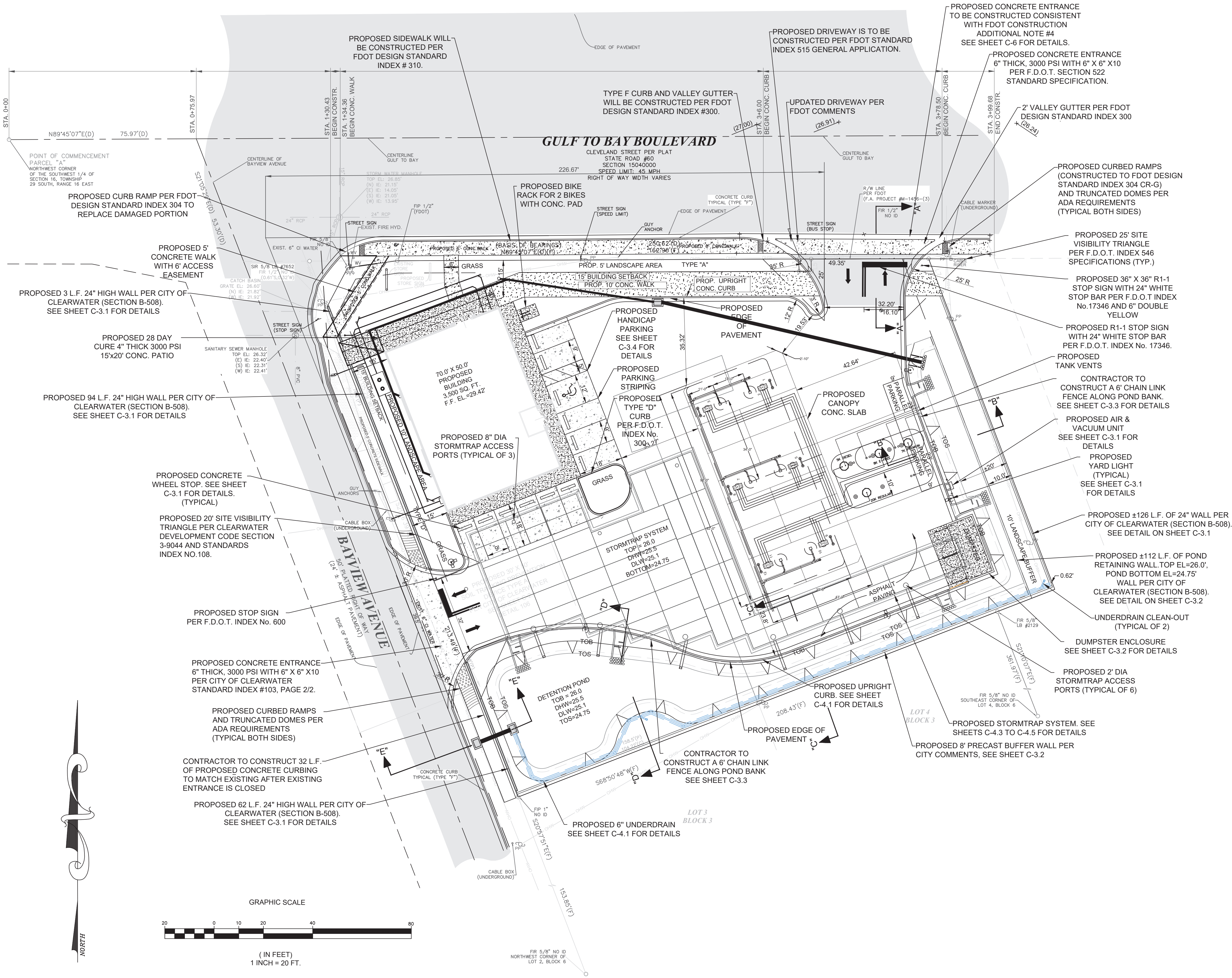
1616 ALLISON WOODS LANE  
CLEARWATER, FL 34619  
(813) 984-1234  
www.aecservicesinc.com

JOB NO.	DWG Name	XREF Name	SCALE	DATE	DRAWN BY	CHECKED	DATE	DESCRIPTION
6	GO161712	CIVIL	NONE	7/8/18	PAZ	GEF		
5								
4								
3								
2								
1								
NO								

DEMO DETAILS

C-2.1

THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.



SITE DATA TABLE

PROPOSED USE: GAS SERVICE STATION		
LOT AREA:	43,959 SQ. FT. ( 1.01 Ac.)	
SITE ADDRESS:	3009 GULF TO BAY BLVD. CLEARWATER, FL. 34619	
PARCEL ID:	16-29-16-05292-008-0130 16-29-16-53892-003-0010 16-29-16-53892-003-0020	
SITE DATA TOTALS	EXISTING	PROPOSED
BUILDING HEIGHT	16'	19'
OPEN AREA	32,794 SQ. FT. = 74.6%	8,447 SQ. FT. = 19.3%
TOTAL IMPERVIOUS AREA	11,165 SQ. FT. = 25.4%	30,012 SQ. FT. = 68.2%
DRAINAGE POND AREA	0	5,500 SQ. FT. =12.5%
PARKING SPACES	0	4 SPACES PER 1,000 S.F OF BUILDING. 3,500 S.F OF BUILDING DIVIDED BY 1,000=3.5X4=14 SPACES

BUILDING SETBACKS		
FRONT (NORTH)	15'	15'
REAR (SOUTH)	10'	10'
SIDE (WEST)	15'	15'
SIDE (EAST)	10'	10'

FLOOD ZONE:  
PROJECT LIES WITHIN FLOOD ZONE X AS DELINEATED IN FEMA FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 12103C0129G, INDEX DATED SEPTEMBER 3, 2003.

LEGAL DESCRIPTION: (AS SURVEYED)  
PARCEL A:  
TRACT A, BAY VIEW CITY SUBDIVISION, AS RECORDED IN PLAT BOOK 9, PAGE 43, PUBLIC RECORDS OF PINELLAS COUNTY, FLORIDA, TOGETHER WITH ONE-HALF OF A VACATED RIGHT-OF-WAY BEING FURTHER DESCRIBED AS FOLLOWS: FROM THE NORTHWEST CORNER OF THE SOUTHWEST 1/4 OF SECTION 16, TOWNSHIP 29 SOUTH, RANGE 16 EAST, RUN N 89°45'07" E, ALONG THE CENTERLINE OF GULF-TO-BAY BOULEVARD (S.R. 60) 75.97 FEET, THENCE S 21°05'29" E, ALONG THE CENTERLINE OF BAYVIEW AVENUE 53.50 FEET, THENCE N 89°45'07" E, 26.75 FEET TO THE POINT OF INTERSECTION WITH THE SOUTH RIGHT-OF-WAY LINE OF GULF-TO-BAY BOULEVARD AND THE EAST RIGHT-OF-WAY LINE OF BAYVIEW AVENUE, SAID POINT BEING THE POINT OF BEGINNING; THENCE CONTINUE N 89°45'07" E ALONG SAID SOUTH RIGHT-OF-WAY LINE OF GULF-TO-BAY BOULEVARD (S.R. 60) 250.62 FEET; THENCE S 21°05'29" E, 14.48 FEET; THENCE S 69°01'11" W, 234.22 FEET TO A POINT ON THE EAST RIGHT-OF-WAY LINE OF BAYVIEW AVENUE; THENCE N 21°05'29" W, ALONG SAID EAST RIGHT-OF-WAY LINE, 103.20 FEET TO THE POINT OF BEGINNING. LESS ANY PART THEREOF LYING WITHIN LANDS DESCRIBED IN OFFICIAL RECORDS BOOK 6893, PAGE 338 AND OFFICIAL RECORDS BOOK 6997, PAGE 1573, PUBLIC RECORDS OF PINELLAS COUNTY, FLORIDA, OF WHICH PINELLAS COUNTY CONTAINING 0.316 ACRES MORE OR LESS.

PARCEL B:  
LOT ONE (1) OF BLOCK THREE (3) OF McMULLEN'S BAY VIEW SUBDIVISION, ACCORDING TO THE MAP OR PLAT THEREOF AS RECORDED IN THE PUBLIC RECORDS OF PINELLAS COUNTY, FLORIDA, TOGETHER WITH THE SOUTHERLY 1/2 OF THE RIGHT OF WAY VACATED BY THE CITY OF CLEARWATER, FLORIDA IN RESOLUTION 75-4 FILED 1/18/75 IN OR BOOK 4251, PAGE 153, LYING TO THE NORTH OF AND ADJACENT TO SAID LOT 2, ACCORDING TO THE PLAT THEREOF RECORDED IN PLAT BOOK 6, PAGE 23, OF THE PUBLIC RECORDS OF HILLSBOROUGH COUNTY, FLORIDA, OF WHICH PINELLAS COUNTY WAS FORMERLY A PART.

LOT 2, OF BLOCK 3 TOWN OF BAY VIEW AND KNOWN AS McMULLEN'S BAYVIEW SUBDIVISION, TOGETHER WITH THE SOUTHERLY 1/2 OF THE RIGHT OF WAY VACATED BY THE CITY OF CLEARWATER, FLORIDA IN RESOLUTION 75-4 FILED 1/18/75 IN OR BOOK 4251, PAGE 153, LYING TO THE NORTH OF AND ADJACENT TO SAID LOT 2, ACCORDING TO THE PLAT THEREOF RECORDED IN PLAT BOOK 6, PAGE 23, OF THE PUBLIC RECORDS OF HILLSBOROUGH COUNTY, FLORIDA, OF WHICH PINELLAS COUNTY WAS FORMERLY A PART.

TOGETHER WITH THE WEST 1/2 OF A VACATED RIGHT-OF-WAY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE SOUTHWEST 1/4 OF SECTION 16, TOWNSHIP 29 SOUTH, RANGE 16 EAST, PINELLAS COUNTY, FLORIDA; THENCE N 89°45'07" E, ALONG THE CENTERLINE OF GULF-TO-BAY BOULEVARD, (S.R. NO. 60), FOR A DISTANCE OF 75.97 FEET; THENCE S 21°05'29" E, ALONG THE CENTERLINE OF BAYVIEW AVENUE, FOR A DISTANCE OF 53.30 FEET; THENCE N 89°45'07" E, 26.75 FEET TO A POINT OF INTERSECTION WITH THE SOUTH RIGHT-OF-WAY LINE OF GULF-TO-BAY BOULEVARD AND THE EAST RIGHT-OF-WAY LINE OF BAYVIEW AVENUE; THENCE CONTINUE N 89°45'07" E, ALONG SAID SOUTH RIGHT-OF-WAY LINE OF GULF-TO-BAY BOULEVARD, FOR A DISTANCE OF 223.87 FEET TO THE POINT OF BEGINNING; THENCE CONTINUE N 89°45'07" E, ALONG SAID SOUTH RIGHT-OF-WAY LINE OF GULF-TO-BAY BOULEVARD, FOR A DISTANCE OF 26.75 FEET; THENCE S 21°05'29" E, FOR A DISTANCE OF 143.65 FEET; THENCE S 69°01'11" W, FOR A DISTANCE OF 25.00 FEET; THENCE N 21°05'29" W, FOR A DISTANCE OF 153.12 FEET TO THE POINT OF BEGINNING.

CUSTOMER:

GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

SITE ADDRESS:

BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:

AEC Services, Inc.  
RON FAIR, P.E.  
FL # 50738 License No. 9277 CB #0011445

NOTES:

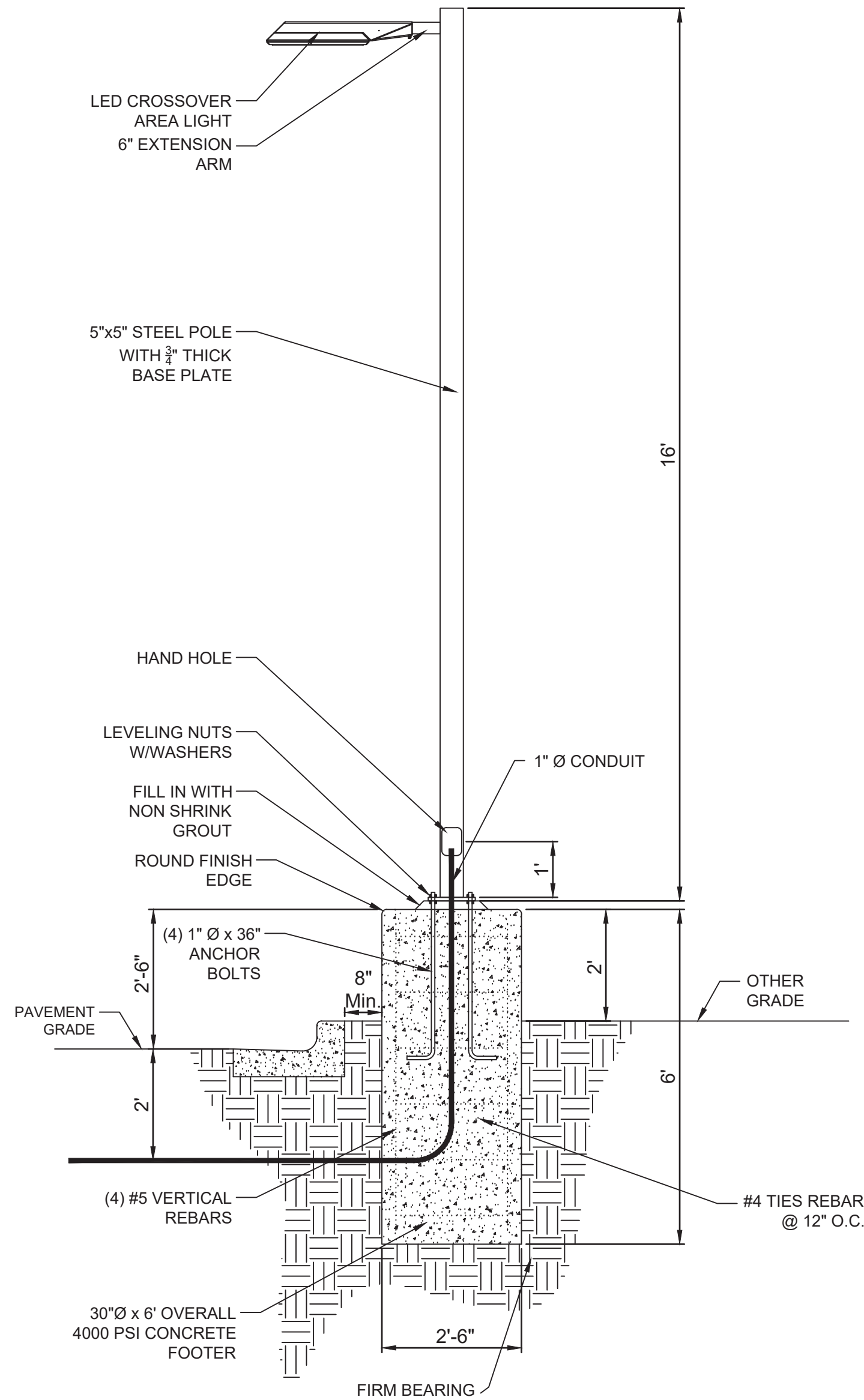
1. PRINT COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED FOR ANY ELECTRONIC PURPOSES.

JOB NO.	GO161712	DWG Name	CIVIL	XREF Name	NONE	SCALE	1"=20'-0"	DATE	9-7-18	DRAWN BY	PAZ	CHECKED	GEP	APPROVAL	RAF
DESCRIPTION															
REVISIONS															

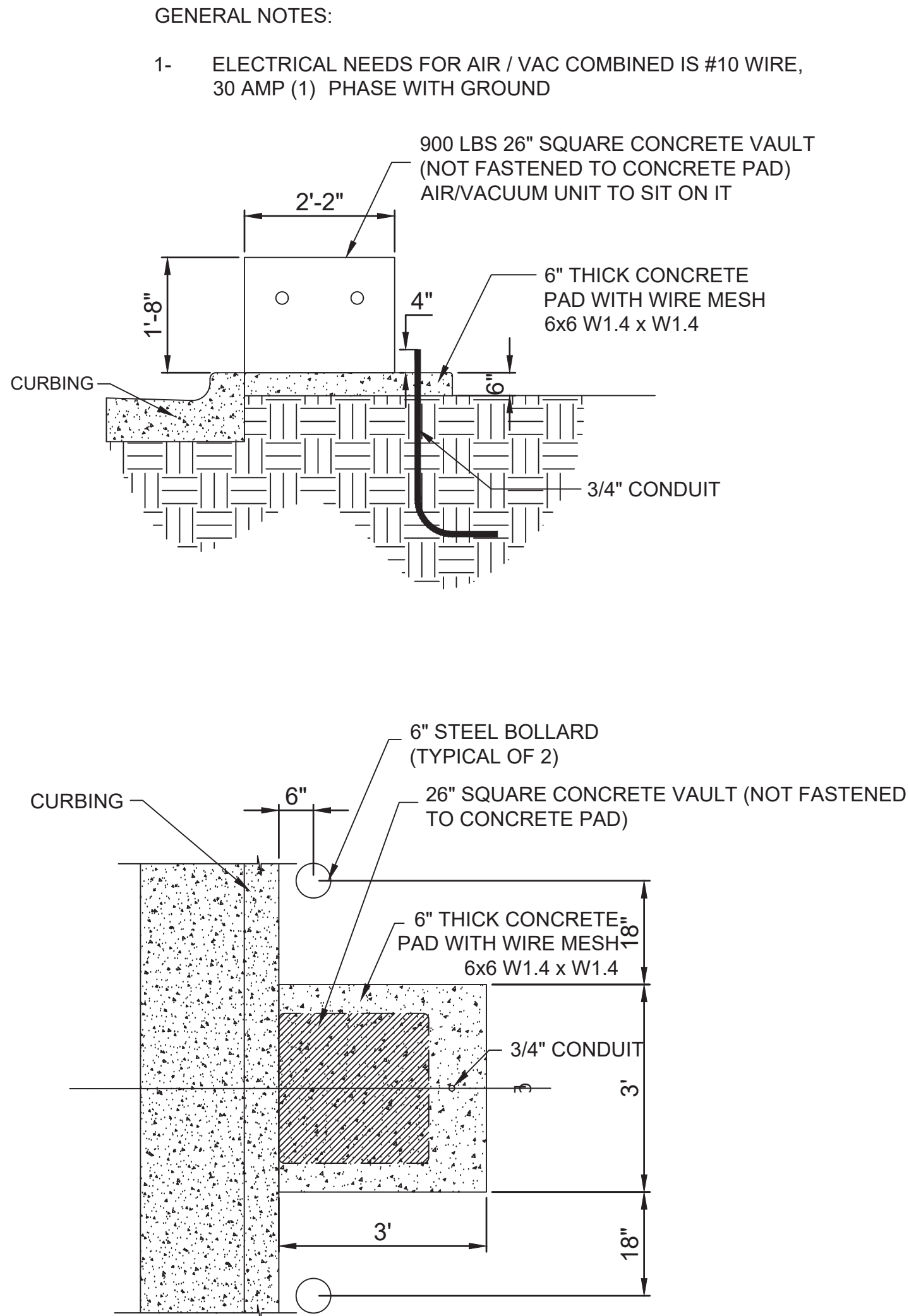
SITE PLAN

C-3

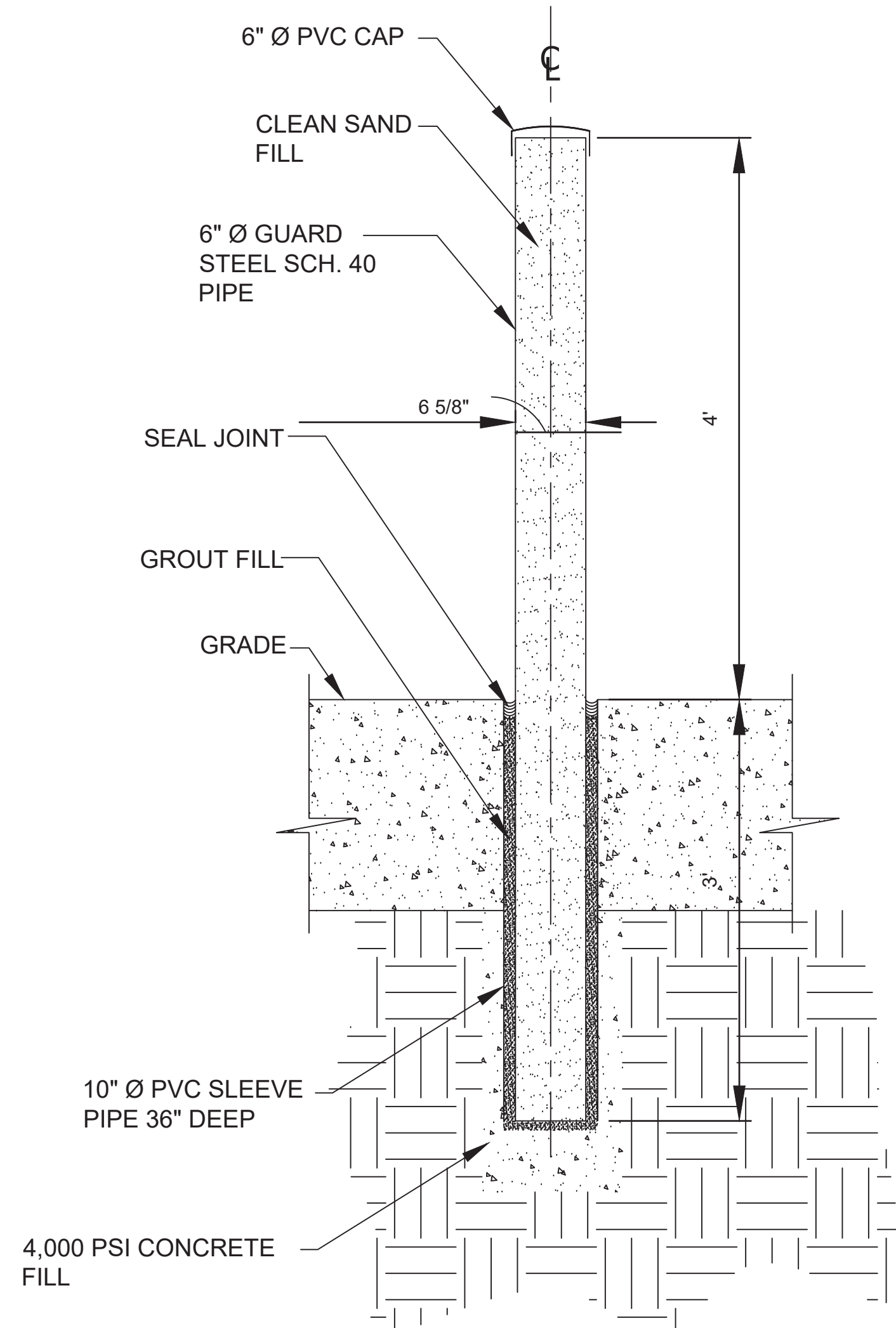
THIS DRAWING IS THE PROPERTY OF AEC SERVICES INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.



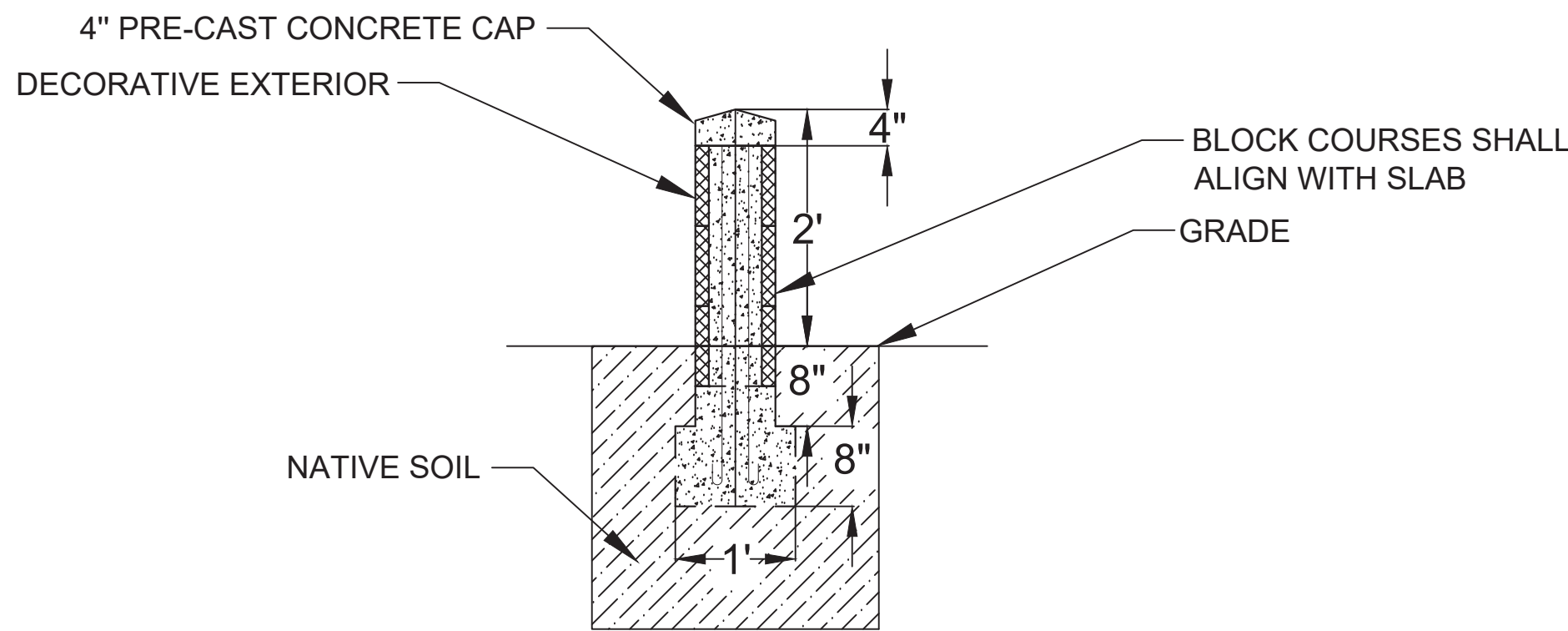
1 YARD LIGHT DETAIL  
N.T.S.



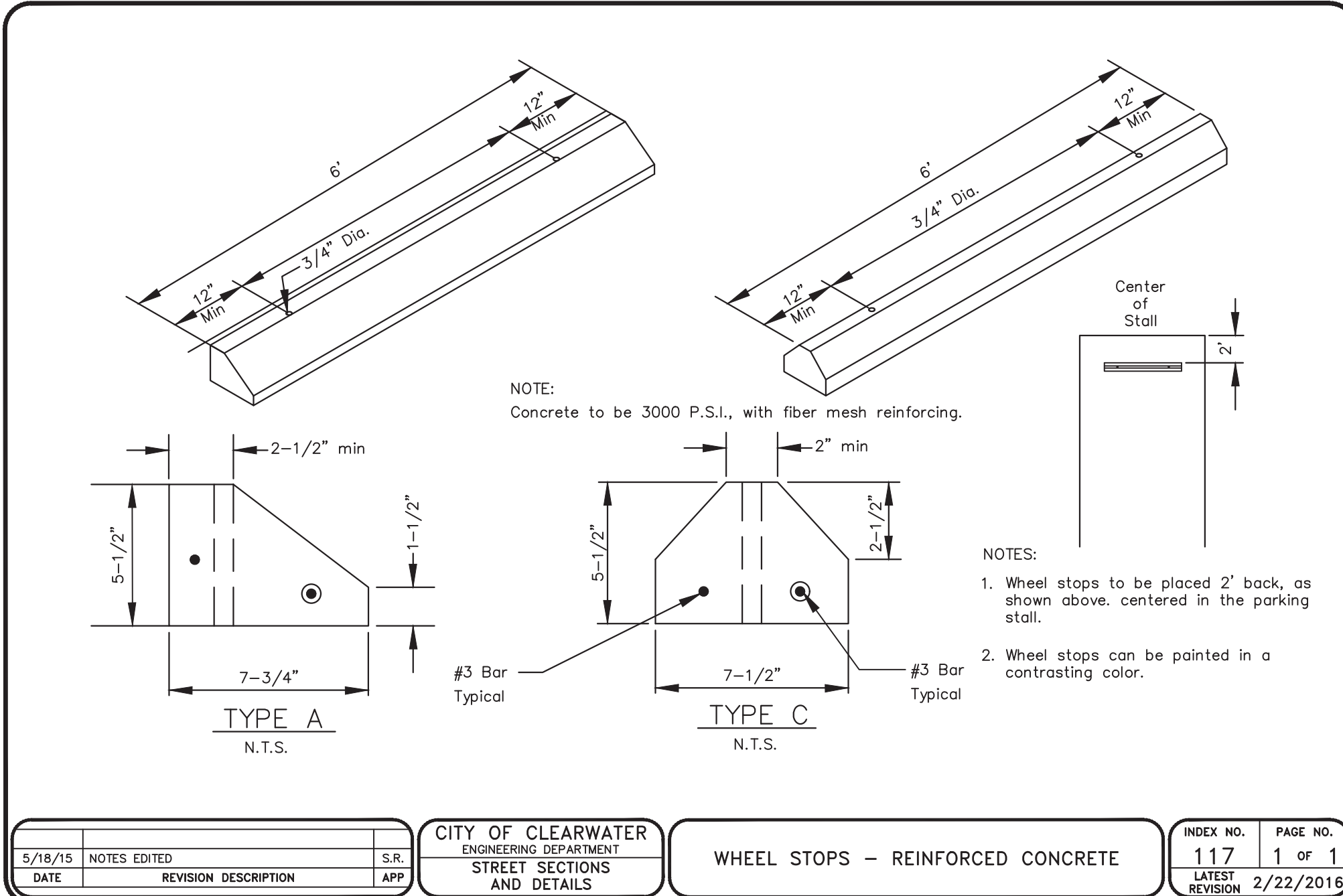
2 AIR & VACUUM UNIT DETAIL  
N.T.S.



3 BOLLARD DETAILS  
N.T.S.



4 24" DECORATIVE HIGH WALL  
N.T.S.



5/18/15	NOTES EDITED	S.R.	CITY OF CLEARWATER ENGINEERING DEPARTMENT STREET SECTIONS AND DETAILS	WHEEL STOPS - REINFORCED CONCRETE	INDEX NO. 117	PAGE NO. 1 of 1
DATE	REVISION DESCRIPTION	APP			LATEST REVISION	2/22/2016

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	N.T.S.
DATE	2/15/17
DRAWN BY	PAZ
CHECKED	GEP
DATE	
DESCRIPTION	
REVISIONS	
APPROVAL	RAF

SITE PLAN  
DETAILS

C-3.1

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
FL # 50738 License No. 9277 OB #011445  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 684-1234  
www.aecsenr.com

CUSTOMER:  
**GIANT OIL INC.**  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

SITE ADDRESS:  
**BP STATION**  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

PRINT COPIES OF THIS DOCUMENT ARE  
NOT CONSIDERED SIGNED AND  
VERIFIED ON ANY ELECTRONIC COPIES  
RON FAIR, P.E.  
FL #50738

APPLICABLE CODES
1. FLORIDA BUILDING CODE 2017 EDITION, CHAPTER 18. 2. A.C.I. 318-02 FOR REINFORCED CONCRETE. 3. A.I.S.C. MANUAL FOR STEEL CONSTRUCTION A.S.D. FOR STRUCTURAL STEEL, THIRTEENTH EDITION. 4. A.S.C.E. 7.05 FOR WIND ANALYSIS AND DESIGN.

- | MATERIALS (U. O. N. ON PLANS) |   |
|-------------------------------|---|
| 1.                            | CONCRETE<br>ALL STRUCTURAL CONCRETE SHALL CONFORM TO ACI-301            |
| 2.                            | STRUCTURAL STEEL<br>f <sub>y</sub> = 50 KSI (MIN.) CONFORM TO ASTM A992 |

1. WIND:

DESIGN ASSUMPTIONS

BASIC WIND VELOCITY:	150 MPH
EXPOSURE:	D
IMPORTANCE FACTOR:	0.77

$K_z$ , EXPOSURE COEFFICIENT = 0.57

$G$ , GUST FACTOR = 0.85

$K_d$ , WIND DIRECTION FACTOR = 0.85

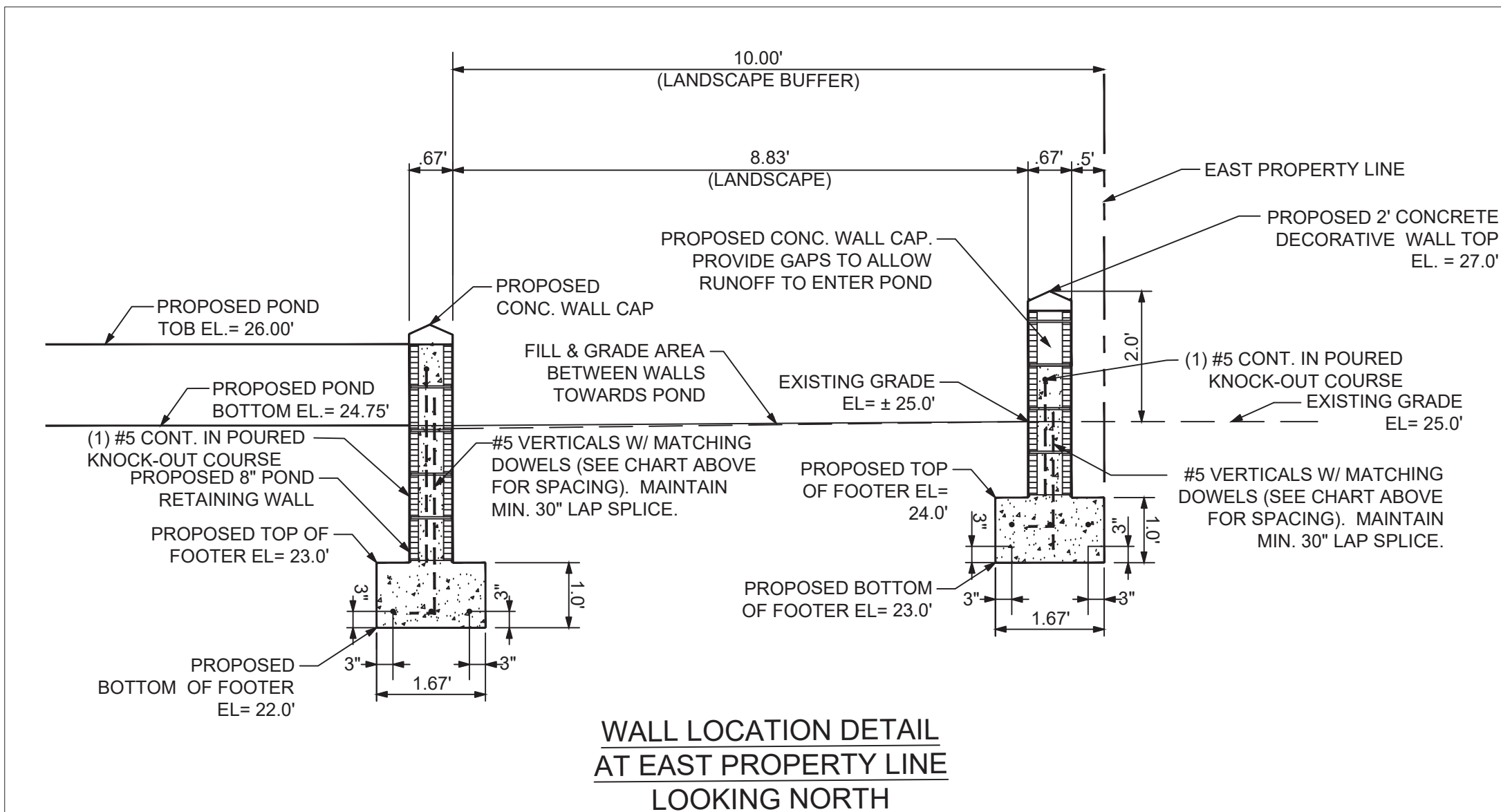
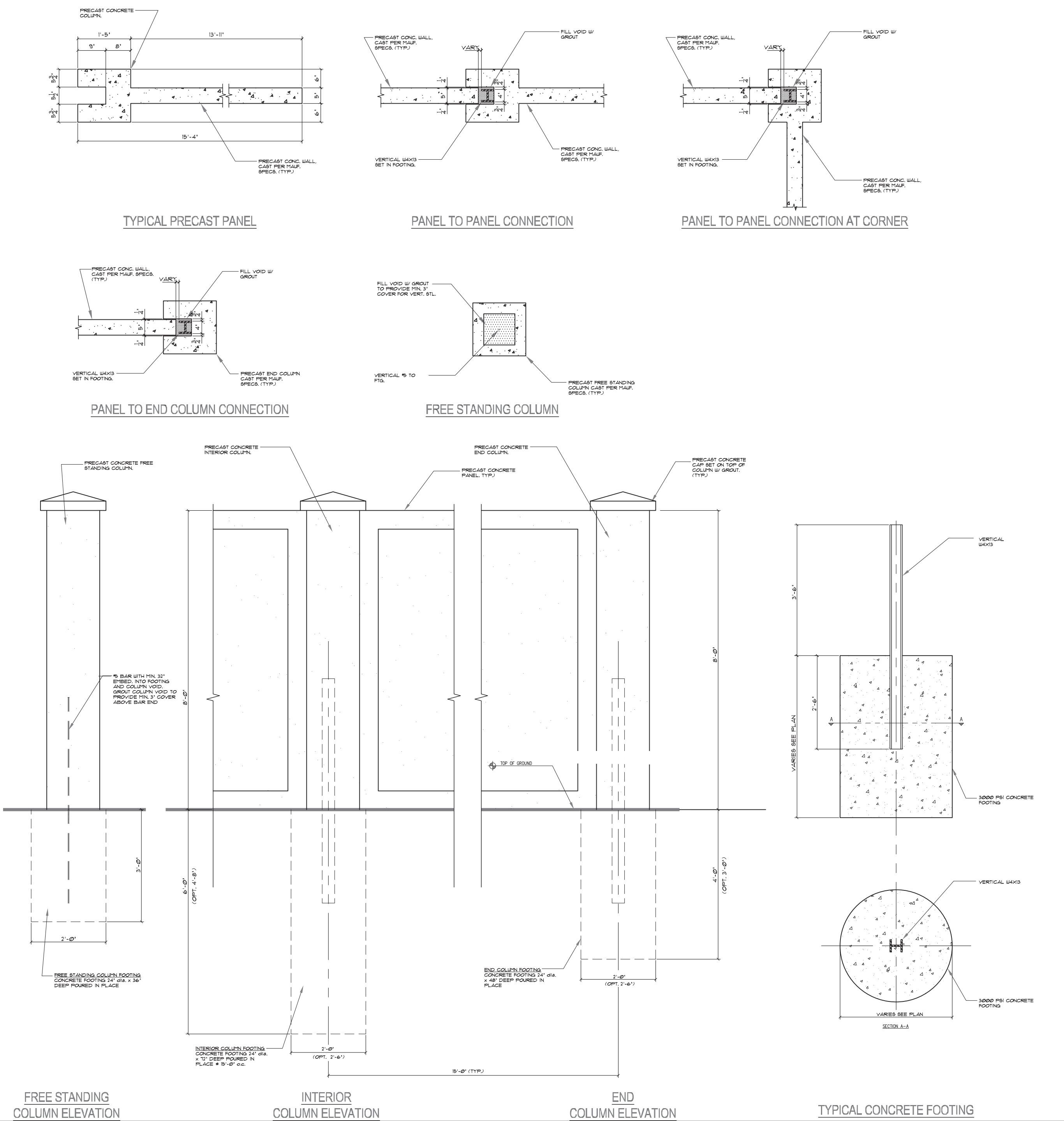
$K_e$ , TOPOGRAPHIC FACTOR = 1.10

$C_f$ , GUST FACTOR COEFFICIENT = 1.20

1. PIER FOUNDATIONS TO BE CONSTRUCTED IN ACCORDANCE W/ ACI 308.1-01

2. THESE FOUNDATIONS HAVE BEEN DESIGNED FOR SOIL TYPES SW, SP, SM, SC, GM & GC. IF OTHER CLAY TYPES ARE PRESENT, CONTACT ENGINEER OF RECORD BEFORE PIER CONSTRUCTION BEGINS.

8' PRECAST WALL  
DETAIL ALONG SOUTH  
PROPERTY LINE  
SCALE: 1/2"=1'-0"




ENGINEER OF RECORD:  
**AEC Services, Inc.**

NO	DESCRIPTION	DATE	CHECKED / GEP	APPROVAL / RFP
<b>REVISIONS</b>				
1		8-28-17	DRAWN BY: PAZ	
2			DATE: 7/8/18	
3			SCALE: N.T.S.	
4			XREF Name: NONE	
5			DWG Name: CIVIL	
6			JOB NO.: GO161712	

C-3.2

PRINT COPIES OF THIS DOCUMENT ARE  
NOT CONSIDERED SIGNED AND  
SEALED AND THE SIGNATURE MUST BE  
VERIFIED ON ANY ELECTRONIC COPIES



**AEC Services, Inc.**  
ENGINEER OF RECORD


FL # 50738 License No. 9277 QB #0011445  
RON FAIR, P.E.  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 684-1254  
(813) 684-2660 (f)  
www.aecservicesinc.com

NO	DESCRIPTION	DATE	CHECKED / GEP	APPROVAL / RFP
<b>REVISIONS</b>				
1		8-28-17	DRAWN BY: PAZ	
2			DATE: 7/8/18	
3			SCALE: N.T.S.	
4			XREF Name: NONE	
5			DWG Name: CIVIL	
6			JOB NO.: GO161712	

C-3.2

CUSTOMER:	GIANT OIL INC. 1806 N. FRANKLIN STREET TAMPA, FLORIDA 33602
SITE ADDRESS:	BP STATION 3009 GULF TO BAY BLVD. CLEARWATER, FLORIDA 34619

PRINT COPIES OF THIS DOCUMENT ARE  
NOT CONSIDERED SIGNED AND  
SEALED AND THE SIGNATURE MUST BE  
VERIFIED ON ANY ELECTRONIC COPIES



**AEC Services, Inc.**  
ENGINEER OF RECORD

FL # 50738 License No. 9277 QB #0011445  
RON FAIR, P.E.  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 684-1254  
(813) 684-2660 (f)  
www.aecservicesinc.com

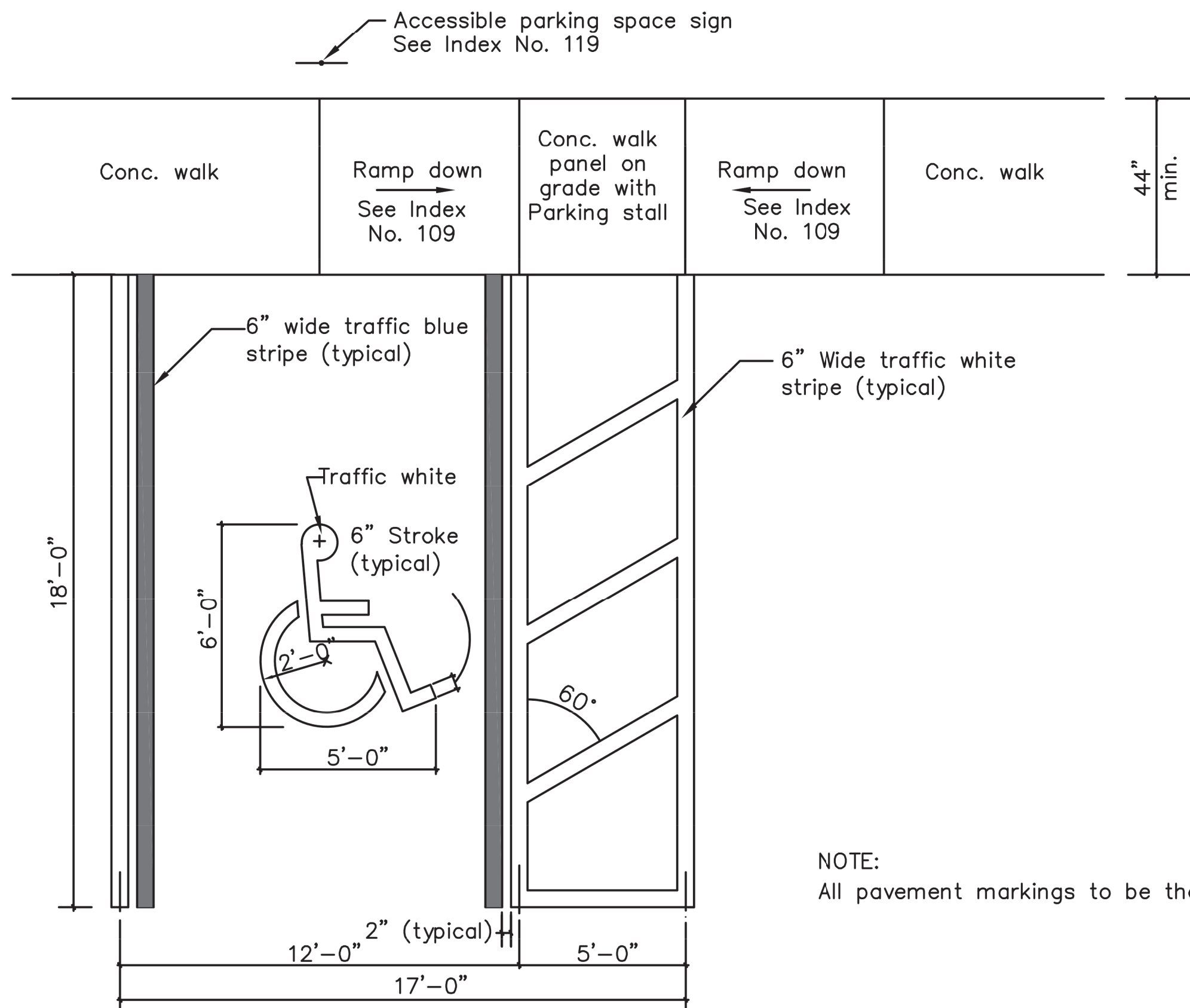
NO	DESCRIPTION	DATE	CHECKED / GEP	APPROVAL / RFP
<b>REVISIONS</b>				
1		8-28-17	DRAWN BY: PAZ	
2			DATE: 7/8/18	
3			SCALE: N.T.S.	
4			XREF Name: NONE	
5			DWG Name: CIVIL	
6			JOB NO.: GO161712	

C-3.2

\_\_\_\_\_



THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.



NOTE:  
All pavement markings to be thermoplastic.

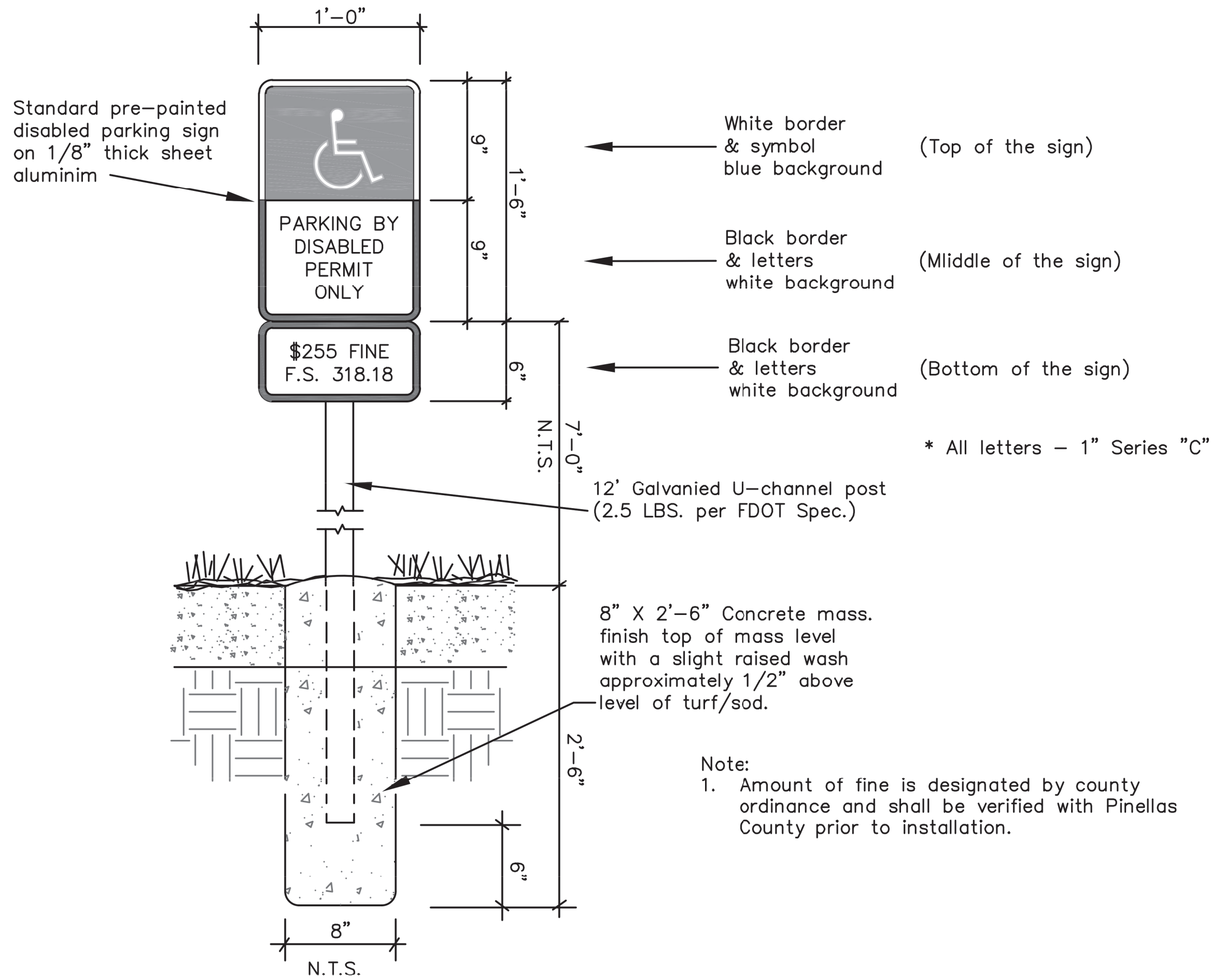
N.T.S.

5/18/15	ADDED NOTE	S.R.
2/15/12	CHANGE DETAIL NAME	H.P.
DATE	REVISION DESCRIPTION	APP

CITY OF CLEARWATER  
ENGINEERING DEPARTMENT  
STREET SECTIONS  
AND DETAILS

ACCESSIBLE PARKING STALL – SINGLE

INDEX NO.	PAGE NO.
118	1 OF 2
LATEST REVISION	2/22/2016

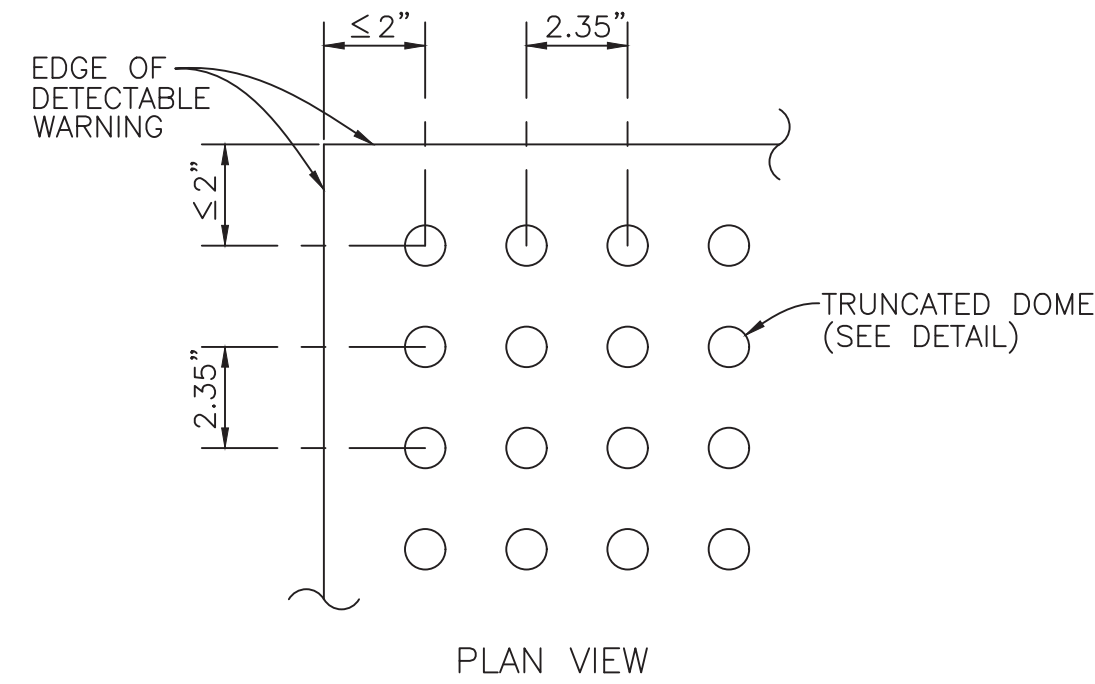


2/15/12	CHANGE DETAIL TITLE	H.P.
10/09	CHG. SIGN POST TYPE	H.P.
DATE	REVISION DESCRIPTION	APP

CITY OF CLEARWATER  
ENGINEERING DEPARTMENT  
STREET SECTIONS  
AND DETAILS

TYPICAL ACCESSIBLE  
PARKING SIGN

INDEX NO.	PAGE NO.
119	1 OF 1
LATEST REVISION	2/22/2016



TRUNCATED DOME  
CURB RAMP DETECTABLE WARNING DETAIL

NOTES:

DETECTABLE WARNINGS ON WALKING SURFACES

THE DETECTABLE WARNING SHALL EXTEND THE FULL WIDTH AND DEPTH OF THE CURB RAMP.

DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 INCH, A HEIGHT OF NOMINAL 0.2 INCH AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 INCH AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.

THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON INTERIOR SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT.

THE MATERIAL USED TO PROVIDE CONTRAST SHOULD CONTRAST BY AT LEAST 70%.

CONTRAST IN PERCENT IS DETERMINED BY:

$$\text{CONTRAST} = [(B1-B2)/B1] \times 100$$

WHERE B1 = LIGHT REFLECTANCE VALUE (LRV) OF THE LIGHTER AREA AND B2 = LIGHT REFLECTANCE VALUE (LRV) OF THE DARKER AREA.

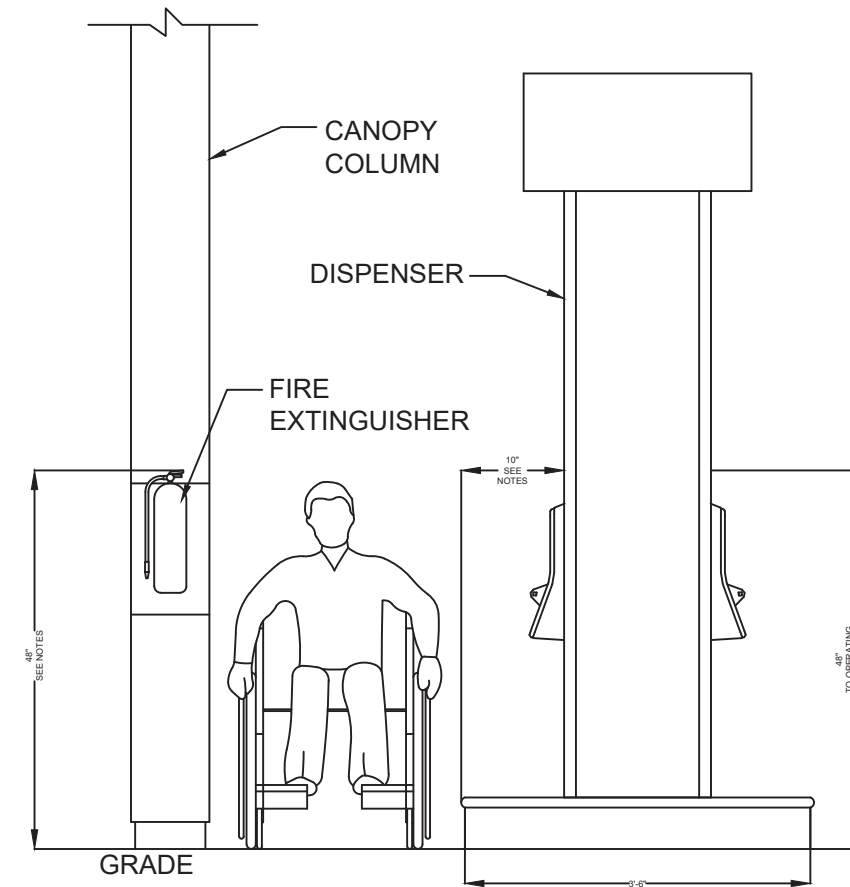
NOTE THAT IN ANY APPLICATION BOTH WHITE AND BLACK ARE NEVER ABSOLUTE; THUS, B1 NEVER EQUALS 100 AND B2 IS ALWAYS GREATER THAN 0.

ALSO NOTE TRUNCATED DOMES TO BE RED IN COLOR.

MANATEE COUNTY TRANSPORTATION DEPARTMENT
REV. BY DATE
6/12/07
DATE OF B.O.C.C. APPROVAL

CURB RAMP  
DETECTABLE  
WARNINGS

302.3



HC ACCESSIBLE SERVICE NOTES:

- 1) REACH RANGE IS TO BE BETWEEN 9" MINIMUM FROM GROUND TO 48" MAXIMUM FRONT APPROACH OR 54" MAXIMUM SIDE APPROACH.
- 2) REACH RANGE SHOULD NOT EXCEED 10" MAXIMUM IN DEPTH FOR ANY SERVICE SO THAT BOTH SIDE AND FRONT REACH REQUIREMENTS CAN BE MAINTAINED AS STATED ABOVE.
- 3) A 30"x48" CLEAR FLOOR SPACE IS REQUIRED IN FRONT OF EACH ACCESSIBLE SERVICE AT A SITE. A 2% MAX. FOR BOTH CROSS SLOPE AND RUNNING SLOPE IS PREFERRED, BUT IF SITE CONDITIONS PROHIBIT THE PREFERRED GRADING, THEN A MAX. 2% CROSS SLOPE AND MAX. 5% RUNNING SLOPE IS ACCEPTABLE.
- 4) OBJECTS HIGHER THAN 27" FROM WALKING SURFACE CAN NOT PROTRUDE MORE THAN 4" INTO ACCESSIBLE ROUTE AND SHALL NOT REDUCE THE CLEAR WIDTH OF THE ROUTE OR MANEUVERING SPACE

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602  
SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

PRINT COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED FOR ANY ELECTRONIC USES  
RON FAIR, P.E.  
FL #50738

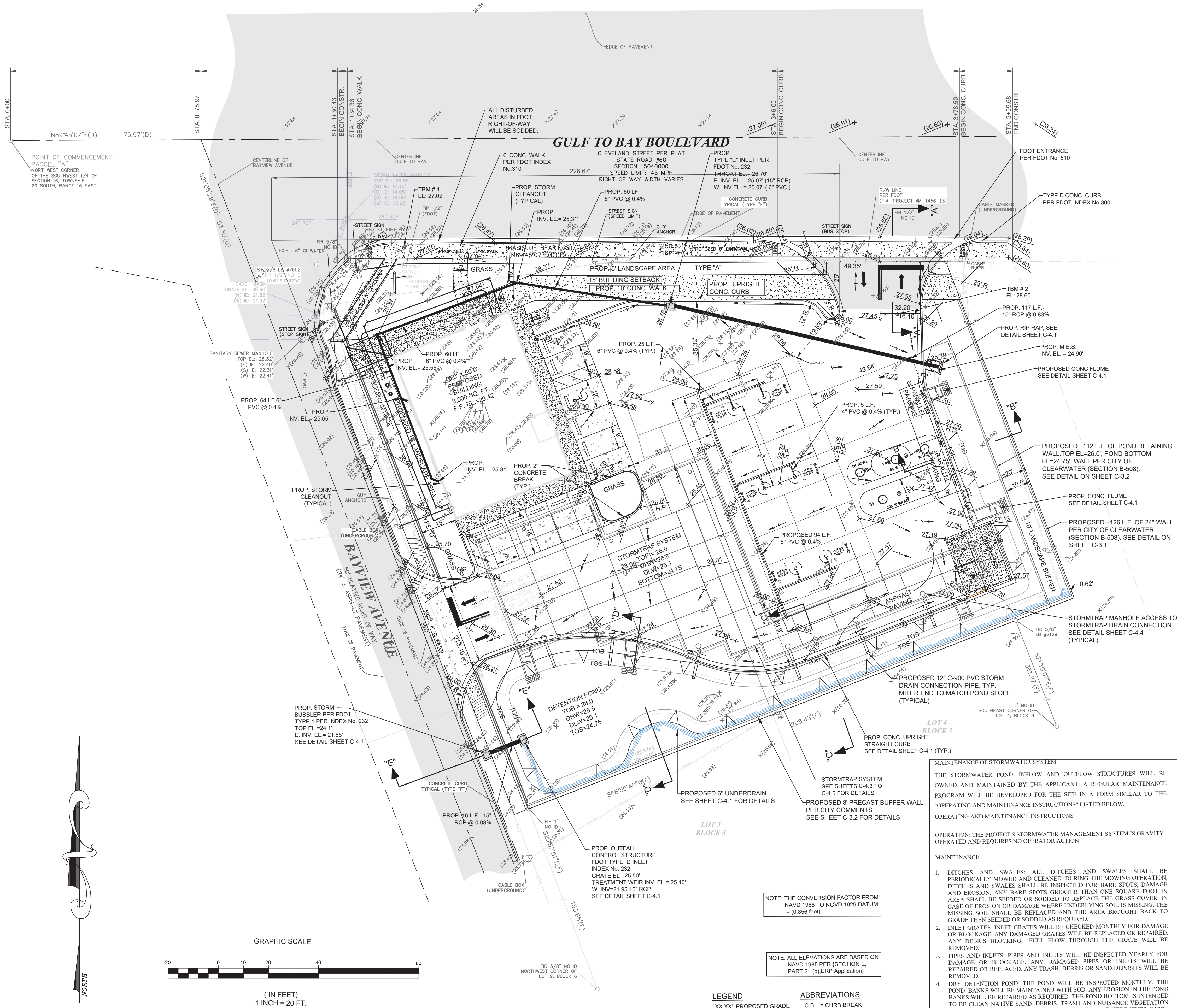
ENGINEER OF RECORD:  
AEC Services, Inc.  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738  
1516 ALLISON WOODS LANE  
CLEARWATER, FL 34619  
(813) 984-1234  
(813) 984-2680 (f)  
www.aecservicesinc.com

JOB NO.	GO161712
DWG Name	SITE PLAN
XREF Name	MASTER
SCALE	AS NOTED
DATE	2/15/17
DRAWN BY	E.T.N.
CHECKED	CEP
APPROVAL	RAF
DESCRIPTION	DATE
NO	REVISIONS

ADA  
SITE PLAN  
DETAILS

C-3.4

THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.



SEQUENCE OF MAJOR EVENTS:	
1. INSTALL STAKED SILT FENCE AS INDICATED ON THE CONSTRUCTION PLANS. 2. CLEAR AND GRUB POND TO BE USED AS SEDIMENTATION BASIN. 3. EXCAVATE POND FOR SEDIMENT TRAPS FOR SITE RUNOFFS. 4. BEGIN BUILDING CONSTRUCTION. 5. CONSTRUCT DIVERSION SWALES AROUND PERIMETER OF SITE TO POND, AS NECESSARY. 6. INSTALL STORM SEWER SYSTEM AND ITS SLOPE PROTECTION, UTILITIES AND OUT FALL STRUCTURE. 7. EXCAVATE THE REMAINDER OF THE PONDS INCLUDING REMOVAL OF SILT DEPOSITS. 8. STABILIZE PARKING LOT. 9. CONSTRUCT CURB, BASE AND ASPHALT. 10. COMPLETE FINAL SITE GRADING. 11. INSTALL PERMANENT LANDSCAPING ON SITE. REPAIR ANY WASHED OUT AREAS. 12. WHEN CONSTRUCTION ACTIVITY IS COMPLETE AND THE SITE IS STABILIZED, REMOVE EROSION PROTECTION DEVICES AND PLACE SOD AS NECESSARY.	
STABILIZATION PRACTICES	
<b>WIND EROSION STABILIZATION</b> - THE CONTRACTOR SHALL DENUDE ONLY AREAS WHERE IT IS EXPECTED TO BE GRADED OR ALTERED WITHIN A TWO (2) WEEK TIME FRAME. ALL PVIOUS AREAS OF THE SITE INCLUDED IN GRADING THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE GRADED AND PREPARED WITH A COMBINATION OF SOD AND/OR SEEDING AND MULCHING. PAD AREAS WITHIN FUTURE UNITS WHERE EARTHWORK IS COMPLETED SHALL BE COMPLETELY SEEDED AND MULCHED. AREAS WHERE CONSTRUCTION OPERATIONS WILL BE CONTINUOUS, FUGITIVE DUST SHALL BE MANAGED BY APPLYING A WATER SPRAY TO SATURATE THE SURFACE SOILS ON A DAILY BASIS (OR AS NEEDED) TO MAINTAIN MINIMAL DUST TRANSPORT. FUGITIVE DUST SHALL BE MONITORED CONTINUOUSLY AND ADDITIONAL MEASURES MAY NEED TO BE TAKEN TO CONTROL OFF SITE TRANSPORT OF UNACCEPTABLE LEVELS OF DUST. <b>TEMPORARY STABILIZATION</b> - TOP OF SOIL STOCK PILES AND DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR AT LEAST 21 DAYS SHALL BE STABILIZED WITH TEMPORARY GRASS AND MULCH NO LATER THAN 14 DAYS FROM THE LAST CONSTRUCTION ACTIVITY. GRASS SEED SHALL BE A MIXTURE OF 20 PARTS OF BERMUDA AND 80 PARTS OF PENNSYLVANIA BAHIA. THE SEPARATE TYPES OF SEED USED SHALL BE THOROUGHLY DRY MIXED IMMEDIATELY BEFORE SOWING. SEED WHICH HAS BECOME WET SHALL NOT BE USED. THE MULCH MATERIAL USED SHALL NORMALLY BE DRY MULCH. DRY MULCH SHALL BE STRAW OR HAY CONSISTING OF OAT, RYE OR WHEAT STRAW, OR OF PANOLA, PEANUT, COASTAL BERMUDA OR BAHIA GRASS HAY. ONLY UNDETERIORATED MULCH WHICH CAN BE READILY CUT INTO THE SOIL SHALL BE USED. AREAS OF THE SITE WHICH ARE TO BE PAVED WILL BE TEMPORARILY STABILIZED BY APPLYING STABILIZATION AND BASE. <b>PERMANENT STABILIZATION</b> - DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY PERMANENTLY CEASES SHALL BE STABILIZED WITH SOD NO LATER THAN 14 DAYS AFTER LAST CONSTRUCTION ACTIVITY.	
STRUCTURAL PRACTICES	
<b>EROSION PROTECTION</b> - DURING THE CONSTRUCTION PHASES, APPROPRIATE PRACTICES INCLUDING, BUT NOT LIMITED TO SILT FENCE BARRIERS, HAY BALES AND WATERING OR OTHER METHODS NECESSARY WILL BE IMPLEMENTED TO CONTROL FUGITIVE DUST. <b>SEDIMENT BASINS</b> - THE STORM WATER MANAGEMENT AREAS (RETENTION AREA(S)) WILL SERVE AS SEDIMENT BASINS DURING THE CONSTRUCTION PERIOD. AT THE CONTRACTOR'S DISCRETION, THE SEDIMENT BASINS WILL BE CONSTRUCTED TO THE DESIGN CROSS-SECTION OR A MINIMUM OF 2'-FEET BELOW EXISTING GROUND TO ALLOW THE SILT TO BE COLLECTED AND REMOVED PRIOR TO COMPLETION OF THE GRADING.	
STORM WATER MANAGEMENT	
STORM WATER DRAINAGE WILL BE PROVIDED BY AN INVERTED CROWN PAVEMENT, STORM WATER AND CATCH BASIN SYSTEM FOR THE DEVELOPED AREAS. THE AREAS NOT DEVELOPED SHALL BE GRADED TO LESS THAN 2% SLOPES AND HAVE PERMANENT SEEDING OR PLANTINGS WHEN CONSTRUCTION IS COMPLETE. THE SITE WILL DRAIN TO STORM WATER PONDS THAT WERE UTILIZED AS THE TEMPORARY SEDIMENT BASINS DURING THE CONSTRUCTION PROCESS. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE SEDIMENT BASINS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSTRUCT ALL RETENTION/DETENTION AREAS IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PLANS.	
WASTE DISPOSAL	
<b>WASTE MATERIALS</b> - ALL WASTE MATERIAL SHALL BE COLLECTED AND CONTAINED IN A CONTROLLED AREA PURSUANT TO STATE AND LOCAL SOLID WASTE REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS GENERATED FROM CONSTRUCTION IS TO BE REMOVED FROM THE SITE AND DISPOSED OF APPROPRIATELY. NO CONSTRUCTION MATERIALS SHALL BE BURIED ON SITE. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING THESE PRACTICES SHALL BE POSTED IN THE ON SITE OFFICE TRAILER AND THE CONSTRUCTION MANAGER RESPONSIBLE FOR THE DAY TO DAY SITE OPERATIONS SHALL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED. <b>HAZARDOUS WASTE</b> - IF ENCOUNTERED, ALL WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY STATE AND/LOCAL REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED. <b>SANITARY WASTE</b> - ALL SANITARY WASTE SHALL BE COLLECTED FROM PORTABLE UNITS BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR AS REQUIRED BY STATE AND LOCAL CODES AND REGULATIONS.	
OFF SITE VEHICLE TRACKING	
STABILIZED CONSTRUCTION ENTRANCES SHALL BE PROVIDED TO HELP REDUCE OFF SITE VEHICLE TRACKING OF SEDIMENTS. THE PAVED STREETS SHALL BE CLEANED AS NEEDED TO REMOVE ANY EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE SITE SHALL BE COVERED WITH A TARPULIN AT ALL TIMES.	
TIMING OF CONTROL MEASURES	
AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, STAKED SILT FENCE, STABILIZED CONSTRUCTION ENTRANCES AND SEDIMENT BASINS SHALL BE CONSTRUCTED PRIOR TO CLEARING OR GRADING OF ANY OTHER PORTIONS OF THE SITE. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN 21 DAYS SHALL BE STABILIZED WITH A TEMPORARY GRASS AND MULCH WITHIN 14 DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY THAT AREA SHALL BE STABILIZED WITH PERMANENT SOD. AFTER THE ENTIRE SITE IS STABILIZED, THE ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE TRAPS AND THE STAKED SILT FENCES SHALL BE REMOVED.	
EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES	
THESE ARE THE INSPECTION AND MAINTENANCE PRACTICES THAT SHALL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROL:	
1. LESS THAN ONE HALF OF THE SITE SHALL BE DENUDE AT ONE TIME. 2. ALL CONTROL MEASURES SHALL BE INSPECTED AT AT THE END OF EACH WORK DAY AND FOLLOWING ANY STORM EVENT OF 0.5-INCHES OR GREATER BY A CONTRACTOR'S REPRESENTATIVE. 3. ALL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT. 4. BUILT UP SEDIMENT SHALL BE REMOVED FROM A SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE SILT FENCE. 5. SILT FENCE SHALL BE INSPECTED REGULARLY FOR DEPTH OF SEDIMENT AND TEARS TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS AND TO SEE THAT THE GRASS IS GROWING PROPERLY IN THE PROTECTED AREA. 6. THE SEDIMENT BASINS SHALL BE INSPECTED, DEPTH OF SEDIMENT AND BUILD UP OF SEDIMENT SHALL BE REMOVED WHEN IT REACHES 10% OF THE DESIGN CAPACITY OR AT THE END OF THE JOB. 7. TEMPORARY AND PERMANENT GRASSING AND MULCHING SHALL BE INSPECTED FOR BARE SPOTS, WASHOUTS AND HEALTHY GROWTH. 8. A MAINTENANCE INSPECTION REPORT SHALL BE MADE AFTER EACH INSPECTION BY THE CONTRACTOR AND SHALL BE KEPT IN AN ACTIVE LOG READILY AVAILABLE AT THE JOB SITE. 9. EITHER THE SITE SUPERINTENDENT OR HIS DESIGNEES SHALL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE, REPAIR ACTIVITIES AND COMPLETING THE INSPECTION AND MAINTENANCE REPORT. 10. PERSONNEL SELECTED FOR INSPECTION AND MAINTENANCE RESPONSIBILITIES SHALL RECEIVE TRAINING FROM THE SITE SUPERINTENDENT. THEY SHALL BE TRAINED IN ALL INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS USED ON SITE IN GOOD WORKING ORDER.	
NON-STORM WATER DISCHARGE	
IT IS EXPECTED THAT THE FOLLOWING NON-STORM WATER DISCHARGES WILL OCCUR FROM THE SITE DURING THE CONSTRUCTION PERIOD: 1. WATER FROM WATER LINE FLUSHING. 2. PAVEMENT WASH WATERS (WHERE NO SPILLS OR LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE OCCURRED). 3. UNCONTAMINATED GROUNDWATER (FROM DEWATERING EXCAVATION). ALL NON-STORM WATER DISCHARGES SHALL BE DIRECTED TO THE SEDIMENT BASIN PRIOR TO DISCHARGE.	
NON-STORM WATER DISCHARGE	
IT IS EXPECTED THAT THE FOLLOWING NON-STORM WATER DISCHARGES SHALL NOT OCCUR FROM THE SITE DURING THE CONSTRUCTION PERIOD: CONCRETE SAND CLEANING SOLVENTS STONE DETERGENTS FERTILIZERS WOOD MASONRY BLOCK PAINTS (ENAMEL AND LATEX) METAL STUDS PETROLEUM BASED PRODUCTS AND FUELS ROOFING SHINGLES	
SPILL PREVENTION	
THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. <b>GOOD HOUSEKEEPING:</b> THE FOLLOWING GOOD HOUSEKEEPING PRACTICES SHALL BE FOLLOWED ON SITE DURING THE CONSTRUCTION PROJECT. AN EFFORT SHALL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO COMPLETE THE PROJECT. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND IF POSSIBLE, UNDER A ROOF OR OTHER CONTAINED ENCLOSURE. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL MANUFACTURERS LABELED CONTAINERS. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER. WHENEVER POSSIBLE, ALL OF THE PRODUCT SHALL BE USED BEFORE DISPOSING OF THE CONTAINER. MANUFACTURERS RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ON SITE. <b>HAZARDOUS PRODUCTS:</b> THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS. PRODUCTS SHALL BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED. THEY CONTAIN IMPORTANT PRODUCT INFORMATION. IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURERS OR LOCAL AND STATE RECOMMENDED METHODS OF PROPER DISPOSAL SHALL BE FOLLOWED. <b>PETROLEUM PRODUCTS:</b> ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDINGLY TO THE MANUFACTURERS RECOMMENDATIONS. <b>FERTILIZERS:</b> FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNT RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZERS SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. STORAGE SHALL BE IN A COVERED SHED. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS. <b>PAINTS:</b> ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT SHALL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURERS INSTRUCTIONS OR STATE AND LOCAL REGULATIONS. <b>CONCRETE TRUCKS:</b> DISCHARGE OF SURPLUS CONCRETE OR DRUM WASH WATER IS STRICTLY PROHIBITED. HARD DEBRIS SHALL BE DISPOSED OF BY CONTRACTOR UPON COMPLETION OF THE PROJECT.	
SPILL CONTROL PRACTICES	
IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTIONS OF THIS PLAN, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP: MANUFACTURERS RECOMMENDED METHODS FOR SPILL CLEAN UP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEAN UP SUPPLIES. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEAN UP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE, BUT NOT BE LIMITED TO, BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC AND METAL TRASH CONTAINERS. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY. THE SPILL SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH HAZARDOUS SUBSTANCE. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE. THE SPILL PREVENTION PLAN SHALL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND THE CLEAN UP PROCEDURES FOR FUTURE USE. THE CLEAN UP MEASURES SHALL ALSO BE INCLUDED. THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY TO DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEAN UP COORDINATOR. HE OR SHE SHALL DESIGNATE OTHER SITE PERSONNEL WHO WILL RECEIVE SPILL PREVENTION AND CLEAN UP TRAINING. THESE INDIVIDUALS SHALL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEAN UP. THE NAMES OF THE RESPONSIBLE SPILL PERSONNEL SHALL BE POSTED IN THE MATERIAL STORAGE AREA OR IN THE OFFICE TRAILER ON SITE, IF APPLICABLE.	

**CUSTOMER:**  
GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

**SITE ADDRESS:**  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

**ENGINEER OF RECORD:**  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 92777 CB #0011445  
FL # 50738

1616 ALLISON WOODS LANE  
TAMPA, FLORIDA 33619  
(813) 884-1234  
(813) 884-2680 (f)  
www.aecservicesinc.com

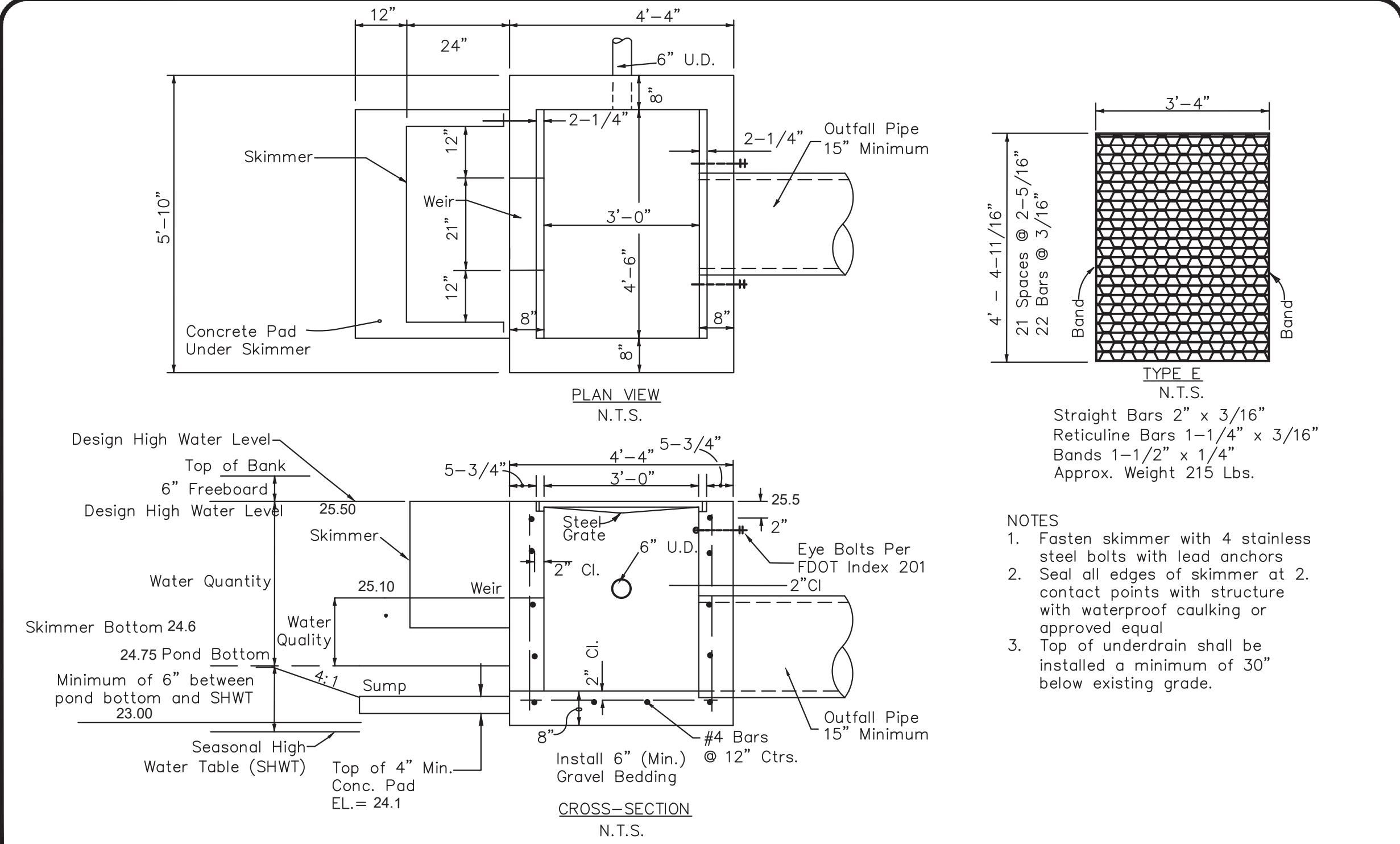
PRINT COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED FOR ANY ELECTRONS PURPOSES

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	1"=20'-0"
DATE	7/8/18
DRAWN BY	PAZ
CHECKED	GEF
APPROVAL	RAF
DESCRIPTION	REVISIONS
NO	

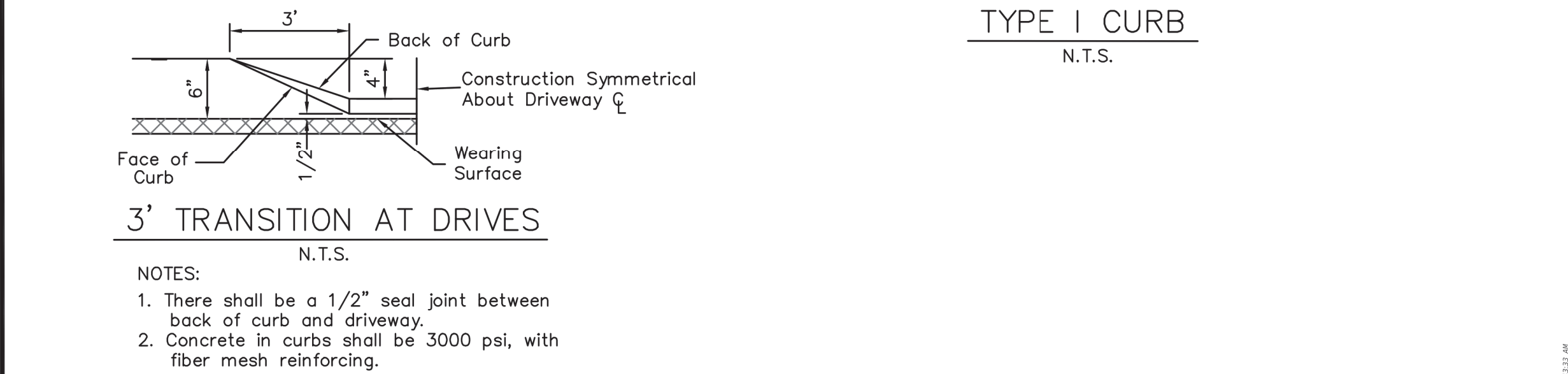
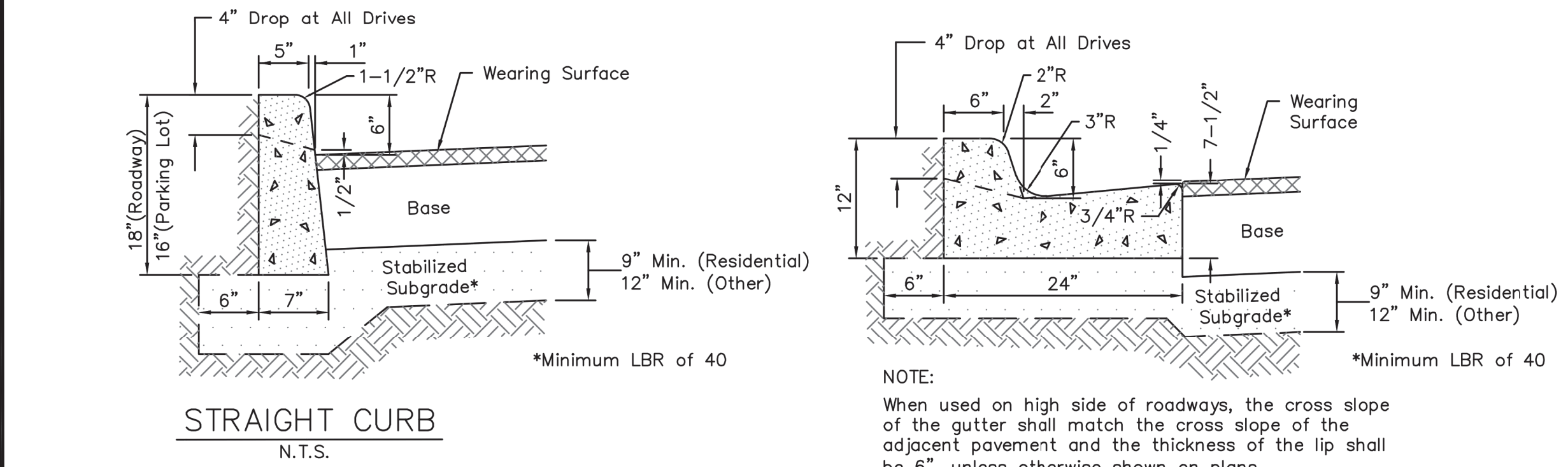
**DRAINAGE PLAN**

**C-4**

THIS DRAWING IS THE PROPERTY OF AEC SERVICES INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.

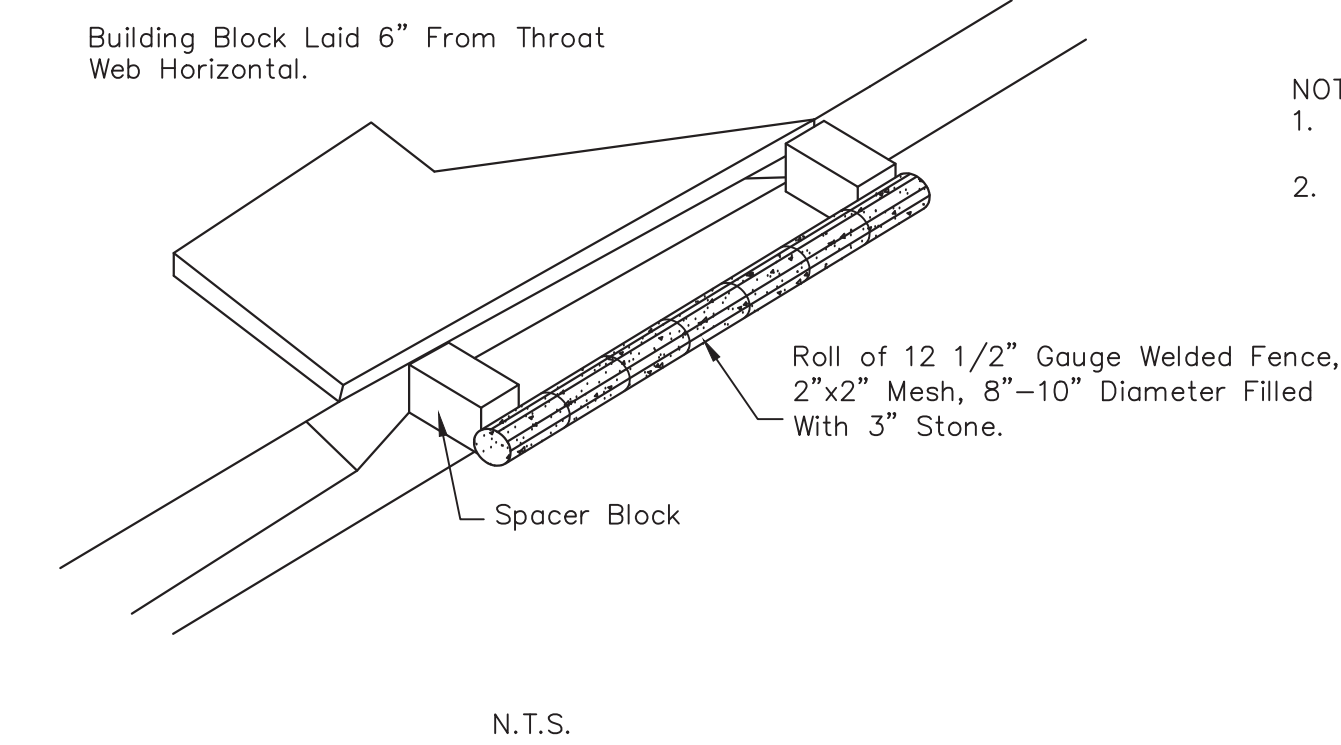


6/18/15	EDITED DRAWING	S.R.	CITY OF CLEARWATER ENGINEERING DEPARTMENT	STORM SEWER OUTFALL CONTROL STRUCTURE FDOT TYPE E INLET (MODIFIED) WITH UNDERDRAIN (DRY POND)	INDEX NO. 215	PAGE NO. 1 OF 1
DATE	REVISION DESCRIPTION	APP	STORM DETAILS		LATEST REVISION	2/22/2016

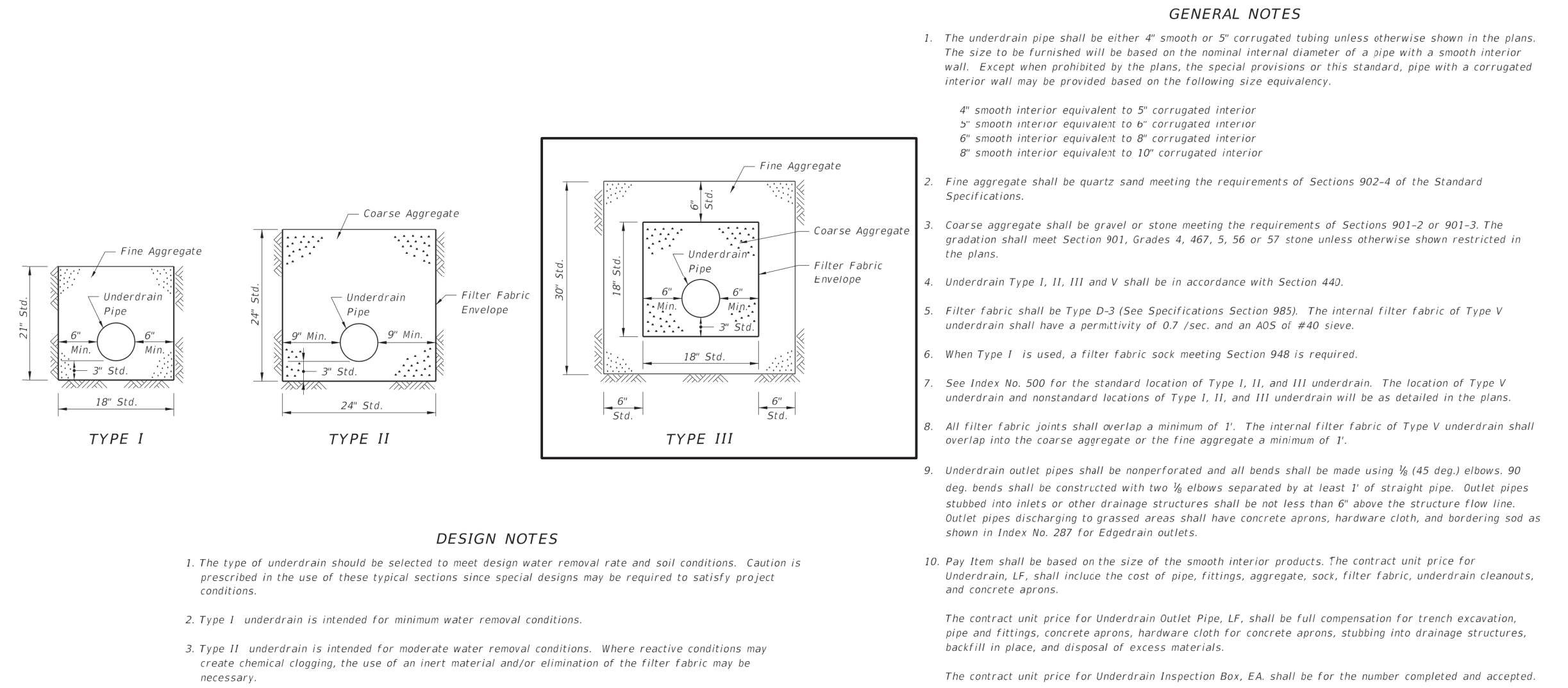


2/27/17	SUBGRADE UPDATED	JWS	CITY OF CLEARWATER ENGINEERING DEPARTMENT	TYPICAL CURB CROSS SECTIONS	INDEX NO. 101	PAGE NO. 1 OF 2
5/18/15	COMPACTION THICKNESS	S.R.	STREET SECTIONS AND DETAILS		LATEST REVISION	2/27/17
DATE	REVISION DESCRIPTION	APP				

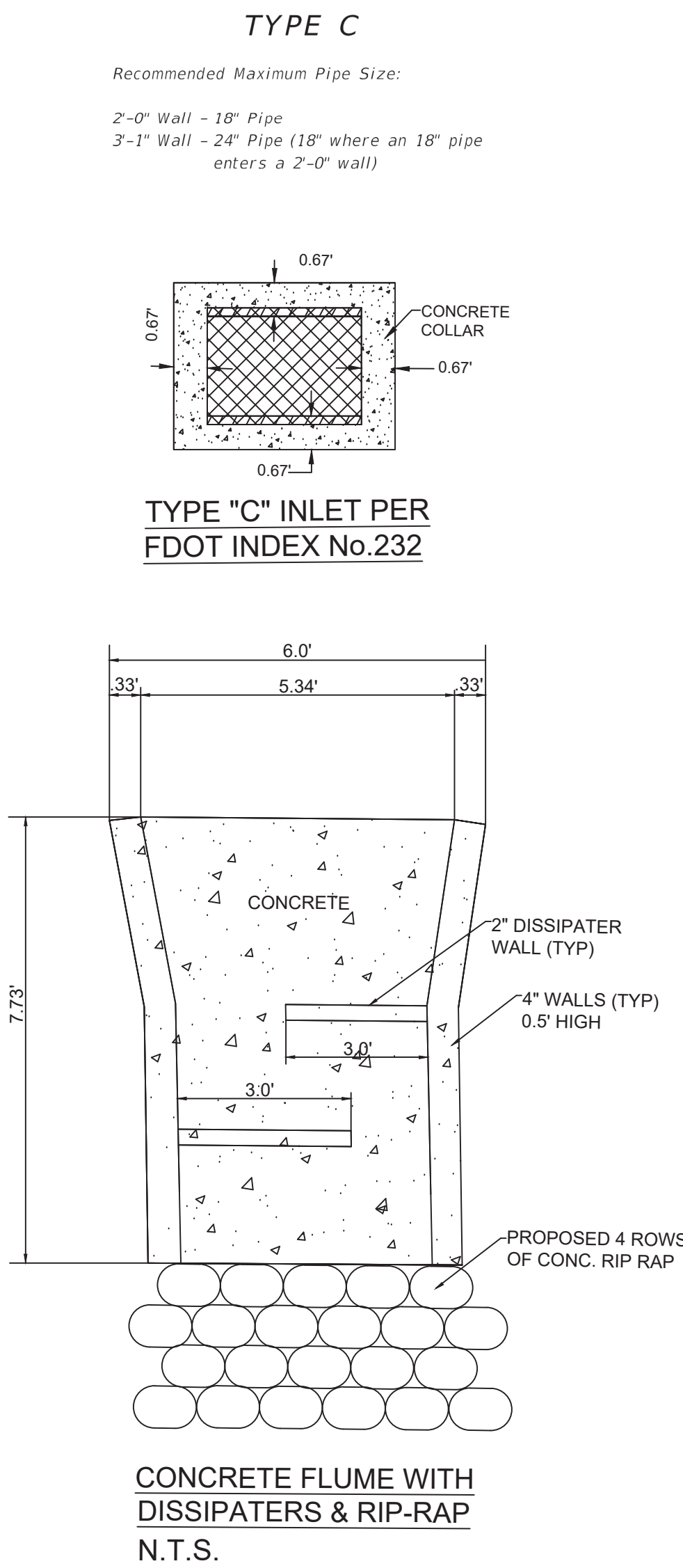
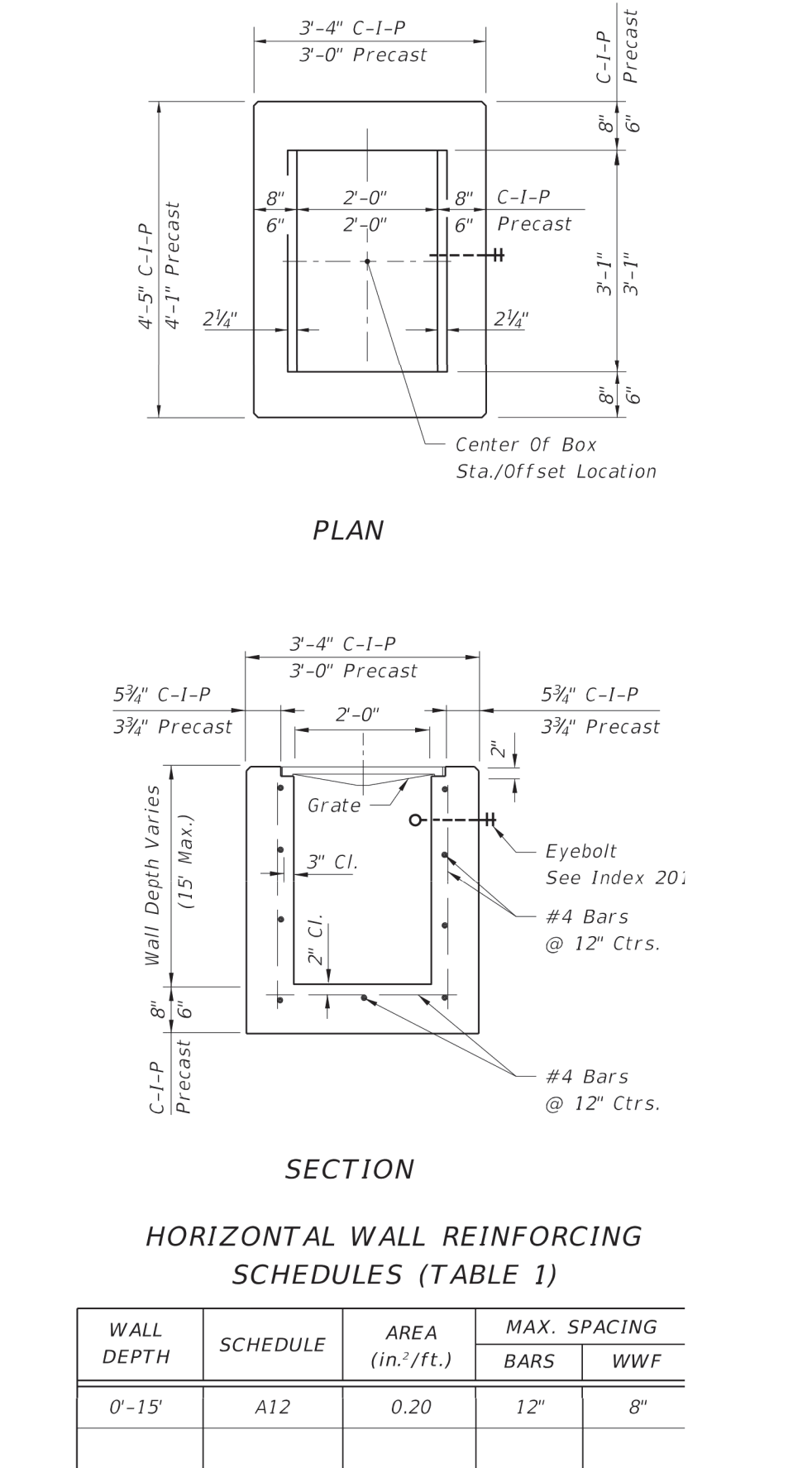
CONTRACTOR'S RESPONSIBILITY  
Erosion and Sedimentation controls are performance based criteria. If the BMPs provided do not prevent soils from leaving a construction site, then the Contractor is required to employ additional procedures to provide clean runoff from a site.



5/18/15	CONTRACTOR NOTE ADDED	S.R.	CITY OF CLEARWATER ENGINEERING DEPARTMENT	TEMPORARY SEDIMENT TRAP AT CURB INLET	INDEX NO. 604	PAGE NO. 1 OF 1
DATE	REVISION DESCRIPTION	APP	EROSION AND SILTATION CONTROL POLICY		LATEST REVISION	2/22/2016



LAST REVISION 07/01/14	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	UNDERDRAIN	INDEX NO. 286	SHEET NO. 1 of 2
------------------------------	--------------	--------------------------------	------------	---------------------	------------------------



CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD: AEC Services, Inc.  
RON FAIR, P.E.  
FL # 50738 License No. 9277 QB #0011445

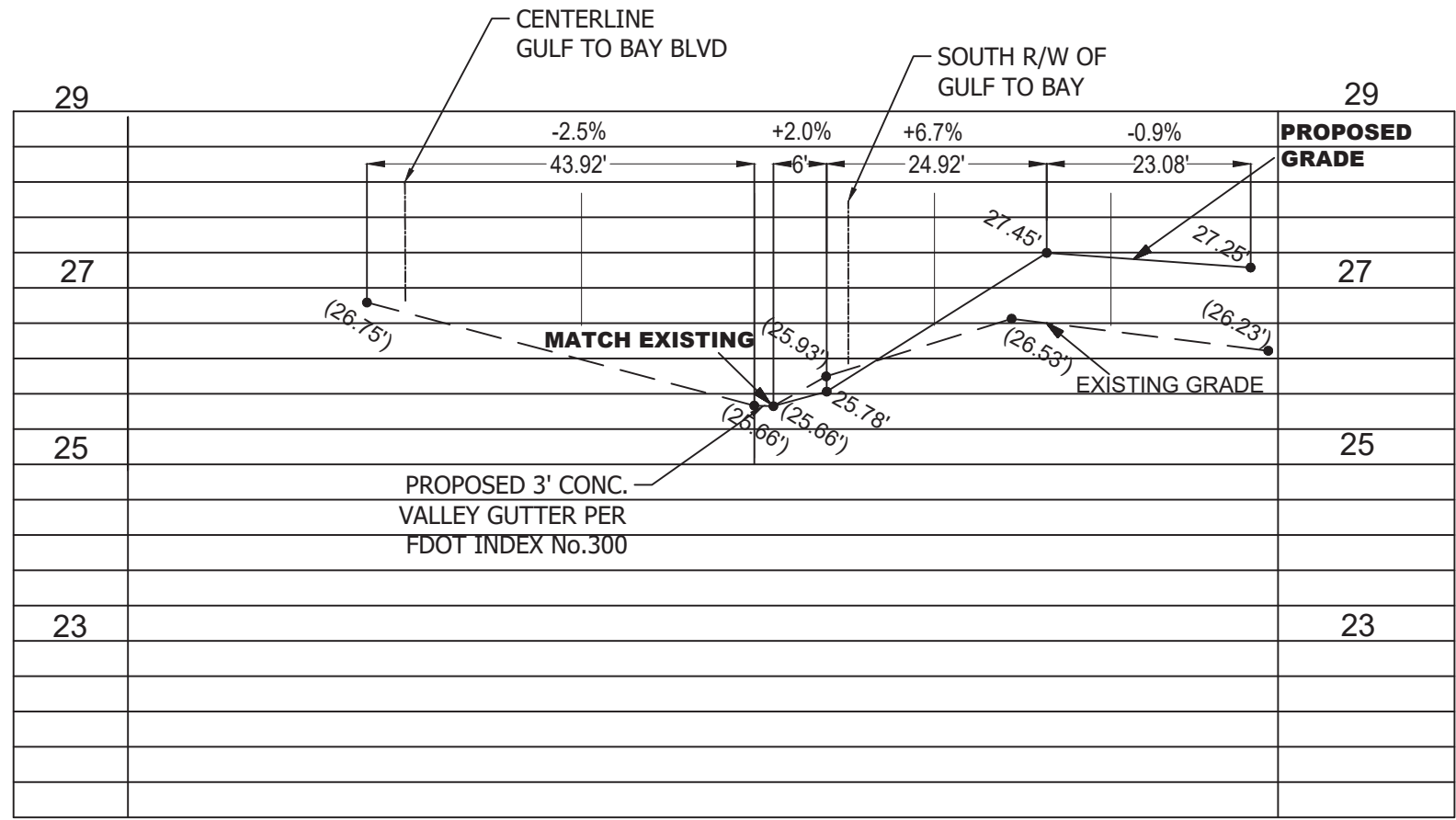
1616 ALLISON WOODS LANE  
CLEARWATER, FL 34619  
(813) 984-1234  
(813) 984-2680 (f)  
www.aecservicesinc.com

JOB NO.	GO161712	DWG Name	CIVIL	XREF Name	NONE	SCALE	N.T.S.	DATE	7/8/18	DRAWN BY	PAZ	CHECKED	GEP	APPROVAL	RAF
DESCRIPTION		DATE		NO		REVISIONS		1		NO		NO		NO	

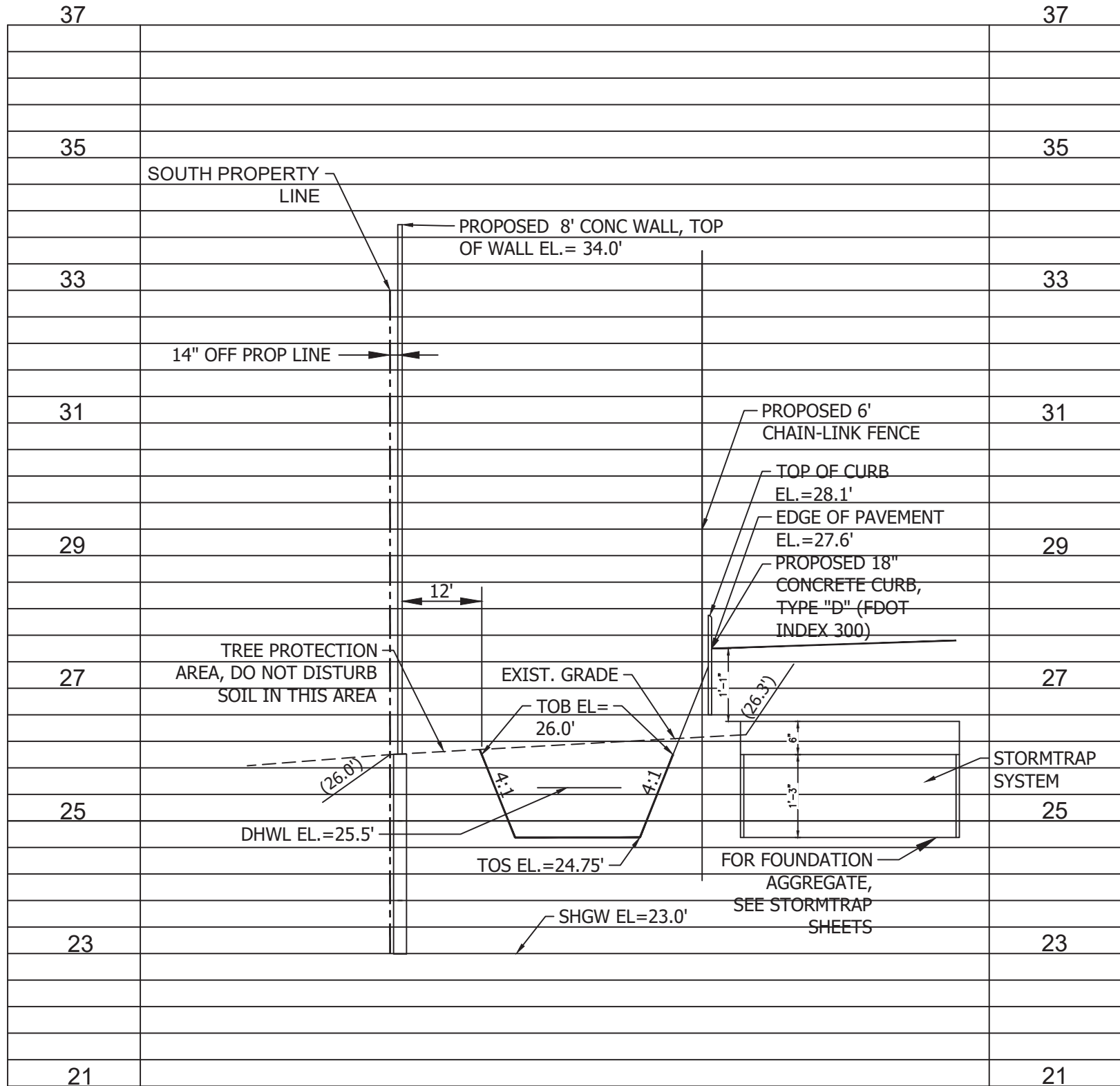
DRAINING  
DETAILS

C-4.1

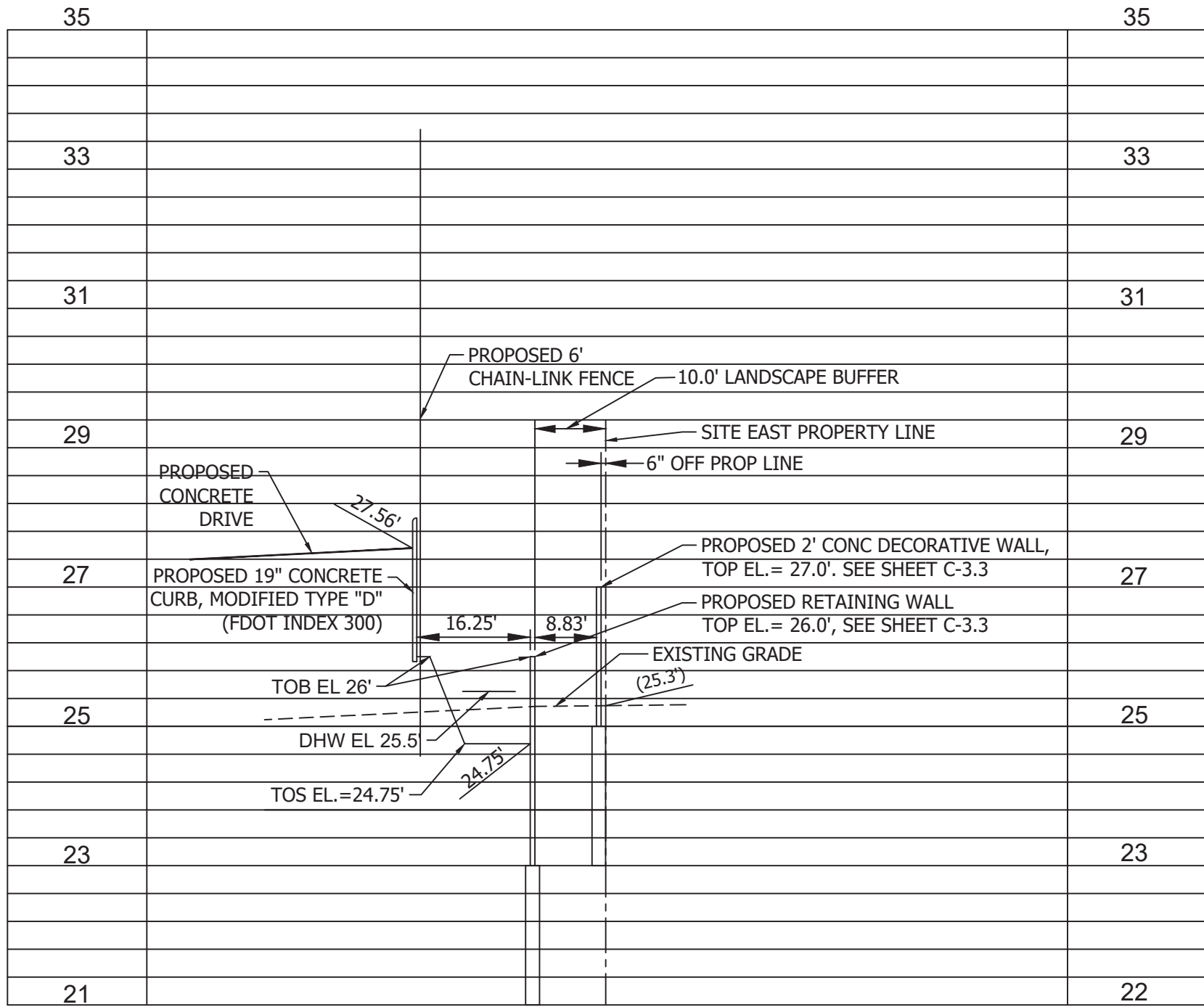
THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.



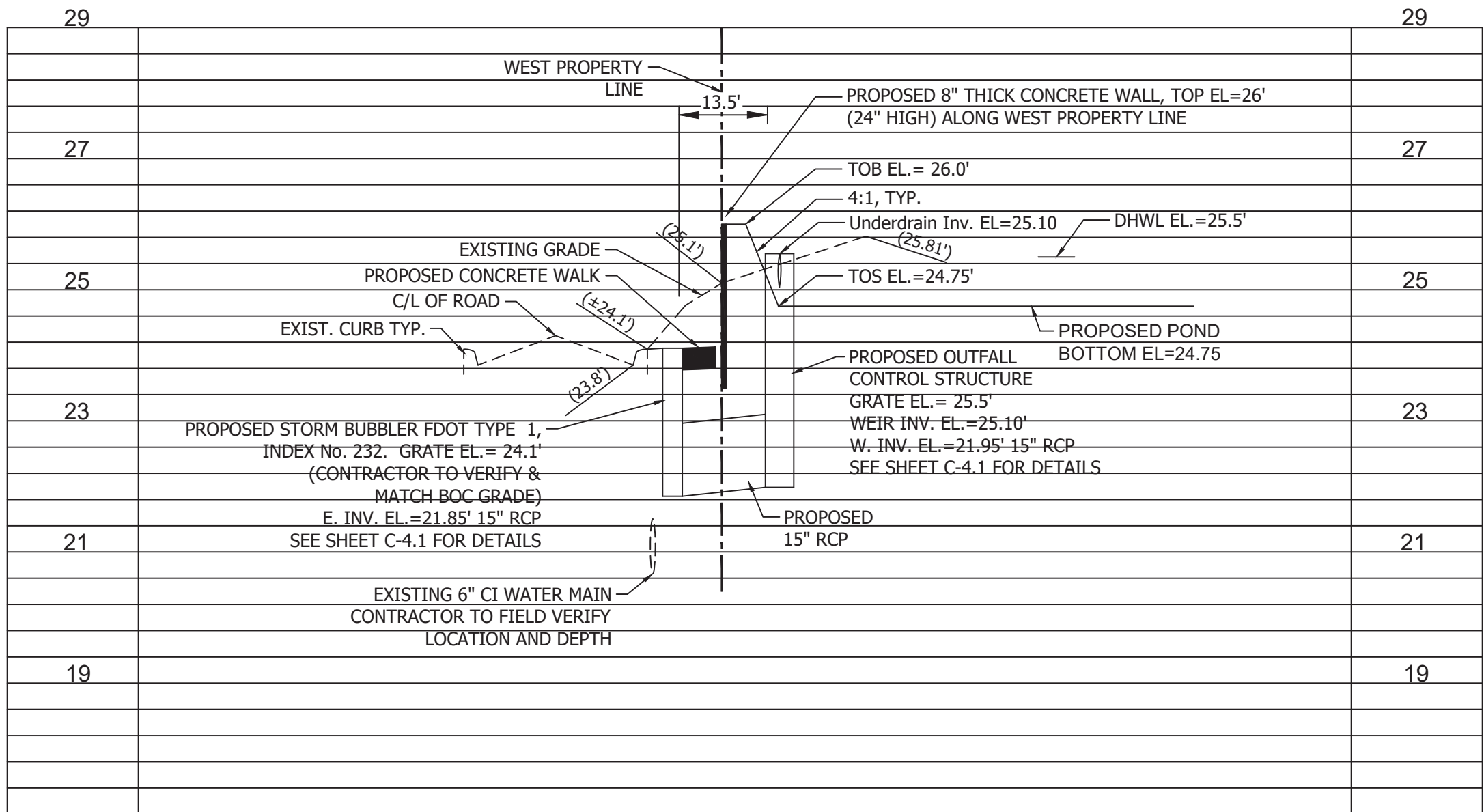
SOUTH RIGHT-OF-WAY OF  
GULF TO BAY BLVD.  
ENTRANCE LOOKING EAST  
CROSS-SECTION "A-A"  
SCALE: HORIZ.=1" = 20'  
VERT.=1" = 2'



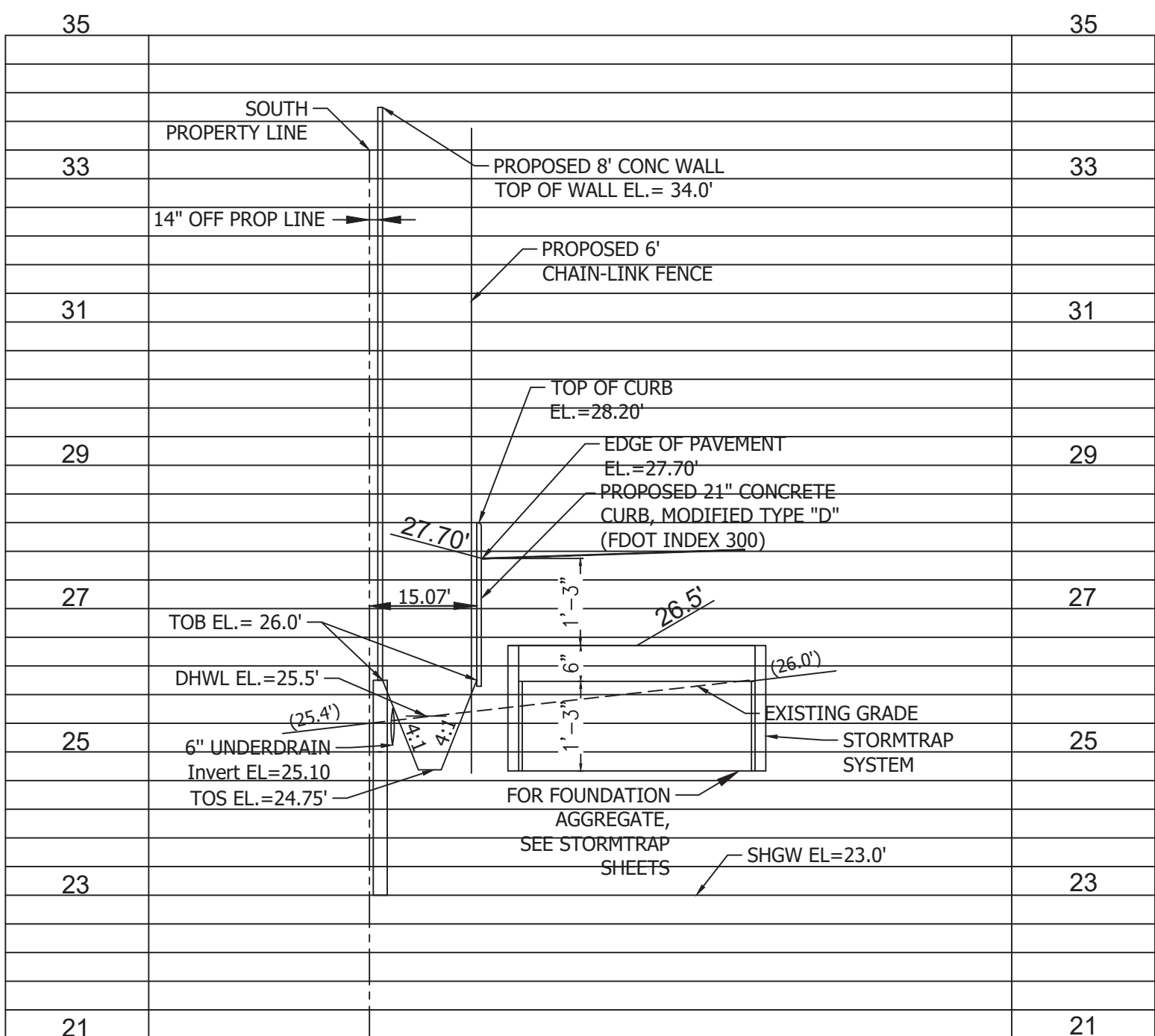
SOUTH PROPERTY LINE  
CROSS-SECTION "D-D"  
LOOKING WEST  
SCALE: HORIZ.=1" = 20'  
VERT.=1" = 2'



EAST POND  
CROSS-SECTION "B-B"  
LOOKING NORTH  
SCALE: HORIZ.=1" = 20'  
VERT.=1" = 2'



WEST MAIN POND  
CROSS-SECTION "E-E"  
WITH CONTROL STRUCTURE  
AND PROPOSED BUBBLER  
LOOKING NORTH  
SCALE: HORIZ.=1" = 20'  
VERT.=1" = 2'



SOUTH POND  
CROSS-SECTION "C-C"  
LOOKING WEST  
SCALE: HORIZ.=1" = 20'  
VERT.=1" = 2'

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD: AEC Services, Inc.  
RON FAIR, P.E.  
License No. 9277 QB #0011445

1616 ALLISON WOODS LANE  
CLEARWATER, FL 34619  
(813) 884-1234  
www.aecservicesinc.com

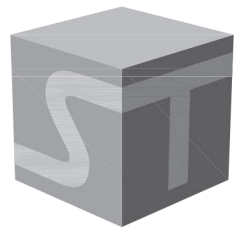
PRINT COPIES OF THIS DOCUMENT ARE  
NOT CONSIDERED SIGNED AND  
SEALLED FOR ANY ELECTRONIC USES  
UNLESS SO NOTED IN ELECTRONIC COPIES

RON FAIR, P.E.  
FL #50738

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	SHOWN
DATE	7/8/18
DRAWN BY	PAZ
CHECKED	GEF
APPROVAL	RAF
DESCRIPTION	
NO	
REVISIONS	

CROSS  
SECTIONS

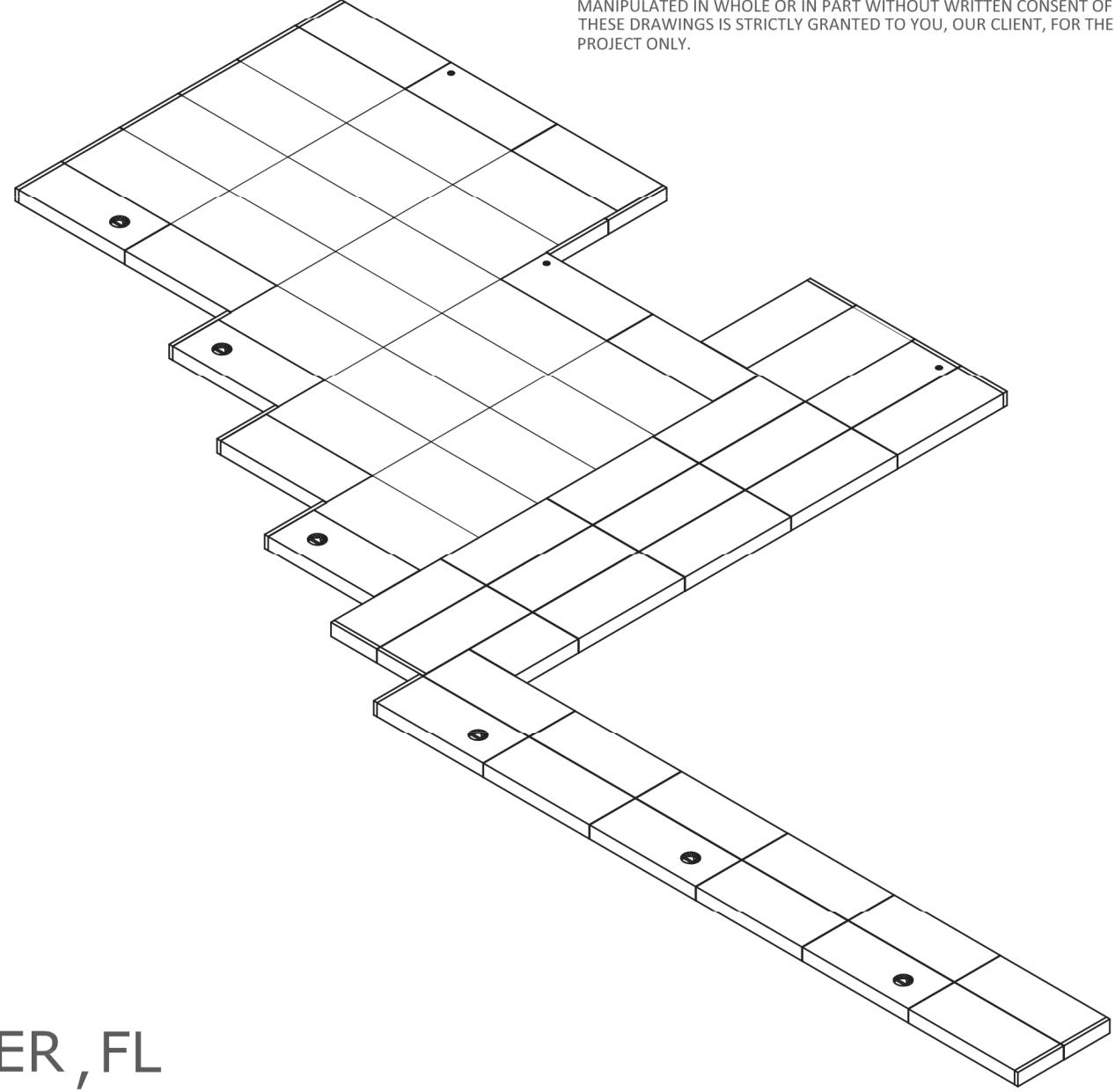
C-4.2



StormTrap®

MODULAR CONCRETE  
STORMWATER MANAGEMENT

THESE DRAWINGS ARE FOR YOUR REFERENCE ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES. THE STORMTRAP DRAWINGS SHALL NOT BE ALTERED OR MANIPULATED IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT OF STORMTRAP. USE OF THESE DRAWINGS IS STRICTLY GRANTED TO YOU, OUR CLIENT, FOR THE SPECIFIED AND NAMED PROJECT ONLY.



BP  
CLEARWATER, FL

SHEET INDEX	
PAGE	DESCRIPTION
0.0	COVER SHEET
1.0	SINGLETRAP DESIGN CRITERIA
2.0	SINGLETRAP SYSTEM LAYOUT
3.0	SINGLETRAP INSTALLATION SPECIFICATIONS
3.1	SINGLETRAP INSTALLATION SPECIFICATIONS
4.0	SINGLETRAP BACKFILL SPECIFICATIONS
5.0	RECOMMENDED PIPE/ACCESS OPENING SPECIFICATIONS
6.0	SPLASH PAD & GEOWEB DETAILS
7.0	SINGLETRAP MODULE TYPES
STORMTRAP CONTACT INFORMATION	
STORM TRAP SUPPLIER: STORMTRAP	
CONTACT NAME: DEAN GROSS	
CELL PHONE: 815-258-1261	
SALES EMAIL: DGROSS@STORMTRAP.COM	

**StormTrap®**  
PATENTS LISTED AT: <http://www.stormtrap.com/patents>

1287 WINDHAM PARKWAY  
ROMEDEVILLE, IL 60446  
P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:  
AEC SERVICES  
1616 ALLISON WOODS LN  
TAMPA, FL 33619  
PHONE:(813)684-1234

PROJECT INFORMATION:  
BP  
CLEARWATER, FL

CURRENT ISSUE DATE:  
8/14/2018

ISSUED FOR:  
PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
Δ	8/14/2018	PRELIMINARY	JW
4	6/27/2018	PRELIMINARY	JW
3	6/19/2018	PRELIMINARY	JW
2	6/13/2018	PRELIMINARY	JW
1	5/10/2018	PRELIMINARY	GS

SCALE:  
NTS

SHEET TITLE:  
COVER SHEET

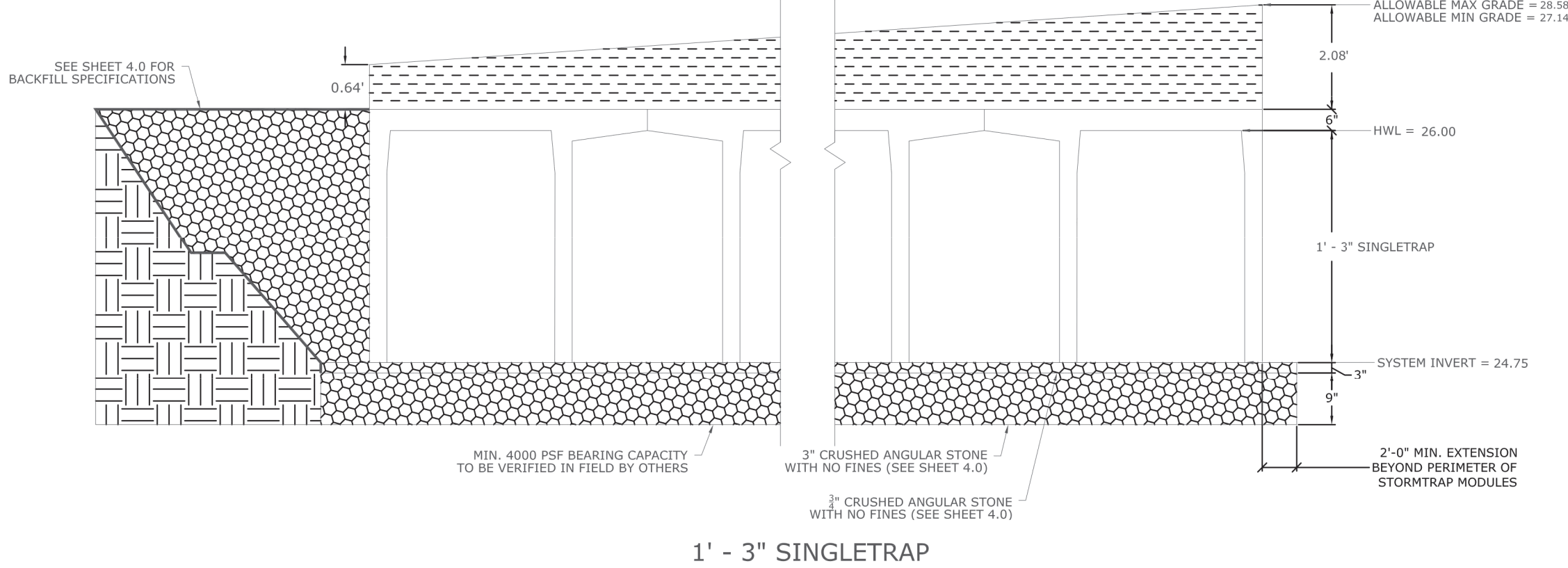
SHEET NUMBER:  
0.0

STRUCTURAL DESIGN LOADING CRITERIA	
LIVE LOADING:	ASHTO HS-20 HIGHWAY LOADING
GROUND WATER TABLE:	BELOW INVERT OF SYSTEM
SOIL BEARING PRESSURE:	4000 PSF
SOIL DENSITY:	120 PCF
EQUIVALENT UNSATURATED LATERAL ACTIVE EARTH PRESSURE:	35 PSF / FT.
EQUIVALENT SATURATED LATERAL ACTIVE EARTH PRESSURE:	80 PSF/FT. (IF WATER TABLE PRESENT)
APPLICABLE CODES:	ASHTO ACI-318
BACKFILL TYPE:	¾" STONE AGGREGATE

STORMTRAP SYSTEM INFORMATION	
WATER STORAGE REQ'D:	7,088.00 CUBIC FEET
WATER STORAGE PROV:	7,291.80 CUBIC FEET
UNIT HEADROOM:	1' - 3" SINGLETRAP
UNIT QUANTITY:	60 TOTAL PIECES

#### SITE SPECIFIC DESIGN CRITERIA

- STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
- COVER RANGE: MIN. 0.64' MAX. 2.08' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
- ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
- FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW INVERT OF SYSTEM . IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.



1' - 3" SINGLETRAP

BILL OF MATERIALS			
QTY.	UNIT TYPE	DESCRIPTION	WEIGHT
0	I	1' - 3" SINGLETRAP	12398
23	II	1' - 3" SINGLETRAP	12398
0	III	1' - 3" SINGLETRAP	10267
36	IV	1' - 3" SINGLETRAP	10267
0	VII	1' - 3" SINGLETRAP	8136
1	SPV	1' - 3" SINGLETRAP	VARIES
20	PANEL	6" THICK PANELS	VARIES
12	JOINTWRAP	150' PER ROLL	
0	JOINTTAPE	14.5' PER ROLL	

#### LOADING DISCLAIMER:

STORMTRAP IS NOT DESIGNED TO ACCEPT ANY ADDITIONAL LOADINGS FROM NEARBY STRUCTURES NEXT TO OR OVER THE TOP OF STORMTRAP. IF ADDITIONAL LOADING CONSIDERATIONS ARE REQUIRED FOR STRUCTURAL DESIGN OF STORMTRAP, PLEASE CONTACT STORMTRAP IMMEDIATELY.

DESIGN CRITERIA  
ALLOWABLE MAX GRADE = 28.58  
ALLOWABLE MIN GRADE = 27.14  
INSIDE HEIGHT ELEVATION = 26.00  
SYSTEM INVERT = 24.75  
STORMTRAP VOLUME = 7,291.80 C.F.

#### NOTES:

- DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
- ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
- SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
- SP - INDICATES A MODULE WITH MODIFICATIONS.
- P - INDICATES A MODULE WITH A PANEL ATTACHMENT.
- CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.

**StormTrap®**  
PATENTS LISTED AT: <http://www.stormtrap.com/patents>

1287 WINDHAM PARKWAY  
ROMEDEVILLE, IL 60446  
P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:  
AEC SERVICES  
1616 ALLISON WOODS LN  
TAMPA, FL 33619  
PHONE:(813)684-1234

PROJECT INFORMATION:  
BP  
CLEARWATER, FL

CURRENT ISSUE DATE:  
8/14/2018

ISSUED FOR:  
PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
Δ	8/14/2018	PRELIMINARY	JW
4	6/27/2018	PRELIMINARY	JW
3	6/19/2018	PRELIMINARY	JW
2	6/13/2018	PRELIMINARY	JW
1	5/10/2018	PRELIMINARY	GS

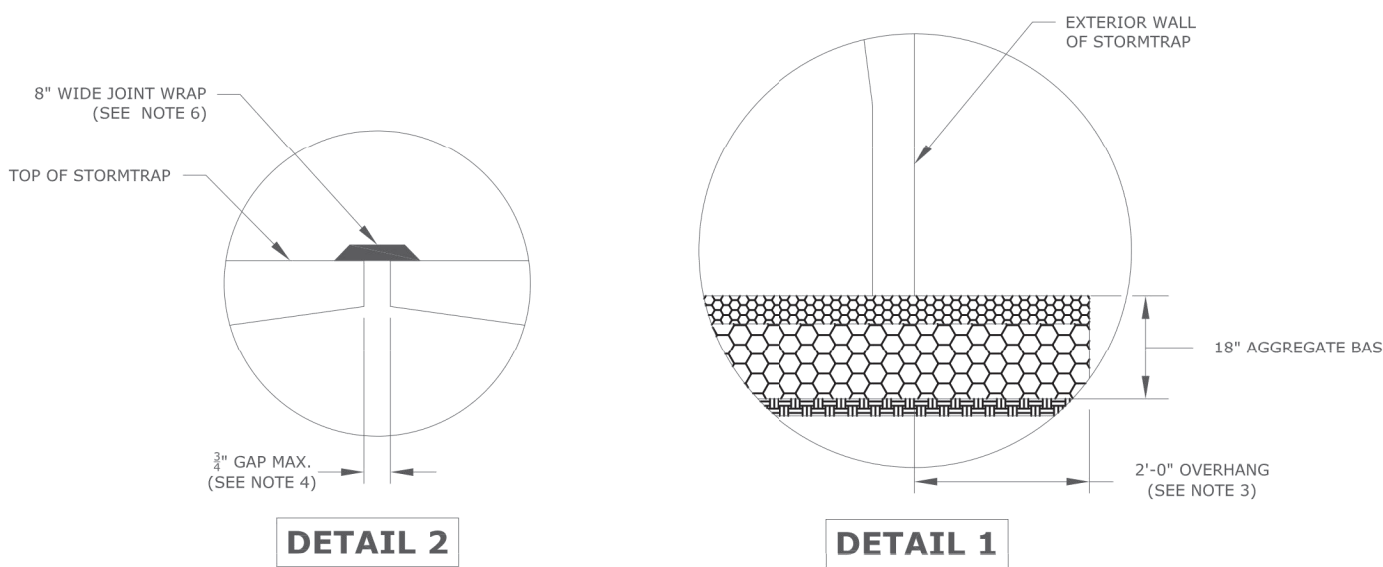
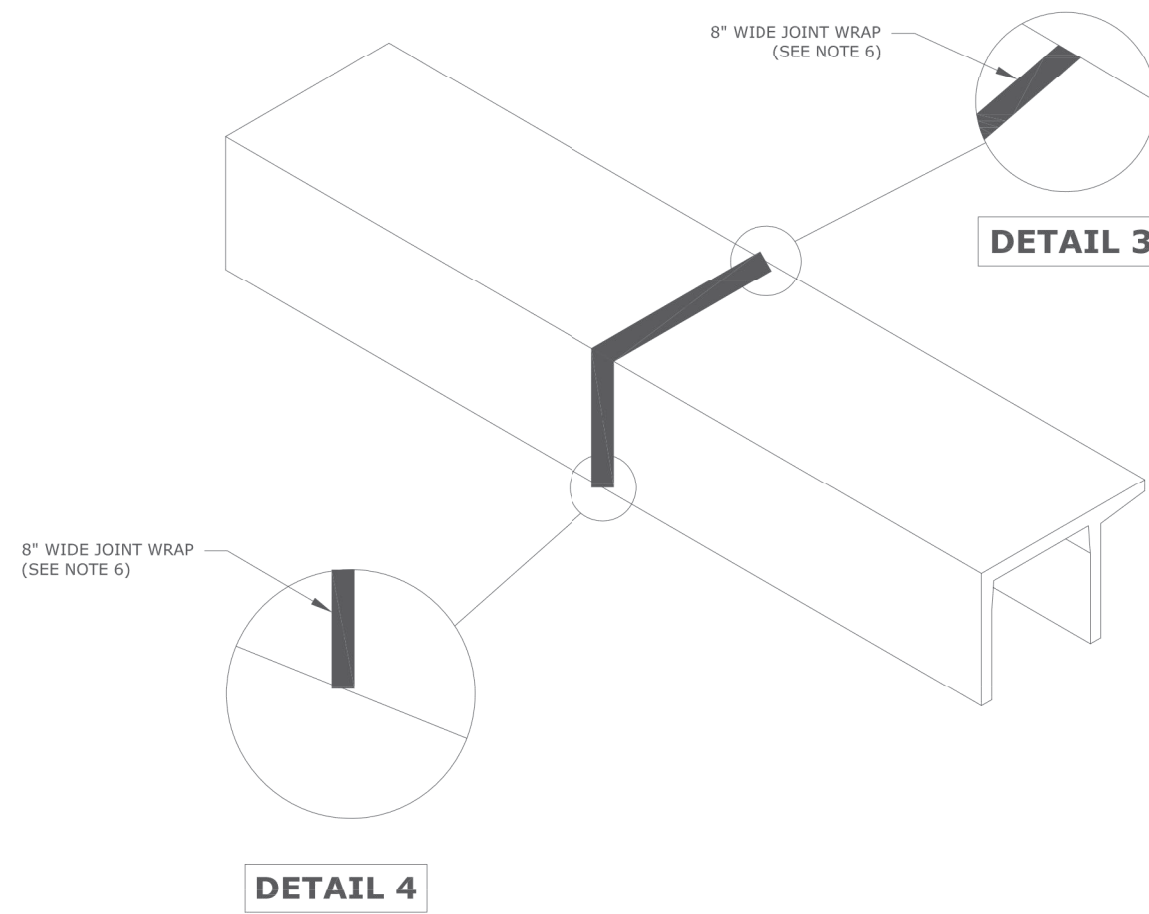
SCALE:  
NTS

SHEET TITLE:  
SINGLETRAP LAYOUT DETAILS

SHEET NUMBER:  
2.0

#### STORMTRAP INSTALLATION SPECIFICATIONS

- STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891 STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRE-CAST CONCRETE UTILITY STRUCTURES. THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY:
  - IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ADEQUATE EQUIPMENT IS USED TO SET/INSTALL THE MODULES.
  - THE AGGREGATE FOUNDATION HAS BEEN DESIGNED BASED ON THE FOLLOWING ASSUMPTIONS. THESE ASSUMPTIONS WILL NEED TO BE VERIFIED BY A GEOTECHNICAL ENGINEER WHICH WILL NEED TO BE EMPLOYED BY THE OWNER.
    - A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE IN EVALUATING THE EXISTING SOIL CONDITIONS BELOW THE PROPOSED ENGINEERED STONE FOUNDATION. IF A STONE FOUNDATION DESIGN IS TO BE USED, THE BEARING PRESSURE OF THE SOILS BELOW THE STONE WILL NEED TO MEET OR EXCEED ALLOWABLE CAPACITY. IF THIS IS NOT POSSIBLE, THE STONE FOUNDATION MAY NOT BE AN OPTION FOR THIS LOCATION.
    - A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO EVALUATE A SOURCE OF STONE AGGREGATES THAT WILL BE PLACED ON PROPERLY COMPACTED SOILS (SEE SHEET 1.0 FOR SOIL BEARING CAPACITY REQUIREMENTS). THE AGGREGATE BASE COURSE FOR WHICH THE STORMTRAP SYSTEM WILL BEAR DIRECTLY ON SHALL CONSIST OF A 3" THICK BED OF ¾" DIAMETER ANGULAR STONE, WELL COMPACTED AND SEATED, WITH NO FINES, AND A 15" THICK BED OF 3" DIAMETER STONE AGGREGATE (SEE SHEET 4.0 FOR FURTHER DESCRIPTION/EXPLANATION). PLEASE NOTE THAT THESE ARE ONLY MINIMUM RECOMMENDATIONS AND A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE USED TO DETERMINE THE EXACT REQUIREMENTS FOR THE LOCATIONS THAT THE STORMTRAP SYSTEM IS TO BE LOCATED.
    - THE CONTRACTOR SHALL REMOVE ANY AND ALL EXPANDABLE OR COLLAPSIBLE SOILS AT THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER.
    - THE AGGREGATE FOUNDATION SHALL BE INSTALLED SUCH THAT THE AGGREGATE EXTENDS A MINIMUM OF 2'-0" PAST THE OUTSIDE OF THE SYSTEM (SEE DETAIL 1).
    - THE ¾" AGGREGATE SHALL BE COMPACTED USING A VIBRATING ROLLER WITH ITS' FULL DYNAMIC FORCE APPLIED TO ACHIEVE A FLAT SURFACE.
    - DISK, DRY AND COMPACT THE TOP 8" OF THE SUBGRADE SOILS TO 95% OF THE STANDARD DRY DENSITY AND 110% OPTIMUM MOISTURE CONTENT.
    - AGGREGATE SHALL BE GRADED WITHIN +/- ½" OF THE GRADE SHOWN ON THE PLANS.
    - MINIMUM SOIL BEARING CAPACITY LISTED ON SHEET 1.0 SHALL BE VERIFIED IN FIELD BY OTHERS.
- THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED ¾" (SEE DETAIL 2). IF THE SPACE EXCEEDS ¾", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.
- STORMTRAP MODULES ARE NOT WATERTIGHT. IF A WATERTIGHT SOLUTION IS REQUIRED, CONTACT STORMTRAP FOR RECOMMENDATIONS. THE WATERTIGHT APPLICATION IS TO BE PROVIDED AND IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE SELECTED WATERTIGHT SOLUTION PERFORMS AS SPECIFIED BY THE MANUFACTURER.
- ALL EXTERIOR JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH 8" WIDE PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN, BONDED TO A WOVEN, HIGHLY PUNCTURE RESISTANT POLYMER WRAP, CONFORMING TO ASTM C891 AND SHALL BE INTEGRATED WITH PRIMER SEALANT AS APPROVED BY STORMTRAP (SEE DETAILS 3 & 4). THE JOINT WRAP DOES NOT PROVIDE A WATERTIGHT SEAL. THE SOLE PURPOSE OF THE JOINT WRAP IS TO PROVIDE A SILT AND SOIL TIGHT SYSTEM. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:
  - USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE THE JOINT WRAP IS TO BE APPLIED.
  - A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
- IF THE CONTRACTOR NEEDS TO CANCEL ANY SHIPMENTS, THEY MUST DO SO 48 HOURS PRIOR TO THEIR SCHEDULED ARRIVAL AT THE JOB SITE. IF CANCELED AFTER THAT TIME, PLEASE CONTACT THE PROJECT MANAGER.
- IF THE STORMTRAP MODULE(S) IS DAMAGED IN ANY WAY PRIOR, DURING, OR AFTER INSTALL, STORMTRAP, MUST BE CONTACTED IMMEDIATELY TO ASSESS THE DAMAGE AND TO DETERMINE WHETHER OR NOT THE MODULE(S) WILL NEED TO BE REPLACED. IF ANY MODULE ARRIVES AT THE JOBSITE DAMAGED DO NOT UNLOAD IT; CONTACT STORMTRAP, IMMEDIATELY. ANY DAMAGE NOT REPORTED BEFORE THE TRUCK IS UNLOADED WILL BE THE CONTRACTOR'S RESPONSIBILITY.
- STORMTRAP MODULES CANNOT BE ALTERED IN ANY WAY AFTER MANUFACTURING WITHOUT WRITTEN CONSENT FROM STORMTRAP.



**StormTrap®**  
PATENTS LISTED AT: <http://www.stormtrap.com/patents>

1287 WINDHAM PARKWAY  
ROMEDEVILLE, IL 60446  
P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:  
AEC SERVICES  
1616 ALLISON WOODS LN  
TAMPA, FL 33619  
PHONE:(813)684-1234

PROJECT INFORMATION:  
BP  
CLEARWATER, FL

CURRENT ISSUE DATE:  
8/14/2018

ISSUED FOR:  
PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
Δ	8/14/2018	PRELIMINARY	JW
4	6/27/2018	PRELIMINARY	JW
3	6/19/2018	PRELIMINARY	JW
2	6/13/2018	PRELIMINARY	JW
1	5/10/2018	PRELIMINARY	GS

SCALE:  
NTS

SHEET TITLE:  
SINGLETRAP DESIGN CRITERIA

SHEET NUMBER:  
1.0

**StormTrap®**  
PATENTS LISTED AT: <http://www.stormtrap.com/patents>

1287 WINDHAM PARKWAY  
ROMEDEVILLE, IL 60446  
P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:  
AEC SERVICES  
1616 ALLISON WOODS LN  
TAMPA, FL 33619  
PHONE:(813)684-1234

PROJECT INFORMATION:  
BP  
CLEARWATER, FL

CURRENT ISSUE DATE:  
8/14/2018

ISSUED FOR:  
PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
Δ	8/14/2018	PRELIMINARY	JW
4	6/27/2018	PRELIMINARY	JW
3	6/19/2018	PRELIMINARY	JW
2	6/13/2018	PRELIMINARY	JW
1	5/10/2018	PRELIMINARY	GS

SCALE:  
NTS

SHEET TITLE:  
SINGLETRAP INSTALLATION SPECIFICATIONS

SHEET NUMBER:  
3.0

CUSTOMER:  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

SITE ADDRESS:  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
FL # 50738 License No. 9277 QB #0011445

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
www.aecservicesinc.com

PRINT COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED FOR ANY ELECTION PURPOSES

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	N.T.S.
DATE	7-8-18
DRAWN BY	PAZ
CHECKED	GEP
APPROVAL	RAF
DESCRIPTION	
NO	
REVISIONS	

STORMTRAP  
DETAILS

C-4.3

THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.

### END PANEL ERECTION/INSTALLATION NOTES

- END PANELS WILL BE SUPPLIED TO CLOSE OFF OPEN ENDS OF ROWS.
- PANELS SHALL BE INSTALLED IN A TILT UP FASHION DIRECTLY ADJACENT TO OPEN END OF MODULE (REFER TO SHEET 2.0 FOR END PANEL LOCATIONS).
- CONNECTION HOOKS WILL BE SUPPLIED WITH END PANELS TO SECURELY CONNECTION PANEL TO ADJACENT STORMTRAP MODULE (SEE PANEL CONNECTION ELEVATION VIEW).
- ONCE CONNECTION HOOK IS ATTACHED, LIFTING CLUTCHES MAY BE REMOVED.
- JOINT WRAP SHALL BE PLACED AROUND PERIMETER JOINT PANEL (SEE SHEET 3.0).

CONNECTION HOOKS PROVIDED BY STORMTRAP AND INSTALLED BY CONTRACTOR (SEE DETAIL 6)

1" Ø PRECAST OPENING FOR HOOK CONNECTION, CONTRACTOR TO SEAL FOR INSTALLATION

SIDE OF STORMTRAP MODULE

SIDE OF END PANEL

PANEL CONNECTION ELEVATION VIEW

MODULE LIFTING DETAIL

END PANEL LIFTING DETAIL

STEP 1

STEP 2

DETAIL 6

**StormTrap®**  
PATENTS LISTED AT: <http://stormtrap.com/patents/>

1287 WINDHAM PARKWAY  
ROMEDEVILLE, IL 60446  
P:815-941-4549 / F:331-318-5347

### ENGINEER INFORMATION:

AEC SERVICES  
1616 ALLISON WOODS LN  
TAMPA, FL 33619  
PHONE: (813)684-1234

### PROJECT INFORMATION:

BP

CLEARWATER, FL

### CURRENT ISSUE DATE:

8/14/2018

### ISSUED FOR:

PRELIMINARY

REV. DATE: ISSUED FOR: DWN BY:

Δ	8/14/2018	PRELIMINARY	JW
4	6/27/2018	PRELIMINARY	JW
3	6/19/2018	PRELIMINARY	JW
2	6/13/2018	PRELIMINARY	JW
1	5/10/2018	PRELIMINARY	GS

### SCALE:

NTS

### SHEET TITLE:

SINGLETRAP  
INSTALLATION  
SPECIFICATIONS

### SHEET NUMBER:

3.1

ZONE CHART		
ZONES	ZONE DESCRIPTIONS	REMARKS
ZONE 1 A	FOUNDATION AGGREGATE	#5 (1") STONE AGGREGATE (SEE NOTE 4 FOR DESCRIPTION)
		3" STONE AGGREGATE (SEE NOTE 3 FOR DESCRIPTION)
ZONE 1 B	FOUNDATION AGGREGATE	#5 (1") STONE AGGREGATE (SEE NOTE 4 FOR DESCRIPTION)
ZONE 2	BACKFILL	#5 (1") STONE AGGREGATE (SEE NOTE 4 FOR DESCRIPTION)
ZONE 3	FINAL COVER OVERTOP	MATERIALS NOT TO EXCEED 120 PCF

FILL DEPTH	TRACK WIDTH	MAX GROUND PRESSURE
12"	12"	1690 psf
	18"	1219 psf
	24"	1111 psf
	30"	1000 psf
	36"	924 psf

### STORMTRAP ZONE INSTALLATION SPECIFICATIONS/PROCEDURES

- THE FILL PLACED AROUND THE STORMTRAP MODULES MUST DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE WALL BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL EITHER BE COMPACTED AND/OR VIBRATED TO ENSURE THAT BACKFILL AGGREGATE/STONE MATERIAL IS WELL SEATED AND PROPERLY INTER LOCKED. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE, AND ALL SLOPES WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR SERRATED TO PREVENT WEDGING ACTION. CARE SHALL ALSO BE TAKEN AS NOT TO DISRUPT THE JOINT WRAP FROM THE JOINT DURING THE BACKFILL PROCESS. BACKFILL MATERIAL SHALL BE CLEAN, CRUSHED, ANGULAR No. 5 (ASHTO M43) AGGREGATE. IF NATIVE EARTH IS SUSCEPTIBLE TO MIGRATION, CONFIRM WITH GEOTECHNICAL ENGINEER AND PROVIDE PROTECTION AS REQUIRED (PROVIDED BY OTHERS).
- DURING PLACEMENT OF MATERIAL OVERTOP THE SYSTEM, AT NO TIME SHALL MACHINERY BE USED OVERTOP THAT EXCEEDS THE DESIGN LIMITATIONS OF THE SYSTEM. WHEN PLACEMENT OF MATERIAL OVERTOP, MATERIAL SHALL BE PLACED SUCH THAT THE DIRECTION OF PLACEMENT IS PARALLEL WITH THE OVERALL LONGITUDINAL DIRECTION OF THE SYSTEM WHENEVER POSSIBLE.
- THE FILL PLACED OVERTOP THE SYSTEM SHALL BE PLACED AT A MINIMUM OF 6" LIFTS. AT NO TIME SHALL MACHINERY OR VEHICLES GREATER THAN THE DESIGN HS-20 LOADING CRITERIA TRAVEL OVERTOP THE SYSTEM WITHOUT THE MINIMUM DESIGN COVERAGE. IF TRAVEL IS NECESSARY OVERTOP THE SYSTEM PRIOR TO ACHIEVING THE MINIMUM DESIGN COVER, IT MAY BE NECESSARY TO REDUCE THE ULTIMATE LOAD/BURDEN OF THE OPERATING MACHINERY SO AS TO NOT EXCEED THE DESIGN CAPACITY OF THE SYSTEM. IN SOME CASES, IN ORDER TO ACHIEVE REQUIRED COMPACTION, HAND COMPACTION MAY BE NECESSARY IN ORDER NOT TO EXCEED THE ALLOTTED DESIGN LOADING. SEE CHART FOR TRACKED VEHICLE WIDTH AND ALLOWABLE MAXIMUM PRESSURE PER TRACK.
- FREE DRAINING AGGREGATE - 80% AGGREGATE RETAINED ON 1" SIEVE MAJORITY OF AGGREGATE SIZE BETWEEN 1" AND 1" ONLY 5% OF MATERIAL PASSING #200 SIEVE NO FINES.
- FREE DRAINING, NO FINES, 3" AGGREGATE - MAJORITY OF STONE SIZE IN BETWEEN 2" AND 3" - VERY SIMILAR TO COURSE AGGREGATE GRADATION #CA1.

GEOTEXTILE/GEOTEXTILE IF REQUIRED BY GEOTECHNICAL ENGINEER (SEE NOTE 1)

GEOTEXTILE/GEOTEXTILE IF REQUIRED BY GEOTECHNICAL ENGINEER (SEE NOTE 1)

STEPPED OR SERRATED AND APPLICABLE OSHA REQUIREMENTS (SEE BACKFILL NOTE 1)

BACKFILL DETAIL

**StormTrap®**  
PATENTS LISTED AT: <http://stormtrap.com/patents/>

1287 WINDHAM PARKWAY  
ROMEDEVILLE, IL 60446  
P:815-941-4549 / F:331-318-5347

### ENGINEER INFORMATION:

AEC SERVICES  
1616 ALLISON WOODS LN  
TAMPA, FL 33619  
PHONE: (813)684-1234

### PROJECT INFORMATION:

BP

CLEARWATER, FL

### CURRENT ISSUE DATE:

8/14/2018

### ISSUED FOR:

PRELIMINARY

REV. DATE: ISSUED FOR: DWN BY:

Δ	8/14/2018	PRELIMINARY	JW
4	6/27/2018	PRELIMINARY	JW
3	6/19/2018	PRELIMINARY	JW
2	6/13/2018	PRELIMINARY	JW
1	5/10/2018	PRELIMINARY	GS

### SCALE:

NTS

### SHEET TITLE:

RECOMMENDED  
PIPE / ACCESS  
OPENING  
SPECIFICATIONS

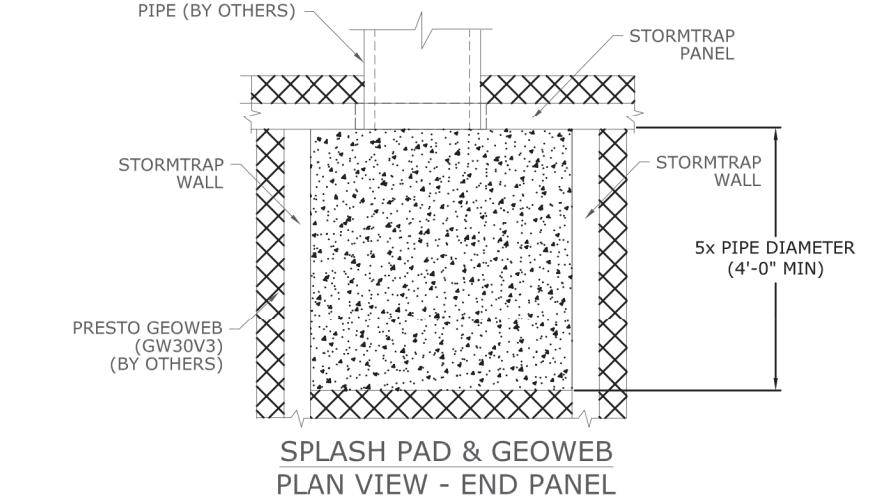
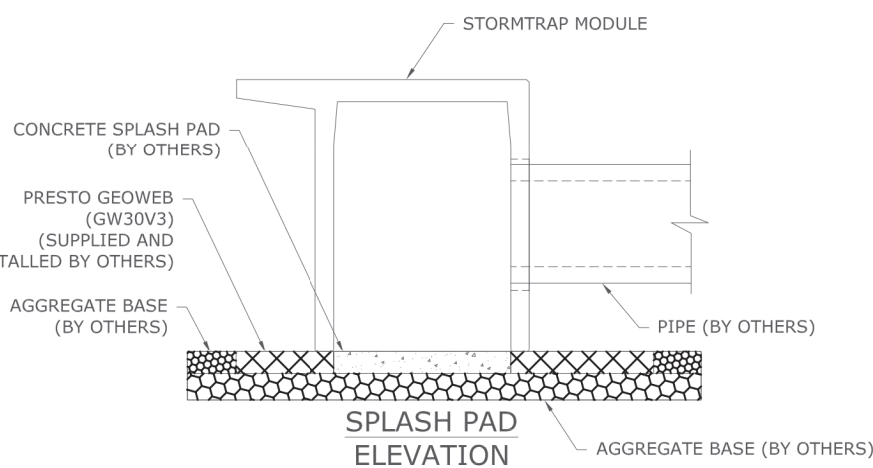
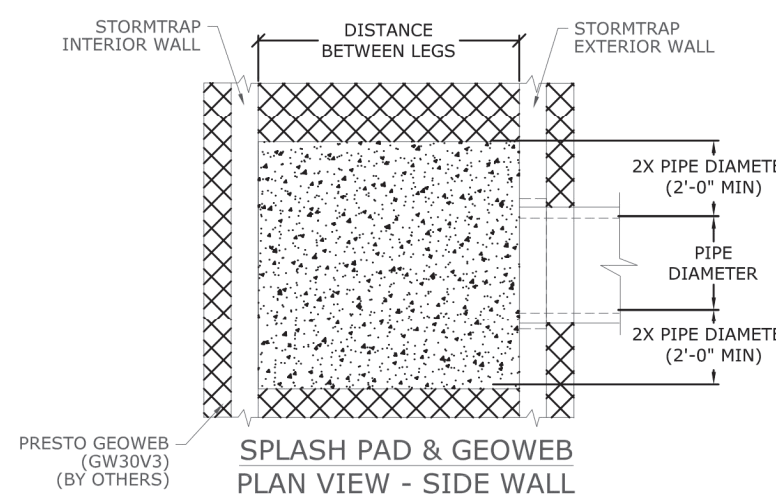
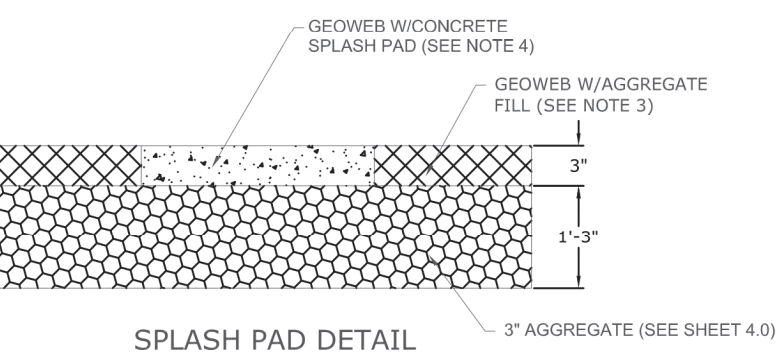
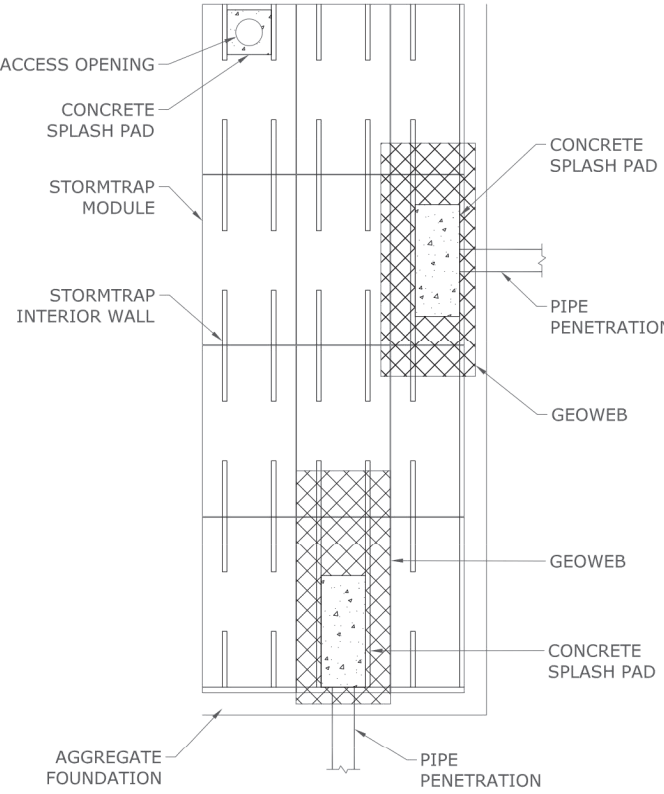
### SHEET NUMBER:

5.0

### NOTES:

- THE APPROVED GEOWEB SHALL BE PRESTO GEOWEB (GW30V3). THE GEOWEB NOMINAL DIMENSIONS SHALL BE 9'-FT x 25'-FT.
- THE CONCRETE SPLASH PAD AND GEOWEB SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE STORMTRAP MODULES.
- THE GEOWEB INFILL MATERIAL SHALL BE #5 AGGREGATE.
- THE CONCRETE SPLASH PAD SHALL BE INSTALLED WITHIN THE GEOWEB AND IS REQUIRED AT ALL PIPE ENTRY LOCATIONS.
- THE GEOWEB EDGE SHALL BE INSTALLED 1'-FT BEYOND THE OUTER PERIMETER OF THE STORMTRAP SYSTEM.
- THE GEOWEB LONGITUDINAL DIMENSION (25'-FT) SHALL BE INSTALLED PARALLEL TO THE STORMTRAP LEGS.
- THE CONCRETE SPLASH PAD AND GEOWEB SHALL BE CENTERED AT THE PIPE PENETRATION.
- REFER TO SPLASH PAD LAYOUT FOR CONCRETE SPLASH PAD DIMENSIONS.
- IF ANY PRODUCT OTHER THAN PRESTO GEOWEB IS TO BE INSTALLED, THE PRODUCT MANUFACTURER, IS REQUIRED TO SUBMIT A LETTER STATING THAT THE PRODUCT IS EQUAL OR BETTER THEN PRESTO GEOWEB, BOTH IN PERFORMANCE AND IN STRUCTURAL CAPACITY.
- ALL GEOWEB AND SPLASH PADS TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
- A CONCRETE SPLASH PAD IS REQUIRED AT ANY ACCESS OPENING THAT HAS AN OPEN GRATE FOR DRAINAGE. THE CONCRETE SPLASH PAD SHALL EXTEND BETWEEN THE UNIT LEG WALLS AND 3'-0" FROM THE CENTERLINE OF THE OPENING ON BOTH SIDES UNLESS SPECIFIED OTHERWISE ON THE SPLASH PAD LAYOUT. GEOWEB IS NOT REQUIRED UNDER ACCESS OPENINGS.

### SPLASH PAD CONFIGURATION



### RECOMMENDED ACCESS OPENING SPECIFICATION

- A TYPICAL ACCESS OPENING FOR THE STORMTRAP SYSTEM ARE 2'-0" IN DIAMETER. ACCESS OPENINGS LARGER THAN 3'-0" IN DIAMETER NEED TO BE APPROVED BY STORMTRAP. ALL OPENINGS MUST RETAIN AT LEAST 1'-0" OF CLEARANCE FROM THE END OF THE STORMTRAP MODULE UNLESS NOTED OTHERWISE. ALL ACCESS OPENINGS TO BE LOCATED ON INSIDE LEG UNLESS OTHERWISE SPECIFIED.
- PLASTIC COATED STEEL STEPS PRODUCED BY M.J. INDUSTRIES PART #PS3-PPC OR APPROVED EQUAL (SEE STEP DETAIL) ARE PROVIDED INSIDE ANY MODULE WHERE DEEMED NECESSARY. THE HIGHEST STEP IN THE MODULE IS TO BE PLACED A DISTANCE OF 1'-0" FROM THE INSIDE EDGE OF THE STORMTRAP MODULES. ALL DRIVING STEPS SHALL BE PLACED WITH A MAXIMUM DISTANCE OF 1'-4" BETWEEN THEM. STEPS MAY BE MOVED OR ALTERED TO AVOID OPENINGS OR OTHER IRREGULARITIES IN THE MODULE.
- STORMTRAP LIFTING INSERTS MAY BE RELOCATED TO AVOID INTERFERENCE WITH ACCESS OPENINGS OR THE CENTER OF GRAVITY OF THE MODULE AS NEEDED.
- STORMTRAP ACCESS OPENINGS MAY BE RELOCATED TO AVOID INTERFERENCE WITH INLET AND/OR OUTLET PIPE OPENINGS SO PLACEMENT OF STEPS IS ATTAINABLE.
- ACCESS OPENINGS SHOULD BE LOCATED IN ORDER TO MEET THE APPROPRIATE MUNICIPAL REQUIREMENTS. STORMTRAP RECOMMENDS AT LEAST TWO ACCESS OPENINGS PER SYSTEM FOR ACCESS AND INSPECTION.
- USE PRECAST ADJUSTING RINGS AS NEEDED TO MEET GRADE. STORMTRAP RECOMMENDS FOR COVER OVER 2' TO USE PRECAST BARREL OR CONE INSPECTIONS. (PROVIDED BY OTHERS)

### RECOMMENDED PIPE OPENING SPECIFICATION

- MINIMUM EDGE DISTANCE FOR AN OPENING ON THE OUTSIDE WALL SHALL BE NO LESS THAN 1'-0".
- MAXIMUM OPENING SIZE TO BE DETERMINED BY THE MODULE HEIGHT. PREFERRED OPENING SIZE IS Ø 36" OR LESS. ANY OPENING NEEDED THAT DOES NOT FIT THIS CRITERIA SHALL BE BROUGHT TO THE ATTENTION OF STORMTRAP FOR REVIEW.
- CONNECTING PIPES SHALL BE INSTALLED WITH A 1'-0" CONCRETE COLLAR, AND AN AGGREGATE CRADLE FOR AT LEAST ONE PIPE LENGTH (SEE PIPE CONNECTION DETAIL). A STRUCTURAL GRADE CONCRETE OR HIGH STRENGTH, NON-SHRINK GROUT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI SHALL BE USED.
- THE ANNULAR SPACE BETWEEN THE PIPE AND THE HOLE SHALL BE FILLED WITH HIGH STRENGTH NON-SHRINK GROUT.

### RECOMMENDED PIPE INSTALLATION INSTRUCTIONS

- CLEAN AND LIGHTLY LUBRICATE ALL OF THE PIPE TO BE INSERTED INTO STORMTRAP.
- IF PIPE IS CUT, CARE SHOULD BE TAKEN TO ALLOW NO SHARP EDGES. BEVEL AND LUBRICATE LEAD END OF PIPE.
- ALIGN CENTER OF PIPE TO CORRECT ELEVATION AND INSERT INTO OPENING.

NOTE: ALL ANCILLARY PRODUCTS/SPECIFICATIONS RECOMMENDED AND SHOWN ON THIS SHEET ARE RECOMMENDATIONS ONLY AND SUBJECT TO CHANGE PER THE INSTALLING CONTRACTOR AND/OR PER LOCAL MUNICIPAL CODE/REQUIREMENTS.

PRECAST CONCRETE ADJUSTING RINGS, BARREL OR CONE SECTIONS AS NEEDED (SEE RECOMMENDED ACCESS OPENING SPECIFICATION NOTE 6, (SUPPLIED BY OTHERS))

FRAME & COVER AS SPECIFIED BY ENGINEER (SUPPLIED BY OTHERS)

NON-SHRINK GROUT

1'-0"

1'-4"

1'-4"

1'-4"

RISER / STAIR DETAIL

HIGH STRENGTH, NON-SHRINK GROUT

WALL OF STORMTRAP

1'-0" x 1'-0" CONCRETE COLLAR

INLET/OUTLET PIPE

AGGREGATE CRADLE

IF A PIPE IS PROPOSED AT THE SYSTEM INVERT, NOTCH PIPE TO ALLOW PIPE INVERT TO MEET SYSTEM INVERT

HIGH STRENGTH, NON-SHRINK GROUT

HIGH STRENGTH, NON-SHRINK GROUT

WALL OF STORMTRAP

1'-0" x 1'-0" CONCRETE COLLAR

INLET/OUTLET PIPE

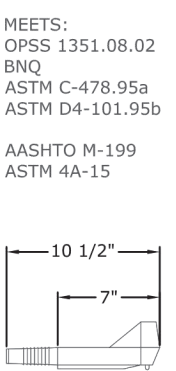
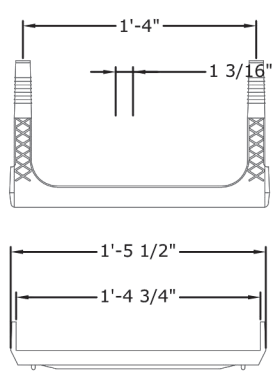
AGGREGATE CRADLE

HIGH STRENGTH, NON-SHRINK GROUT

HIGH STRENGTH, NON-SHRINK GROUT

PIPE CONNECTION DETAIL

STEP DETAIL



CUSTOMER:  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

SITE ADDRESS:  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
FL # 50738  
1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813)684-1234  
(813)684-2680 (f)  
www.aecservicesinc.com

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	N.T.S.
DATE	7-8-18
DRAWN BY	PAZ
CHECKED	GEP
DATE	
DESCRIPTION	
NO	
REVISIONS	

STORMTRAP  
DETAILS

C-4.4

**StormTrap®**  
PATENTS LISTED AT: <http://stormtrap.com/patents/>

1287 WINDHAM PARKWAY  
ROMEDEVILLE, IL 60446  
P:815-941-4549 / F:331-318-5347

### ENGINEER INFORMATION:

AEC SERVICES  
1616 ALLISON WOODS LN  
TAMPA, FL 33619  
PHONE: (813)684-1234

### PROJECT INFORMATION:

BP

CLEARWATER, FL

### CURRENT ISSUE DATE:

8/14/2018

### ISSUED FOR:

PRELIMINARY

REV. DATE: ISSUED FOR: DWN BY:

Δ	8/14/2018	PRELIMINARY	JW
4	6/27/2018	PRELIMINARY	JW
3	6/19/2018	PRELIMINARY	JW
2	6/13/2018	PRELIMINARY	JW
1	5/10/2018	PRELIMINARY	GS

### SCALE:

NTS

### SHEET TITLE:

SINGLETRAP  
BACKFILL  
SPECIFICATIONS

### SHEET NUMBER:

4.0

**StormTrap®**  
PATENTS LISTED AT: <http://stormtrap.com/patents/>

1287 WINDHAM PARKWAY  
ROMEDEVILLE, IL 60446  
P:815-941-4549 / F:331-318-5347

### ENGINEER INFORMATION:

AEC SERVICES  
1616 ALLISON WOODS LN  
TAMPA, FL 33619  
PHONE: (813)684-1234

### PROJECT INFORMATION:

BP

CLEARWATER, FL

### CURRENT ISSUE DATE:

8/14/2018

### ISSUED FOR:

PRELIMINARY

REV. DATE: ISSUED FOR: DWN BY:

Δ	8/14/2018	PRELIMINARY	JW
4	6/27/2018	PRELIMINARY	JW
3	6/19/2018	PRELIMINARY	JW
2	6/13/2018	PRELIMINARY	JW
1	5/10/2018	PRELIMINARY	GS

### SCALE:

NTS

### SHEET TITLE:

SPLASH PAD &  
GEOWEB DETAILS

### SHEET NUMBER:

6.0

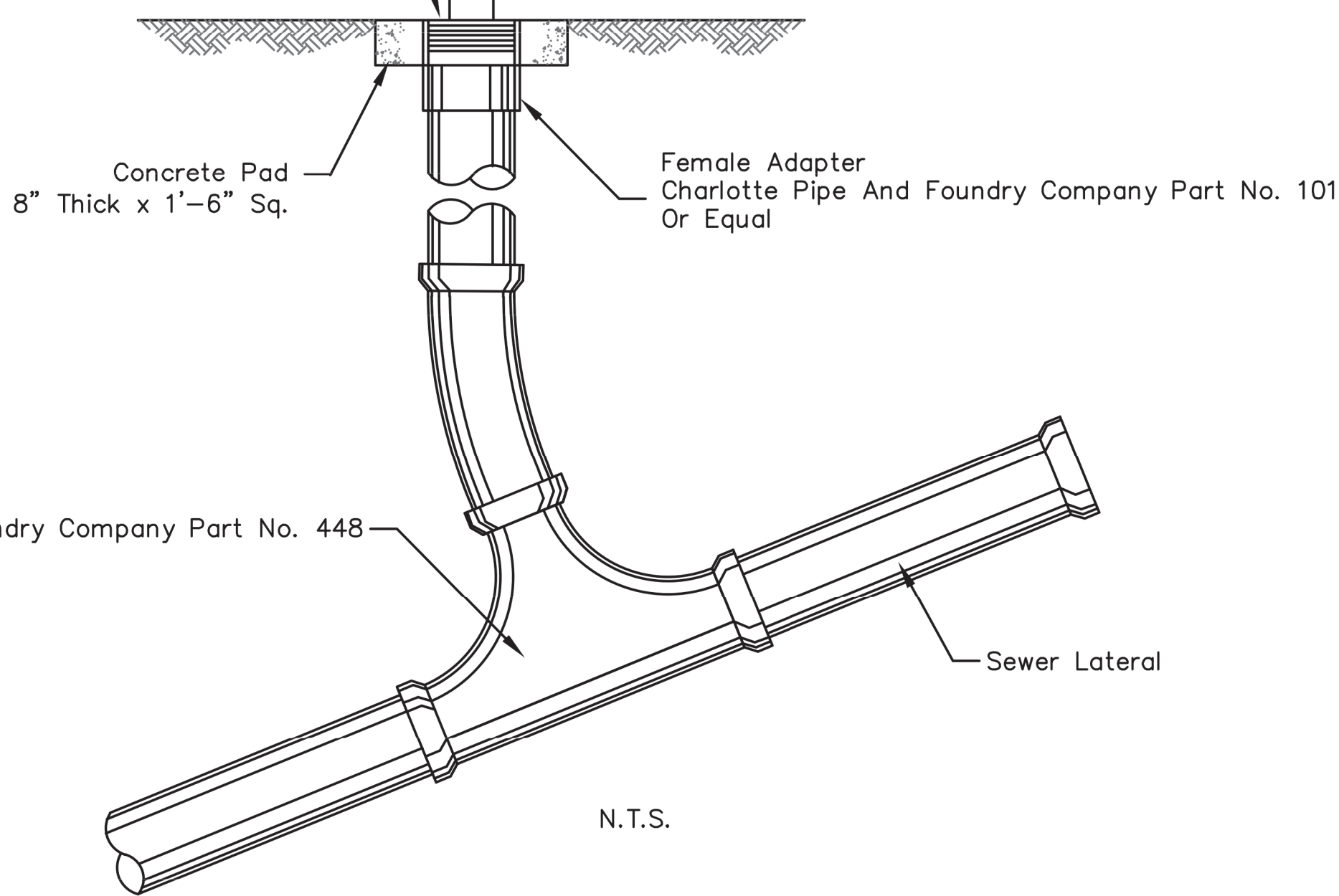


***GULF TO BAY BOULEVARD***

NO	DESCRIPTION	DATE	DRAWN BY: PAZ	CHECKED: GEP	APPROVAL: RAB
<b>REVISIONS</b>					
<u>1</u>					
<u>2</u>					
<u>3</u>					
<u>4</u>					
<u>5</u>					
<u>6</u>					
<u>7</u>					
<u>8</u>					
<u>9</u>					
<u>10</u>					
<u>11</u>					
<u>12</u>					
<u>13</u>					
<u>14</u>					
<u>15</u>					
<u>16</u>					
<u>17</u>					
<u>18</u>					
<u>19</u>					
<u>20</u>					
<u>21</u>					
<u>22</u>					
<u>23</u>					
<u>24</u>					
<u>25</u>					
<u>26</u>					
<u>27</u>					
<u>28</u>					
<u>29</u>					
<u>30</u>					
<u>31</u>					
<u>32</u>					
<u>33</u>					
<u>34</u>					
<u>35</u>					
<u>36</u>					
<u>37</u>					
<u>38</u>					
<u>39</u>					
<u>40</u>					
<u>41</u>					
<u>42</u>					
<u>43</u>					
<u>44</u>					
<u>45</u>					
<u>46</u>					
<u>47</u>					
<u>48</u>					
<u>49</u>					
<u>50</u>					
<u>51</u>					
<u>52</u>					
<u>53</u>					
<u>54</u>					
<u>55</u>					
<u>56</u>					
<u>57</u>					
<u>58</u>					
<u>59</u>					
<u>60</u>					
<u>61</u>					
<u>62</u>					
<u>63</u>					
<u>64</u>					
<u>65</u>					
<u>66</u>					
<u>67</u>					
<u>68</u>					
<u>69</u>					
<u>70</u>					
<u>71</u>					
<u>72</u>					
<u>73</u>					
<u>74</u>					
<u>75</u>					
<u>76</u>					
<u>77</u>					
<u>78</u>					
<u>79</u>					
<u>80</u>					
<u>81</u>					
<u>82</u>					
<u>83</u>					
<u>84</u>					
<u>85</u>					
<u>86</u>					
<u>87</u>					
<u>88</u>					
<u>89</u>					
<u>90</u>					
<u>91</u>					

C-5

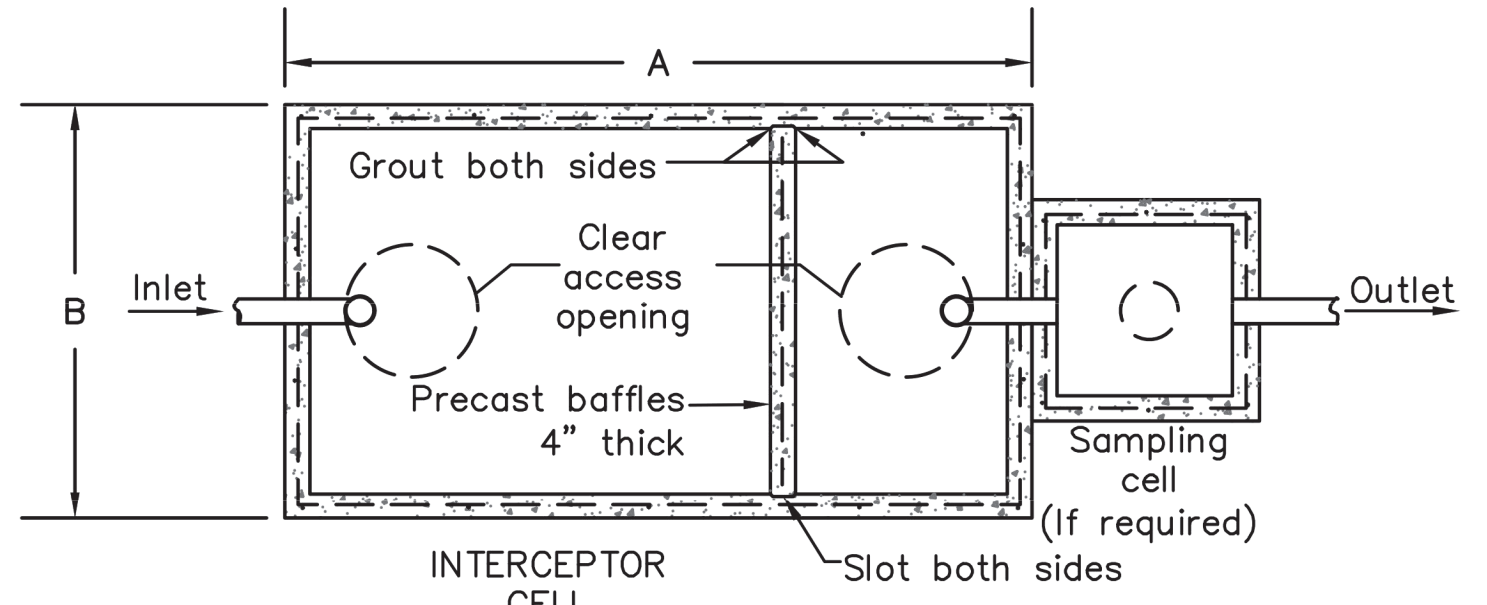
Cleanout Plug  
Charlotte Pipe And Foundry Company Part No. 106  
Or Equal



NOTE  
Cleanout Plug Cover for traffic areas  
to be U.S. Foundry 7623 Or Equal.

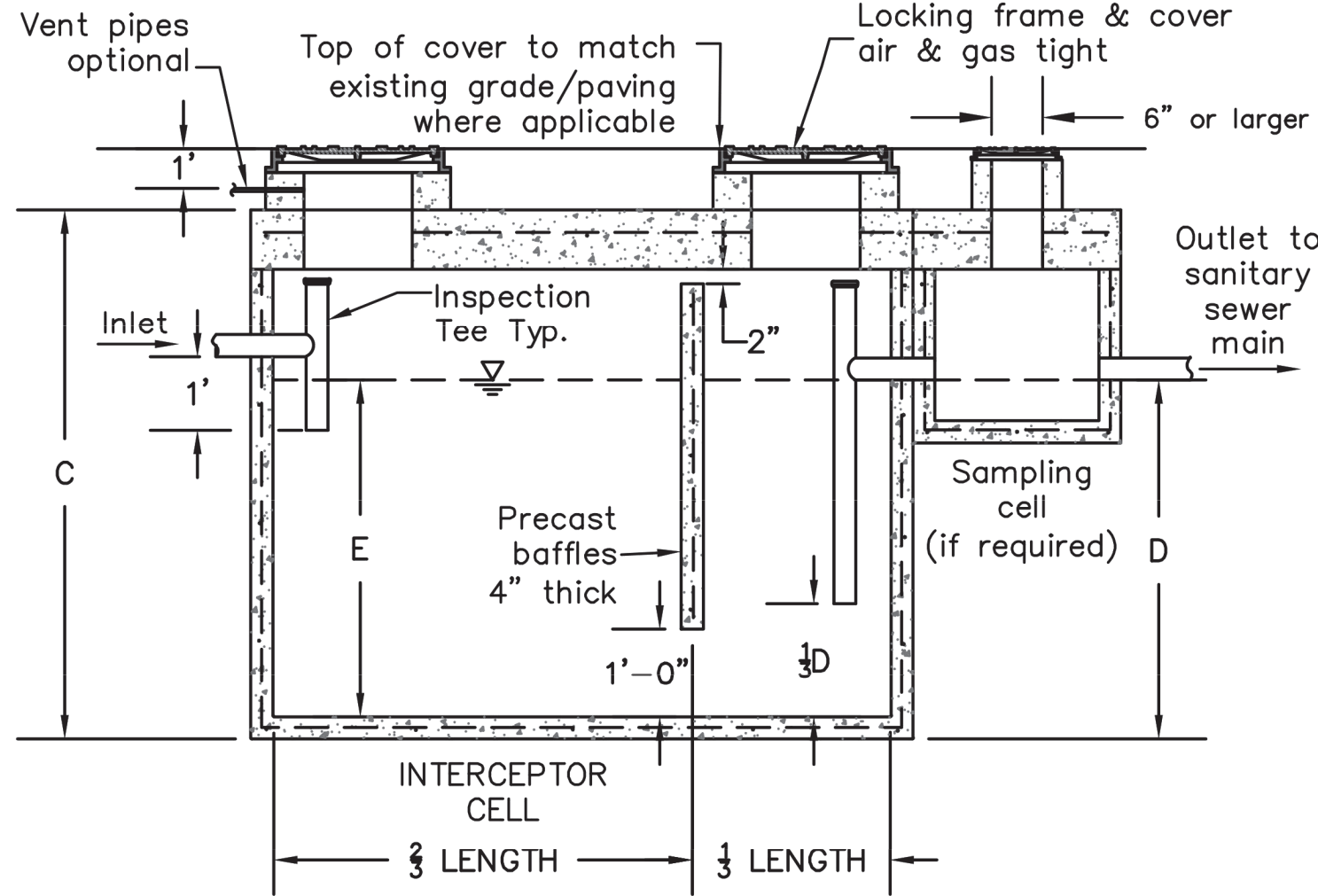
Two-Way Cleanout  
Charlotte Pipe And Foundry Company Part No. 448  
Or Equal

N.T.S.



PLAN VIEW

N.T.S.



SECTION VIEW

N.T.S.

INTERCEPTOR CELL SIZING CHART					
GALLON CAPACITY	A	B	C	D	E
750	7'-0"	4'-8"	7'-0"	4'-3"	3'-11"
1000	9'-0"	5'-0"	7'-2"	4'-2"	3'-10"
1250	9'-0"	5'-0"	7'-2"	5'-2"	4'-10"

GENERAL NOTES:

- The interceptor system may consist of multiple interceptor cells, if required greater than 1250 gallon capacity.
- One sampling cell per system shall be installed at outfall to main, only if required.
- Concrete wall coating taking into consideration the water-oil mix.
- Contractor to supply & install all piping and sanitary tee's, clean-outs for cleaning toward and away from interceptor (alternate dual sweep clean-outs).
- Contractor shall assure 2,500 PSI minimum soil bearing capacity at bedding elevation.

NOTES:

- Concrete: 4500psi at 28 day.
- Rebar: ASTM A615 Grade 60.
- Mesh: ASTM A815 Grade 65.
- Design: ACI3 18-83 Building Code ASTM C857 Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
- Loads: H-20 truck wheels w/30% impact per AASHTO.
- Fill w/clean water prior to start up of system.
- Gray water only, black water shall be carried by separate sewer.

DATE	REVISION DESCRIPTION	APP

CITY OF CLEARWATER  
ENGINEERING DEPARTMENT  
SANITARY SEWER  
DETAILS

STANDARD CLEANOUT  
(SANITARY)

INDEX NO.	PAGE NO.
304	1 OF 2
LATEST REVISION	2/22/2016

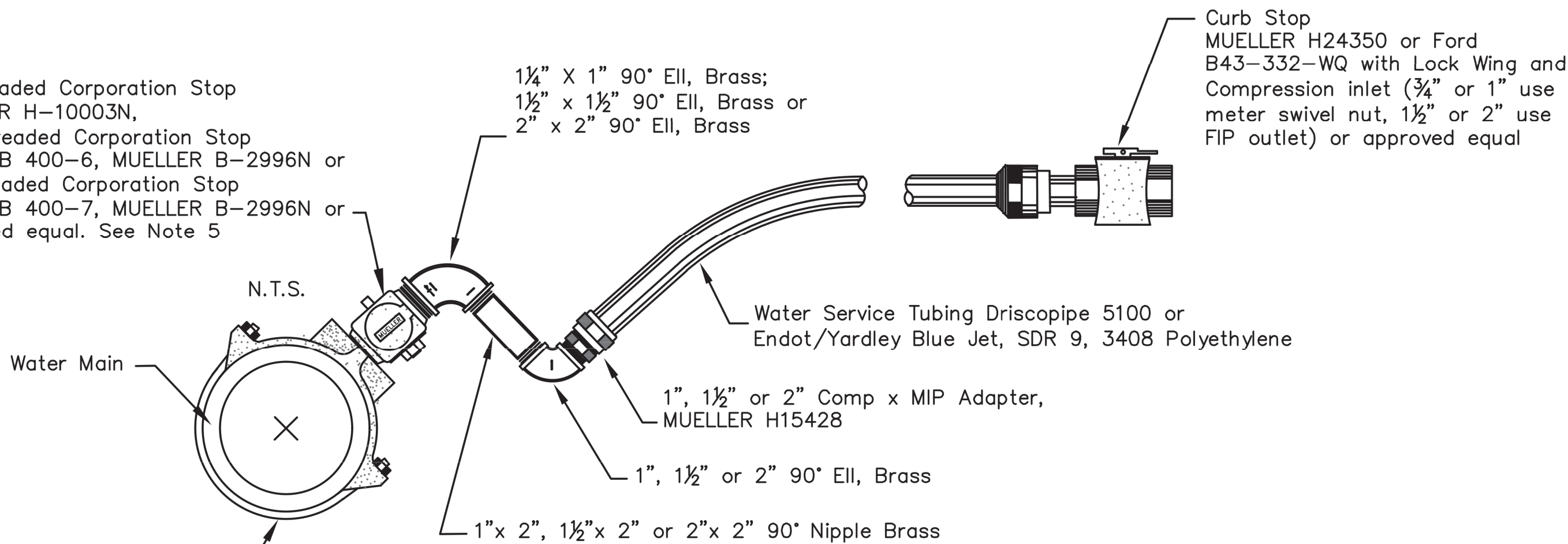
DATE	REVISION DESCRIPTION	APP
5/31/11	SAMPLING CELL NOTE	R.P.

CITY OF CLEARWATER  
ENGINEERING DEPARTMENT  
SANITARY SEWER  
DETAILS

GREASE INTERCEPTOR  
750-1250 GALLON

INDEX NO.	PAGE NO.
307	1 OF 1
LATEST REVISION	2/22/2016

1" Threaded Corporation Stop  
MUELLER H-10003N,  
1½" Threaded Corporation Stop  
FORD FB 400-6, MUELLER B-2996N or  
2" Threaded Corporation Stop  
FORD FB 400-7, MUELLER B-2996N or  
approved equal. See Note 5



Iron service saddle  
Ford FC 202 series or  
MUELLER DR25 w/stainless  
steel band and epoxy coated  
ductile iron body or approved  
equal.

NOTES:

- Contractor to stake service connections, which are to be 2 FT. from side lot line on either side of lot (See Index 401 Sheet 3 of 3). These services to be consistent within the subdivision. Driveways shall not be built over meters or service taps. Meters or service taps shall not be installed within or under driveways.
- All lines shall be chlorinated and pressure tested (Test for two hours @ 150 P.S.I.) under the direction to the Utilities Department. After successful completion of the testing and chlorination, the pressure shall remain on the system at all times.
- Ten (10) FT. separation required between parallel water & sanitary sewer lines.
- Saddle is required for all service connections to mains.
- Taps should be made on a 45° angle from top of pipe. For cover 12" or less, tap shall be made on a 90° angle from top of pipe.
- Minimum distance between service taps to be not less than 36".

DATE	REVISION DESCRIPTION	APP
1/14	ADDED PART NUMBERS	P.U.
8/09	CHG. CORP STOP NO.	P.S.

CITY OF CLEARWATER  
ENGINEERING DEPARTMENT  
WATER  
DETAILS

WATER MAIN SERVICE  
CONNECTION DETAIL

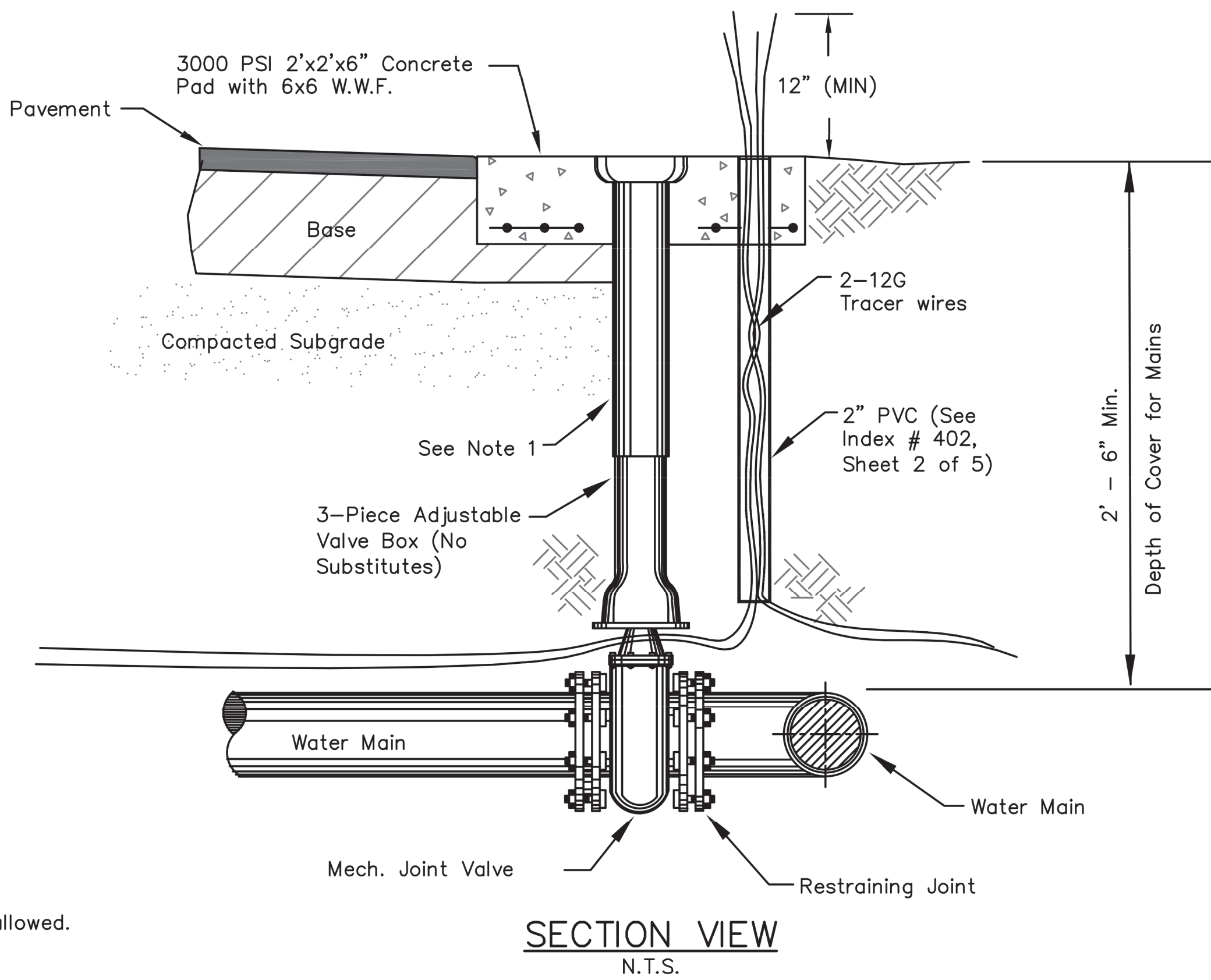
INDEX NO.	PAGE NO.
401	1 OF 3
LATEST REVISION	2/22/2016

DATE	REVISION DESCRIPTION	APP

CITY OF CLEARWATER  
ENGINEERING DEPARTMENT  
WATER  
DETAILS

TYPICAL VALVE AND BOX SETTING  
SECTION VIEW

INDEX NO.	PAGE NO.
402	1 OF 4
LATEST REVISION	2/22/2016



NOTE:  
1. No PVC risers allowed.

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	N.T.S.
DATE	2/15/17
DRAWN BY	PAZ
CHECKED	GEP
DATE	
DESCRIPTION	
NO	
REVISIONS	

UTILITY  
DETAILS

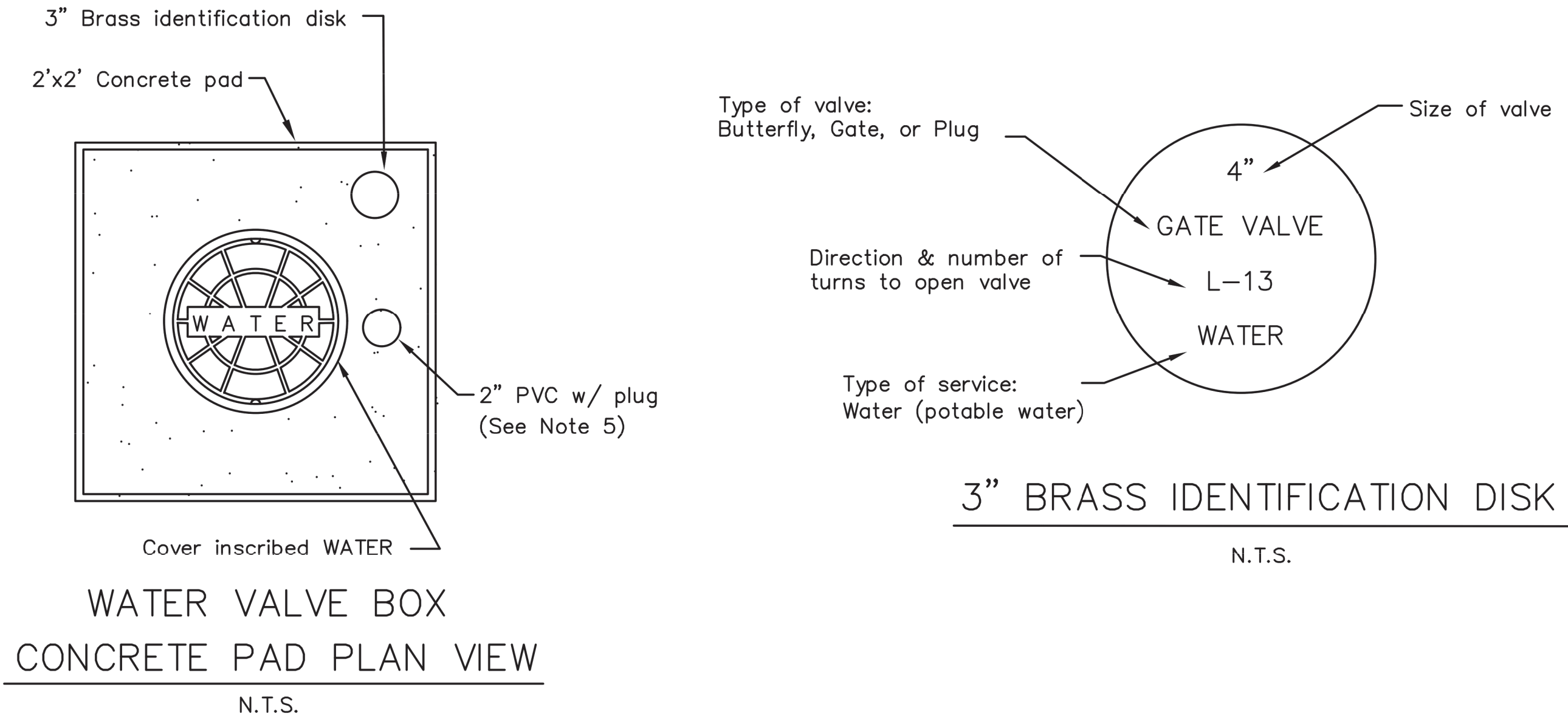
C-5.1

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602  
SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD: AEC Services, Inc.  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
1616 ALLISON WOODS LANE  
CLEARWATER, FL 34619  
(813)884-1234  
www.aecservicesinc.com  
FL #50738

NOTES:

1. Extension on valve box shall be set so as to reserve 1/2 of the adjustment length for future use.
2. Operating nut shall be set so as to be within 12" to 18" of grade.
3. Install 3" brass identification disk in concrete.
4. Install 2" pvc with plug for tracer wire storage.
5. Locator wire access – 2" (white or gray) schedule 80 PVC, brass female adaptor coupling and 2" brass plug w/ recess nut. terminate insulated, solid 12 gauge copper tracer wire at top w/ a minimum 12" of extra wire.



DATE	REVISION	DESCRIPTION	APP

CITY OF CLEARWATER ENGINEERING DEPARTMENT
WATER DETAILS

WATER VALVE BOX CONCRETE PAD PLAN VIEW
--

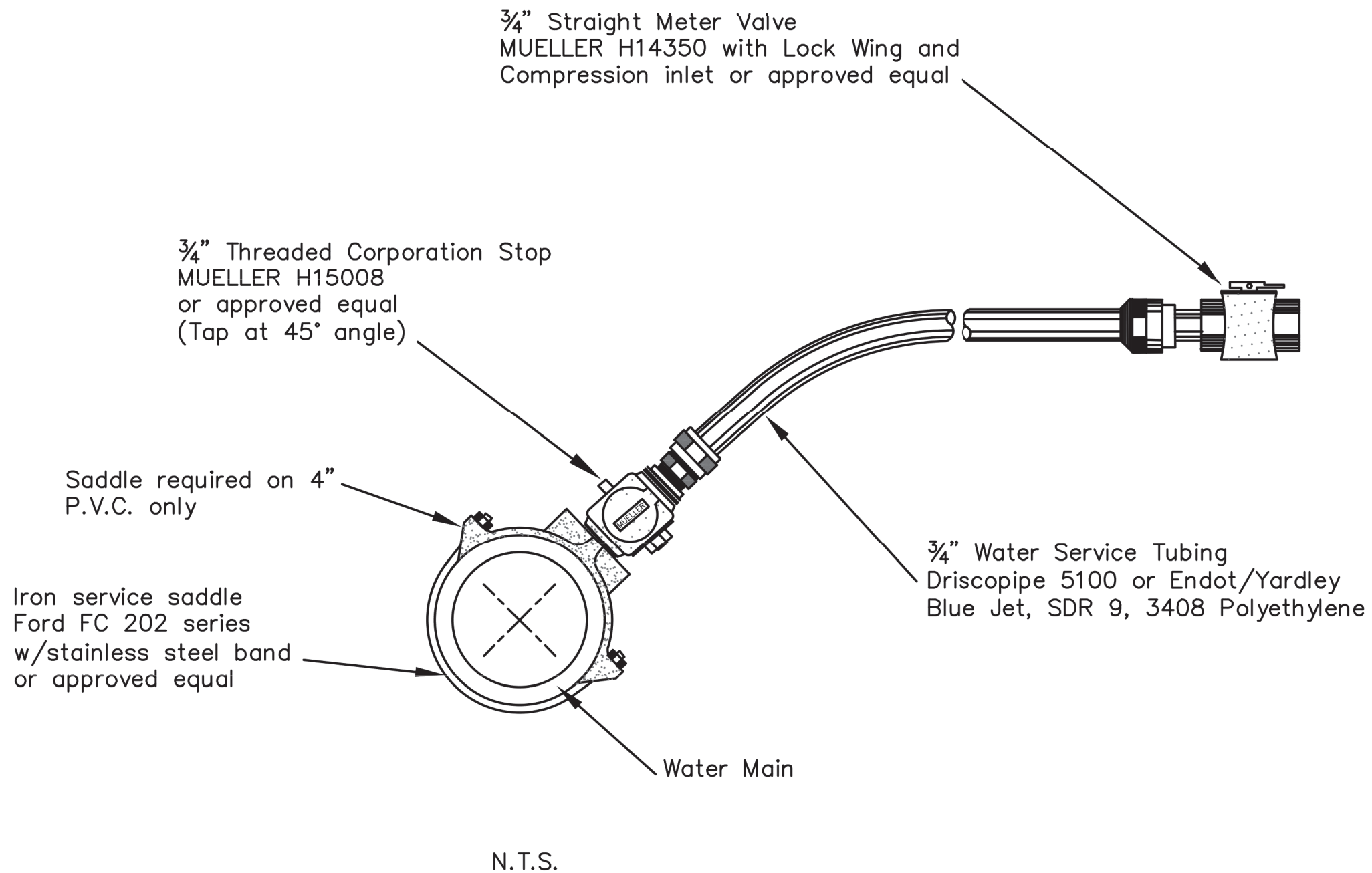
INDEX NO.	PAGE NO.
402	2 OF 4
LATEST REVISION	2/22/2016

DATE	REVISION	DESCRIPTION	APP

CITY OF CLEARWATER ENGINEERING DEPARTMENT
WATER DETAILS

TYPICAL METER SETS W/ BACKFLOW PREVENTERS 1-1/2" & 2" MODELS
--

INDEX NO.	PAGE NO.
405	2 OF 5
LATEST REVISION	2/22/2016



DATE	REVISION	DESCRIPTION	APP

CITY OF CLEARWATER ENGINEERING DEPARTMENT
WATER DETAILS

CHLORINATION TAP
------------------

INDEX NO.	PAGE NO.
408	1 OF 2
LATEST REVISION	2/22/2016

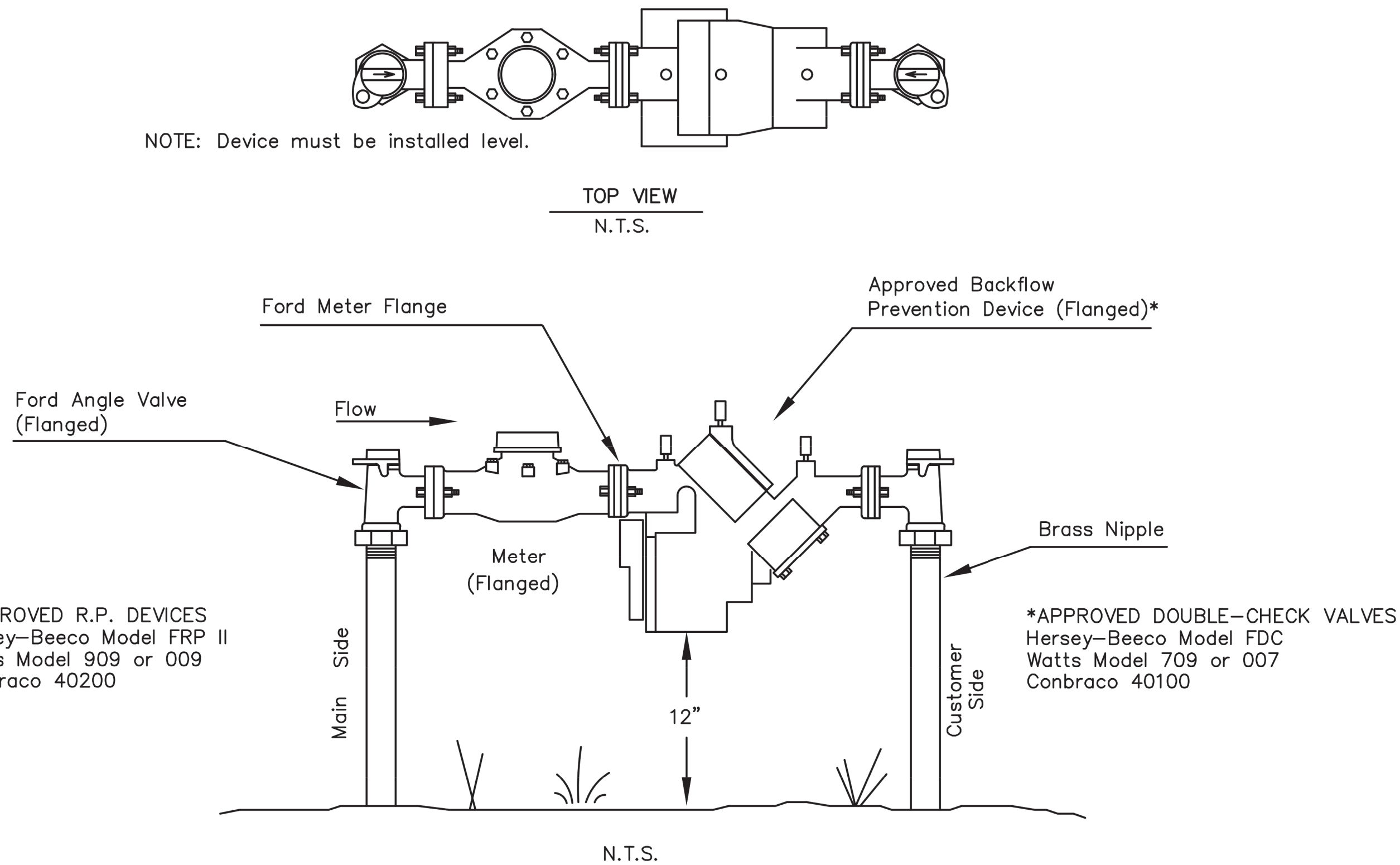
DATE	REVISION	DESCRIPTION	APP

CITY OF CLEARWATER ENGINEERING DEPARTMENT
WATER DETAILS

TEMPORARY BLOWOFF AND SAMPLE TAP
-------------------------------------

INDEX NO.	PAGE NO.
408	2 OF 2
LATEST REVISION	2/22/2016

NOTE: Device must be installed level.

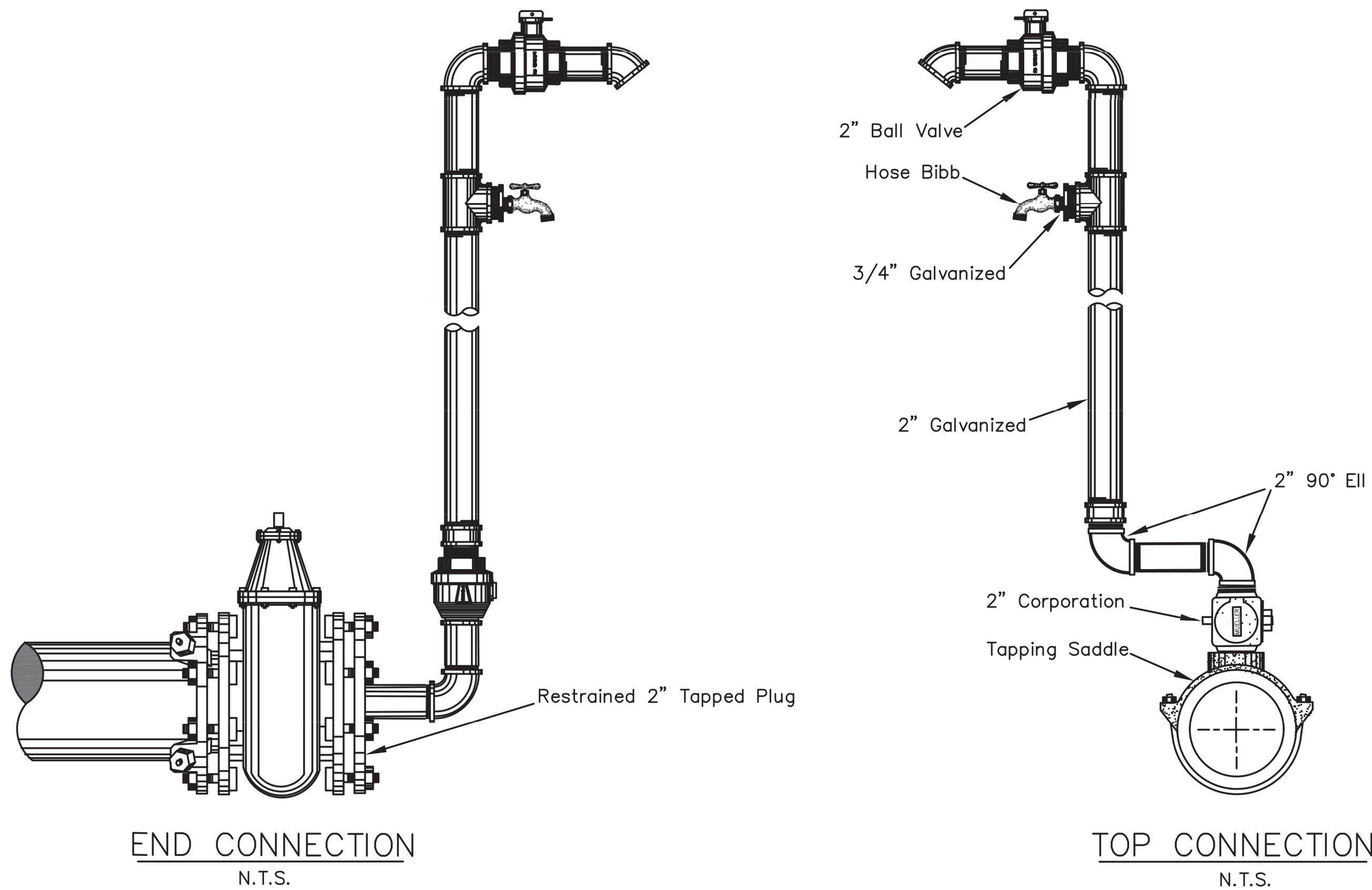


DATE	REVISION	DESCRIPTION	APP

CITY OF CLEARWATER ENGINEERING DEPARTMENT
WATER DETAILS

TYPICAL METER SETS W/ BACKFLOW PREVENTERS 1-1/2" & 2" MODELS
--

INDEX NO.	PAGE NO.
405	2 OF 5
LATEST REVISION	2/22/2016



DATE	REVISION	DESCRIPTION	APP

CITY OF CLEARWATER ENGINEERING DEPARTMENT
WATER DETAILS

TEMPORARY BLOWOFF AND SAMPLE TAP
-------------------------------------

INDEX NO.	PAGE NO.
408	2 OF 2
LATEST REVISION	2/22/2016

CUSTOMER:	GIANT OIL INC. 1806 N. FRANKLIN STREET TAMPA, FLORIDA 33602
SITE ADDRESS:	BP STATION 3009 GULF TO BAY BLVD. CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:	AEC Services, Inc. RON FAIR, P.E. License No. 9277 QB #0011445 1616 ALLISON WOODS LANE CLEARWATER, FL 34619 (813) 884-1234 (813) 884-2680 (f) www.aecservicesinc.com
JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	N.T.S.
DATE	2/15/17
DRAWN BY	PAZ
CHECKED	GEF
DATE	
APPROVAL	RAF

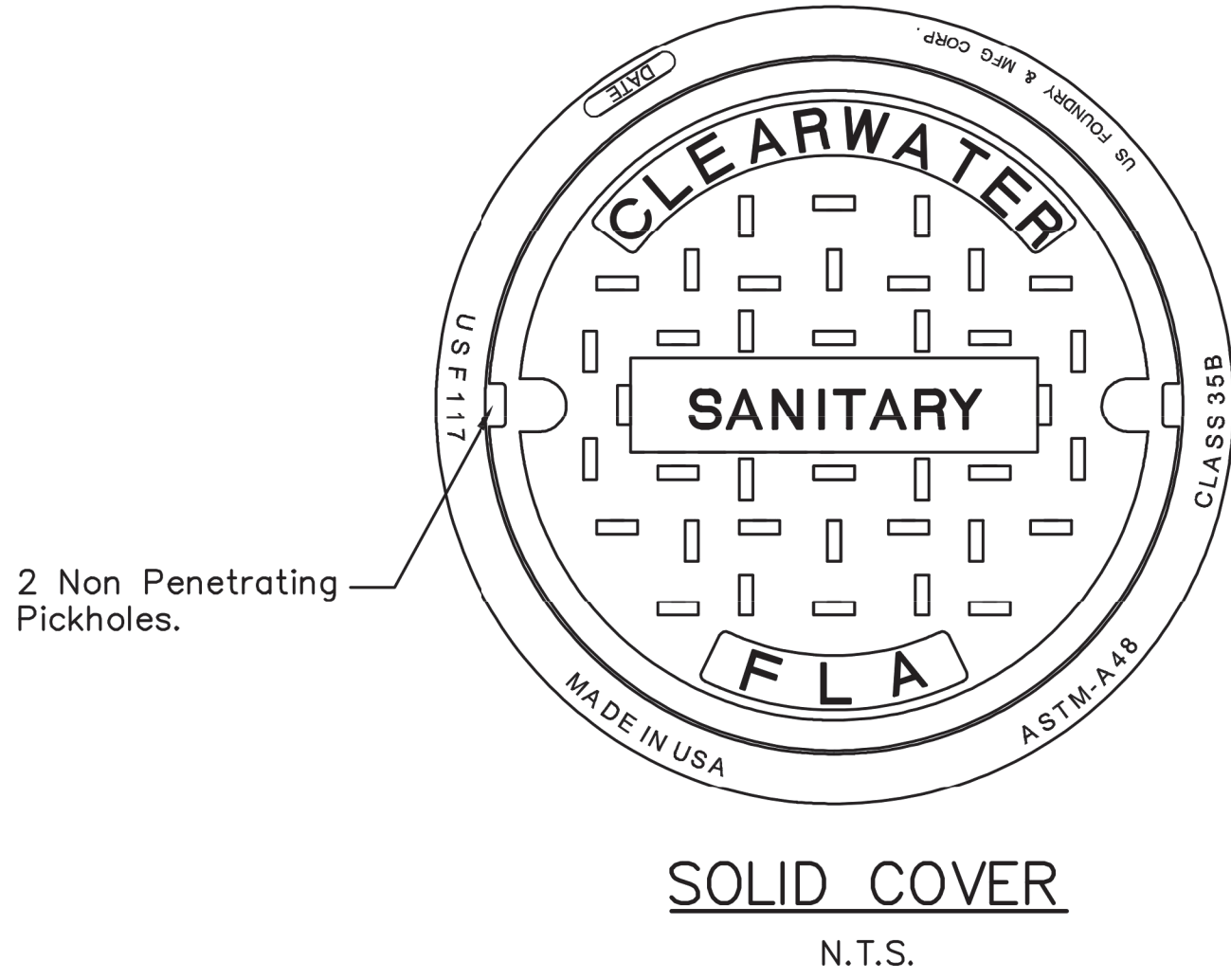
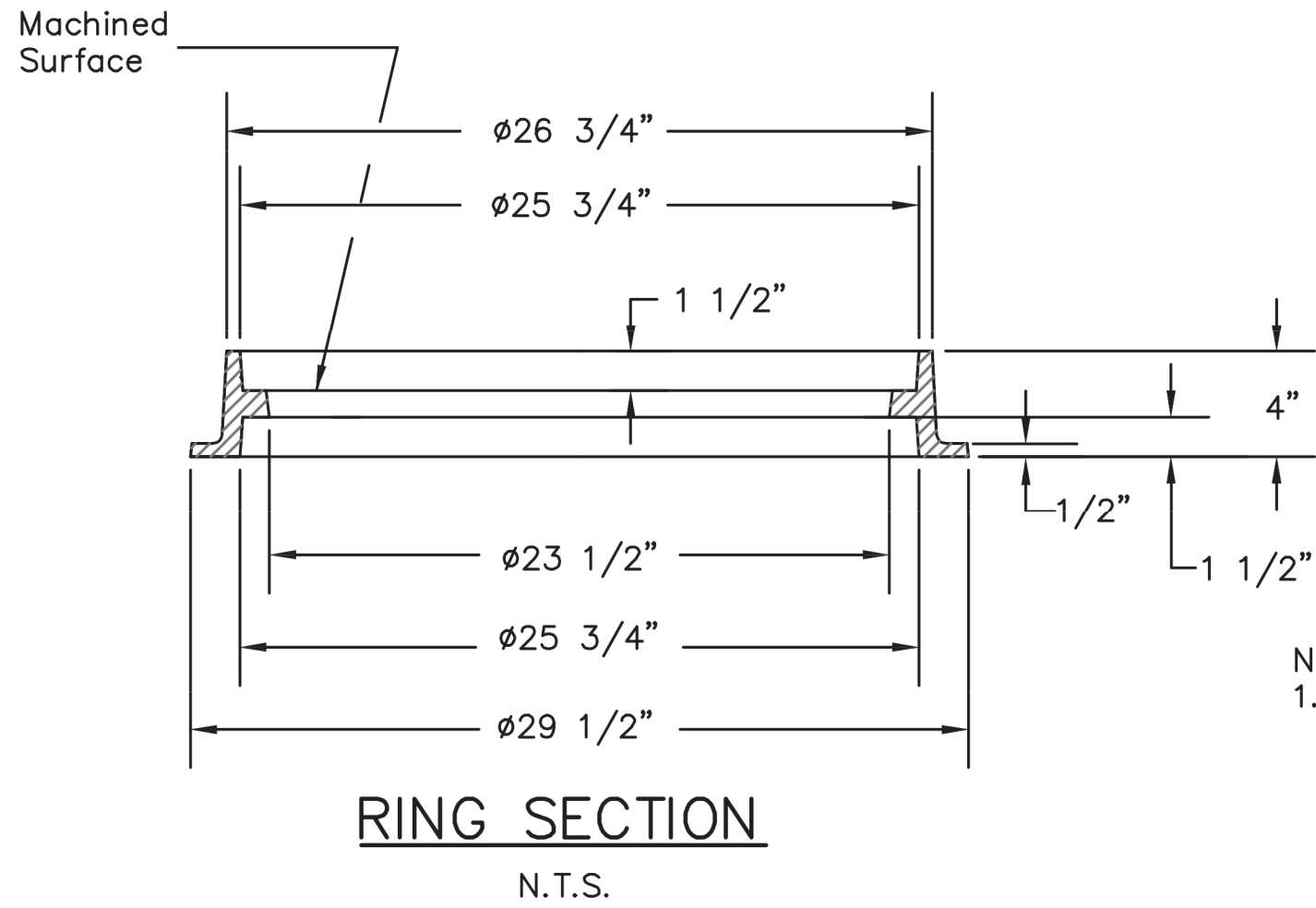
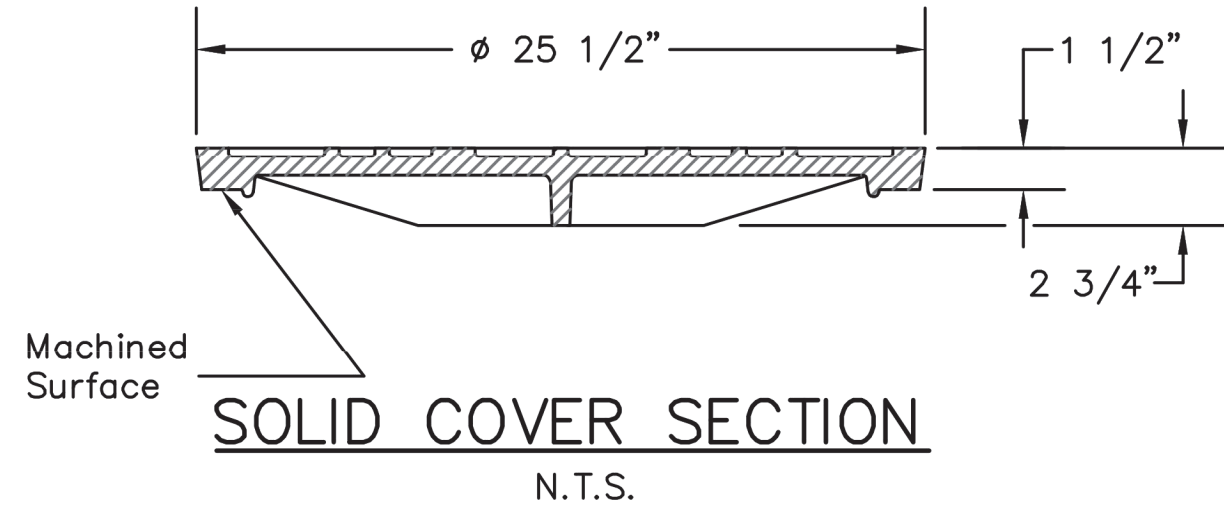
DESCRIPTION	DATE	REVISIONS
NO		

UTILITY DETAILS
--------------------

C-5.2
-------

THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.

THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.



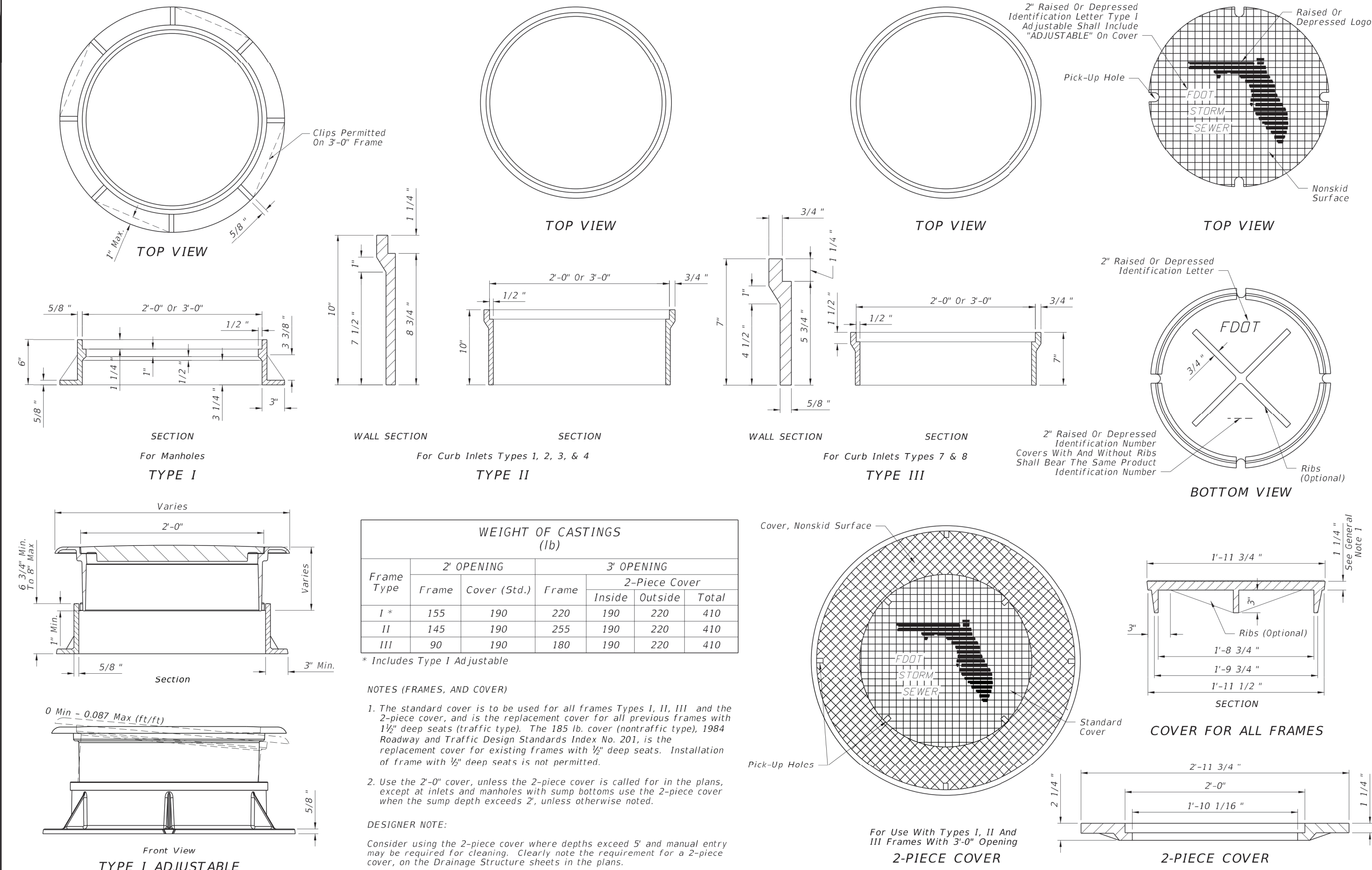
- NOTES
1. U.S. Foundry No. 117 Ring and BL Cover, or equal, if approved by City Engineer.

DATE	REVISION DESCRIPTION	APP

CITY OF CLEARWATER  
ENGINEERING DEPARTMENT  
SANITARY SEWER  
DETAILS

SANITARY SEWER MANHOLE COVER  
NON-ROADWAY APPLICATION

INDEX NO.	PAGE NO.
301	1 OF 3
LATEST REVISION	2/22/2016



LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 1 of 5
01/01/12					

CUSTOMER: GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:  
AEC Services, Inc.  
RON FAIR, P.E.  
FL # 50738 License No. 9277 QB #0011445

1616 ALLISON WOODS LANE  
CLEARWATER, FL 34619  
(813) 884-1234  
(813) 884-2680 (f)  
www.aecservicesinc.com

PRINT COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED FOR ANY ELECTRONIC COPIES

RON FAIR, P.E.  
FL #50738

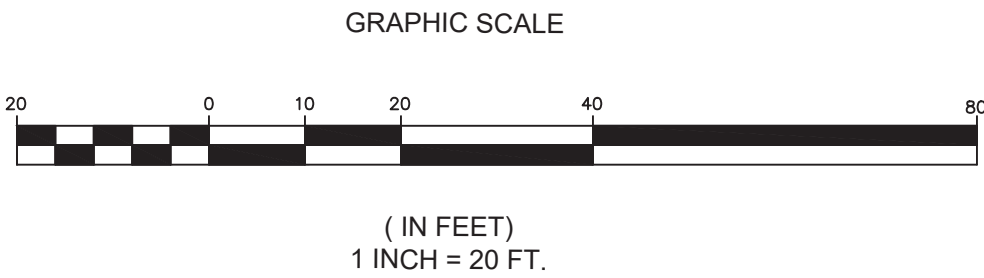
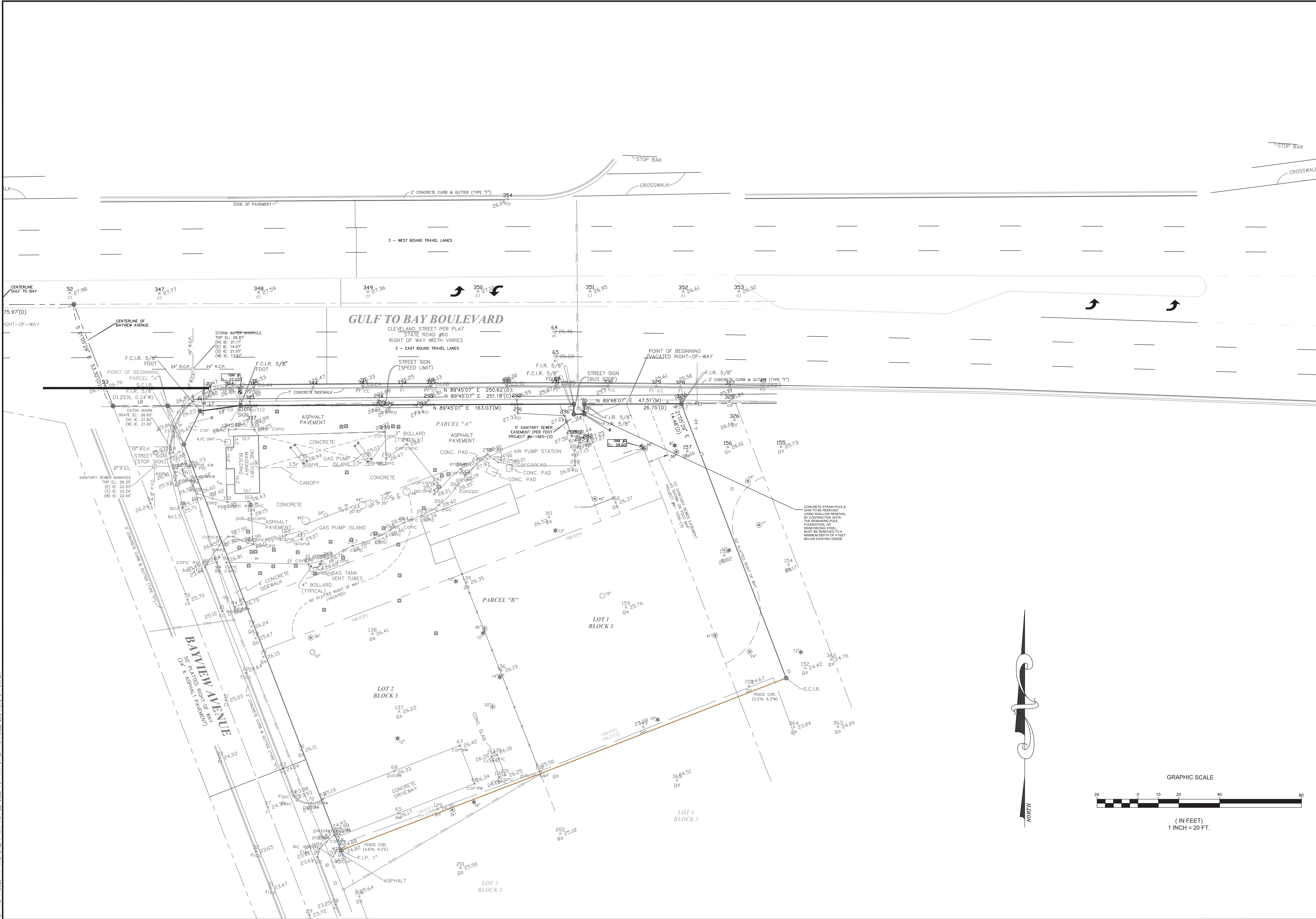
JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	N.T.S.
DATE	2/15/17
DRAWN BY	PAZ
CHECKED	GEP
DATE	
DESCRIPTION	
APPROVAL	RAF

UTILITY  
DETAILS

C-5.3



THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT AT THIS SITE. IT MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.



CUSTOMER:  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

SITE ADDRESS:  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 CB #0011445  
FL # 50738

1616 ALLISON WOODS LANE  
CLEARWATER, FLORIDA 34619  
(813) 884-1234  
(813) 884-2660 (f)  
www.aecservicesinc.com

PRINT COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND ARE ELECTRONIC COPIES

JOB NO.	DWG Name	XREF Name	SCALE	DATE	CHECKED	APPROVAL
60161712	CIVIL	NONE	N.T.S.	7-8-18	PAZ	RAF
REVISIONS						
NO	DESCRIPTION					

EXISTING / DEMO  
RIGHT OF WAY

RW-1

[illegible]

ENGINEER OF RECORD:

**AEC Services, Inc.**

RON FAIR, P.E.  
FL # 50738 License No. 9277 QB #0011445

1616 ALLISON WOODS LANE  
TAMPA, FL 33618  
(813) 884-1234  
(813) 884-2660 (f)  
[www.aecservicesinc.com](http://www.aecservicesinc.com)

PRINT COPIES OF THIS DOCUMENT ARE  
NOT CONSIDERED SIGNED AND MUST BE  
VERIFIED ON ANY ELECTRONIC COPIES

RON FAIR, P.E.  
FL #50738

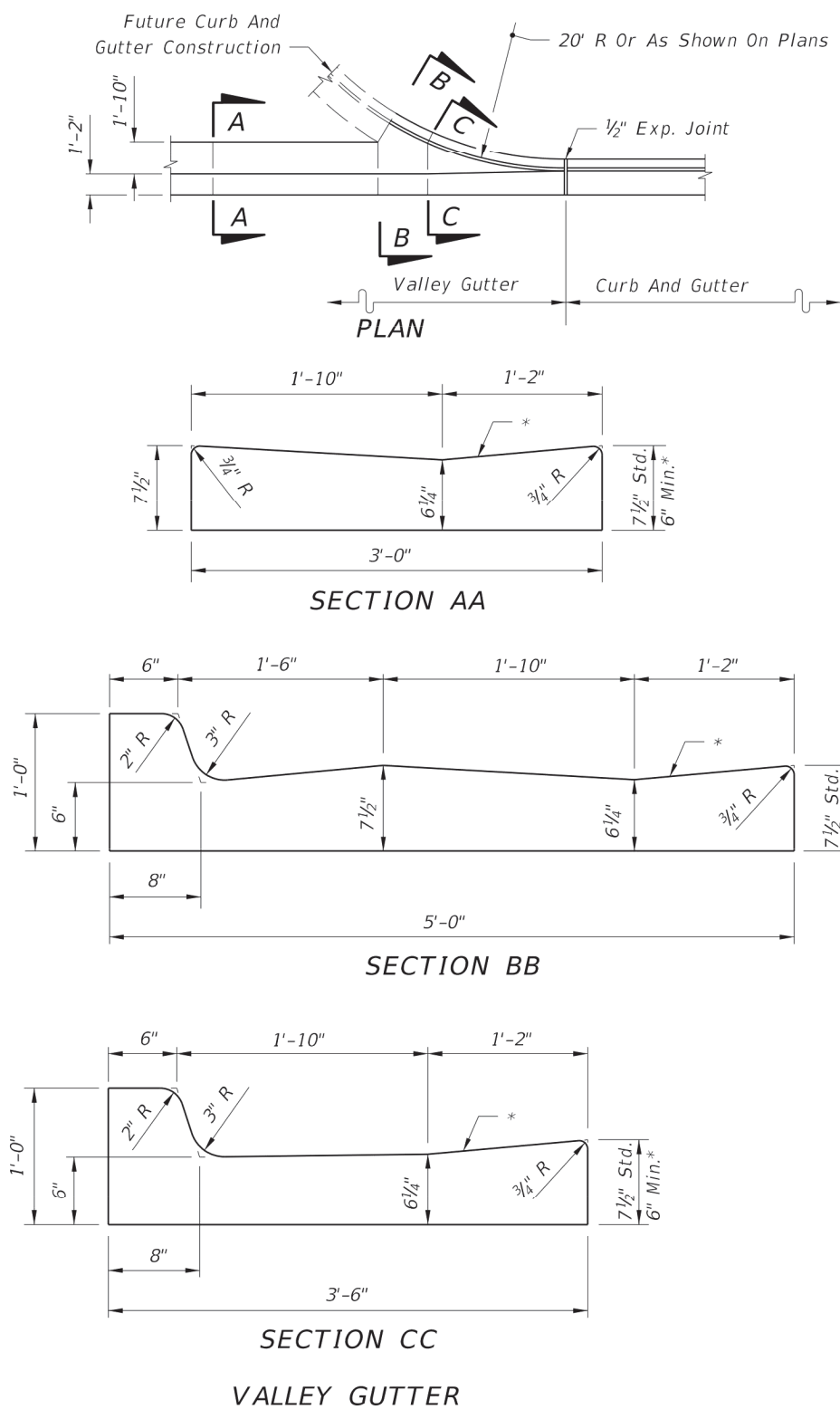
				JOB NO.	G0161712
				DWG Name	CIVIL
				XREF Name	NONE
				SCALE	N.T.S.
				DATE	7-8-18
				DRAWN BY	PAZ
				CHECKED	GEP
				DATE	
				DESCRIPTION	
NO					
<b>REVISIONS</b>					
					APPROVAL/RAF

PROPOSED  
RIGHT OF WAY

RW-2

THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT. NO PART OF THIS DRAWING MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM AEC SERVICES, INC.

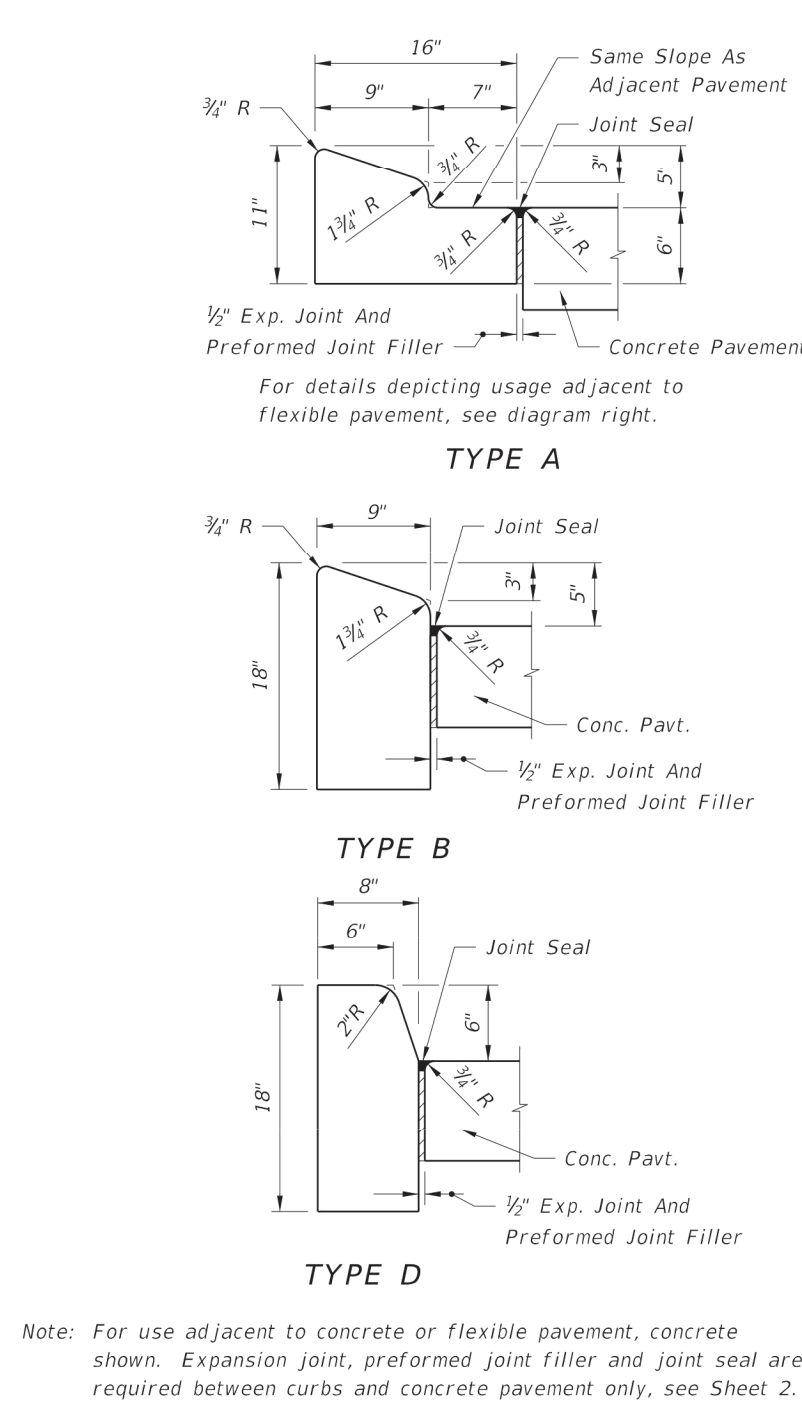
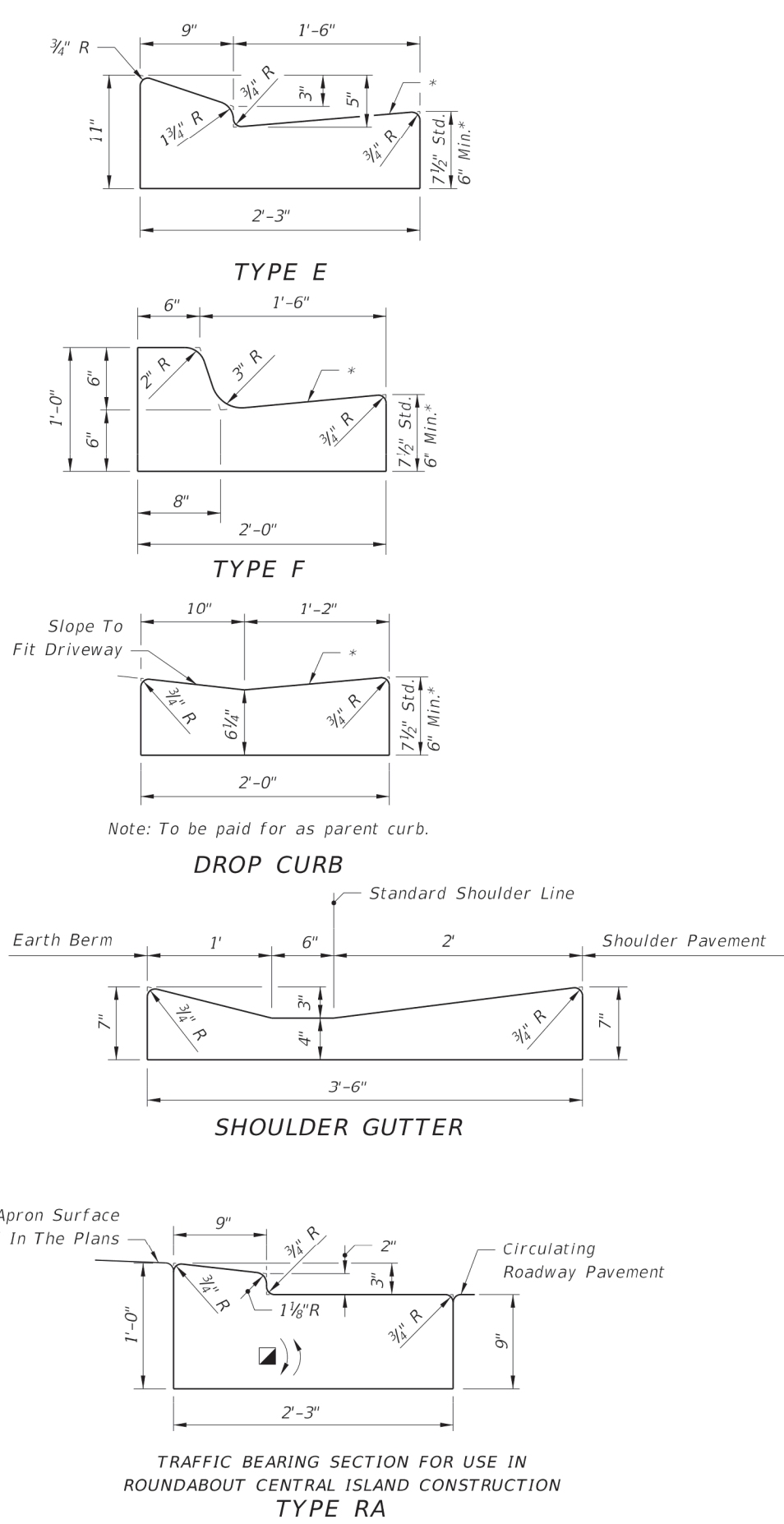
10/12/2016 9:38:14 AM



\* When used on high side of roadways, the cross slope of the gutter shall match the cross slope of the adjacent pavement. The thickness of the lip shall be 6", unless otherwise shown on plans.

■ Rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.

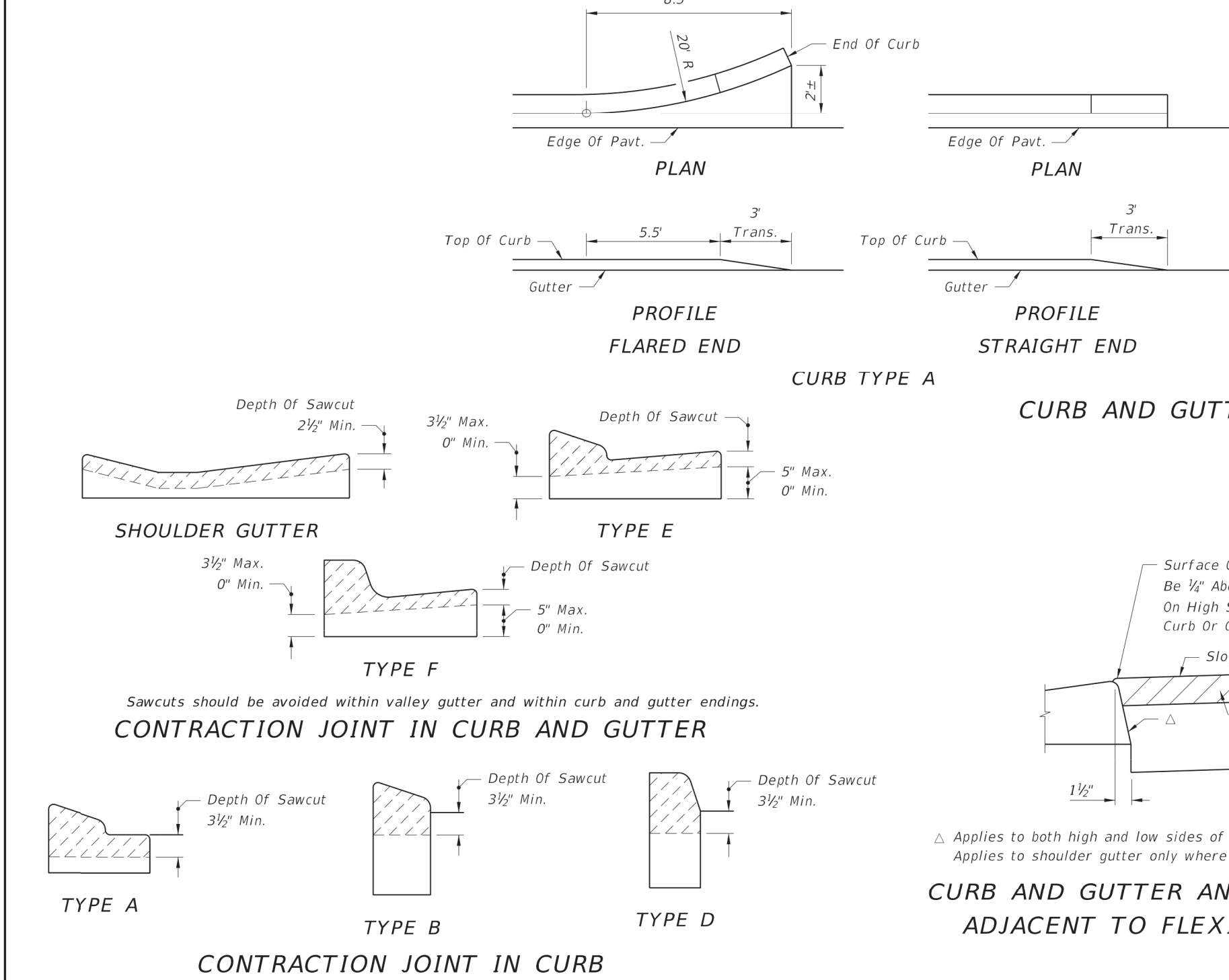
For use adjacent to concrete or flexible pavement. For details depicting usage adjacent to flexible pavement, see Sheet 2. Expansion joint, preformed joint filler and joint seal are required between curb & gutter and concrete pavement only, see Sheet 2.



### CONCRETE CURB

### CONCRETE CURB AND GUTTER

10/12/2016 9:38:17 AM



### CURB AND GUTTER ENDINGS

### EXPANSION JOINT BETWEEN GUTTER AND CONCRETE PAVEMENT

### GENERAL NOTES

- For curb, gutter and curb & gutter provide 1/8" - 1/4" contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers. Curb, gutter and curb & gutter expansion joints shall be located in accordance with Section 520 of the Standard Specifications.
- Ends of Curbs Types B and D shall transition from full to zero heights in 3'.

### CONCRETE BUMPER GUARD

### ASPHALTIC CONCRETE CURB

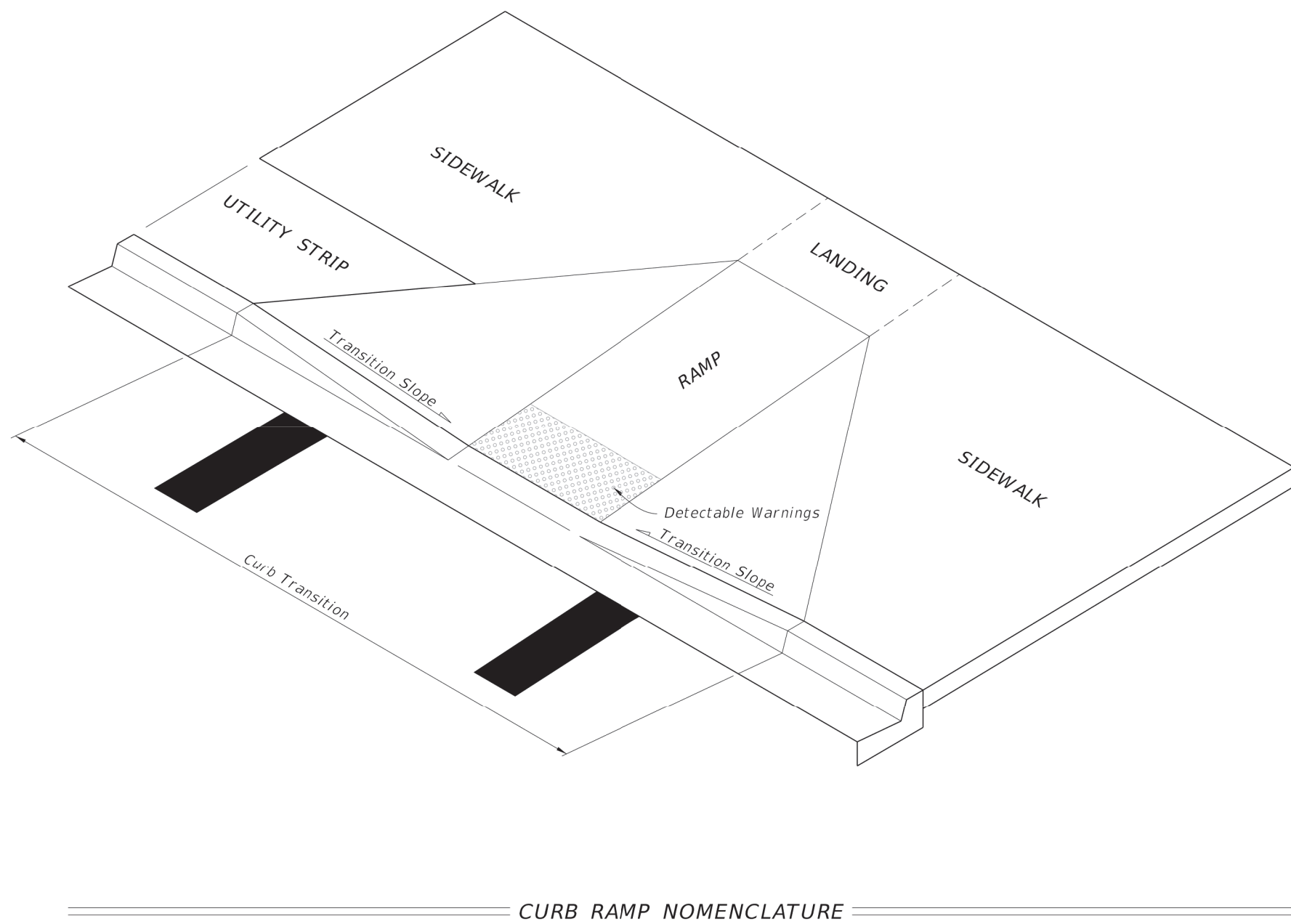
### GENERAL NOTES

- Cross Slopes and Grades:
  - Sidewalk, ramp, and landing slopes (i.e. 0.02, 0.05, and 1:12) shown in this index are maximums. Steeper slopes are not permitted unless otherwise detailed in the Plans.
  - Landings must have slopes less than or equal to 0.02 in any direction.
  - Install ramp slopes along a single linear plane (i.e. no warps or varying slope)
- Grade Breaks:

Grade breaks at the top and bottom of ramps must be parallel to each other and perpendicular to the direction of the ramp slope.
- Existing Curb, Curb and Gutter and/or Sidewalk:
  - Remove any existing curb or curb and gutter to the nearest joint beyond the curb transition or to the extent that no remaining section of curb or curb and gutter is less than 5 feet long. Remove any existing sidewalk to the nearest joint beyond the transition slope or to the extent that no remaining section of sidewalk is less than 5 feet long.
  - Refer to Index 310 for Concrete Sidewalk details.
- Curb Ramp Alpha-Identification:

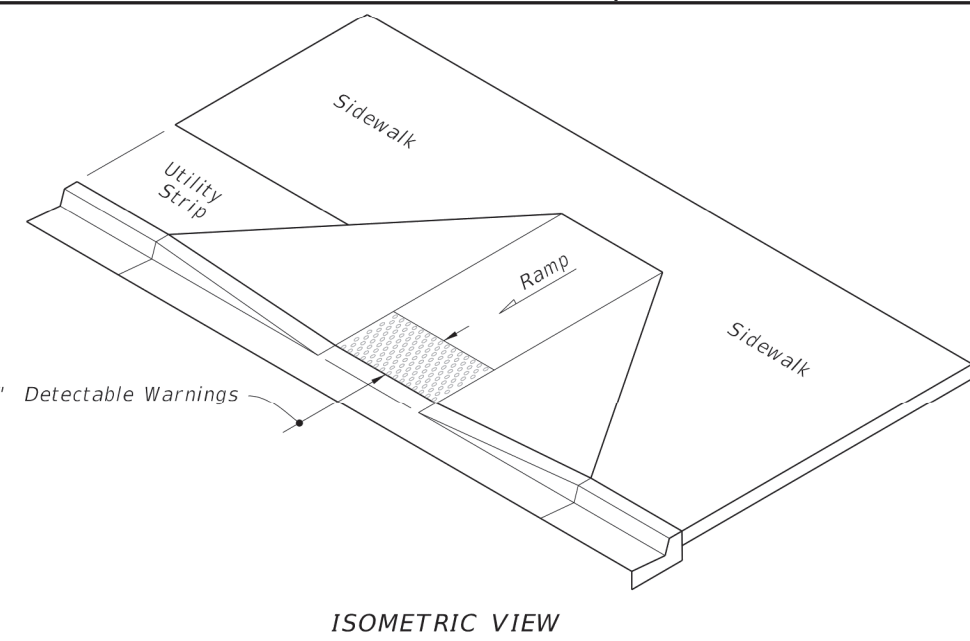
Sidewalk curb ramp alpha-identifications (e.g. CR-A) are provided for reference purposes in the Plans.

Alpha-identifications CR-I and CR-J are intentionally omitted.
- Detectable Warnings:
  - Install detectable warnings in accordance with Specification Section 527.
  - Place detectable warnings across the full width of the ramp or landing, to a depth of 2 feet measured perpendicular to the curb line and no greater than 5 feet from the back of the curb or edge of pavement.
  - If detectable warnings are shown in the Plans on slopes greater than 3%, align the truncated domes with the centerline of the ramp; otherwise, the truncated domes are not required to be aligned.
- Detectable Warnings - Acceptance Criteria:
  - Color and texture shall be complete and uniform.
  - 90% of individual truncated domes shall be in accordance with the Americans with Disabilities Act Standards for Transportation Facilities, Section 705.
  - There shall be no more than 4 non-compliant domes in any one square foot.
  - Non-compliant domes shall not be adjacent to other non-compliant domes.
  - Surfaces shall not deviate more than 0.10" from a true plane.

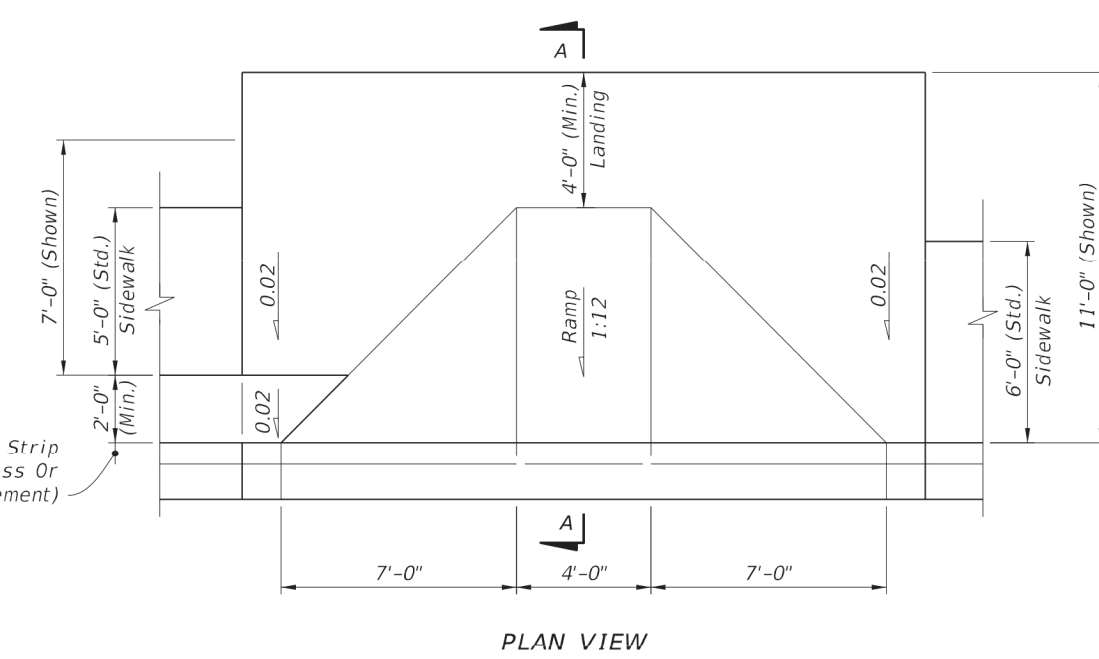


CURB RAMP NOMENCLATURE

10/12/2016 10:51:30 AM

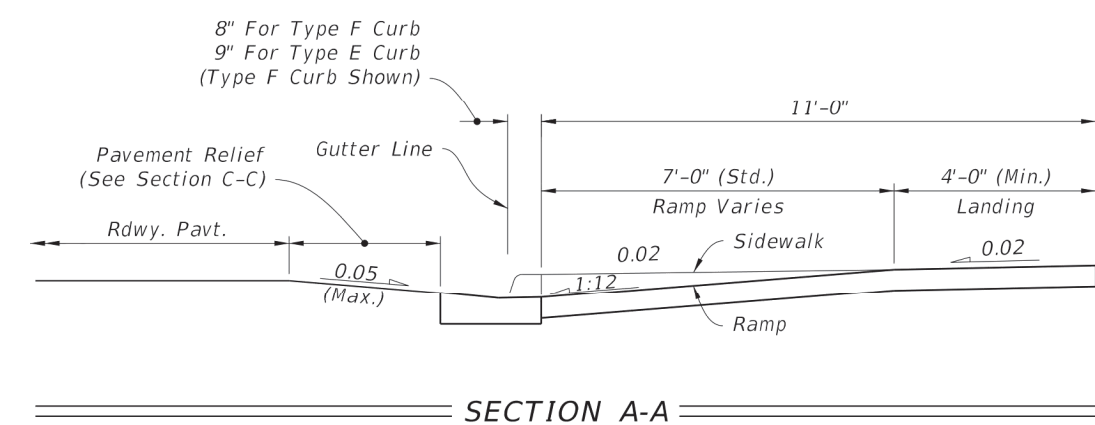


ISOMETRIC VIEW

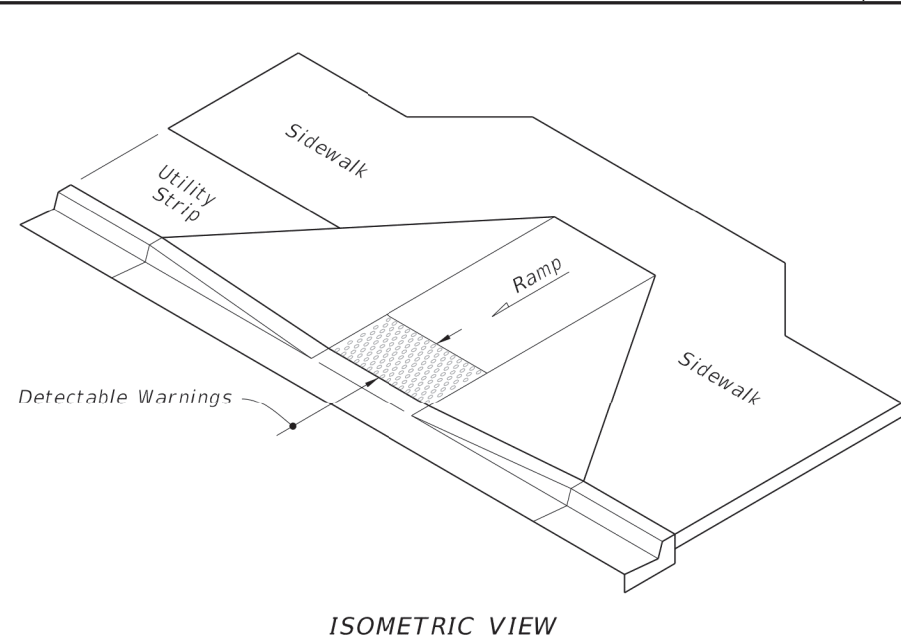


PLAN VIEW

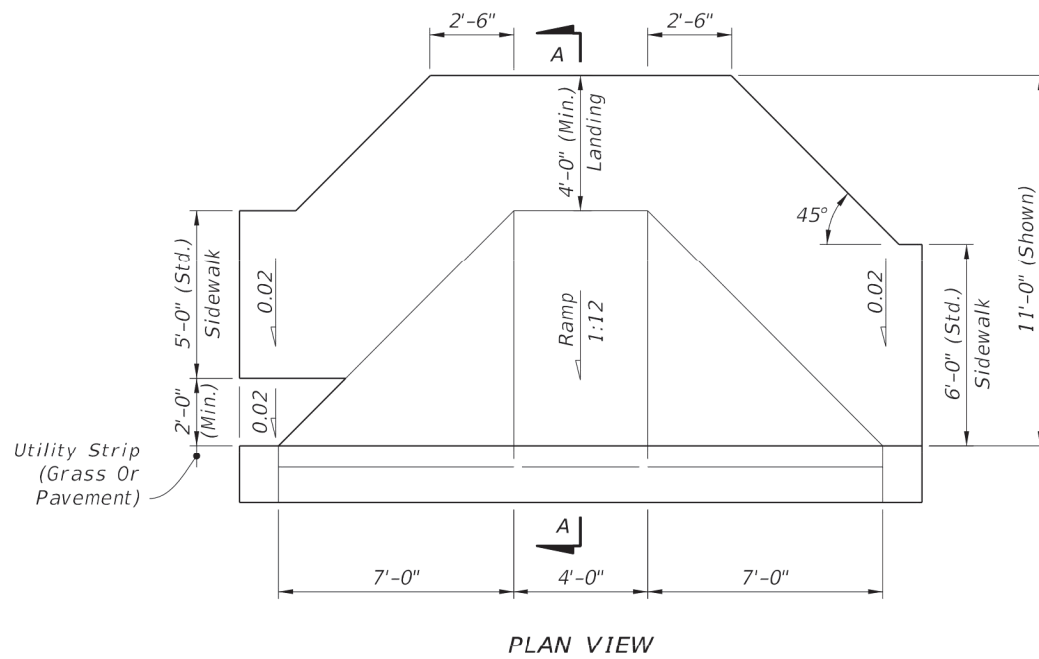
CR-A



SECTION A-A



ISOMETRIC VIEW



PLAN VIEW

CR-B

### SIDEWALK CURB RAMPS CR-A AND CR-B

LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	INDEX NO.	SHEET NO.	LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	INDEX NO.	SHEET NO.
07/01/00			300	1 of 2	07/01/00			300	2 of 2
11/01/16			304	1 of 8	11/01/16			304	2 of 8

BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277 CB #0011445  
FL # 50738

1616 ALLISON WOODS LANE  
CLEARWATER, FLORIDA 34619  
(813) 984-1234  
(813) 984-2660 (f)  
www.aecservicesinc.com

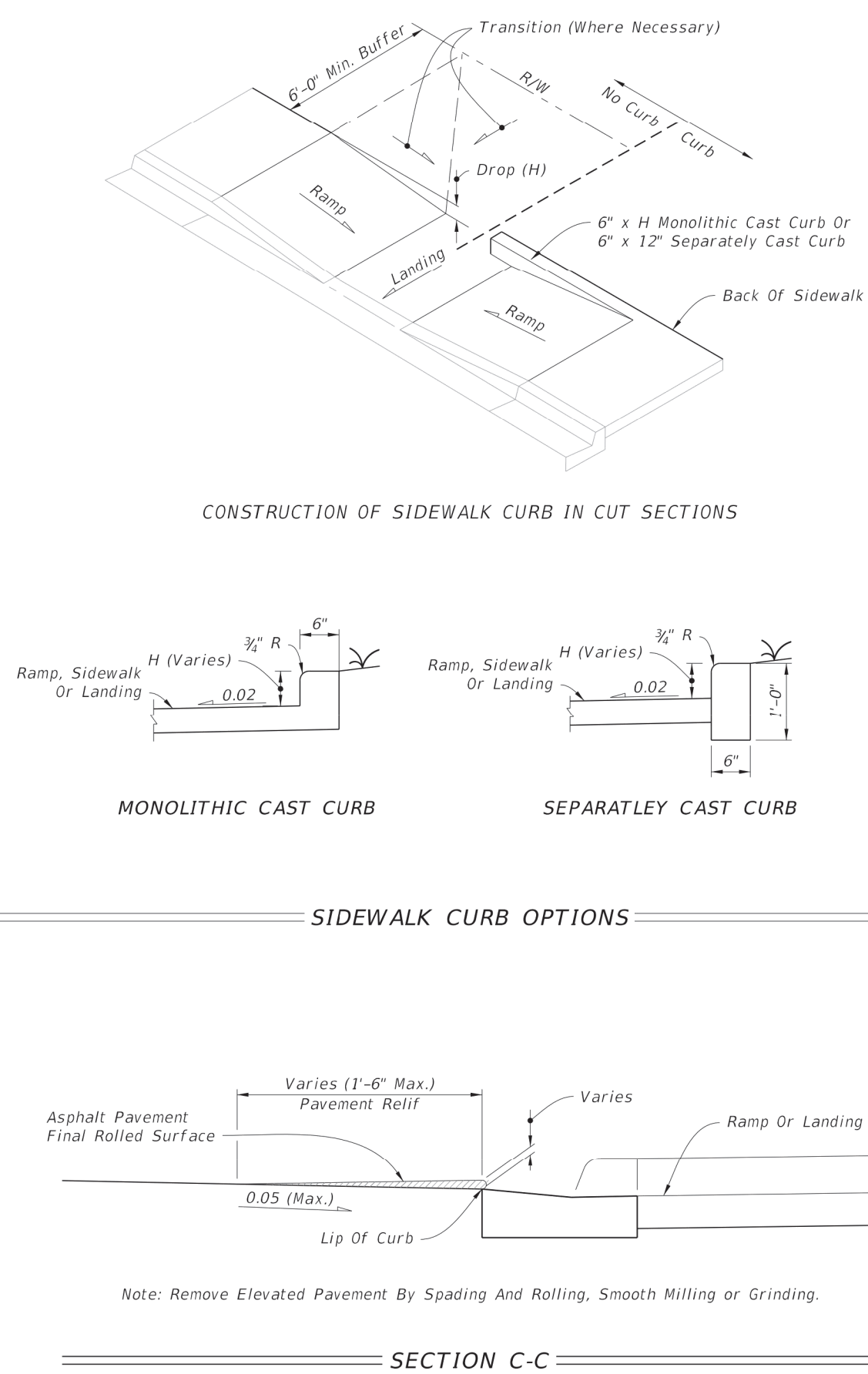
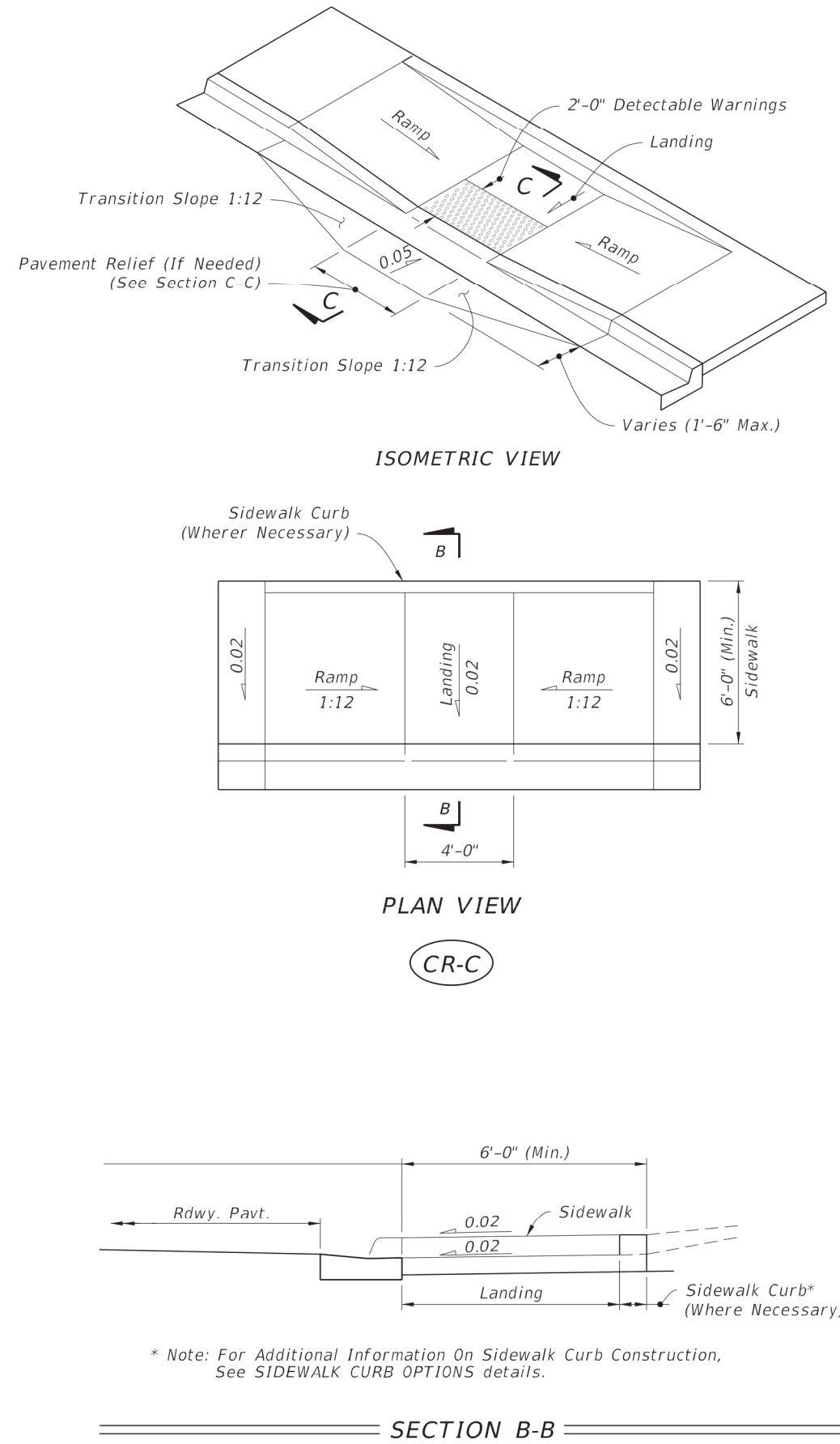
JOB NO.	DWG Name	CIVIL	XREF Name	NONE	SCALE	N.T.S.	DATE	7-8-18	DRAWN BY	PAZ	CHECKED	GEP	APPROVAL	RAF
60161712														

ROW FDOT  
INDEXES

RW-3

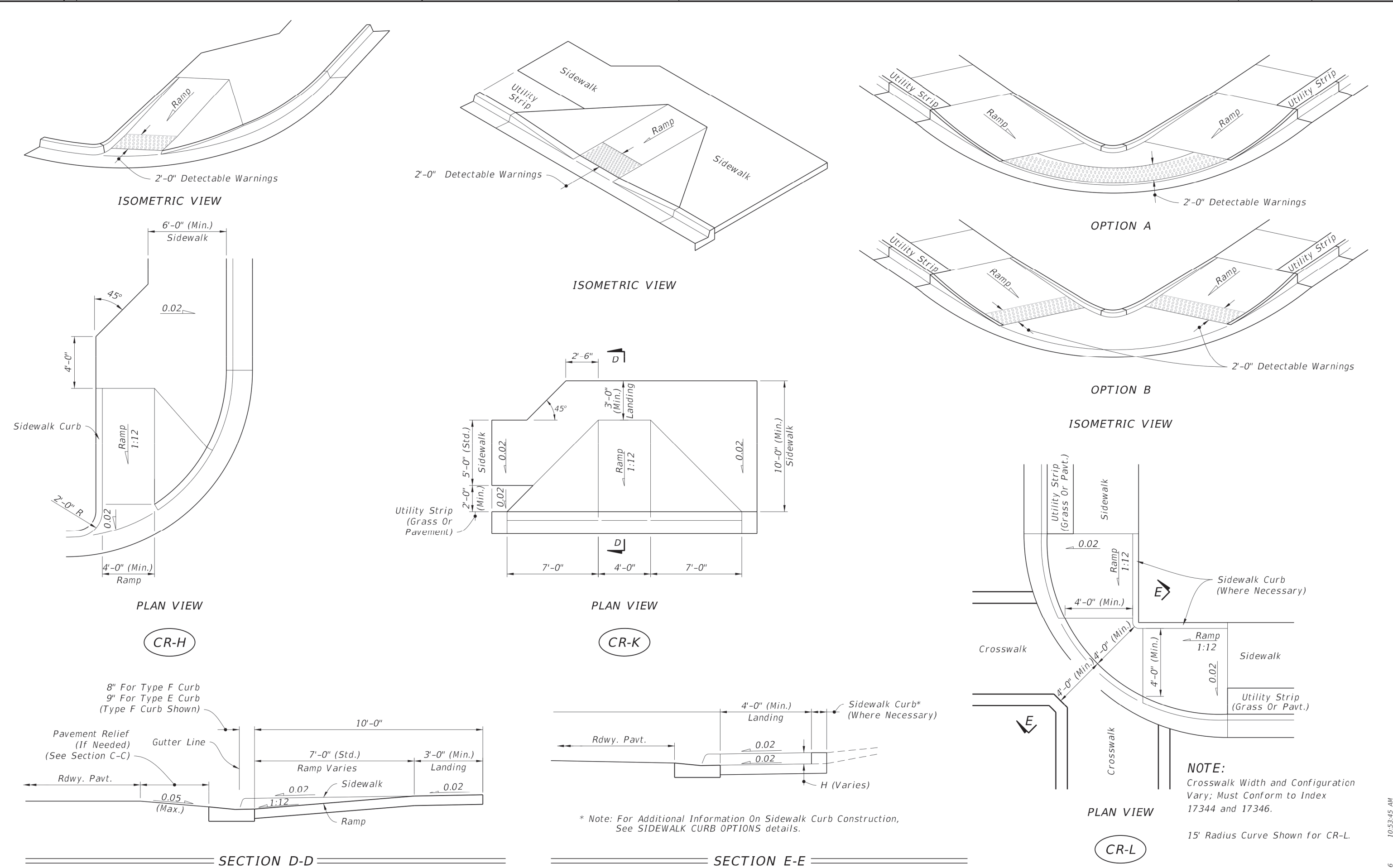
THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT. THIS SITE PLAN MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.

10/27/2016 10:53:38 AM



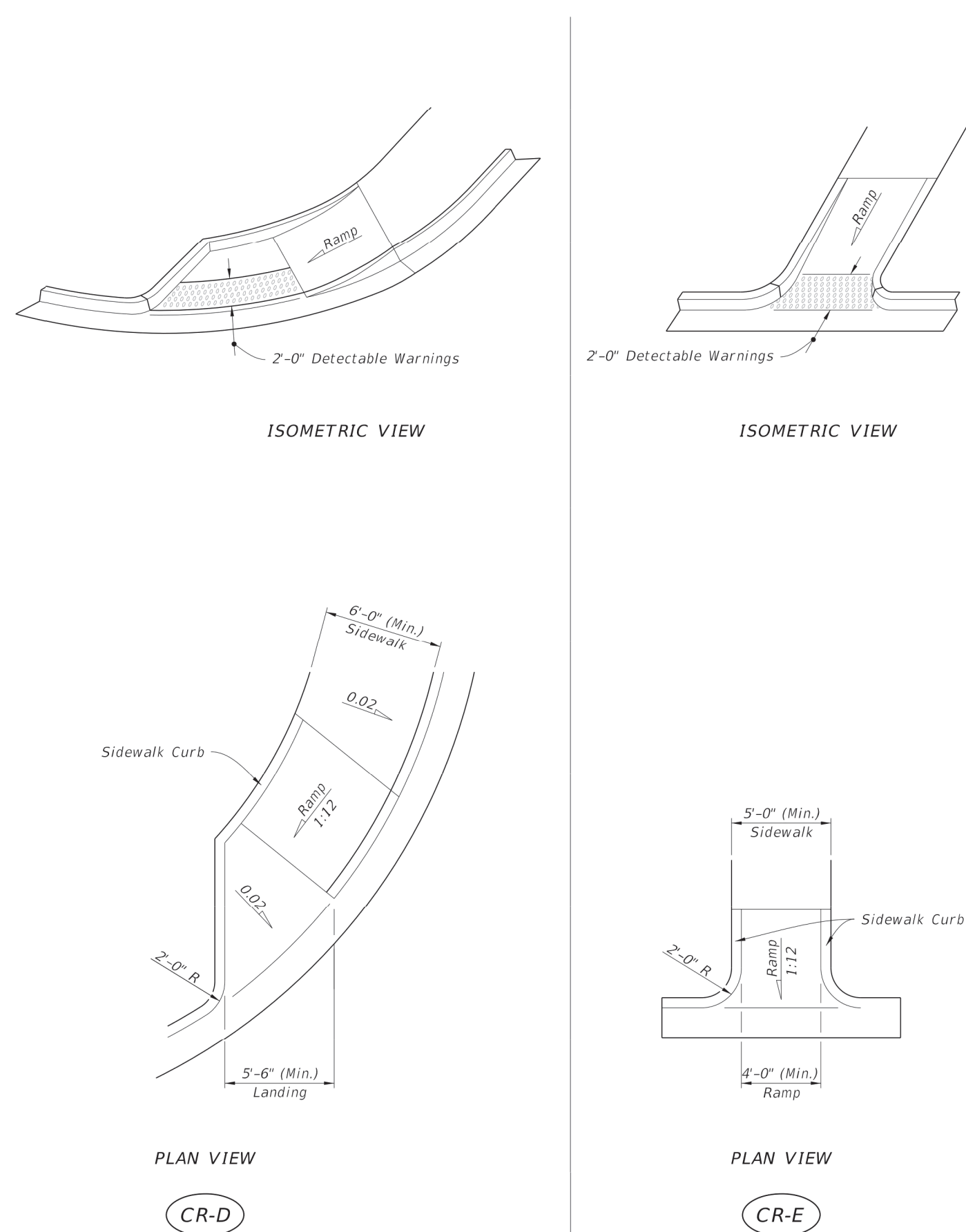
SIDEWALK CURB RAMPS CR-C AND SIDEWALK CURB

LAST REVISION	DESCRIPTION:	FDOT	FY 2017-18 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX NO. 304	SHEET NO. 3 of 8
11/01/16						



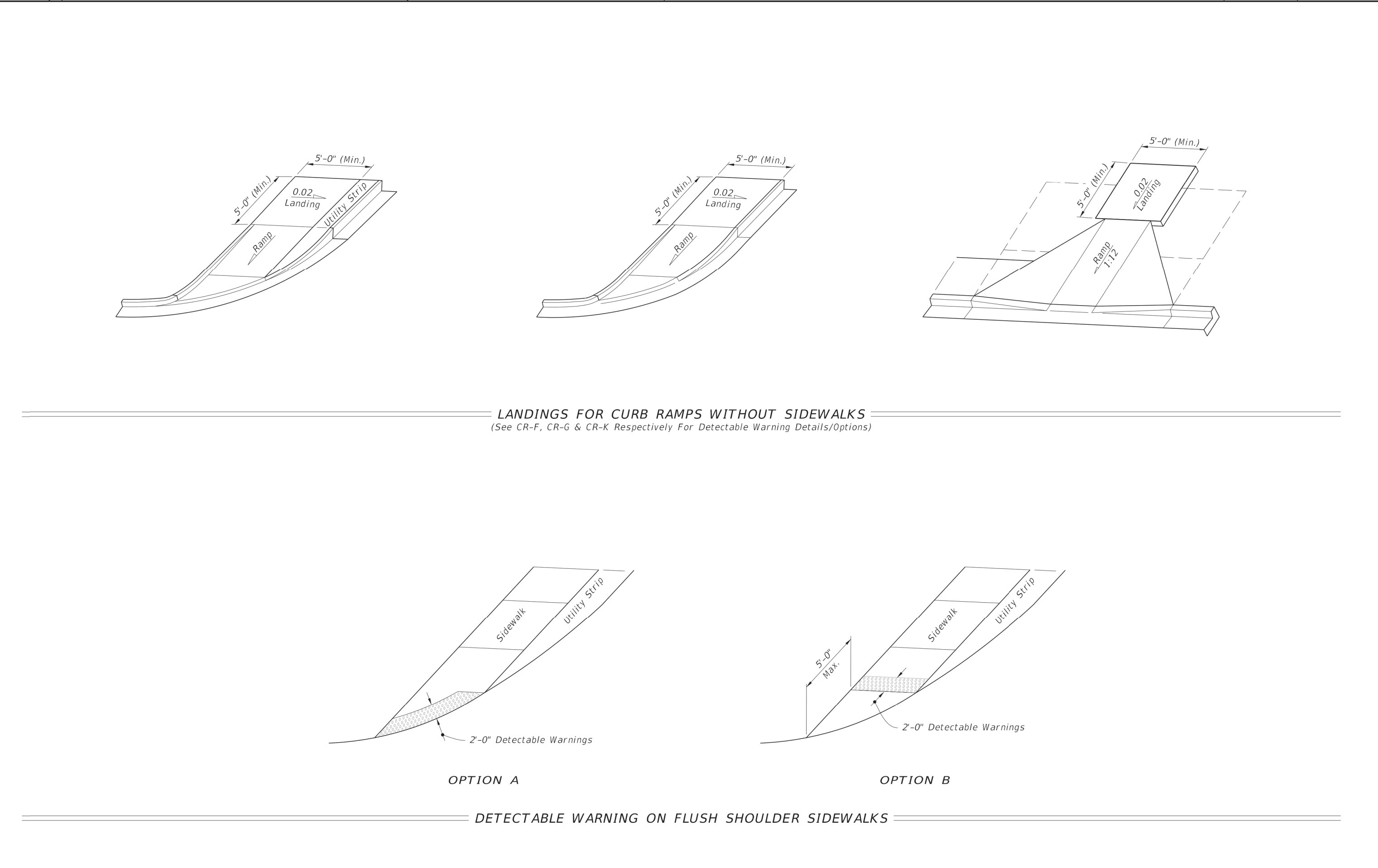
SIDEWALK CURB RAMPS CR-H, CR-K & CR-L

LAST REVISION	DESCRIPTION:	FDOT	FY 2017-18 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX NO. 304	SHEET NO. 5 of 8
11/01/16						



SIDEWALK CURB RAMPS CR-D, CR-E, CR-F & CR-G

LAST REVISION	DESCRIPTION:	FDOT	FY 2017-18 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX NO. 304	SHEET NO. 4 of 8
11/01/16						



CURB RAMPS WITHOUT SIDEWALKS AND FLUSH SHOULDER SIDEWALKS

LAST REVISION	DESCRIPTION:	FDOT	FY 2017-18 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX NO. 304	SHEET NO. 6 of 8
11/01/16						

CUSTOMER:  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

SITE ADDRESS:  
BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:  
**AEC Services, Inc.**  
RON FAIR, P.E.  
License No. 9277    OB #0011445  
1616 ALLISON WOODS LANE  
CLEARWATER, FLORIDA 34619  
(813) 884-1234  
www.aecservicesinc.com

PRINT: CHECKS OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND ARE ELECTRONIC COPIES  
FL #50738

JOB NO.	DWG Name	CIVIL	XREF Name	NONE	SCALE	N.T.S.	DATE	7-8-18	DRAWN BY	PAZ	CHECKED	GEP	APPROVAL	RAF
60161712														

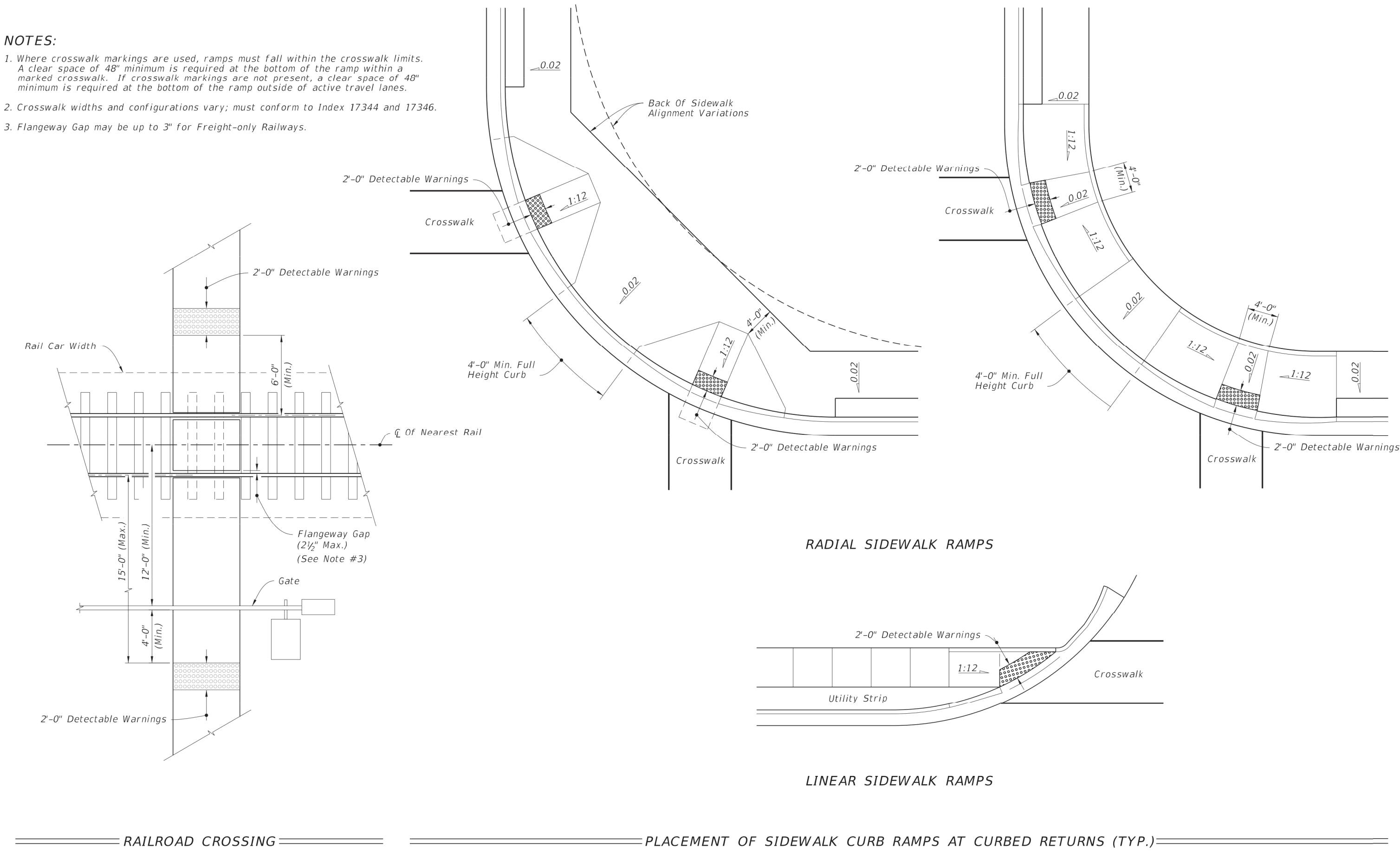
ROW FDOT  
INDEXES

RW-4

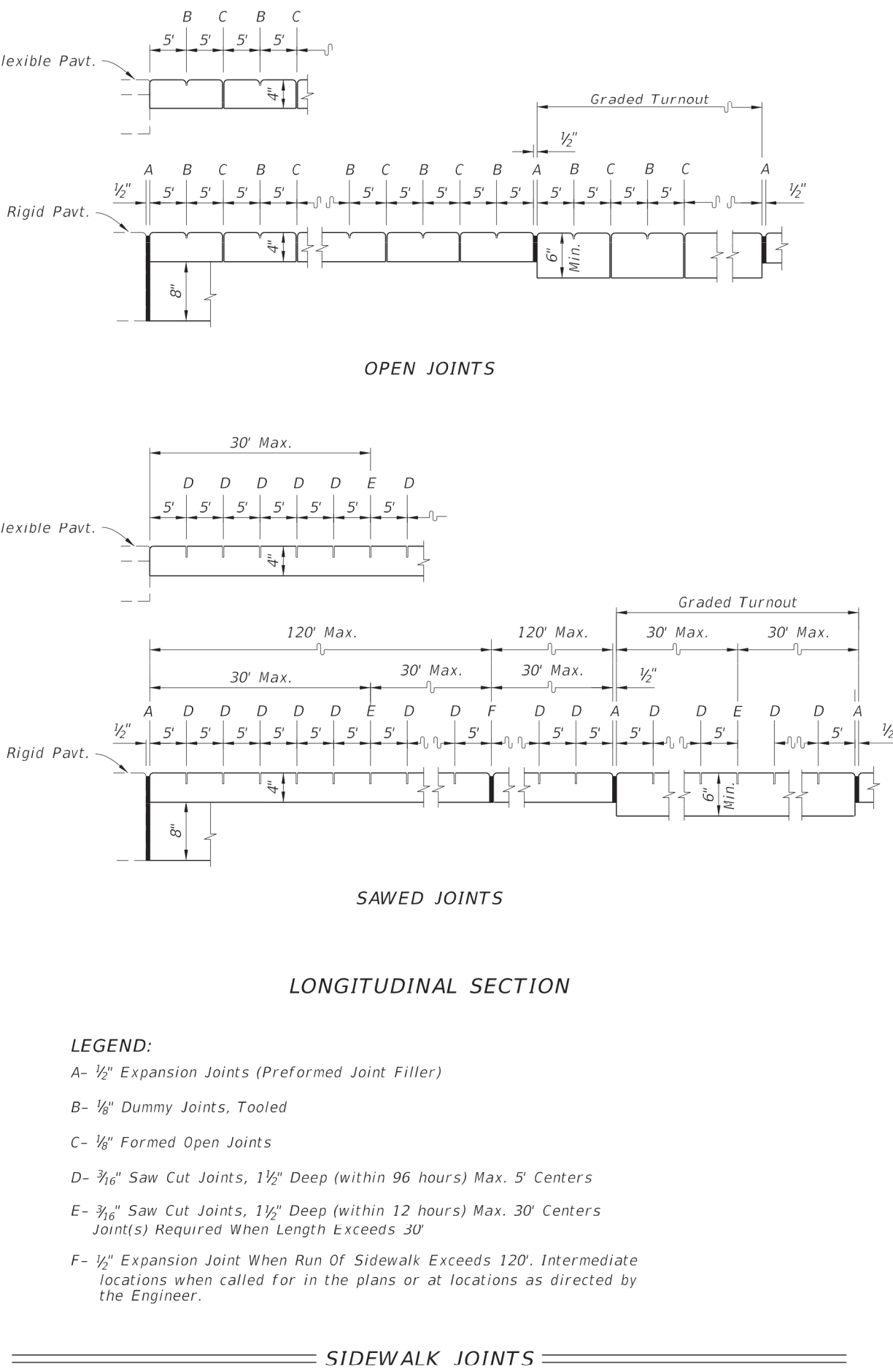
THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT. IT IS THE PROPERTY OF AEC SERVICES, INC. AND MAY NOT BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER.

10/27/2016 10:53:56 AM

- NOTES:**
- Where crosswalk markings are used, ramps must fall within the crosswalk limits. A clear space of 48" minimum is required at the bottom of the ramp within a marked crosswalk. If crosswalk markings are not present, a clear space of 48" minimum is required at the bottom of the ramp outside of active travel lanes.
  - Crosswalk widths and configurations vary; must conform to Index 17344 and 17346.
  - Flangeway Gap may be up to 3" for Freight-only Railways.

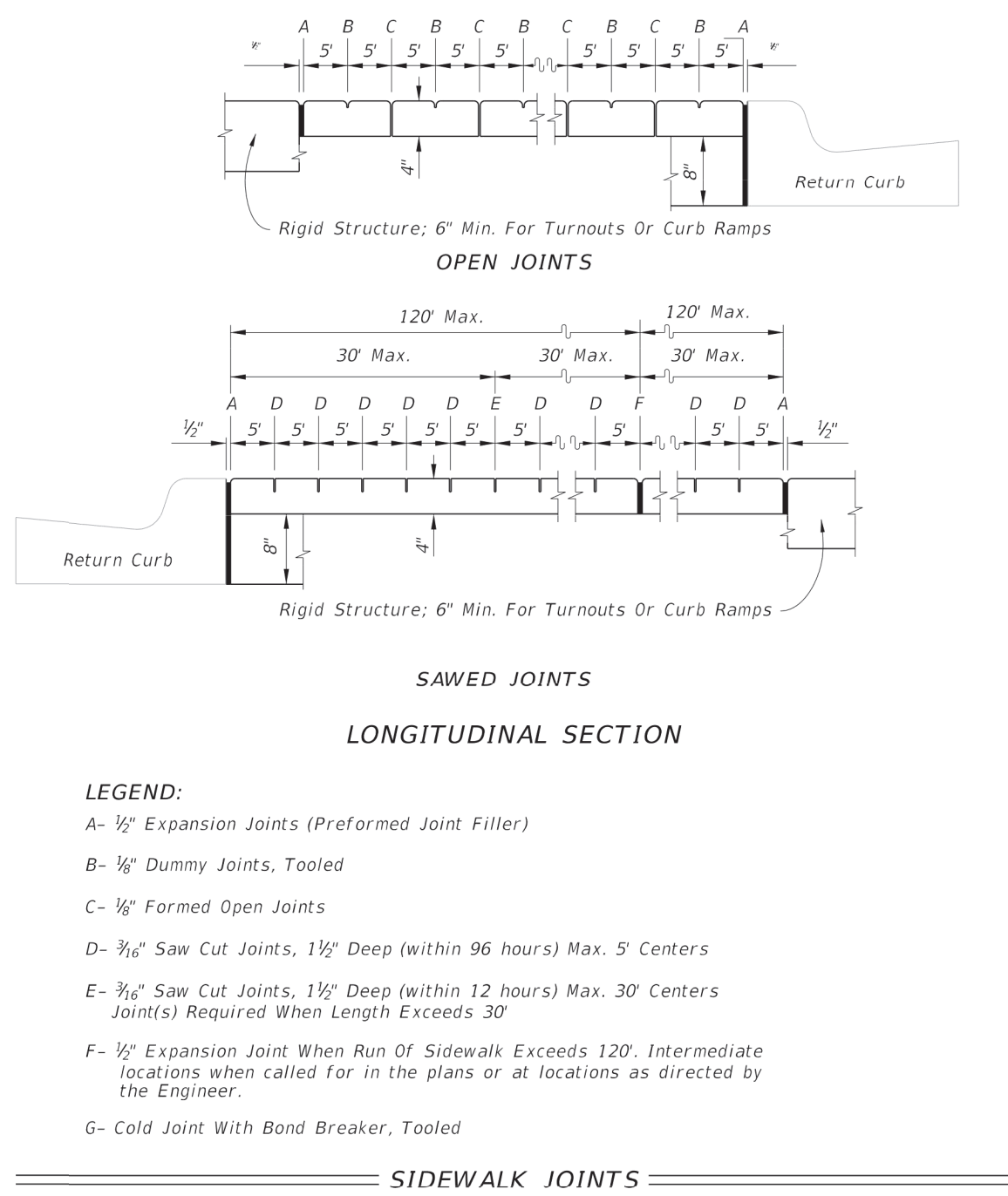


LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURBED RAMPS	INDEX NO. 304	SHEET NO. 8 of 8
11/01/16					

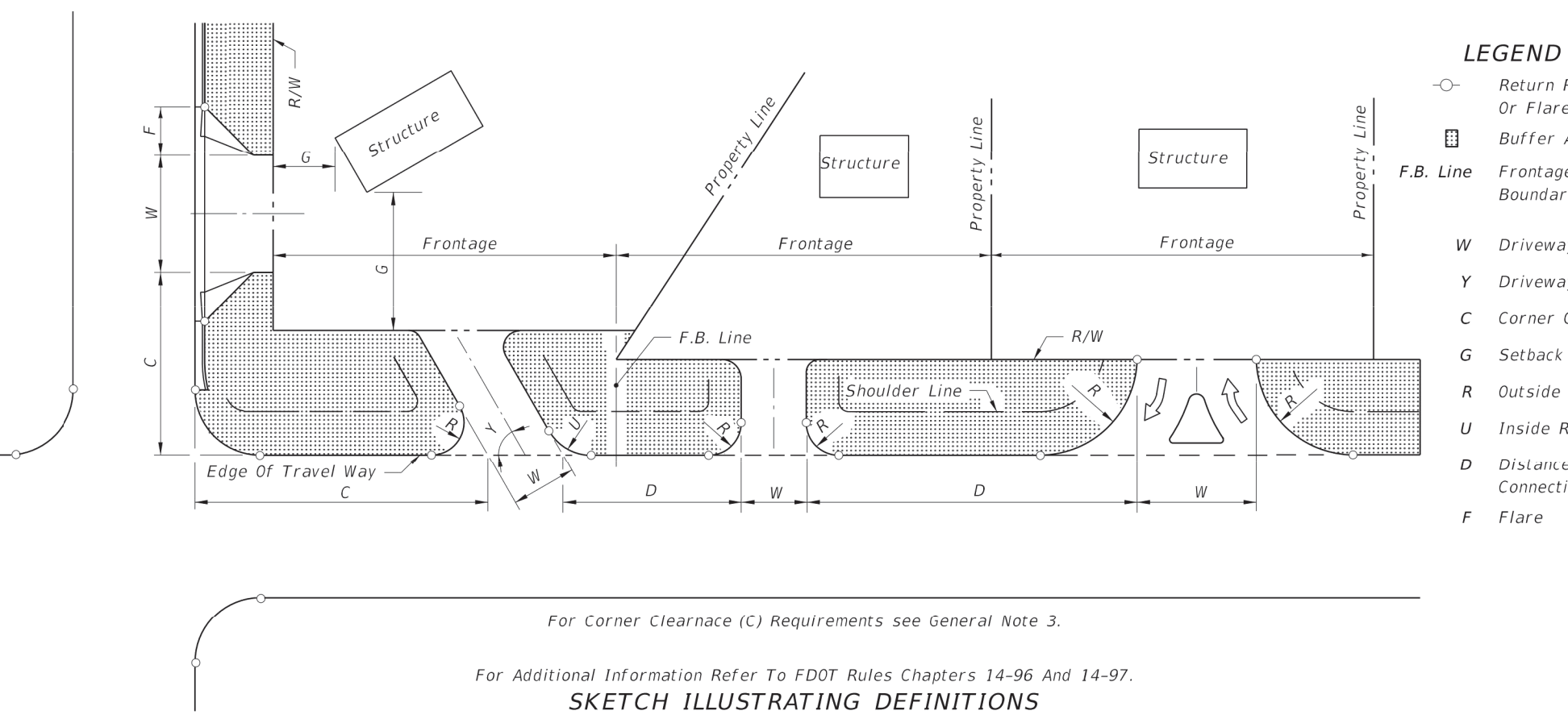


LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	CONCRETE SIDEWALK	INDEX NO. 310	SHEET NO. 2 of 2
11/01/16					

- GENERAL NOTES:**
- Construct sidewalks in accordance with Specification Section 522.
  - Include detectable warnings on sidewalk curb ramps in accordance with Index 304.
  - For TURNOUTS see Index 515.
  - Bond breaker material can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils nor more than 1/2".
  - Construct sidewalks with Edge Beam through the limits of any surface mounted Pedestrian/Bicycle Railing or Pipe Guidrail shown in the plans. (See RAILING DETAIL)
  - When roadways or driveways are newly constructed, reconstructed or altered, construct the cross slopes for crosswalks and discontinuous sidewalks as follows:  
A. Cross Slope = 0.02 for roadways or driveway controlled by "STOP" Sign or "YIELD" sign.  
B. Cross Slope = 0.05 for roadways or driveways controlled by traffic signal.



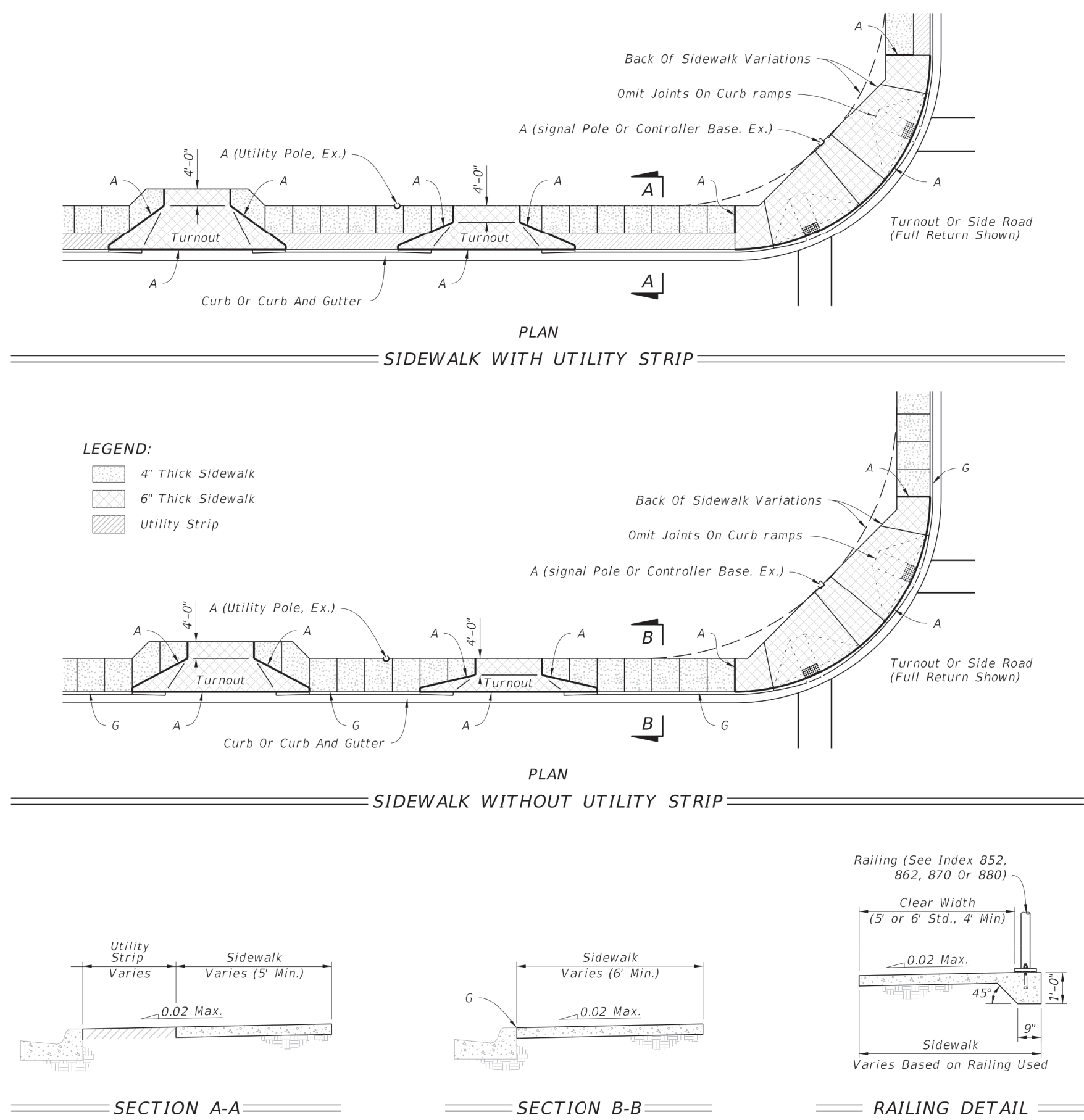
LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS
11/01/16		



ELEMENT DESCRIPTION	CURBED ROADWAYS			FLUSH SHOULDER ROADWAYS		
	1-20 Trips/Day or 1-5 Trips/Hour	21-600 Trips/Day or 6-60 Trips/Hour	601-4000 Trips/Day or 61-400 Trips/Hour	1-20 Trips/Day or 1-5 Trips/Hour	21-600 Trips/Day or 6-60 Trips/Hour	601-4000 Trips/Day or 61-400 Trips/Hour
CONNECTION WIDTH W	12' Min. 24' Max.	24' Min. 36' Max. ☺	24' Min. 36' Max. ☺	12' Min. 24' Max.	24' Min. 36' Max. ☺	24' Min. 36' Max. ☺
FLARE (Drop Curb) F	10' Min.	10' Min.	N/A	N/A	N/A	N/A
RETURNS (Radius) R & U	N/A	△	25' Min. 50' Std. 75' Max.	15' Min. 50' Std. 50' Max.	25' Min. 50' Std. 75' Max.	25' Min. 50' Std. (Or 3-Centered Curves)
ANGLE OF DRIVE Y		60°-90°	60°-90°		60°-90°	60°-90°
DIVISIONAL ISLAND (Throat Median)		4'-22' Wide	4'-22' Wide		4'-22' Wide	4'-22' Wide
SETBACK G	12' Min., All categories. See General Note No. 5.					

NOT INTENDED FOR FULL INTERSECTION DESIGN  
SUMMARY OF GEOMETRIC REQUIREMENTS FOR DRIVEWAY TURNOUTS

LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	TURNOUTS AND DRIVEWAYS	INDEX NO. 515	SHEET NO. 1 of 7
11/01/16					



LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	CONCRETE SIDEWALK	INDEX NO. 310	SHEET NO. 1 of 2
11/01/16					

- GENERAL NOTES**
- For definitions and descriptions of access connection "Categories" and access "Classifications" of highway segments, and for other detailed information on access to the State Highway System, refer to FDOT Rule Chapter 14-96, "State Highway Connection Permits Administrative Process" and Rule Chapter 14-97, "State Highway System Access Management Classification System And Standards."
  - For this index the term "turnout" applies to that portion of driveways or side roads adjoining the outer roadway. For this index the term "connection" encompasses a driveway or side road and their appurtenant islands, separators, transition tapers, auxiliary lanes, travelway flares, drainage pipes and structures, crosswalks, sidewalks, curb cut ramps, signing, pavement marking, required signalization, maintenance of traffic or other means of access to or from controlled access facilities. The turnout requirements set forth in this index do not provide complete intersection design, construction or maintenance requirements.
  - The location, positioning, orientation, spacing and number of connections and median openings shall be in conformance with FDOT Rule Chapter 14-97.
  - On Department construction projects all driveways not shown on the plans shall be reconstructed at their existing location in conformance to these standards, or, in conformance to permits issued during the construction project.
  - Driveways shall have sufficient length and size for all vehicular queuing, stacking, maneuvering, standing and parking to be carried out completely beyond the right of way line. Except for vehicles stopping to enter the highway, the turnout areas and drives within the right of way shall be used only for moving vehicles entering or leaving the highway.
  - Connections with expected daily traffic over 4000 vpd shall be constructed as intersecting side roads. The design requirement of this index and that of the local government will be used to select appropriate connection widths, radii and intersection design, subject to the approval of the Department. For connections with expected daily traffic less than 4000 vpd, the Department will determine if a drop curb or radius returns are required in accordance with existing or planned connections. Where radius returns apply, the design requirements of this index and that of the local government will be used to select appropriate connection widths, radii and intersection design, subject to the approval of the Department.
  - For connections that are intended to daily accommodate either multi-unit vehicles or single unit vehicles exceeding 30' in length, returns with 50' radii shall be used, unless otherwise called for in the plans or otherwise stipulated by permit. Where large numbers of multi-unit vehicles will use the connection, the connection width and radii shall be increased and auxiliary lanes, tapers, lane flares, separators and/or islands constructed, as determined by the Department to be necessary for safe turning movements.
  - Any connection requiring or having a specified median opening with left turn storage and served directly by that opening shall have radial returns.
  - Where a connection is intended to align with a connection across the highway, the through lanes shall align directly with the corresponding through lanes.
  - For new connections and for connections on all new construction and reconstruction projects, pavement materials and thicknesses shall meet the requirements applicable to either that detailed for "Curbed Roadway-Flared Turnouts", or, that described in "Table 515-1" for connections with radial returns and/or auxiliary lanes.
  - The responsibility for the cost of construction or alteration to an access connection shall be in accordance with FDOT Rule Chapter 14-96.
- DESIGN NOTES**
- Prior to the adoption of FDOT Rules Chapters 14-96 and 14-97, connections to the State Highway System were defined and permitted by Classes. Connections have been redefined by Categories under Rule 14-96 and the term "Class" has been applied to highway segments of the State Highway System as defined under Rule 14-97.

CUSTOMER: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD: AEC Services, Inc.  
RON FAIR, P.E.  
License No. 9277 OE #0011445  
FL # 50738

1616 ALLISON WOODS LANE  
CLEARWATER, FLORIDA 34619  
(813) 884-1234  
(813) 884-2660 (f)  
www.aecservicesinc.com

PRINT COPIES OF THIS DRAWING ARE NOT CONSIDERED SIGNED AND SEALED FOR ANY ELECTRICAL PURPOSES

JOB NO.	DWG Name	CIVIL	XREF Name	NONE	SCALE	N.T.S.	DATE	7-8-18	DRAWN BY	PAZ	CHECKED	GEP	APPROVAL	RAF
60161712														

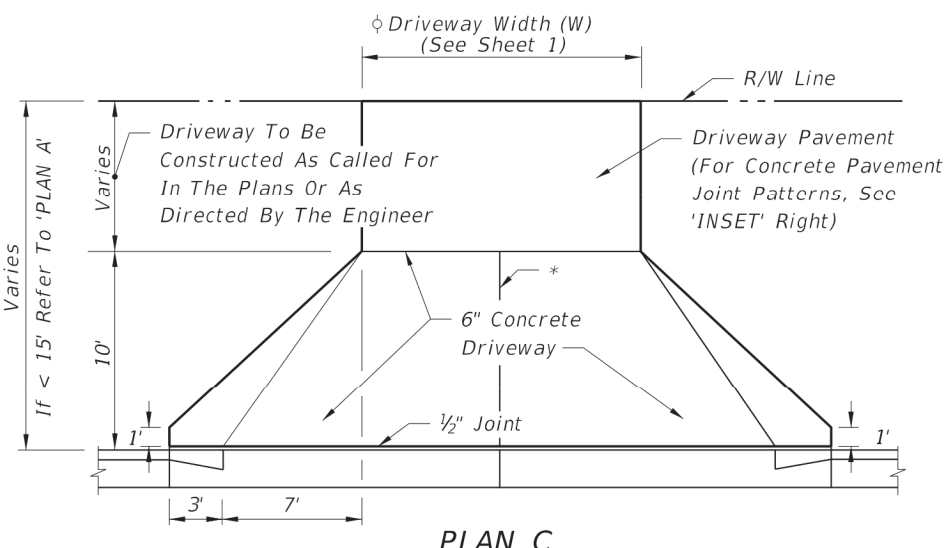
ROW FDOT INDEXES

RW-5

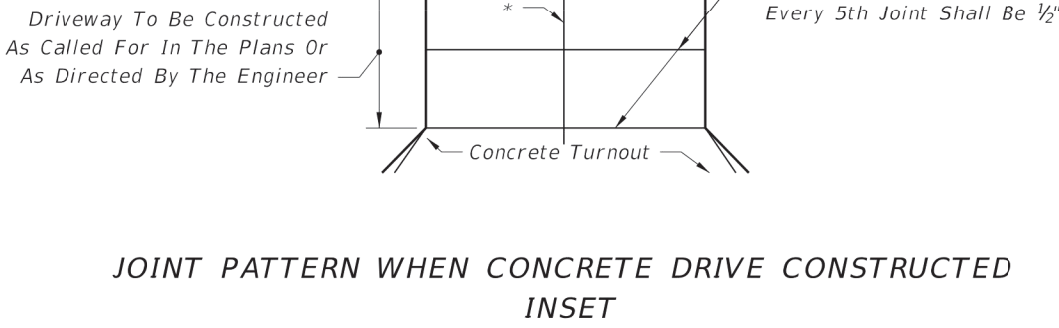
THIS DRAWING IS THE PROPERTY OF AEC SERVICES, INC. AND HAS BEEN PREPARED SPECIFICALLY FOR THE OWNER OF THIS PROJECT. IT MAY NOT BE USED FOR ANY OTHER PROJECT, LOCATION, OR OWNER.

10/17/2016 10:36:54 AM

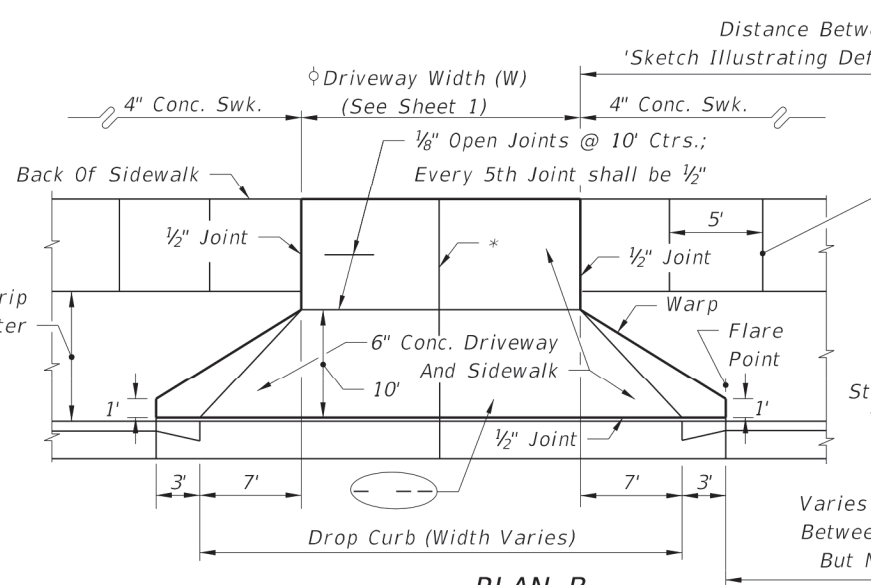
- Footnotes:
- All  $\frac{1}{2}$ " joints shall be constructed with preformed joint filler.
- \*  $\frac{1}{2}$ " Open joints placed at equal (20' max.) intervals for driveways over 20' wide. Joints in curb and gutter to match joints in driveways.
- △ When connecting to side road curb and gutter sections, the no drop curb limits should extend back to the side road radius point. With or without curb and gutter, no driveway should encroach on the corner radius.
- ◇ Driveways (6" concrete) shall be of a uniform width (W) to the right of way line.
- Alpha-numeric identification of a flared driveway type specifically called for in the plans, see sheets 3 and 4.



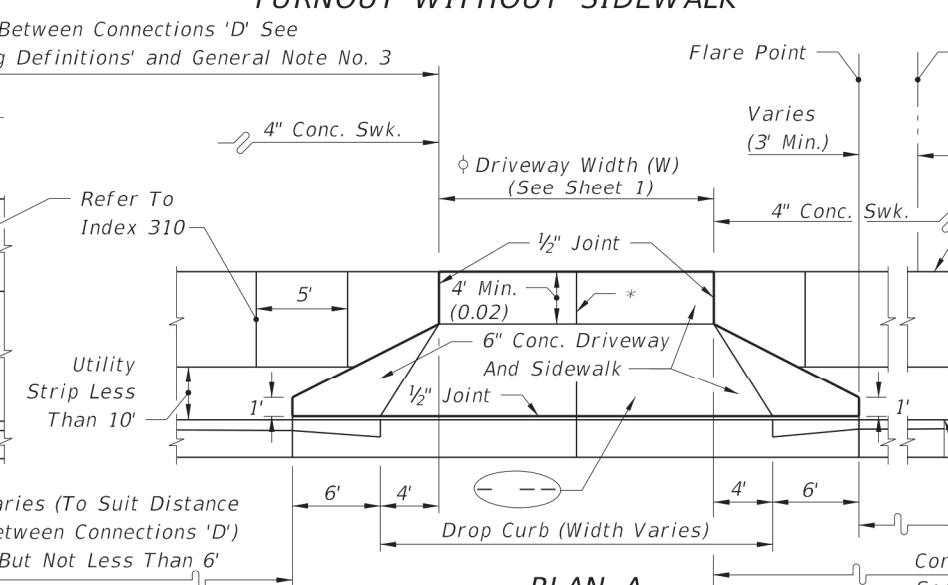
PLAN C  
TURNOUT WITHOUT SIDEWALK



JOINT PATTERN WHEN CONCRETE DRIVE CONSTRUCTED  
INSET



PLAN B  
TURNOUT WITH SIDEWALK AND  
UTILITY STRIP (10' OR GREATER)



PLAN A  
TURNOUT WITH SIDEWALK AND  
UTILITY STRIP (LESS THAN 10')

SPECIAL NOTES FOR CURBED ROADWAYS - FLARED TURNOUTS

- Drop curb, concrete sidewalks (6" thick) and driveways (6" thick) shall meet Specification Sections 520 and 522. The driveway foundation shall meet the requirements of Subarticle 522-4.
- For details of drop curb and sidewalk curb ramps refer to Indexes 300 and 304 respectively.
- Where turnouts are constructed within existing curb and gutter, the existing curb and gutter shall be removed either to the nearest joint beyond the flare point or to the extent that no remaining section is less than 5' long; and, drop curb constructed in accordance with Notes Nos. 1 and 2.
- For turnouts with radial returns see the requirements under the "Summary Of Geometric Requirements For Turnouts", the "General Notes", the details of "Flush Shoulder Roadway-Turnout Construction" and the detail of "Limits Of Clearing & Grubbing, Stabilization And Base At Intersections".
- Maintenance of pavement shall extend out to the right of way or 2' beyond the back of sidewalk, whichever distance is less.
- The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
- All pavement markings on the State highways, including acceleration and deceleration lane markings, and signing installed for the operation of the State highway shall be maintained by the Department.
- All signing and marking installed for the operation of the connection (such as stop bars and stop signs for the connection) shall be the responsibility of the permittee.
- All sidewalk surfaces crossing driveways with a cross slope shown in this Index to be 0.02 shall be 0.02 Maximum.

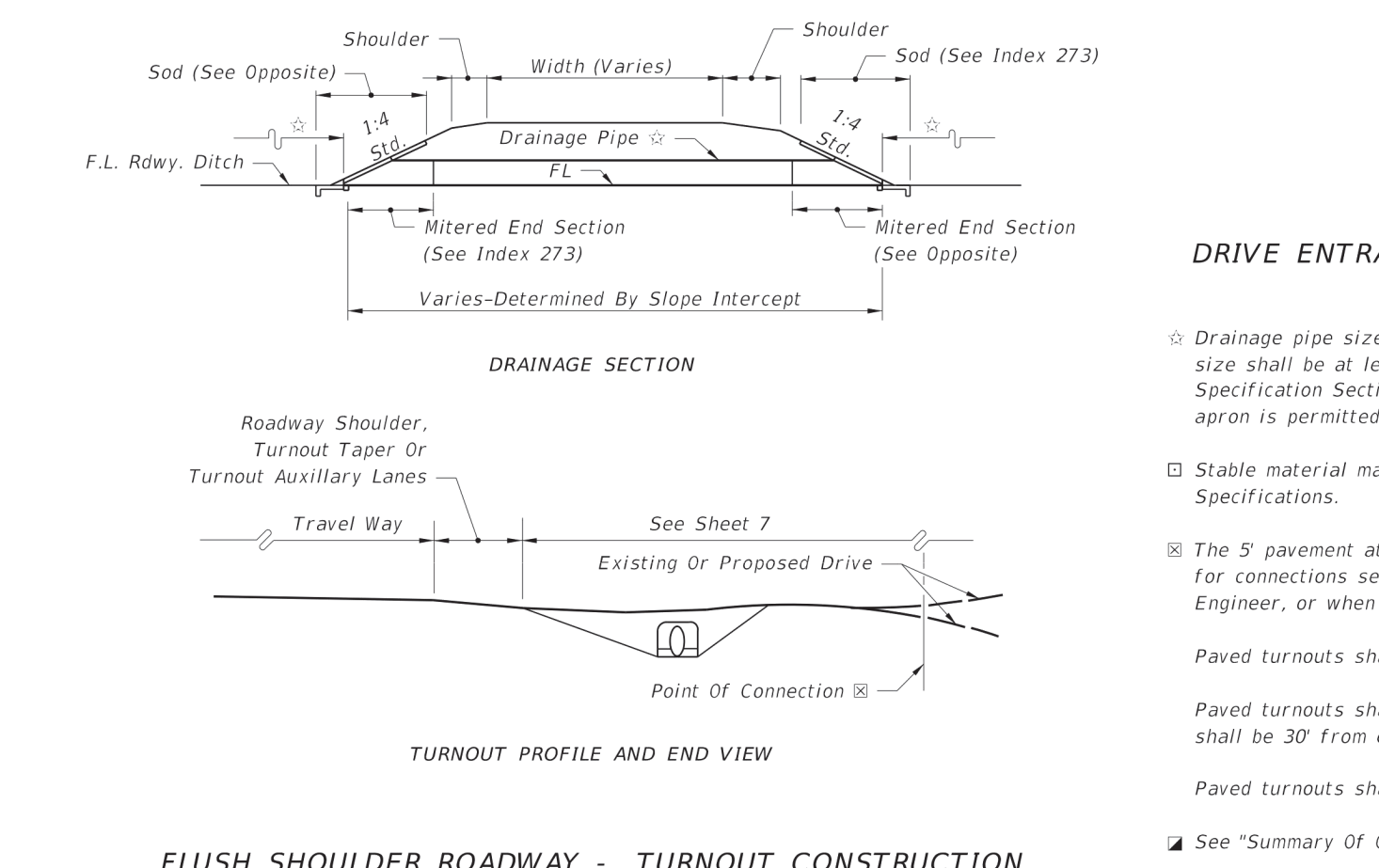
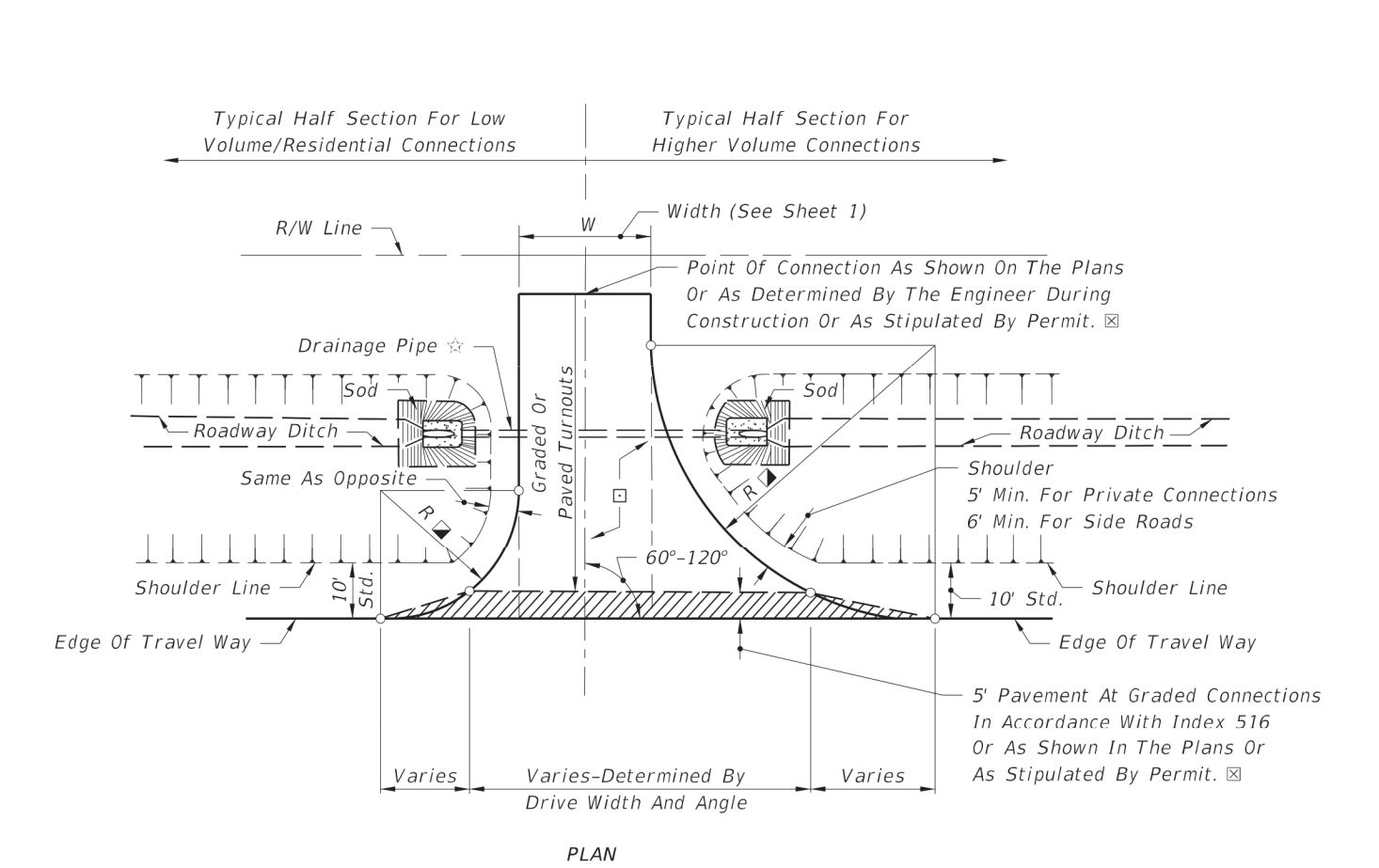
DESIGN NOTES FOR CURBED ROADWAY - FLARED TURNOUTS

- Driveways indicated as 'Adverse Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions; or, those with slopes that can cause drivers who are leaving the roadway to slow or pause to the extent that traffic demand volumes will be impeded.
- Driveways indicated as 'Marginal Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions when the driveway is located on the low side of fully superelevated roadways.
- Driveways indicated as 'General Applications' are those with slopes that can readily accommodate representative standard passenger vehicles and those that can accommodate representative standard trucks, vans, buses and recreational vehicles operating under normal crown and superelevation conditions.
- The standard flared driveways on this index may not accommodate vehicles with low beds, low undercarriage or low appendage features. Where such vehicles are design vehicles, driveways shall have site specific flare designs or Category III designs.
- When specific flare type driveways shall be constructed, the type shall be designated in the plans using the assigned alpha-numeric designation.

CURBED ROADWAY - FLARED TURNOUTS

10/17/2016 10:36:52 AM

LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	INDEX NO.	SHEET NO.
11/01/16			515	2 of 7

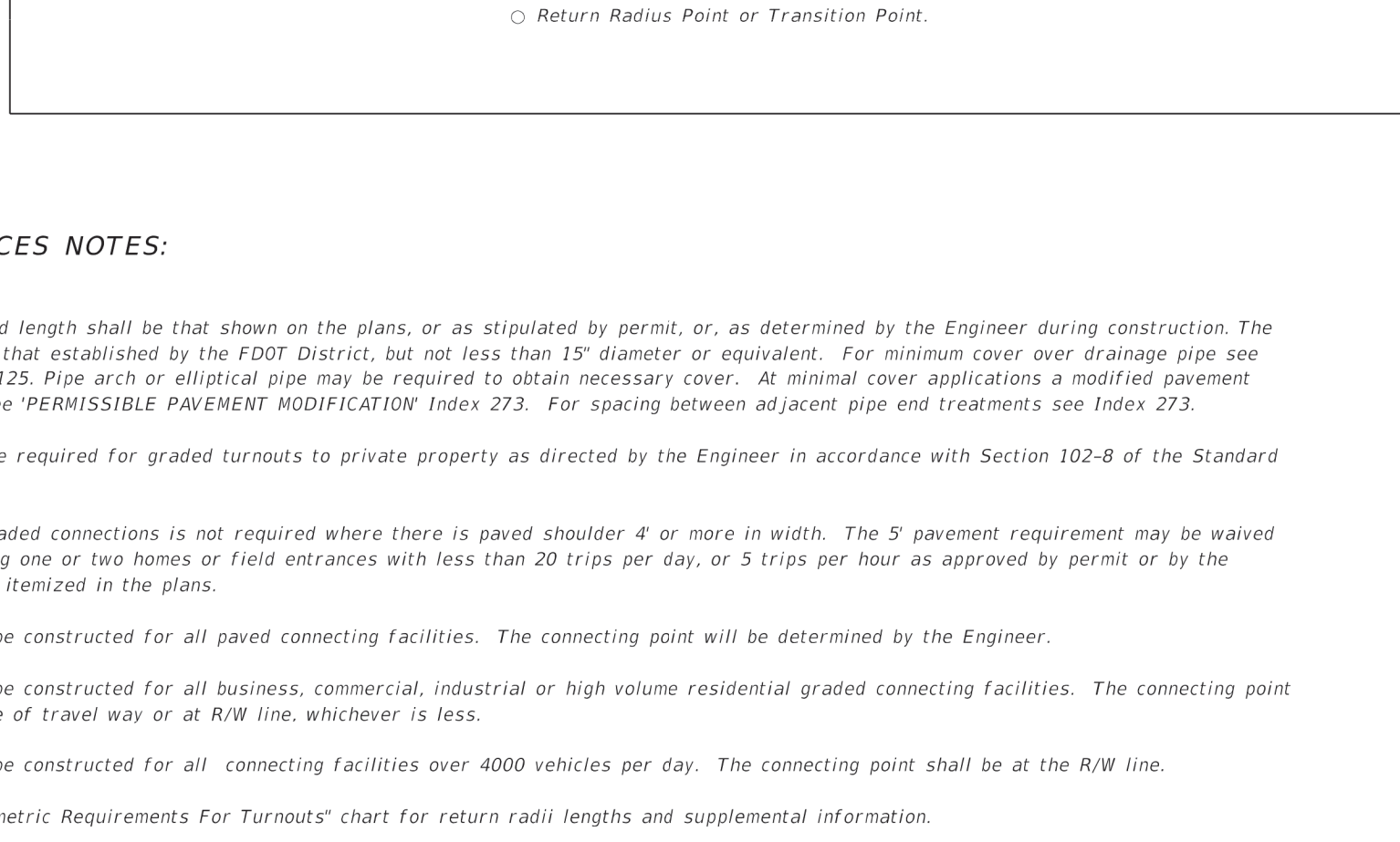
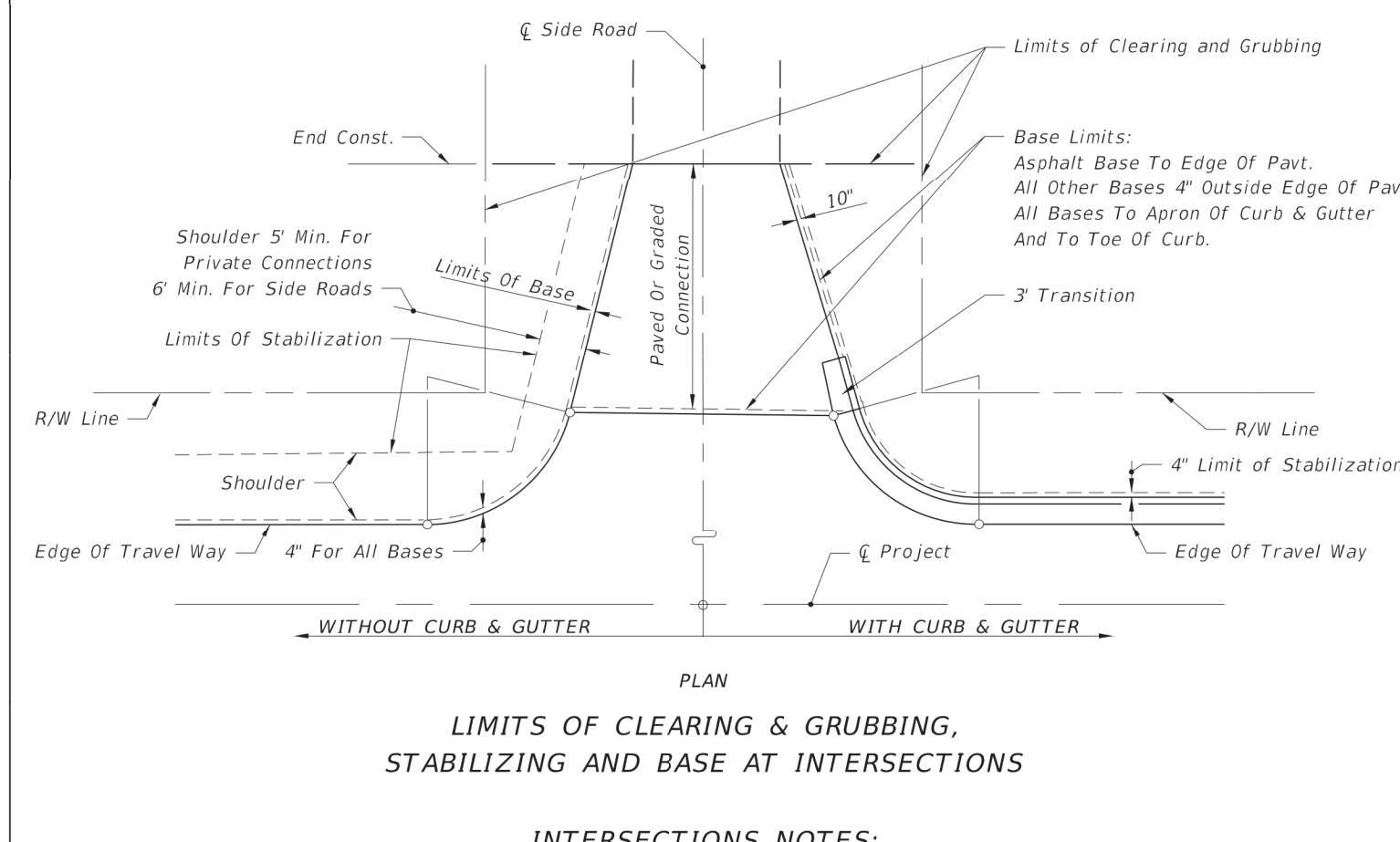


FLUSH SHOULDER ROADWAY - TURNOUT CONSTRUCTION

LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	INDEX NO.	SHEET NO.
11/01/16			515	4 of 7

LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	INDEX NO.	SHEET NO.
11/01/16			515	5 of 7

LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	INDEX NO.	SHEET NO.
11/01/16			515	3 of 7



FLUSH SHOULDER ROADWAY - TURNOUT CONSTRUCTION

LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	INDEX NO.	SHEET NO.
11/01/16			515	5 of 7

LAST REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	INDEX NO.	SHEET NO.
11/01/16			515	5 of 7

CUSTOMER:	BP STATION 3009 GULF TO BAY BLVD. CLEARWATER, FLORIDA 34619
SITE ADDRESS:	BP STATION 3009 GULF TO BAY BLVD. CLEARWATER, FLORIDA 34619

ENGINEER OF RECORD:	AEC Services, Inc. RON FAIR, P.E. License No. 9277 CB #0011445 1616 ALLISON WOODS LANE CLEARWATER, FLORIDA 34619 (813) 884-1234 www.aecservicesinc.com
JOB NO:	GO161712
DWG Name:	CIVIL
XREF Name:	NONE
SCALE:	N.T.S.
DATE:	7-8-18
DRAWN BY:	PAZ
CHECKED:	GEP
APPROVAL:	RAF

NO.	DESCRIPTION	DATE
1		
2		
3		
4		
5		
6		

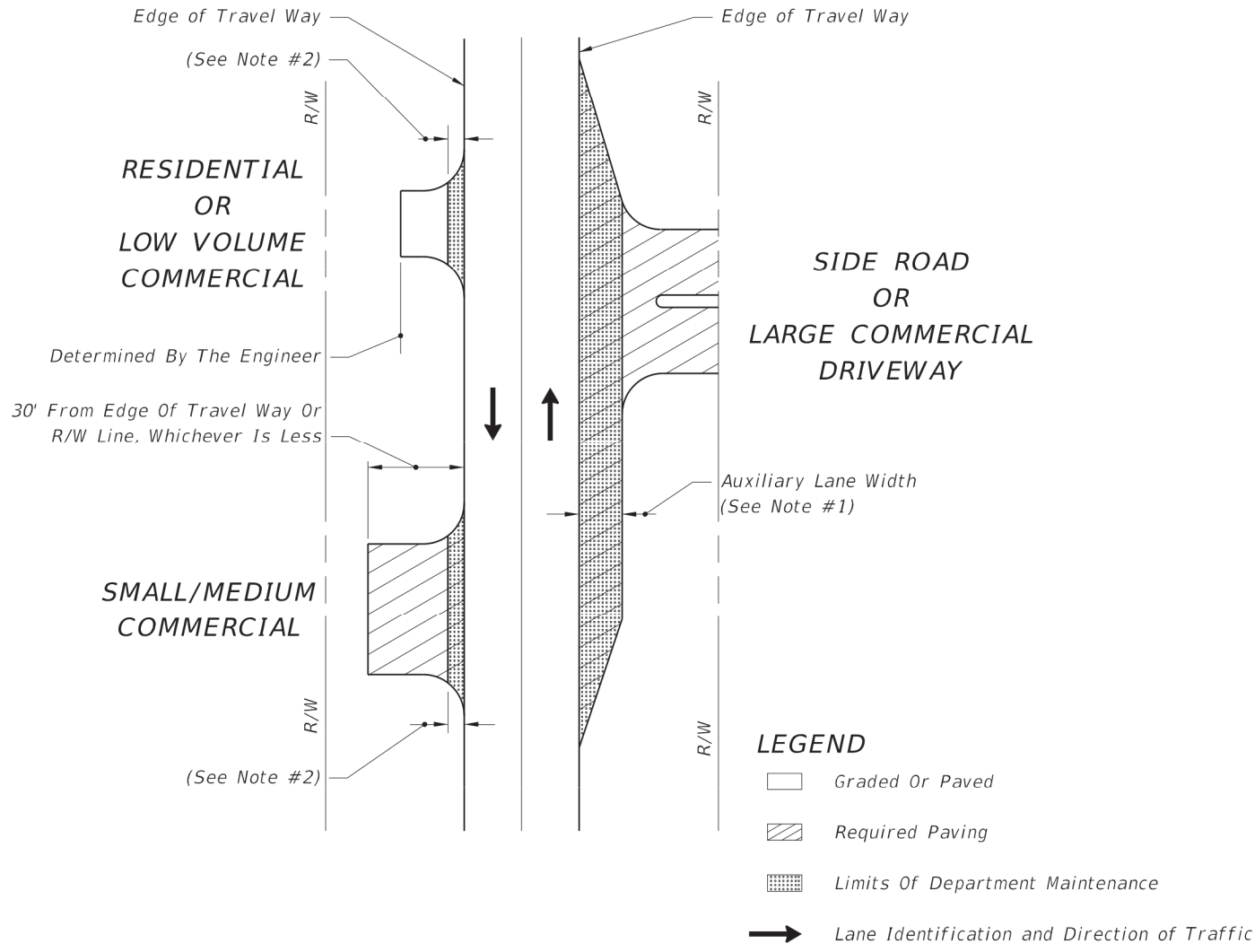
NO.	DESCRIPTION	DATE
1		
2		
3		
4		
5		
6		

ROW FDOT INDEXES
---------------------

RW-6
------

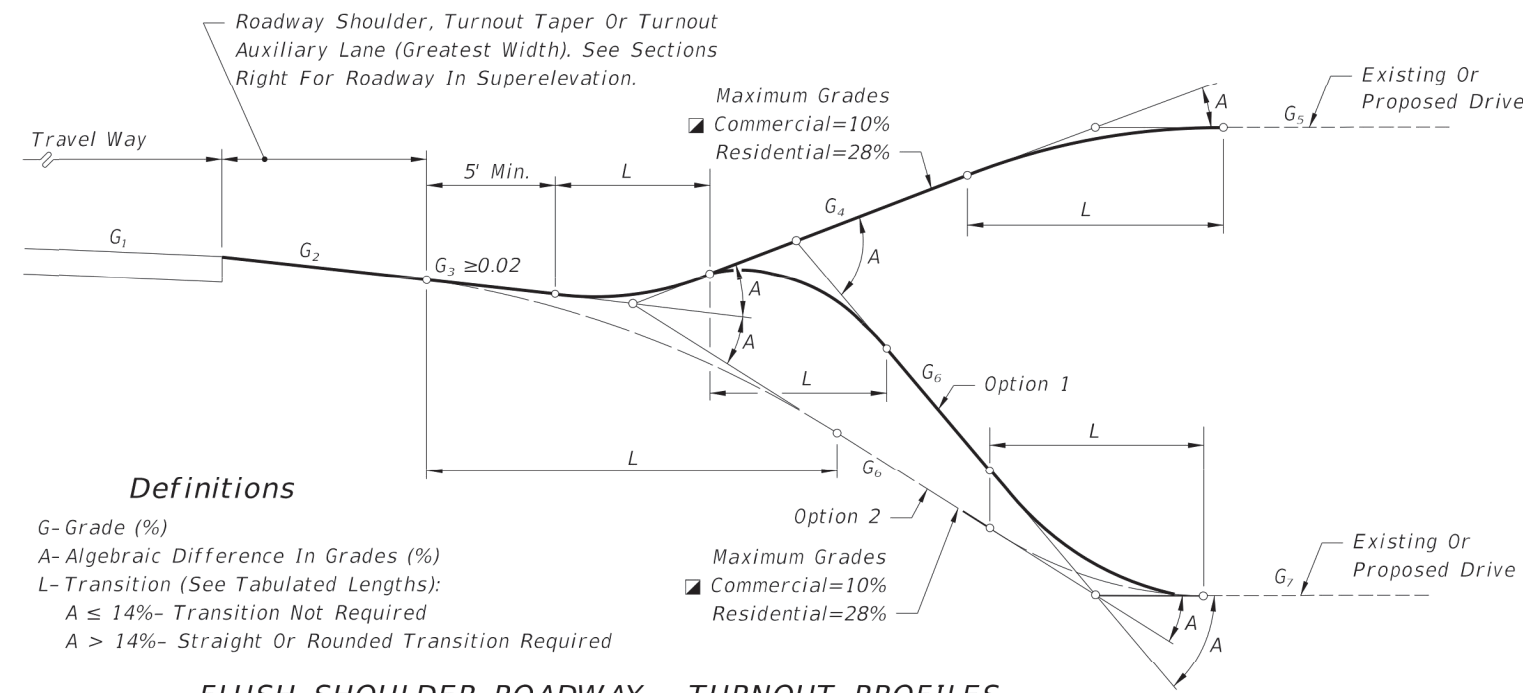
MATERIAL TYPES AND THICKNESSES IN DRIVING AREAS FOR ALL CONNECTIONS			
Course	Materials ❷	Thickness (in.) ❸	
		Connections ❹	Roadway ❺
Structural	Asphaltic Concrete	1"	1½"
Bases	Optional Base (See Spec. Section 285)	O.B.G. 1	O.B.G. 3
❶ Minimum thickness. ❷ All materials shall be approved by the Department prior to being placed. ❸ Connection structure other than traffic lanes. See Notes 1 and 2 below. ❹ Travel way flares (bypass lanes), auxiliary lanes serving more than a single connection, and all median crossovers including their auxiliary lanes and/or transition tapers. See Notes 1 and 2 below.			
NOTES			
1. The pavement should be structurally adequate to meet the expected traffic loads and should not be less than that shown above, except as approved by the Department for graded connections. Other Department-approved equivalent pavements may be used at the discretion of the Engineer.			
2. Auxiliary lanes and their transition tapers shall be the same structure as the abutting travel way pavement thickness or any of the roadway structures tabulated above, whichever is thicker.			
3. If an asphalt base course is used for a turnout, its thickness may be increased to match the edge of travel way pavement thickness in lieu of a separate structural course. 6" of Portland cement concrete will be acceptable in lieu of the asphalt base and structural courses. See Notes 4 and 5 below.			
4. A structural course is required for flexible pavements when they are used for auxiliary lanes serving more than a single connection.			
5. Connections paved with Portland cement concrete shall be Class NS concrete at least 6" thick. The Department may require greater thickness when called for in the plans or stipulated by permit. Materials and construction shall conform with FDOT Standard Specifications Sections 347, 350 and 522.			
6. The Department may require other pavement criteria where local conditions warrant.			

PAVEMENT STRUCTURE FOR TURNOUTS AND AUXILIARY LANES  
TABLE 515-1

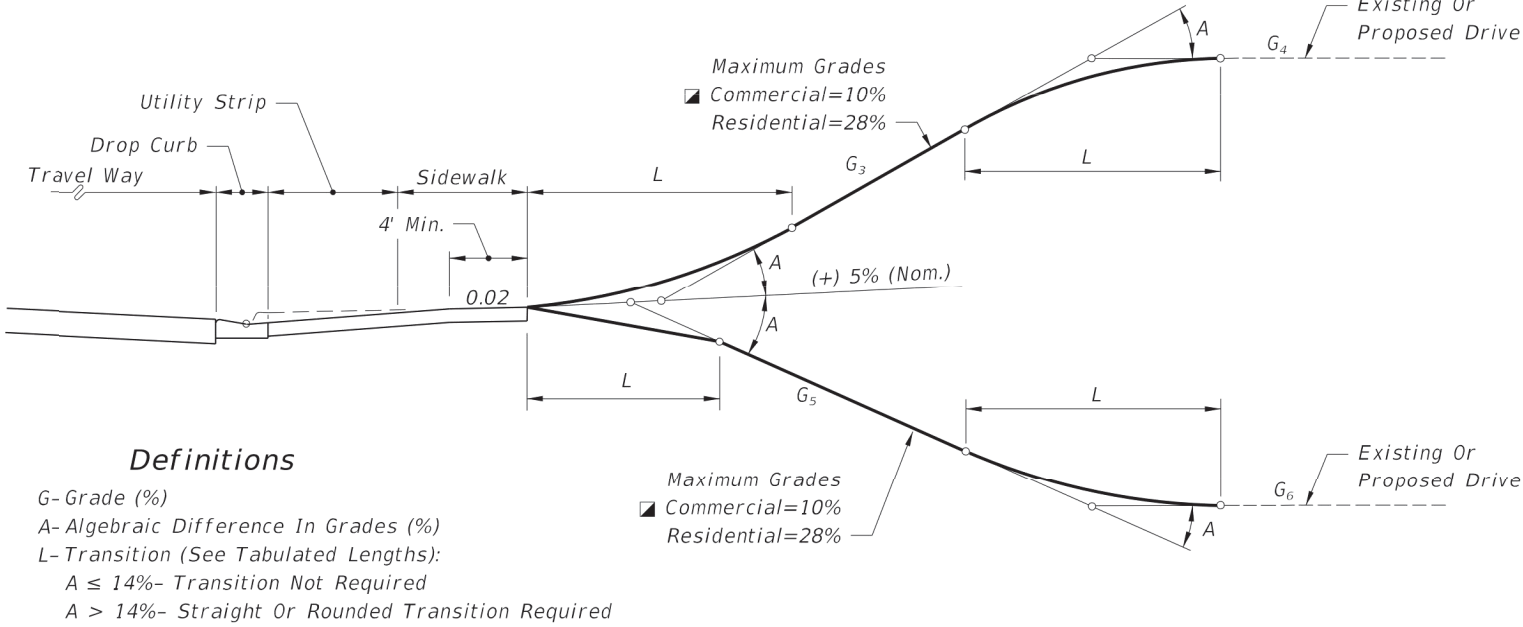


- NOTES
- Auxiliary lane pavements and crossover pavements shall be maintained by the Department.
  - Department maintenance of turnout pavement extends 5' from edge of the travel way or to the edge of paved shoulder, whichever is greater. The remainder of any turnout paved area on the right of way shall be maintained by the owner or his authorized agent. As a function of routinely reworking shoulders, the Department may grade and shape existing material on nonpaved areas beyond the maintained pavement.
  - Control and maintenance of drainage facilities within the right of way shall be solely the responsibility of the Department, unless specified differently by Department permit.
  - The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
  - All pavement markings on the State highways, including acceleration and deceleration lane markings, and signing installed for the operation of the State highway shall be maintained by the Department.
  - All signing and marking installed for the operation of the connection (such as stop bars and stop signs for the connection) shall be the responsibility of the permittee.

LIMITS OF  
CONSTRUCTION AND MAINTENANCE  
FOR FLUSH SHOULDER ROADWAY CONNECTIONS



FLUSH SHOULDER ROADWAY - TURNOUT PROFILES



CURBED ROADWAY - TURNOUT PROFILES

- When restoring or reconstructing existing commercial turnout connections on new construction and reconstruction projects, the maximum 10% commercial grade may be exceeded provided this does not create adverse roadway operational or safety impacts. This shall be approved by the District Design Engineer and supported by documented site specific findings.

TURNOUT PROFILES

A		LENGTHS (L) (FT.)							
		CRESTS				SAGS			
		STRAIGHT		ROUNDED		STRAIGHT		ROUNDED	
		Desirable	Minimum	Desirable	Minimum	Desirable	Minimum	Desirable	Minimum
6-13%	3	0	5	0	3	0	5	0	0
14%	3	0	10	0	3	0	10	0	0
15%	3	2.5	10	3	5	3	10	5	0
16%	5	3	10	4	6	4	10	6	0
17%	6	3.5	10	5	8	5	10	7	0
18%	6	4	10	6	9	6	10	8	0
19%	7	4.5	10	7	11	7	12	9	0
20%	8	5	11	8	12	8	13	10	0
21%	9	5.5	12	9	13	8.5	14	11	0
22%	10	6	13	10	14	9	16	12	0
23%	10	6.5	14	10.5	14	9.5	16	12.5	0
24%	11	7	15	11	15	10	17	13	0
25%	12	7.5	15	11.5	16	10.5	18	13.5	0
26%	12	8	16	12	17	11	18	14	0
27%	13	8.5	17	12.5	17	11.5	19	14.5	0
28%	14	9	17	13	18	12	20	15	0
29%	NA	NA	22	14	NA	NA	21	17	0
30-31%	NA	NA	23	15	NA	NA	22	18	0
32-33%	NA	NA	24	16	NA	NA	23	20	0
34-36%	NA	NA	26	17	NA	NA	25	21	0
37-38%	NA	NA	27	18	NA	NA	26	22	0
39-41%	NA	NA	29	19	NA	NA	28	24	0
42-43%	NA	NA	30	20	NA	NA	29	25	0
44-46%	NA	NA	32	21	NA	NA	31	26	0
47-48%	NA	NA	33	22	NA	NA	32	27	0
49-51%	NA	NA	34	23	NA	NA	34	28	0
52-54%	NA	NA	36	24	NA	NA	35	30	0
55-56%	NA	NA	37	25	NA	NA	36	31	0

Rounded: Either circular, parabolic, or spline curvature.  
The plans or the Engineer may specify a particular type of curvature.  
Desirable: Desirable minimum lengths  
Minimum: Absolute minimum lengths  
(Greater lengths than minimum and desirable are recommended where practical for flatter and smoother profile.)

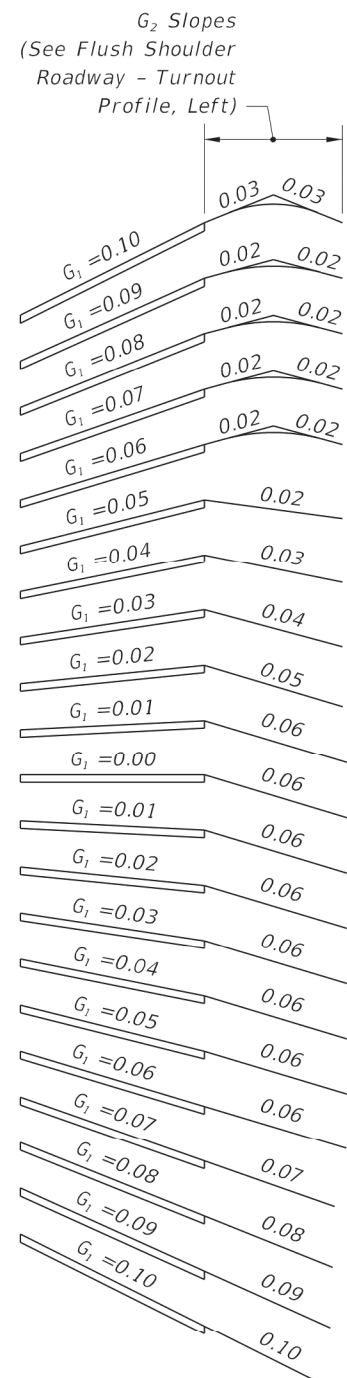
RECOMMENDED TURNOUT PROFILE  
TRANSITION LENGTHS (L) (FT.)

STORMWATER RUNOFF AND PROFILE OPTION NOTES

- Turnouts shall neither cause water to flow on or across the roadway pavement, nor cause water ponding or erosion within the State right of way. On all Flush Shoulder Roadway turnouts the transition (L) nearest the roadway shall be sloped or crowned to direct stormwater runoff to the roadside ditch. Inlets, flumes or other appropriate runoff control devices shall be constructed when runoff volumes are sufficient to cause erosion of the shoulder. Similar runoff control devices shall be constructed as necessary to properly direct and control the stormwater runoff on Curbed Roadway turnouts.
- The Option 1 profile is intended for locations where roadway, turnout taper and auxiliary lane stormwater runoff volumes are relatively large. The Option 2 profile is intended for locations where runoff volumes are relatively small and/or where there is no roadside ditch.

ROADWAY PAVEMENT SLOPES  
AND SLOPES OF ABUTTING  
FLUSH SHOULDER ROADWAY  
TURNOUT SURFACES (G<sub>s</sub>)

SUPERELEVATION SECTIONS



LAST REVISION	REVISION
11/01/16	

DESCRIPTION:

	FY 2017-18 DESIGN STANDARDS
--	--------------------------------

TURNOUTS AND DRIVEWAYS

INDEX NO.	SHEET NO.
515	6 of 7

LAST REVISION	REVISION
11/01/16	

DESCRIPTION:

	FY 2017-18 DESIGN STANDARDS
--	--------------------------------

TURNOUTS AND DRIVEWAYS

INDEX NO.	SHEET NO.
515	7 of 7

ENGINEER OF RECORD:

**AEC Services, Inc.**

RON FAIR, P.E.  
License No. 9277 OE #0011445

1616 ALLISON WOODS LANE  
CLEARWATER, FL 34619  
(813) 884-1234  
(813) 884-2660 (f)  
www.aecservicesinc.com



PRINT COPIES OF THIS DRAWING ARE  
NOT CONSIDERED SIGNED AND  
SEALED FOR ANY ELECTION PURPOSES  
UNLESS SO INDICATED OTHERWISE

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	N.T.S.
DATE	7-8-18
DRAWN BY	PAZ
CHECKED	GEF
APPROVAL	RAF
DESCRIPTION	
NO	
REVISIONS	

ROW FDOT  
INDEXES

RW-7

CUSTOMER: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619


SITE ADDRESS: BP STATION  
3009 GULF TO BAY BLVD.  
CLEARWATER, FLORIDA 34619

**Proposed Tanker Access Plan**  
Scale: 1" = 20'-0"

The plan shows a proposed building (70' x 50', 3,500 sq. ft.) and a parking lot (10' x 50', 500 sq. ft.) adjacent to Gulf to Bay Boulevard. The building is set back 15' from the boulevard. The parking lot is set back 10' from the boulevard. The plan also shows a 5' landscape area and a 10' landscape area. The building is set back 15' from the boulevard. The parking lot is set back 10' from the boulevard. The plan also shows a 5' landscape area and a 10' landscape area.

TANKER ACCESS  
PLAN

1/6		JOB NO: G0161712
1/5		DWG Name CIVIL
1/4		XREF Name NONE
1/3		SCALE: 1"=20'-0"
1/2		DATE: 5/9/17
1/1		DRAWN BY PAZ
NO	DESCRIPTION	DATE
<div> <div>REVISIONS</div> <div>APPROVAL</div> <div>REF</div> </div>		



ENGINEER OF RECORD:

**AEC Services, Inc.**

RON FAIR, P.E.  
FL # 50738 License No. 9277 QB #001445

1616 ALLISON WOODS LANE  
TAMPA, FL 33619  
(813) 8684-1234  
(813) 8684-2660 (f)  
[www.aecservicesinc.com](http://www.aecservicesinc.com)

<p>CUSTOMER:</p> <p>GIANT OIL INC. 1806 N. FRANKLIN STREET TAMPA, FLORIDA 33602</p>	<p>SITE ADDRESS:</p> <p>BP STATION 3009 GULF TO BAY BLVD CLEARWATER, FLORIDA 34619</p>
---	--

PRINT COPIES OF THIS DOCUMENT ARE  
NOT CONSIDERED SIGNED AND  
RECEIVED UNTIL THE ORIGINAL HAS BEEN  
VERIFIED ON ANY ELECTRONIC COPIES

RON FAIR, P.E.  
FL #50738

GENERAL NOTES

- Work operations shall be confined to either one lane, or lane combinations as follows:
  - Outside travel lane;
  - Outside auxiliary lane;
  - Outside travel lane and adjoining auxiliary lane;
  - Inside travel lane  $\Delta$ ;
  - Inside auxiliary lane  $\Delta$ ;
  - Inside travel lane and adjoining auxiliary lane  $\Delta$ ;
  - See Sheet 3
- If the work area is confined to an auxiliary lane the work area shall be barricaded and the RIGHT (LEFT) LANE CLOSED AHEAD signs replaced by ROAD WORK AHEAD signs, and the merge symbol signs eliminated.
- When vehicles in a parking zone block the line of sight to TCZ signs, the signs shall be post mounted and located in accordance with Index No. 17302.
- If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index No. 600.
- Signs are required on the median side for divided highways.
- The two channelizing devices directly in front and directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
- For general TCZ requirements and additional information, refer to Index No. 600.

DURATION NOTES

- For work operations up to approximately 15 minutes, signs, channelizing devices, and arrow board may be omitted if all of the following conditions are met:
  - Speed limit is 45 mph or less;
  - No sight obstructions to vehicles approaching the work area for a distance equal to twice the taper length;
  - Volume and complexity of the roadway has been considered;
  - The closed lane is occupied by a class 5 or larger, medium duty truck(s) with a minimum gross weight vehicle rating (GVWR) of 16,001 lb with high-intensity, rotating, flashing, oscillating, or strobe lights mounted above the cab height and operating.
- For work operations up to 60 minutes, the arrow board may be omitted if conditions a, b, and c in DURATION NOTE 1 are met, and vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

SYMBOLS

- Work Area
- Work Zone Sign
- Advance Warning Arrow Board
- Type III Barricade
- Channelizing Device (See Index No. 600)
- Lane Identification + Direction of Traffic

10/12/2016 1:12:30 PM

DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft.)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350

\* 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)		Type I or Type II	
	Cones or Tubular Markers	Barricades or Vertical Panels or Drums	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50

Table II Taper Length - Merge (12' Lateral Transition)			
Speed (mph)	L (ft.)	Notes (Merge)	
25	125		
30	180		
35	245		
40	320		
45	540		

For lateral transitions other than 12', use formula for L shown in the notes column. Where:  
L = Length of taper in feet  
W = Width of lateral transition in feet  
S = Posted speed limit (mph)

RIGHT LANE CLOSED ON FAR SIDE OF MINOR SIDESTREET

RIGHT LANE CLOSED ON FAR SIDE OF INTERSECTION WITH SIGNIFICANT RIGHT TURNING MOVEMENTS

- The normal procedure is to close on the near side of the intersection any lane that is not carried through the intersection. However, when this results in the closure of a right lane having significant right turning movements, then the right lane may be restricted to right turns only as shown in this detail.
- For intersection approaches reduced to a single lane, left turning movements may be prohibited to maintain capacity for through vehicular traffic.

FY 2017-18  
DESIGN STANDARDS

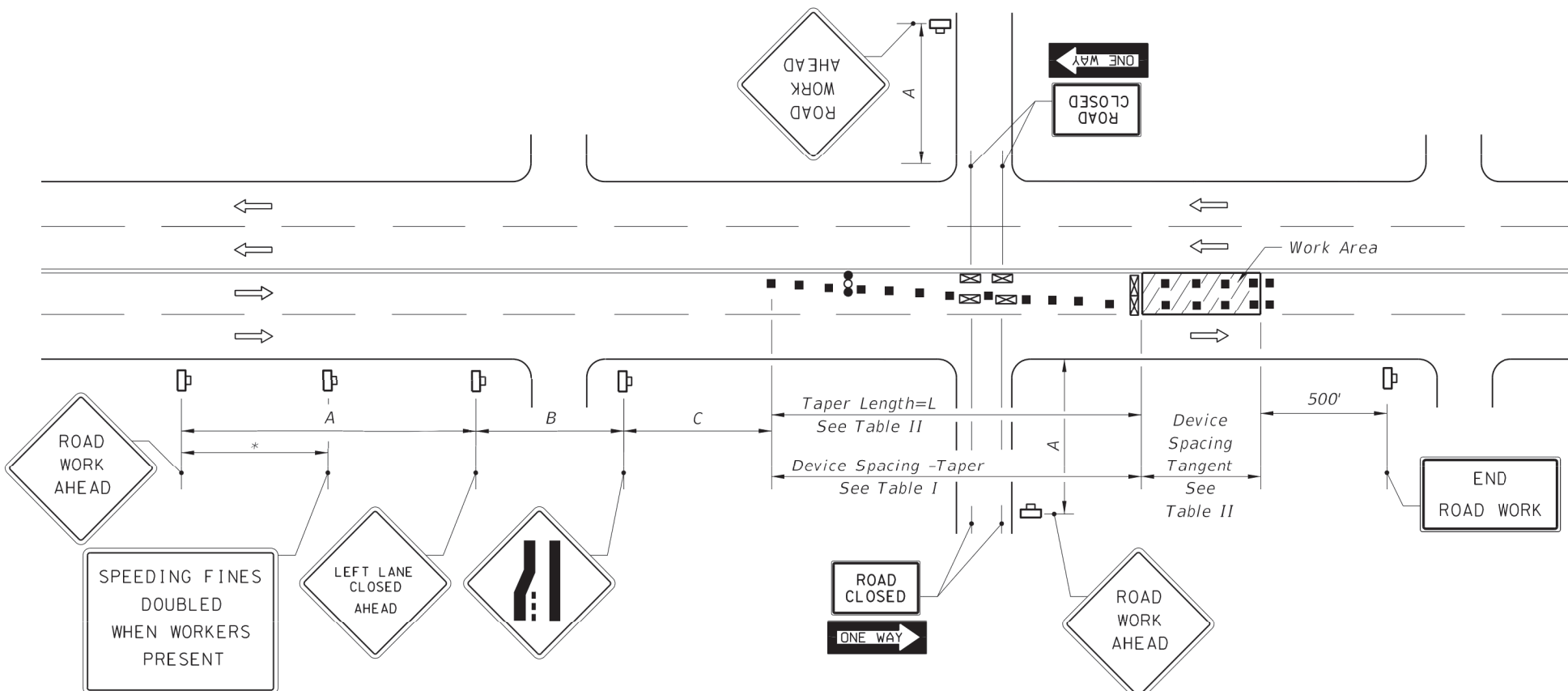
MULTILANE, WORK NEAR INTERSECTION  
MEDIAN OR OUTSIDE LANE

INDEX NO. 616  
SHEET NO. 1 of 3

FY 2017-18  
DESIGN STANDARDS

MULTILANE, WORK NEAR INTERSECTION  
MEDIAN OR OUTSIDE LANE

INDEX NO. 616  
SHEET NO. 2 of 3



DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft.)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350

\* 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)		Type I or Type II	
	Cones or Tubular Markers	Barricades or Vertical Panels or Drums	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50

Table II Taper Length - Merge (12' Lateral Transition)			
Speed (mph)	L (ft.)	Notes (Merge)	
25	125		
30	180		
35	245		
40	320		
45	540		

For lateral transitions other than 12', use formula for L shown in the notes column. Where:  
L = Length of taper in feet  
W = Width of lateral transition in feet  
S = Posted speed limit (mph)

LEFT LANE CLOSED ON FAR SIDE OF MINOR SIDESTREET - RESTRICTED TURNING MOVEMENTS

LEFT LANE CLOSED ON FAR SIDE OF INTERSECTION TURNING MOVEMENTS ALLOWED

- The normal procedure is to close on the near side of the intersection any lane that is not carried through the intersection. However, when this results in the closure of a left lane having significant left turning movements, then the left lane may be reopened as a turn bay for left turns only as shown in this detail.

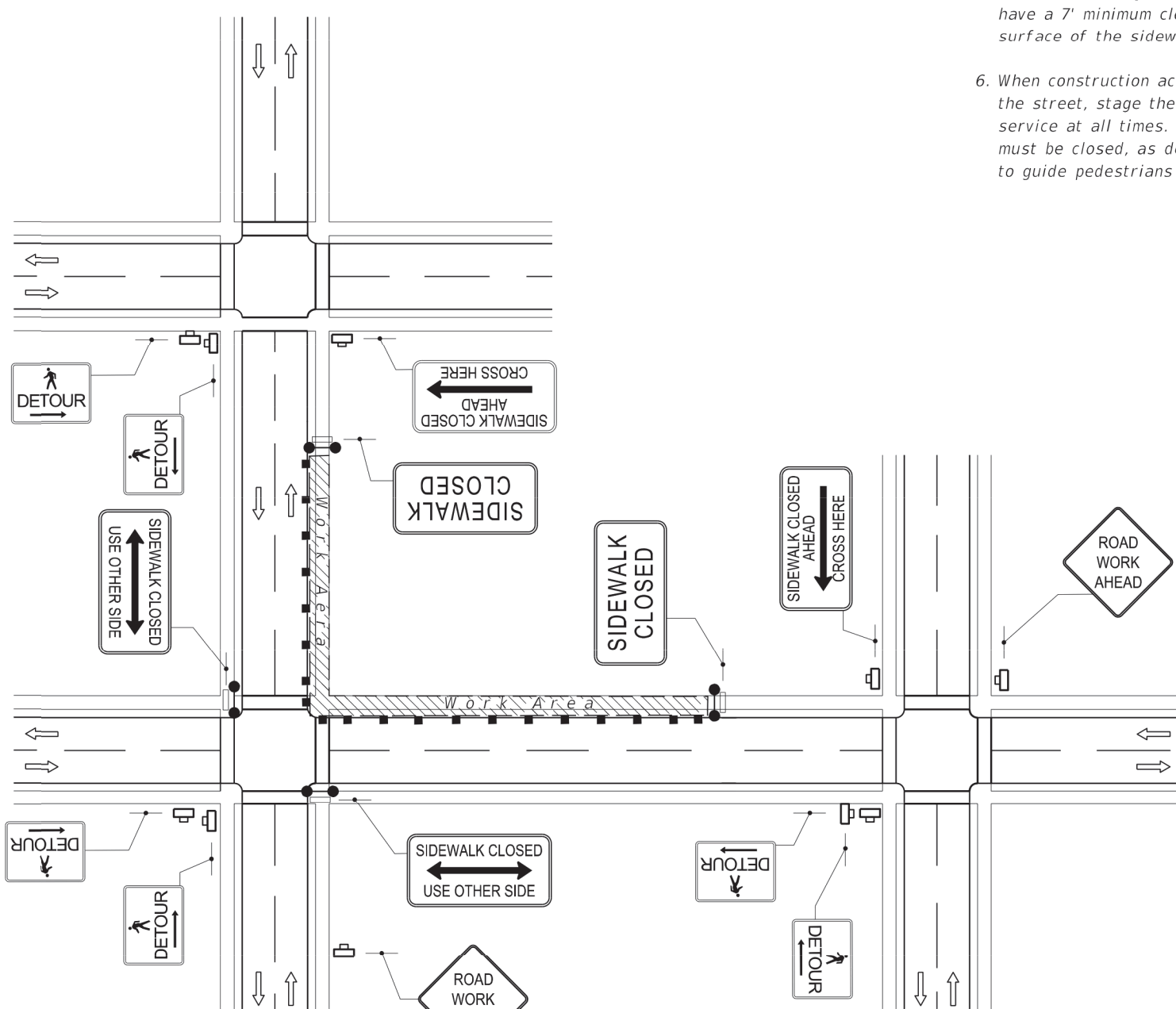
10/12/2016 1:12:30 PM

SYMBOLS

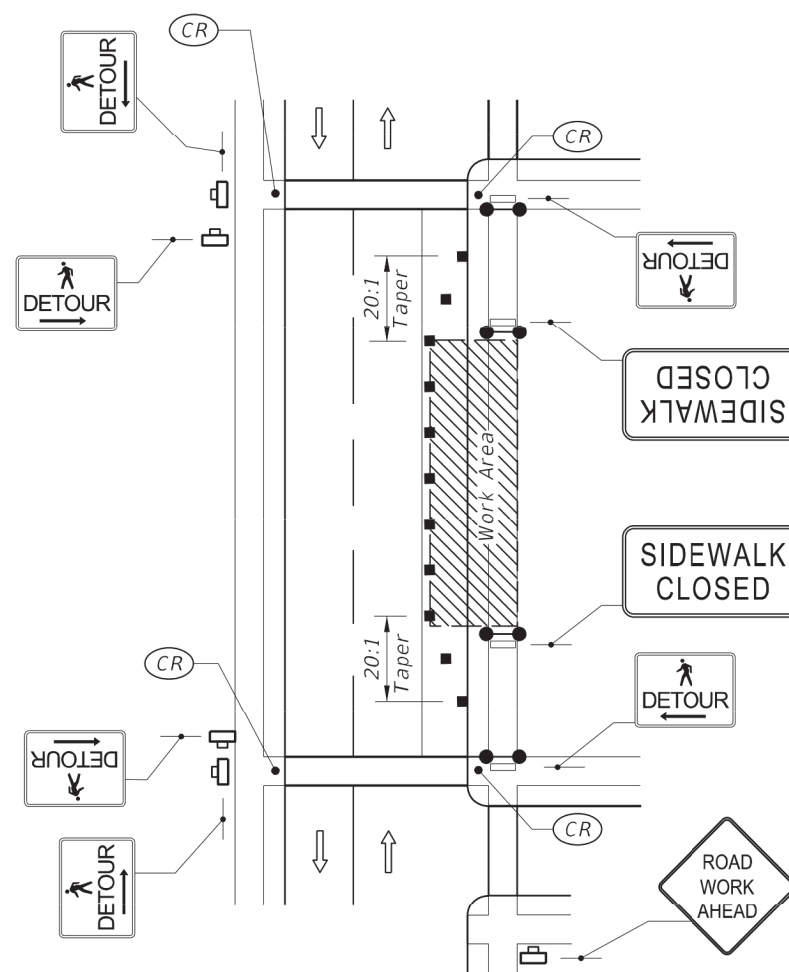
- Work Area
- Channelizing Device (See Index 600)
- Work Zone Sign
- Required Locations For Either Temporary Or Permanent Curb Ramps.
- Lane Identification + Direction of Traffic
- Pedestrian Longitudinal Channelizing Device (LCD) with Mounted Work Zone Sign or separate Work Zone Sign
- Pedestrian Longitudinal Channelizing Device (LCD)

GENERAL NOTES

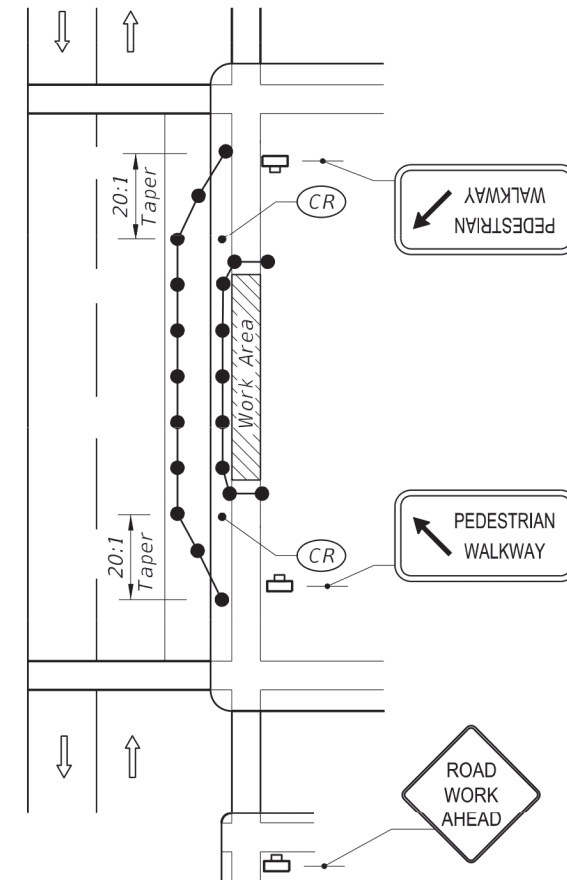
- Route pedestrian traffic around work areas when construction activities encroach on the sidewalk for more than 60 minutes using the devices and remedies shown on this Index. Use project specific designs for scenarios not included on this Index.
- For spacing of traffic control devices and general TCZ requirements refer to Index 600. The maximum spacing between barricades, vertical panels, drums or tubular markers is 25'.
- Use delineators on longitudinal channelizing devices separating the work area from vehicular traffic.
- Cover or deactivate pedestrian traffic signal display(s) controlling closed crosswalks.
- Post mounted signs located near or adjacent to a sidewalk is in service at all times. If this is not feasible and both sidewalks must be closed, as determined by the Engineer, provide a detour to guide pedestrians around the construction zone.
- Provide a 5' wide temporary walkway, except where space restrictions warrant a minimum width of 4'. Provide a 5' x 5' passing space for temporary walkways less than 5' in width at intervals not to exceed 200'.
- Provide a cross-slope with a maximum value of 0.02 for all temporary walkways.
- Temporary walkway surfaces and ramps must be stable, firm, slip resistant, and kept free of any obstructions and hazards such as holes, debris, mud, construction equipment and stored materials.
- Remove temporary walkways immediately after reopening of the sidewalk, unless otherwise noted in the plans.
- Meet the requirements of Index 304 for temporary curb ramps.
- Place pedestrian longitudinal channelizing device(s) across the full width of the closed sidewalk. For temporary walkways, similar to the Sidewalk Diversion, place LCDs to delineate both sides of the temporary walkway.



CROSSWALK CLOSURE AND PEDESTRIAN DETOUR



SIDEWALK DETOUR



SIDEWALK DIVERSION

FY 2017-18  
DESIGN STANDARDS

MULTILANE, WORK NEAR INTERSECTION  
MEDIAN OR OUTSIDE LANE

INDEX NO. 616  
SHEET NO. 3 of 3

FY 2017-18  
DESIGN STANDARDS

PEDESTRIAN CONTROL FOR CLOSURE OF SIDEWALKS

INDEX NO. 660  
SHEET NO. 1 of 1

GIANT OIL INC.  
1806 N. FRANKLIN STREET  
TAMPA, FLORIDA 33602

BP STATION  
3009 GULF TO BAY BLVD  
CLEARWATER, FLORIDA 34619

RON FAIR, P.E.  
FL #50738

AEC Services, Inc.  
RON FAIR, P.E.  
License No. 9277 QB #0011445  
1616 ALLISON WOODS LANE  
CLEARWATER, FLORIDA 34619  
(813) 984-1234  
www.aecservicesinc.com

JOB NO.	GO161712
DWG Name	CIVIL
XREF Name	NONE
SCALE	N.T.S.
DATE	5/9/17
DRAWN BY	PAZ
CHECKED	CEP
APPROVAL	RAF

MAINTENANCE  
OF TRAFFIC

MOT