

CONSTRUCTION DRAWINGS
FOR THE

NORTHWEST GROUND STORAGE TANK
GROUND STORAGE TANK IMPROVEMENTS

MORRIS BRIDGE SECTION 23 TOWNSHIP 27 RANGE 19
NORTHWEST SECTION 30 TOWNSHIP 28 RANGE 18
TAMPA, HILLSBOROUGH COUNTY, FLORIDA

PREPARED FOR

CITY OF TAMPA WATER DEPARTMENT

City of Tampa Water Department
306 E. Jackson Street, 5N
Tampa, FL 33602

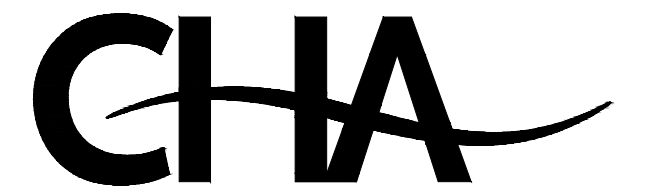


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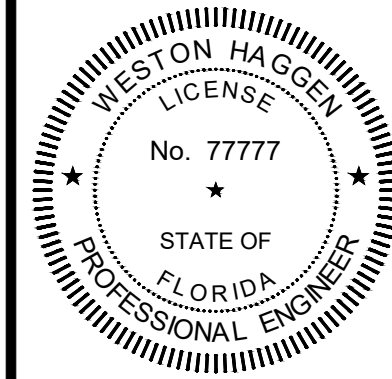
MARCH 2022

REI Project No. 0818

PROJECT TEAM



CHA CONSULTING, INC.
CERTIFICATE OF AUTHORIZATION #28386
3507 EAST FRONTAGE ROAD
TAMPA, FL 33607
TEL: (813) 549-0919
FAX: (813) 549-0922



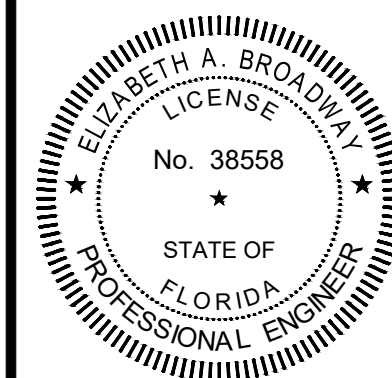
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GENERAL
G01, G02, G03, G04
CIVIL
C01, C02, C03, C04
DETAILS
C05, C06

B BROADWAY ENGINEERING, P.A.
CIVIL, MECHANICAL, STRUCTURAL AND BUILDING DESIGN
See Us At www.Broadway-Eng.Com
1335 W. Cass Street
Tampa, Florida 33606 813-251-9244
Fax 813-251-9330 Bus. Email: Info@Broadway-Eng.Com
Cadd. Email: DGorr@Broadway-Eng.Com
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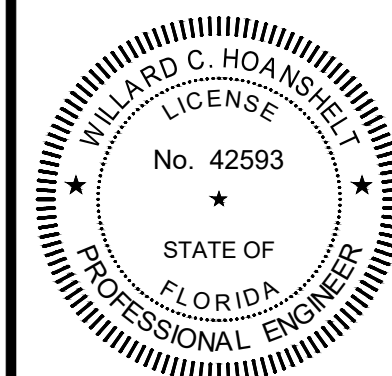
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STRUCTURAL
S01, S02, S03, S04

EMI CONSULTING SPECIALTIES, INC.
5742 River Bed Road
Groveland, FL 34736
CO# 6160 (407) 322-0500



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ELECTRICAL
E01
INSTRUMENTATION
I01, I02

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REV	DATE	DESCRIPTION	BY
0	03/2022	ISSUED FOR BID	AJM



ABBREVIATIONS

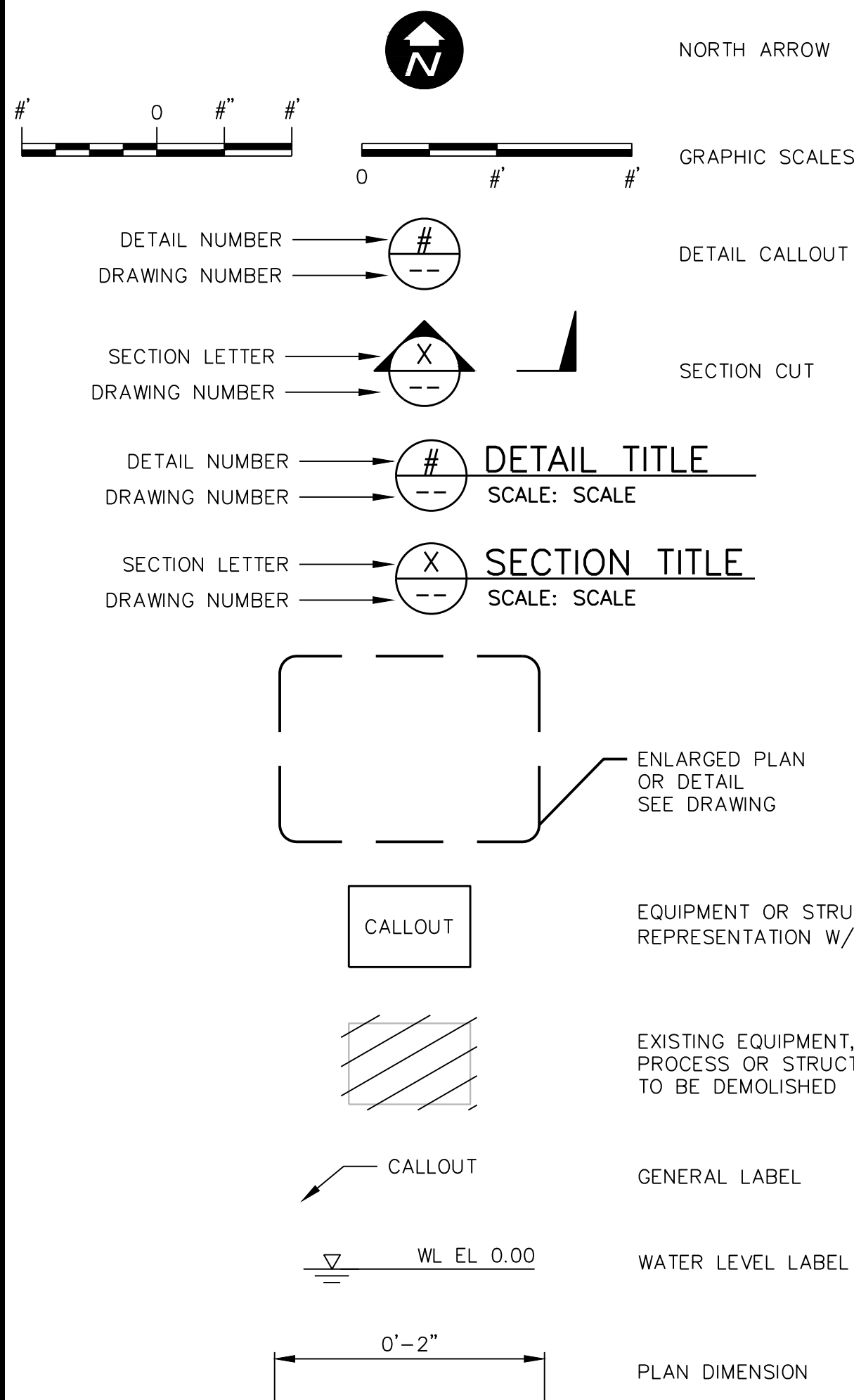
A	ACID, AIR	DBL	DOUBLE	H	HIGH, HOUR, HYDROGEN	N	NORTH(ING)	S	SOUTH	W	WEST, WIDE, WATER
AB	ANCHOR BOLT	DEG	DEGREE	HB	HOSE BIBB	N/A	NOT APPLICABLE	SA	SAMPLE LINE	W/ WAS	WITH WASTE ACTIVATED SLUDGE
ABAN	ABANDON(ED)	DEPT	DEPARTMENT	HDD	HORIZONTAL DIRECTIONAL DRILL	NaOCI	SODIUM HYPOCHLORITE	SAN	SANITARY	WD	WOOD, WIDTH
ABS	ACRYLONITRILE BUTADIENE STYRENE	DET	DETAIL	HDPE	HIGH-DENSITY POLYETHYLENE	NBC	NAIL IN BOTTLE CAP	SCV	SCHEDULE	WF	WALL FITTING, WIDE FLANGE
A/C	AIR CONDITIONER, (ING)	DI	DIESEL FUEL	HE	HEAT EXCHANGER	N.C.	NORMALLY CLOSED	SD	SILENT CHECK VALVE	WH	WALL HYDRANT, WATER HEATER
ACCOMP	ASPHALT-COATED CORRUGATED METAL PIPE	DIA	DROP INLET, DUCTILE IRON	HF	HOSE FAUCET	NE	NORTHEAST	SE	STORM DRAIN	WL	WATER LEVEL
ACP	ASBESTOS CEMENT PIPE	DIF	DIAMETER	HFA	HYDROFLUOSILICIC ACID	N.F.	NANOFILTRATION	SEC	SOUTHEAST	WM	WATER METER, WATER MAIN
ADD	ADDITIONAL	DIM	DIMENSION	HFC	HARNESSED FLANGED COUPLING ADAPTER	N.I.C.	NOT IN CONTRACT	SECT	SECTION	WO	WINDOW OPENING
ADH	ADHESIVE	DIP	DUCTILE IRON PIPE	HH	HANDHOLE	N.O.	NORMALLY OPEN	SEFF	SECONDARY EFFLUENT	W/O	WITHOUT
ADJ	ADJUSTABLE, ADJACENT	DISCH	DISHARGE	HLS	HIGH LEVEL SWITCH	NO(S)	NOMINAL	SF	SQUARE FOOT	WP	WATERPROOF, WORKING POINT
ADMIN	ADMINISTRATION	DISP	DISPENSER	HMC	HARNESSED MECHANICAL COUPLING	NORM	NORMAL	SG	SLUICE GATE	WR	WASTE RECEPACLE
AFF	ABOVE FINISH FLOOR	DIST	DISTRIBUTION	HMJ	HARNESSED MECHANICAL JOINT	NPT	NATIONAL PIPE TAPER	SHT	SHEET	WS	WATERSTOP
AHU	AIR HANDLING UNIT	DIV	DIVISION	HORIZ	HORIZONTAL	NPW	NONPOTABLE WATER	SIM	SIMILAR	WSP	WELDED STEEL PIPE
ALT	ALTERNATE, (IVE)	DJ	DISMANTLING JOINT	HP	HIGH POINT, HORSEPOWER	NS	NEAR SIDE	SL	SLUDGE	WT	WEIGHT
ALUM	ALUMINIUM	DM	DAMPER MOTOR	HPA	HIGH PRESSURE AIR	N.T.S.	NOT TO SCALE	SM	SHEET METAL	WTF	WATER TREATMENT FACILITY
AOD	ANGLE OF DEFLECTION	DMH	DROP MANHOLE	HR	HOUR, HANDRAIL	NW	NORTHWEST	SP	SUMP PUMP	WTP	WATER TREATMENT PLANT
AP	ACCESS PANEL	DMJ	DOUBLE MECHANICAL JOINT	HS	HIGH STRENGTH	OC	ON CENTER, ODOR CONTROL	SPA	SPACING, SPACES	WW	WET WELL, WASH WATER
APPR	APPROACH	DN	DOWN	HSP	HIGH SERVICE PUMP	OD	OUTSIDE DIAMETER	SPEC(S)	SPECIFICATION(S)	WWF	WELDED WIRE FABRIC
APPROX	APPROXIMATE, (LY)	DO	DOOR OPENING, DISSOLVED OXYGEN	HT	HEIGHT	OF	OUTSIDE FACE, OVERFLOW	SPLY	SUPPLY	WWM	WELDED WIRE MESH
ARCH	ARCHITECTURAL	DRN	DRAIN	HV	HOSE VALVE	OH	OVERHEAD	SQ	SQUARE	WWTF	WASTEWATER TREATMENT FACILITY
ARV	AIR RELEASE VALVE	DS	DOWNSPOUT	HVA	HYDRAULIC VALVE ACTUATOR	O&M	OPERATION AND MAINTENANCE	SS	SANITARY SEWER	WWTP	WASTEWATER TREATMENT PLANT
ARVV	AIR RELEASE AND VACUUM VALVE	DV	DRAIN VALVE, DIAPHRAGM VALVE	HVAC	HEATING, VENTILATING AND AIR CONDITIONING	OP	ORIFICE PLATE	SSE	SUBSTANDARD EFFLUENT		
ASSY	ASSEMBLY	DW	DISINFECTED WATER	HW	HOT WATER	OPER	OPERATING	SS	STAINLESS STEEL	x	BY, TIMES
AUTO	AUTOMATIC	DWG(S)	DRAWING(S)	HWL	HIGH WATER LEVEL	OPNG	OPENING	ST	SELF TAPPING	XLHDPE	CROSS LINKED HIGH-DENSITY POLYETHYLENE
AUX	AUXILIARY	DWL(S)	DOWL(S)	HWY	HIGHWAY	OPP	OPPOSITE	STA	STATION	YD	YARD
AVS	AUTOMATIC VALVE STATION	DWV	DRAIN, WASTE, AND VENT	HYD	HYDRAULIC	OPT	OPTIONAL	STD	STANDARD	YH	YARD HYDRANT
AWG	AMERICAN WIRE GAGE			HYDRO	HYDROPNEUMATIC	OZ	OUNCE	STM	STORMWATER	YR	YEAR
BC	BEGIN CURVE	E	EAST(ING), ELECTRICAL	I	INDICATOR	PBV	PLASTIC BALL VALVE	STR	STORAGE		
BCV	BALL CHECK VALVE	EA	EACH	ID	INSIDE DIAMETER	PC	POINT OF CURVE	STRUC	STRUCTURAL	&	AND
BF	BLIND FLANGE	EC	END CURVE	IF	INSIDE FACE	PCC	POINT OF COMPOUND CURVATURE	SV	SHUTOFF VALVE, SOLENOID VALVE	@	AT
BFP	BACKFLOW PREVENTER	ECC	ECCENTRIC	IN	INCH(ES)	PCCP	PRESTRESSED CONCRETE CYLINDER PIPE	SVC	SERVICE	>	DEFLECTION ANGLE GREATER THAN
BFV	BUTTERFLY VALVE	EEW	EMERGENCY EYEWASH	INC	INCORPORATED	PE	PLAIN END	SWV	SERVICE WATER	<	LESS THAN
BGO	BURIED GEAR OPERATOR	EF	EACH FACE	INCL	INCLUDING	PEP	POLYETHYLENE PIPE	SW	SOUTHWEST	#	NUMBER
BI	BLACK IRON	EFF	EFFLUENT	INCR	INCREASE	PERM	PERMEATE	SWD	SIDE WATER DEPTH	%	PERCENT
BIP	BLACK IRON PIPE	EGO	ELEVATED GEAR OPERATOR	INF	INFLUENT	PC	PRESSURE GAUGE	SWR	SEWER		
BITUM	BITUMINOUS	EJ	EXPANSION JOINT	INST	INSTRUMENT, (ATION)	PH	PIPE HANGER, POST HYDRANT	SWS	SEAL WATER SOLENOID		
BKR	BREAKER	EL	ELEVATION	INSUL	INSULATE, (ED), (ING)	PI	POINT OF INTERSECTION	SY	SQUARE YARD		
BLDG	BUILDING	ELAST	ELASTOMERIC	INT	INTERIOR, INTERNAL	PJV	POINT OF INTERSECTION ON VERTICAL CURVE	SYM	SYMBOL		
BLK	BLOCK	ELEV	ELEVATOR	INV	INVERT	PJ	PUSH-ON JOINT	SYMM	SYMMETRICAL		
BM	BENCHMARK	ELL	ELBOW - PLUMBING SMALLER THAN 4"	IPS	INTERNATIONAL PIPE STANDARD	P/L	PROPERTY LINE	SYS	SYSTEM		
BOC	BACK OF CURB	EMER	EMERGENCY	IR	INTERNAL RECYCLE	PL	PLATE	T	TELEPHONE, TOP		
BOF	BOTTOM OF FOOTING	ENC	ENCASEMENT	IW	IRRIGATION WATER	PM	PROCESS MECHANICAL	TAN	TANGENT		
BOS	BOTTOM OF SLAB, BOTTOM OF SLOPE	ENCL	ENCLOSURE	JB	JUNCTION BOX	PNL(S)	PANEL(S)	T&B	TOP AND BOTTOM		
BOT	BOTTOM	ENT	ENTRANCE	JF	JOINT FILLER	PNV	PINCH VALVE	TB	TERMINAL BOX		
BRG	BEARING	EOL	END OF LINE	JT	JOINT	POB	POINT OF BEGINNING	TBE	THREAD BOTH ENDS		
B&S	BELL AND SPIGOT	EOP	EDGE OF PAVEMENT	KGV	KNIFE GATE VALVE	POI	POINT OF INTERSECTION	TBM	TEMPORARY BENCHMARK		
BSMT	BASEMENT	EPDM	ETHYLENE PROPYLENE DIENE MONOMER	KO	KNOCK OUT	POLY	POLYMER	TC	TOP OF CURB		
BSP	BLACK STEEL PIPE	EQU	EQUIPMENT	L	LEVEL, LOUVER	PPD	POUNDS PER DAY	TDH	TOTAL DYNAMIC HEAD		
BTU	BRITISH THERMAL UNIT	EST	ESTIMATE	LAB	LABORATORY	PPM	PARTS PER MILLION	TEL	TELESCOPING		
BTUH	BRITISH THERMAL UNIT-HOUR	EVA	ELECTRIC VALVE ACTUATOR	LAM	LAMINATE(D)	PROP	PROPOSED	TEMP	TEMPERATURE, TEMPORARY		
BU	BELL-UP	EW	EACH WAY	LAT	LATERAL	PRS	PRESSURE REDUCING STATION	TERM	TERMINAL		
BV	BALL VALVE	EWFC	EACH WAY EACH FACE	LAV	LAVATORY	PRV	PRESSURE REDUCING VALVE	TH	TEST HOLE		
BVC	BEGIN VERTICAL CURVE	EXCH	EXCHANGER	LB(S)	POUNDS	PRW	PROCESS WATER	THK	THICK, THICKNESS		
BWW	BACKWASH WATER	EXIST	EXISTING	LF	LINEAR FEET	PS	PIPE SUPPORT, PUMP STATION	THRD	THREADED		
C/C	CENTER TO CENTER	EXP	EXPANSION, EXPOSED	LH	LENGTH, LONG	PSF	POUNDS PER SQUARE FOOT	TJ	TIED JOINT		
CATV	CABLE TELEVISION	EXT	EXTENSION, EXTERIOR, EXTERNAL	LHG	LEFT HAND	PT	POINT, POINT OF TANGENCY	TOB	TOP OF BANK		
CAV	COMBINATION AIR VALVE	F/F	FACE TO FACE	LHPE	LINEAR HIGH-DENSITY POLYETHYLENE	PV	PLUG VALVE	TOC	TOP OF CONCRETE		
CB	CATCH BASIN	FAB	FABRICATED	LM	LINEAL, LINEAR	PVC	POLYVINYL CHLORIDE	TOF	TOP OF FOOTING		
CCC	CHLORINE CONTACT CHAMBER	FC	FLEXIBLE CONNECTION, FLOW CONTROL	LNDPE	LINEAR HIGH-DENSITY POLYETHYLENE	PVC-D	POLYVINYL CHLORIDE (DOUBLE CONTAINED)	TOS	TOP OF SLAB		
CF	CUBIC FOOT	FCA	FLANGED COUPLING ADAPTER	LNL	LINEAL, LINEAR	PVCP	POLYVINYL CHLORIDE PIPE	TRANS	TRANSFORMER, TRANSMITTER, TRANSFER		
CFM	CUBIC FEET PER MINUTE	FCV	FLOW-CONTROL VALVE	LO	LOUVER OPENING	PVDF	POLYVINYLIDENE FLUORIDE (KYNAR)	TS	THICKENED SLUDGE		
CFPS	CUBIC FEET PER SECOND	FD	FLOOR DRAIN, FOUNDATION DRAIN	LR	LONG RADIUS	PVMT	PAVEMENT	TV	TELEVISION		
C&G	CURB AND GUTTER	FDN	FOUNDATION	LS	LIFT STATION	PW	POTABLE WATER	TWP	TOWNSHIP		
CHKD	CHECKERED	FE	FILTER EFFLUENT	LT	LEFT	QTY	QUANTITY	TYP	TYPICAL		
CI	CAST IRON, CUBIC INCH	FF	FINISH FLOOR	LWL	LEFT WATER LEVEL	R	RADIUS, RISER	UD	UNDERDRAIN		
CIMH	CAST IRON MANHOLE	FG	FIBERGLASS	MACH	MACHINE	RAS	RETURN ACTIVATED SLUDGE	UDM	ULTRASONIC DENSITY METER		
CIMHS	CAST IRON MANHOLE STEPS	FH	FIRE HYDRANT	MAINT	MAINTENANCE	RAW	RAW WATER	UG	UNDERGROUND		
CIP	CAST IRON PIPE	FIG	FIGURE	MAN	MANUAL	RCB	REINFORCED CONCRETE BOX	UGE	UNDERGROUND ELECTRIC		
CISP	CAST IRON SOIL PIPE	FIN	FINISH	MAX	MAXIMUM	RCCP	REINFORCED CONCRETE PIPE	UNO	UNLESS NOTED OTHERWISE		
CJ	CONSTRUCTION JOINT	FL	FLOOR, FLOW LINE	MC	MECHANICAL COUPLING	RCHP	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE	USGS	UNITED STATES GEOLOGICAL SURVEY		
CJT	CONTROL JOINT	FLEX	FLEXIBLE	MCC	MOTOR CONTROL CENTER	RCP	REINFORCED CONCRETE PIPE	UTC	UNDERGROUND TELEPHONE CABLE		
CL	CENTERLINE	FLG	FLANGE	MECH	MECHANICAL	RCW	RECLAIM WATER	UTIL	UTILITY		
CLF	CHAIN LINK FENCE	FM	FORCE MAIN, FLOW METER	MED	MEDIUM	RD	ROOF DRAIN, ROAD	UV	ULTRAVIOLET		
CLR	CLEAR, (ANCE)	FOT	FLAT ON TOP	MET	METAL	RECIRC	RECIRCULATING	V	VALVE, VENT		
CMP	CORRUGATED METAL PIPE	FPM	FEET PER MINUTE	MES	METERED END SECTION	RECP	RECEPTACLE	VAC	VACUUM		
CMU	CONCRETE MASONRY UNIT	FPS	FEET PER SECOND	MFM	MAGNETIC FLOWMETER	RED	REDUCER, REDUCING	VB	VALVE BOX		
CO	CLEAN OUT, COMPANY	FRP	FIBERGLASS REINFORCED PLASTIC	MFR(S)	MANUFACTURER(S)	REW	REUSE EFFLUENT WATER	VC	VERTICAL CURVE, VICTAULIC COUPLING		
COD	CHEMICAL OXYGEN DEMAND	FS	FAR SIDE, FLOOR SLEEVE, FLOAT SWITCH	MG	MILLION GALLONS	REG	REGULATOR, REGULATING	VCD	VERTICAL CONTROL DAMPER		
COMB	COMBINATION	FT	FOOT	MGD	MILLION GALLONS PER DAY	REF	REFERENCE	VCP	VITRIFIED CLAY PIPE		
COMB SWR	COMBINED SEWER	FURN	FURNISH, FURNISHED	MH	MANHOLE	REF	REINFORCING	VERT	VERTICAL		
COMP	COMPRESSOR, (ED)	FV	FLAP VALVE	MI	MILE	REINF	REINFORCING	VFD	VARIABLE FREQUENCY DRIVE		
CONC	CONCRETE	FW	FINISHED WATER	MIN	MINIMUM, MINUTE	REM	REMOVABLE	VF	VACUUM FILTER		
CONN	CONNECTION	FWD	FORWARD	MISC	MISCELLANEOUS	REQD	REQUIRED	VIB	VIBRATION		
CONSTR	CONSTRUCT, CONSTRUCTION	G	GAS	MJ	MECHANICAL JOINT	RET	RETURN	VS	VARIABLE SPEED		
CONT	CONTINUOUS(LY), CONTINUATION	GA	GAUGE	MJRJ	MECHANICAL JOINT RETAINER GLAND	REV	REVISION, REVISED, REVERSED	VTR	VENT THROUGH ROOF		
COP	COPPER PIPE	GAL	GALLON	MJTR	MECHANICAL JOINT WITH TIE ROD	REW	RETURN EFFLUENT WATER	VV	VENT VALVE		
COR	CORNER	GALV	GALVANIZED	ML	MIXED LIQUOR	RG	RETAINER GLAND	VVB	VACUUM BREAKER		
CORR	CORRIDOR, CORRUGATED	GC/MS	GAS CHROMATOGRAPH/MASS SPECTROMETER	MO	MASONRY OPENING, MOTOR OPERATED	RJ	RESTRAINED JOINT (BELL)				
CP	CONCRETE PIPE	GEN	GENERAL, GENERATOR	MP	METERING PUMP	RMJ	RESTRAINED MECHANICAL JOINT				
CPLG	COUPLING	GIP	GALVANIZED IRON PIPE	MPH	MILES PER HOUR	RNG	RANGE				
CPP	CONCRETE PRESSURE PIPE	GJ	GROOVE JOINT	MRPP	METAL REINFORCED PLASTIC PIPE	RO	REVERSE OSMOSIS				
CPVC	CHLORINATED POLYVINYL CHLORIDE	GM	GAS METER	MSL	MEAN SEA LEVEL	ROC	RADIUS OF CURVATURE				
CS	CHLORINE SOLUTION	GND	GROUND	MTD	MOUNTED	RPM	REVOLUTIONS PER MINUTE				
CTR(S)	CENTER(S)	GO	GEAR OPERATED	MTL	MATERIAL	RPZBP	REDUCED PRESSURE ZONE BACKFLOW PREVENTER				
CTRL	CONTROL	GPD	GALLONS PER DAY	MTR	MOTOR	RR	RAILROAD				
CV	CHECK VALVE	GPH	GALLONS PER HOUR	MV	MOTORIZED VALVE	RS	RAW SLUDGE, RAW SEWAGE				
CW	COLD WATER	GPM	GALLONS PER MINUTE	MW	MANWAY	RT	RIGHT				
CY	CUBIC YARD	GPS	GALLONS PER SECOND	MWL	MEAN WATER LEVEL	R/W	RIGHT OF WAY				
		GR	GRADE			RWW	RAW WASTEWATER				
		GS	GALVANIZED STEEL								
		GSP	GALVANIZED STEEL PIPE								
		GSR	GROUND STORAGE RESERVOIR								
		GST	GROUND STORAGE TANK								
		GV	GATE VALVE								

NOTE: THIS LEGEND IS FOR GENERAL REFERENCE. NOT ALL ABBREVIATIONS MAY BE USED IN THIS DESIGN, NOR IS THIS LEGEND COMPREHENSIVE. REFER TO INDIVIDUAL DRAWING LEGEND(S). IF ABBREVIATIONS ARE NOT LISTED, INDIVIDUAL DISCIPLINE STANDARD LEGENDS SUPERCEDE THIS GENERAL LEGEND, IF PROVIDED.

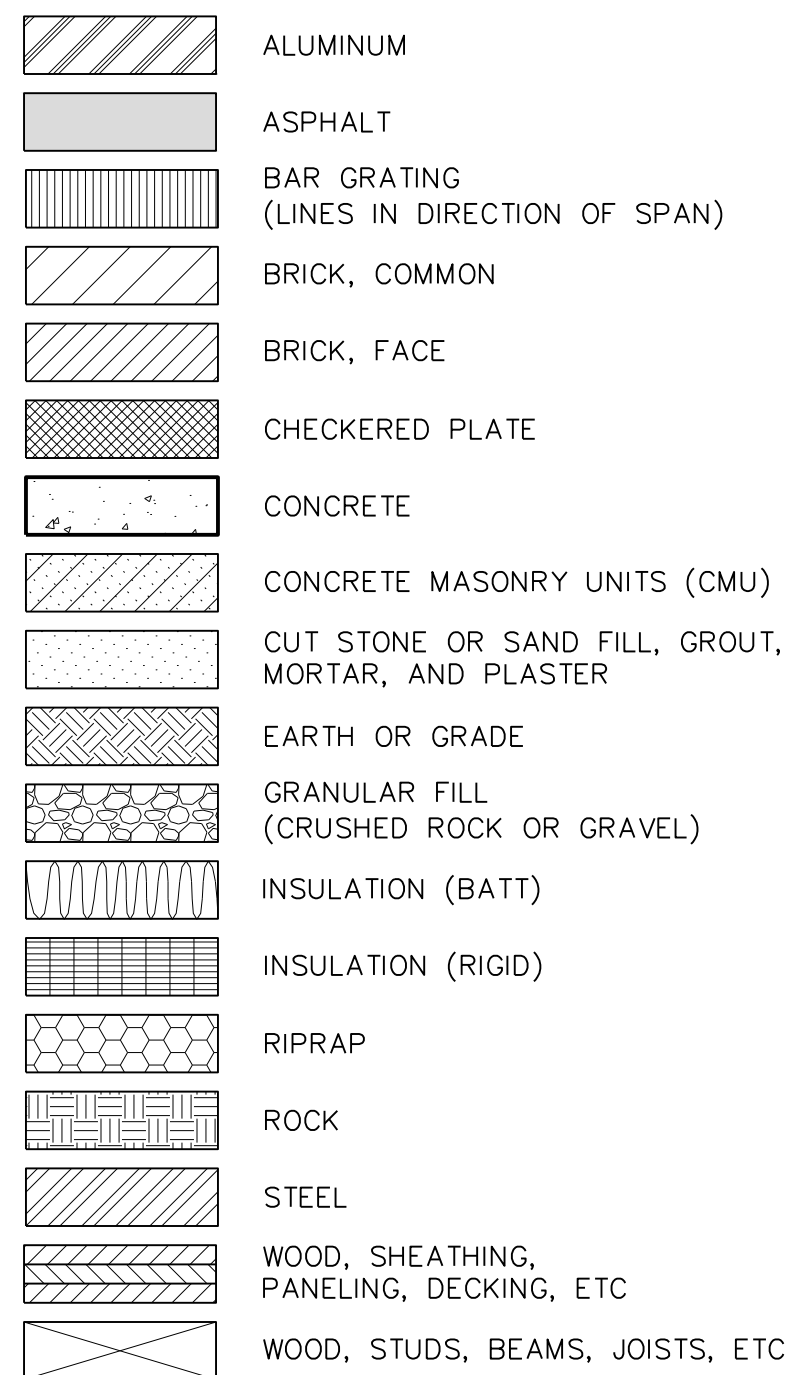
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	REV	DATE	DESCRIPTION	BY				SCALE:	NOTED		REVISION:	0
								DRAWING NO.:	G03		SHEET NO.:	03 OF 17

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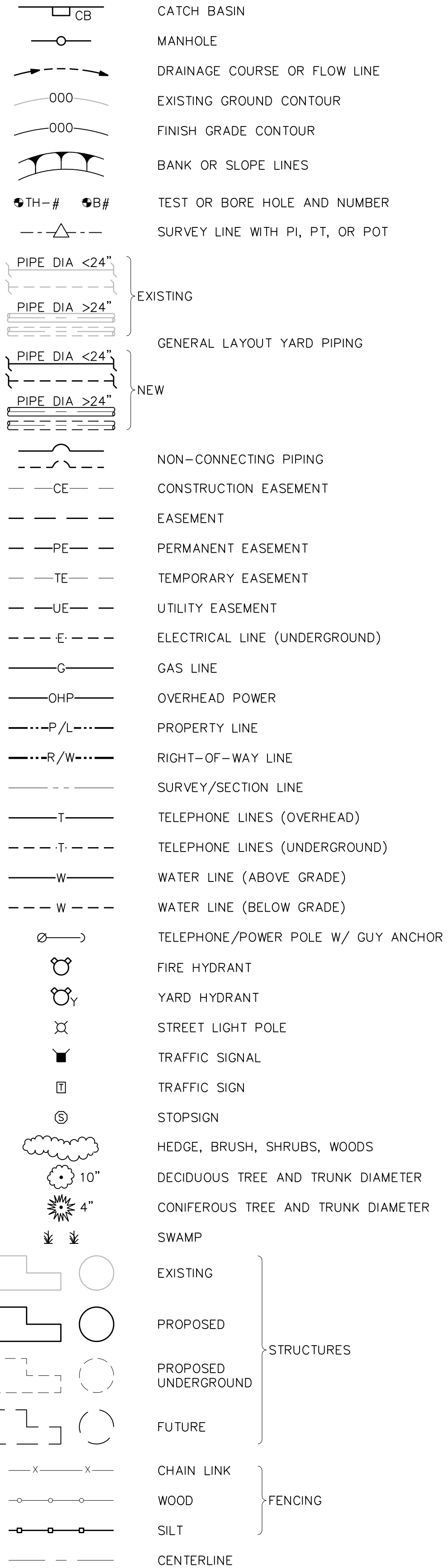
GENERAL DRAFTING LEGEND



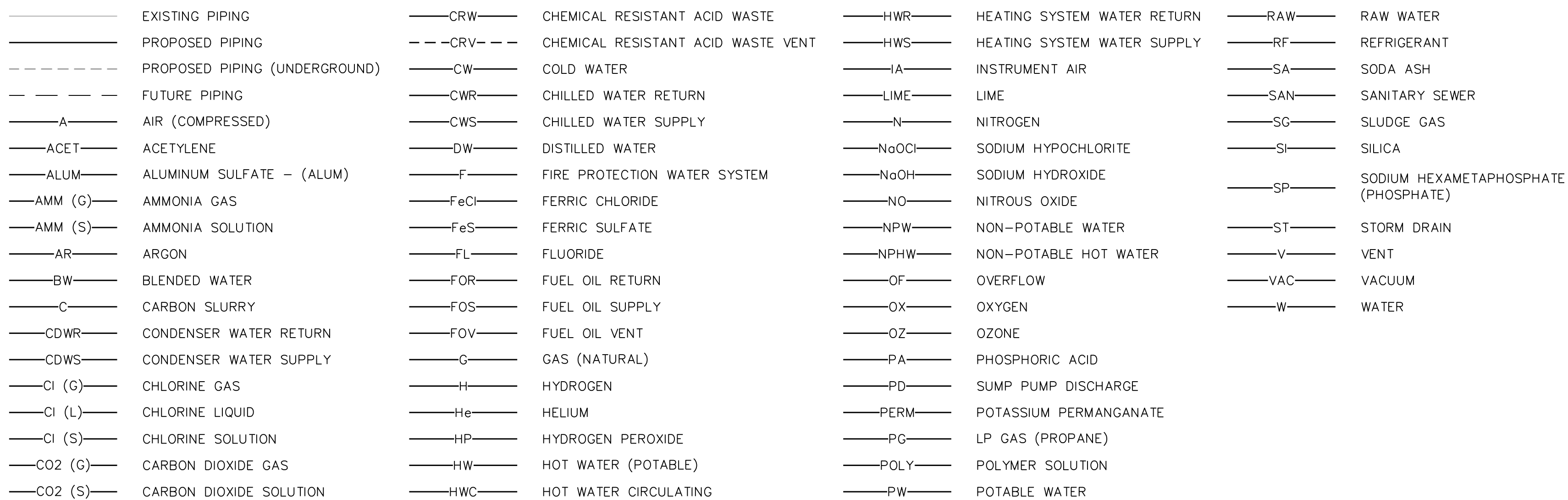
MATERIALS LEGEND



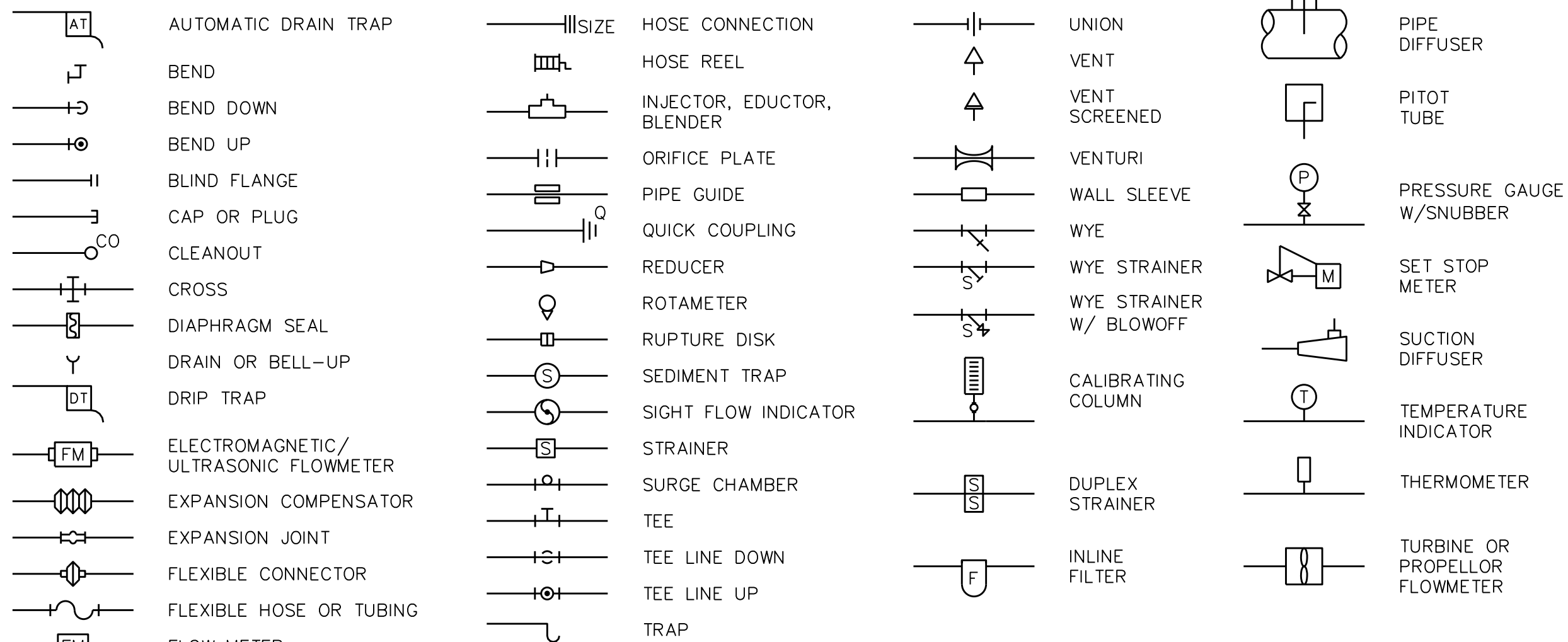
CIVIL LEGEND



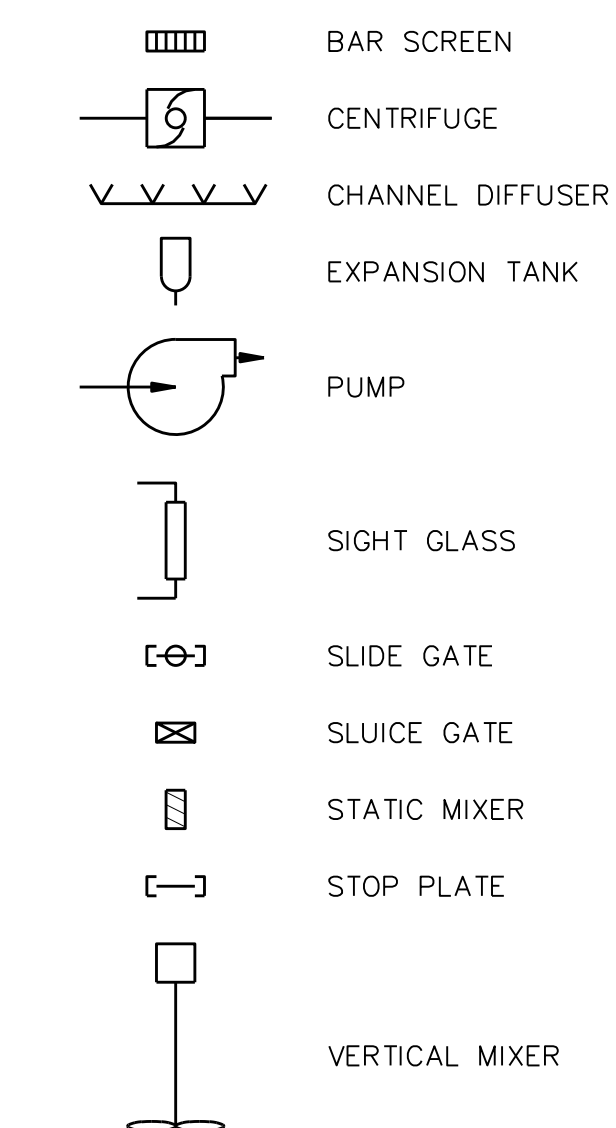
PIPING SYSTEMS LEGEND



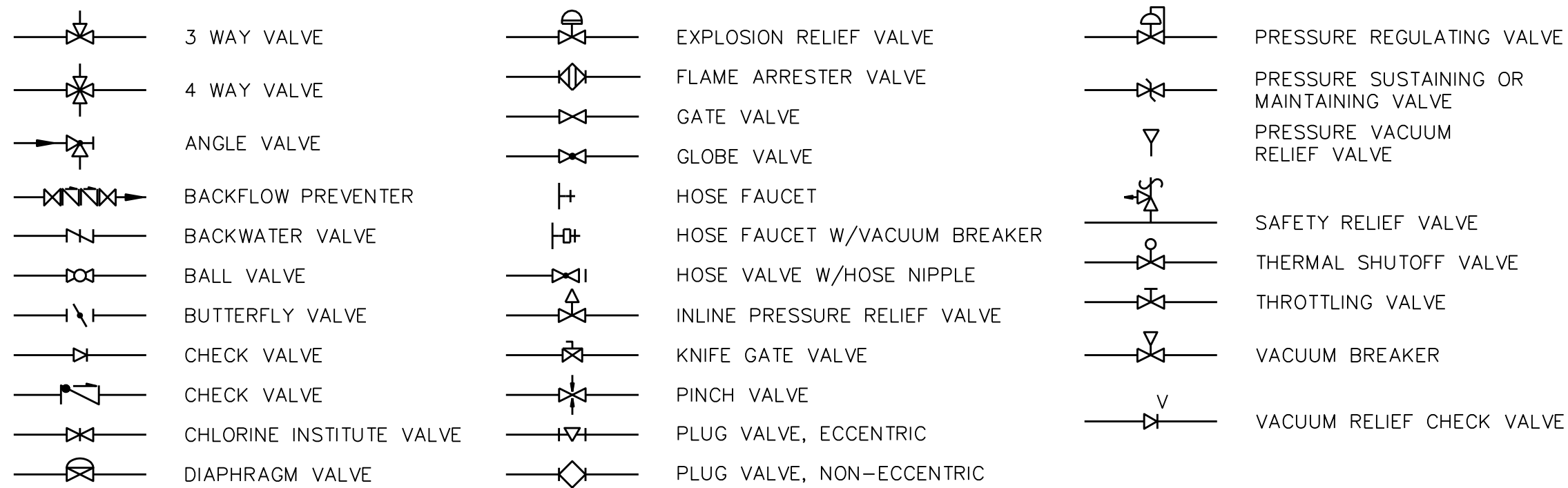
PIPING ACCESSORIES LEGEND



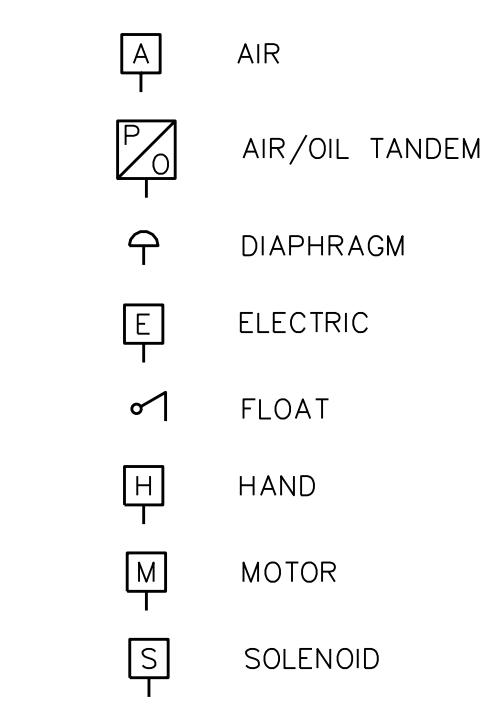
MISCELLANEOUS EQUIPMENT LEGEND



VALVE LEGEND



ACTUATOR LEGEND



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Designed ESW
 Drawn PFH
 Checked WTH
 Reviewed GWD
 Approved WTH

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

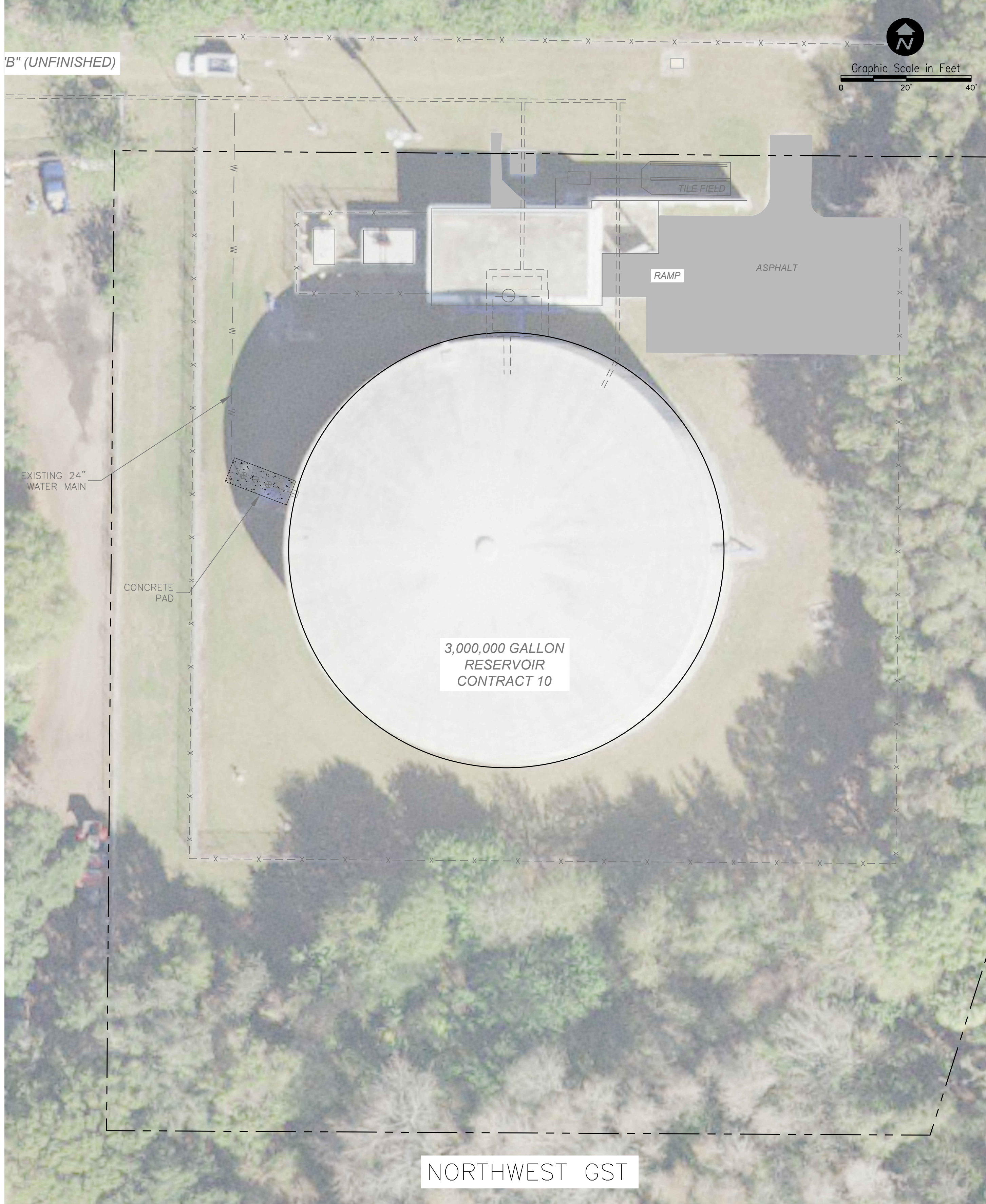
GENERAL

SYMBOLS AND LEGENDS

PROJECT NO.:	0818
SCALE:	NOTED
REVISION:	0
DRAWING NO.:	G04
SHEET NO.:	04 OF 17



Parent Sheet Set: 0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 10:59 AM Individual File Path: C01



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Designed ESW
 Drawn PFH
 Checked WTH
 Reviewed ---
 Approved WTH

LINE IS 1" AT FULL SIZE

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

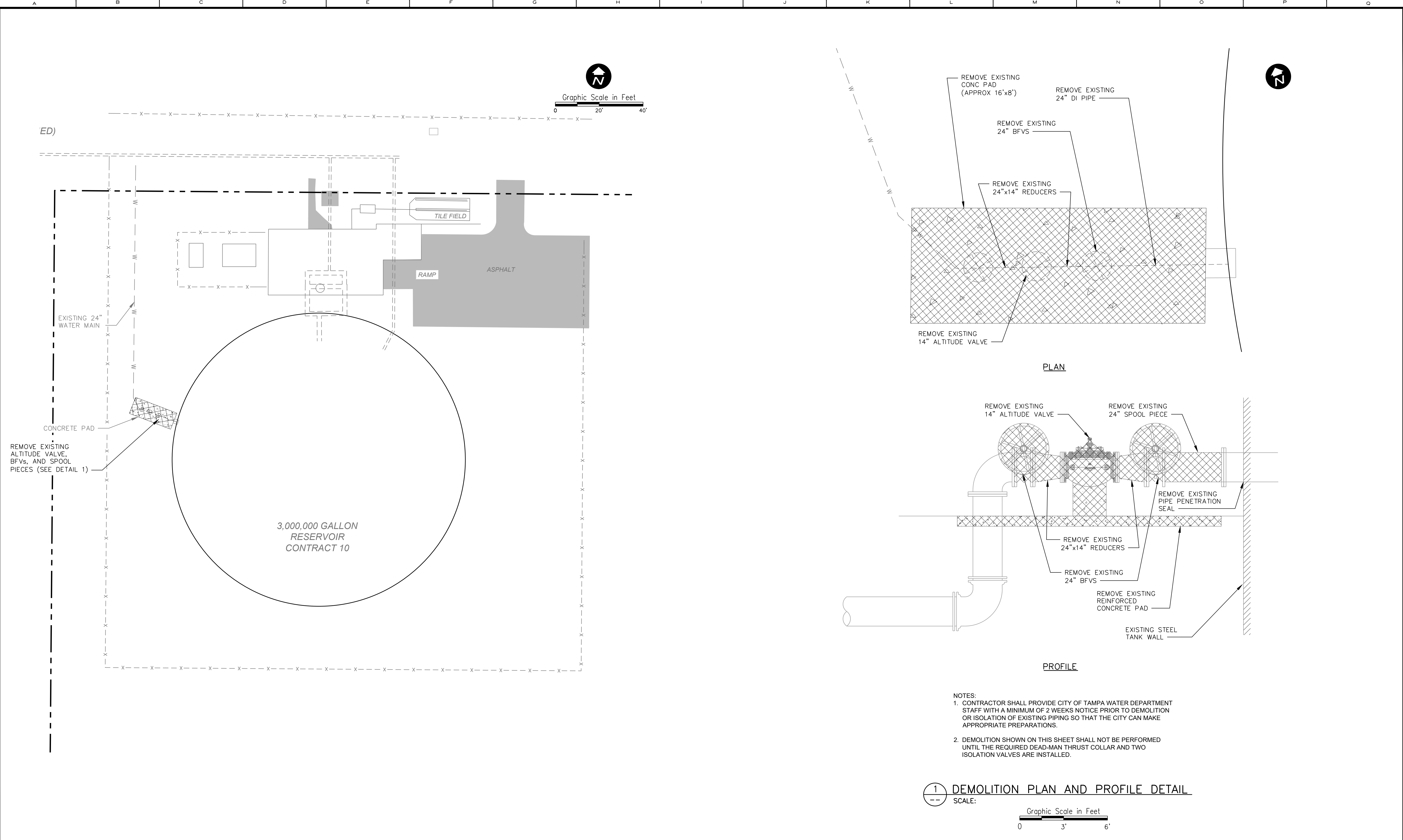
CIVIL

EXISTING SITES

PROJECT NO.: 0818	
SCALE: NOTED	REVISION: 0
DRAWING NO. C01	SHEET NO.: 05 OF 17

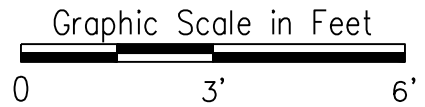


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- NOTES:**
- CONTRACTOR SHALL PROVIDE CITY OF TAMPA WATER DEPARTMENT STAFF WITH A MINIMUM OF 2 WEEKS NOTICE PRIOR TO DEMOLITION OR ISOLATION OF EXISTING PIPING SO THAT THE CITY CAN MAKE APPROPRIATE PREPARATIONS.
 - DEMOLITION SHOWN ON THIS SHEET SHALL NOT BE PERFORMED UNTIL THE REQUIRED DEAD-MAN THRUST COLLAR AND TWO ISOLATION VALVES ARE INSTALLED.

1 DEMOLITION PLAN AND PROFILE DETAIL
SCALE:



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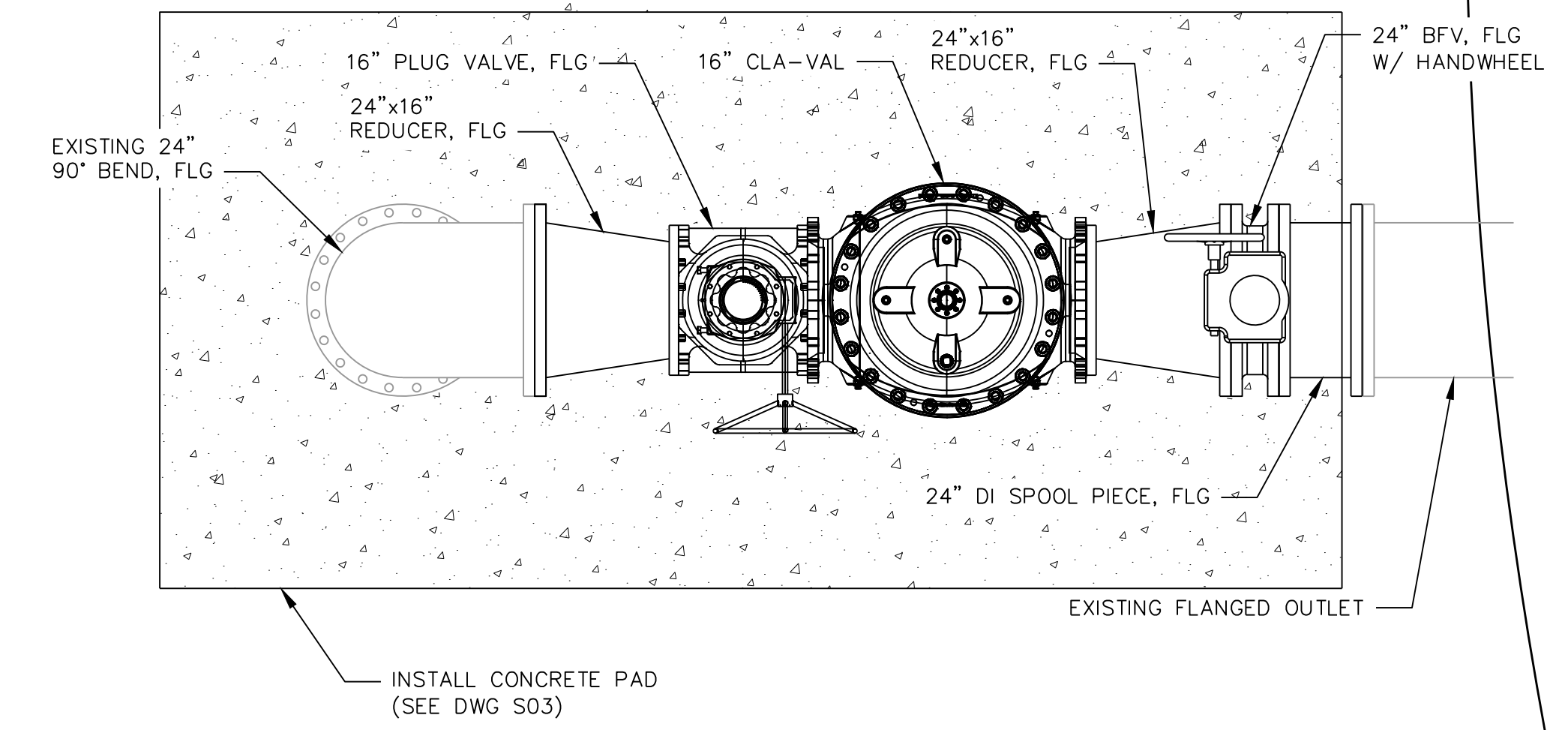
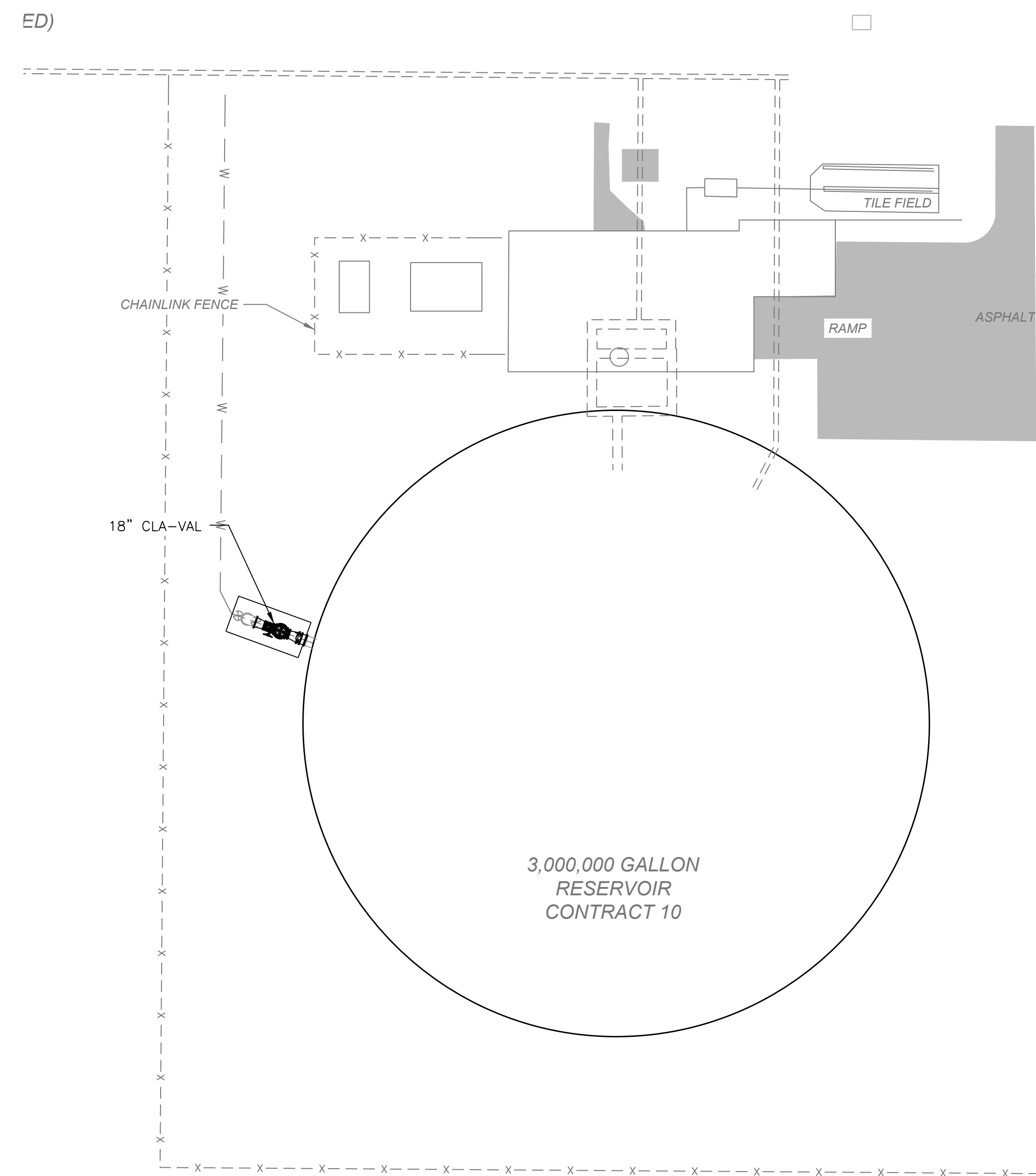
Designed ESW
 Drawn PFH
 Checked WTH
 Reviewed GWD
 Approved WTH

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 CIVIL
NORTHWEST GST DEMOLITION PLAN AND PROFILE

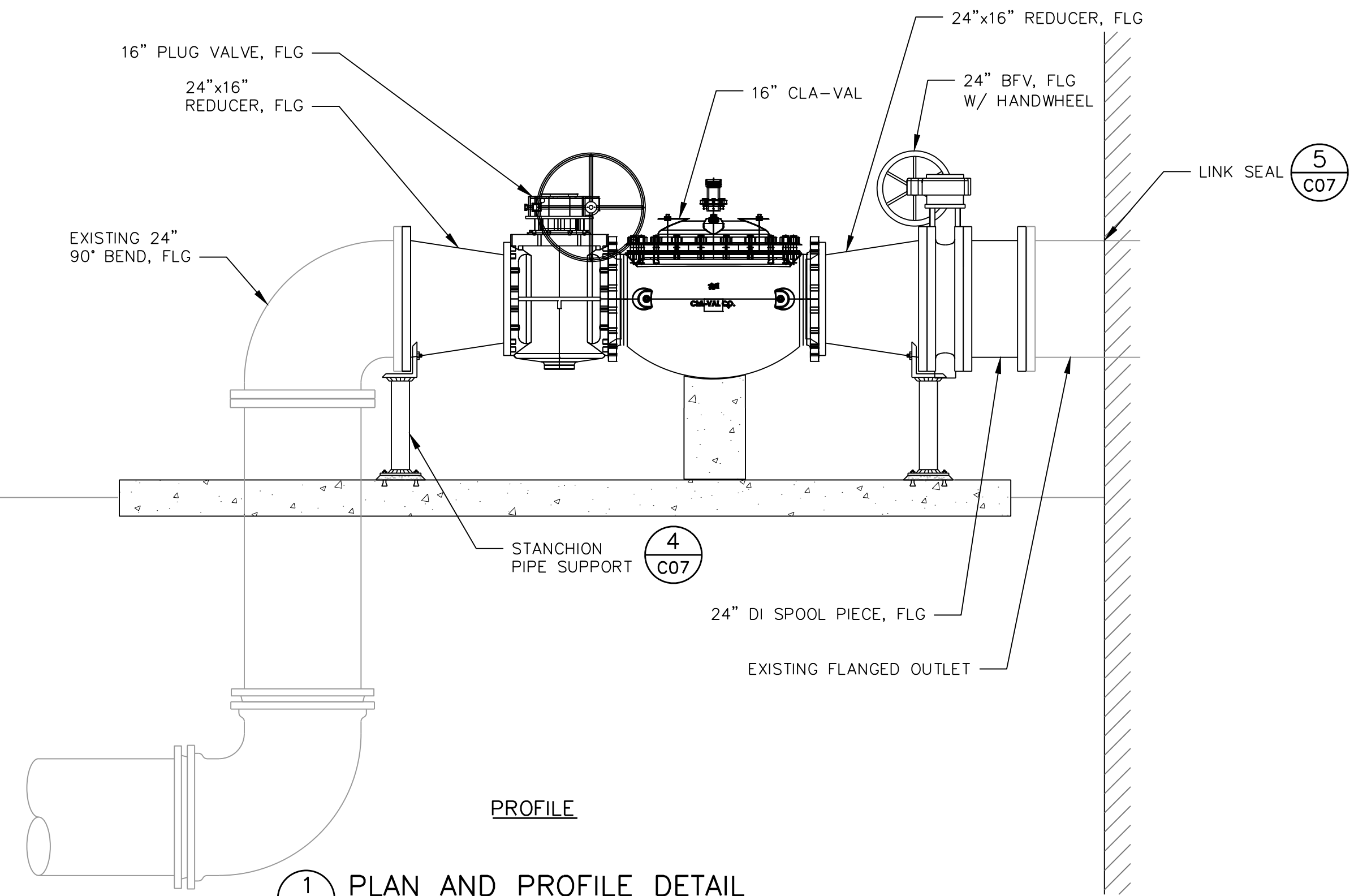
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SCALE:	NOTED
DRAWING NO.:	C02
REVISION:	0
SHEET NO.:	06 OF 17



Parent Sheet Set: 0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 10:51 AM Individual File Path: C03



PLAN



PROFILE

1 PLAN AND PROFILE DETAIL

SCALE: Graphic Scale in Feet
0 2' 4'

- NOTES:
- CONTRACTOR SHALL PROVIDE THE TAMPA WATER DEPARTMENT STAFF WITH A MINIMUM OF 2 WEEKS NOTICE PRIOR TO DEMOLITION OR ISOLATION OF EXISTING PIPING SO THAT THE CITY CAN MAKE APPROPRIATE PREPARATIONS.
 - CONCRETE THRUST COLLAR SHALL BE INSTALLED AND DEEMED FULLY FUNCTIONAL PRIOR TO COMMENCEMENT OF ANY EXCAVATION OR PIPE MODIFICATION.
 - ALL BELOW GRADE JOINTS SHALL BE MECHANICAL JOINT AND RESTRAINED. ALL ABOVE GRADE JOINTS SHALL BE FLANGED UNLESS OTHERWISE NOTED.
 - ALL BURIED DUCTILE IRON PIPE SHALL BE POLY WRAPPED AS PER THE SPECIFICATIONS.
 - ALL ABOVE GRADE PIPING, FITTING AND ISOLATION VALVES SHALL BE FACTORY PRIMED COATED AND PAINTED IN FIELD PER THE SPECIFICATIONS.



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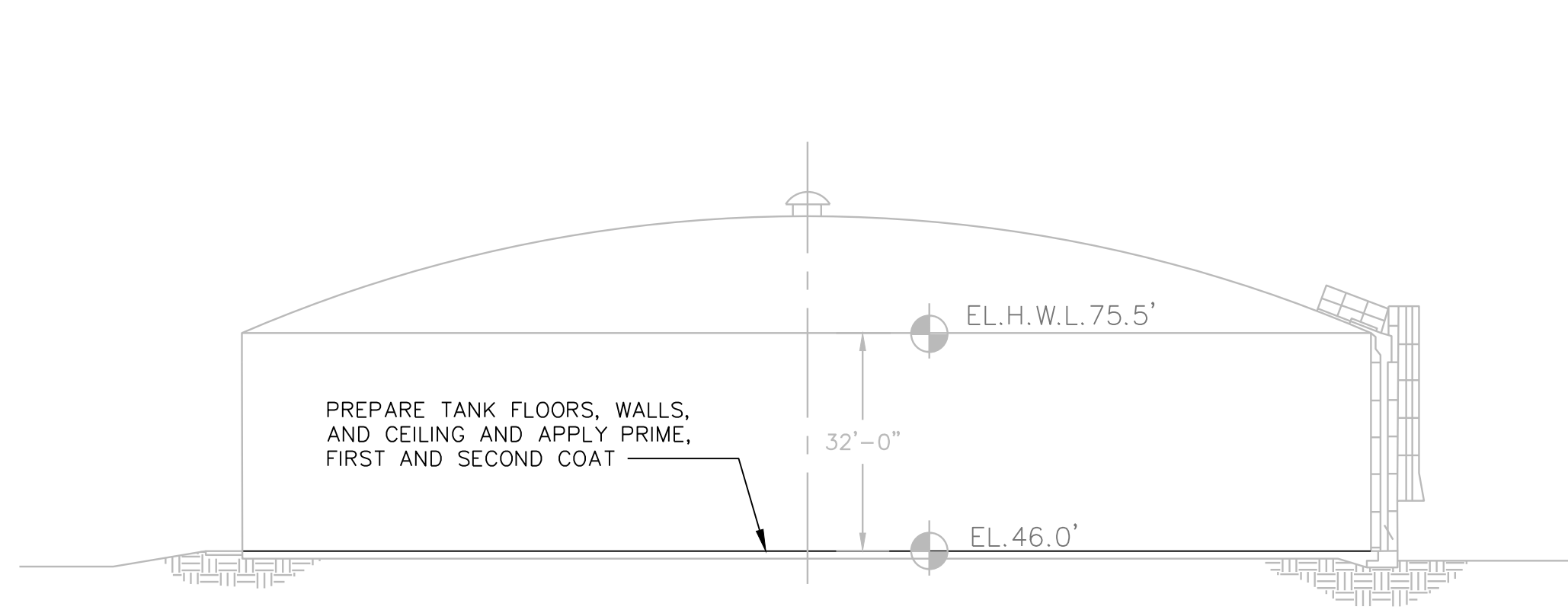
Designed ESW
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 Checked WTH
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 Approved WTH

LINE IS 1" AT FULL SIZE

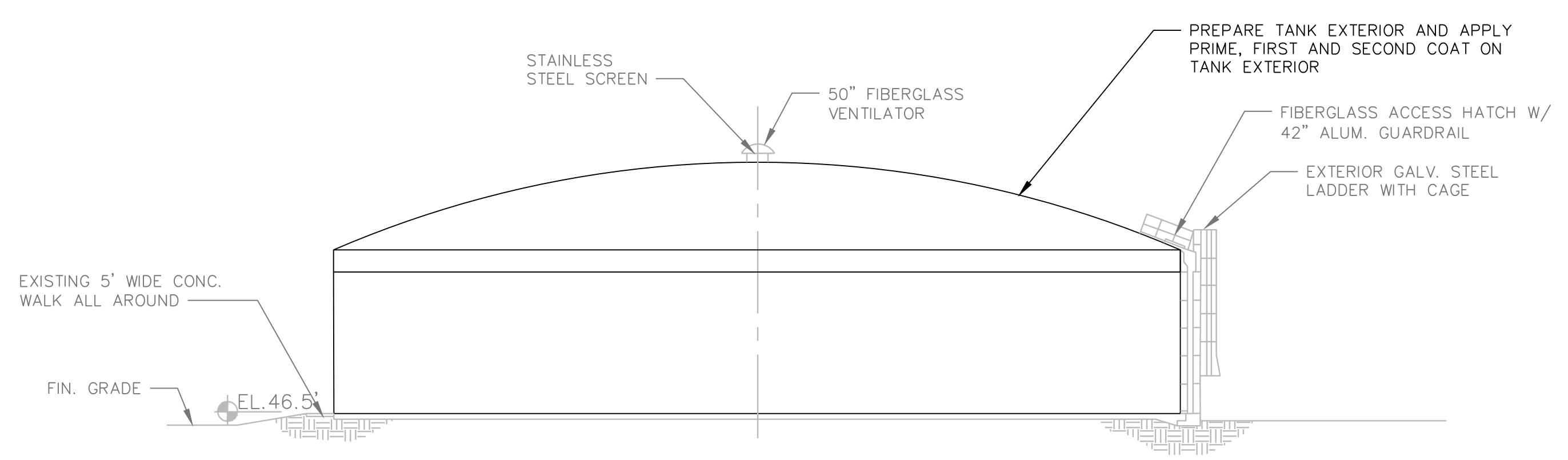
CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 CIVIL
 NORTHWEST GST PLAN AND PROFILE

PROJECT NO.: 0818	
SCALE: NOTED	REVISION: 0
DRAWING NO. C03	SHEET NO.: 07 OF 17

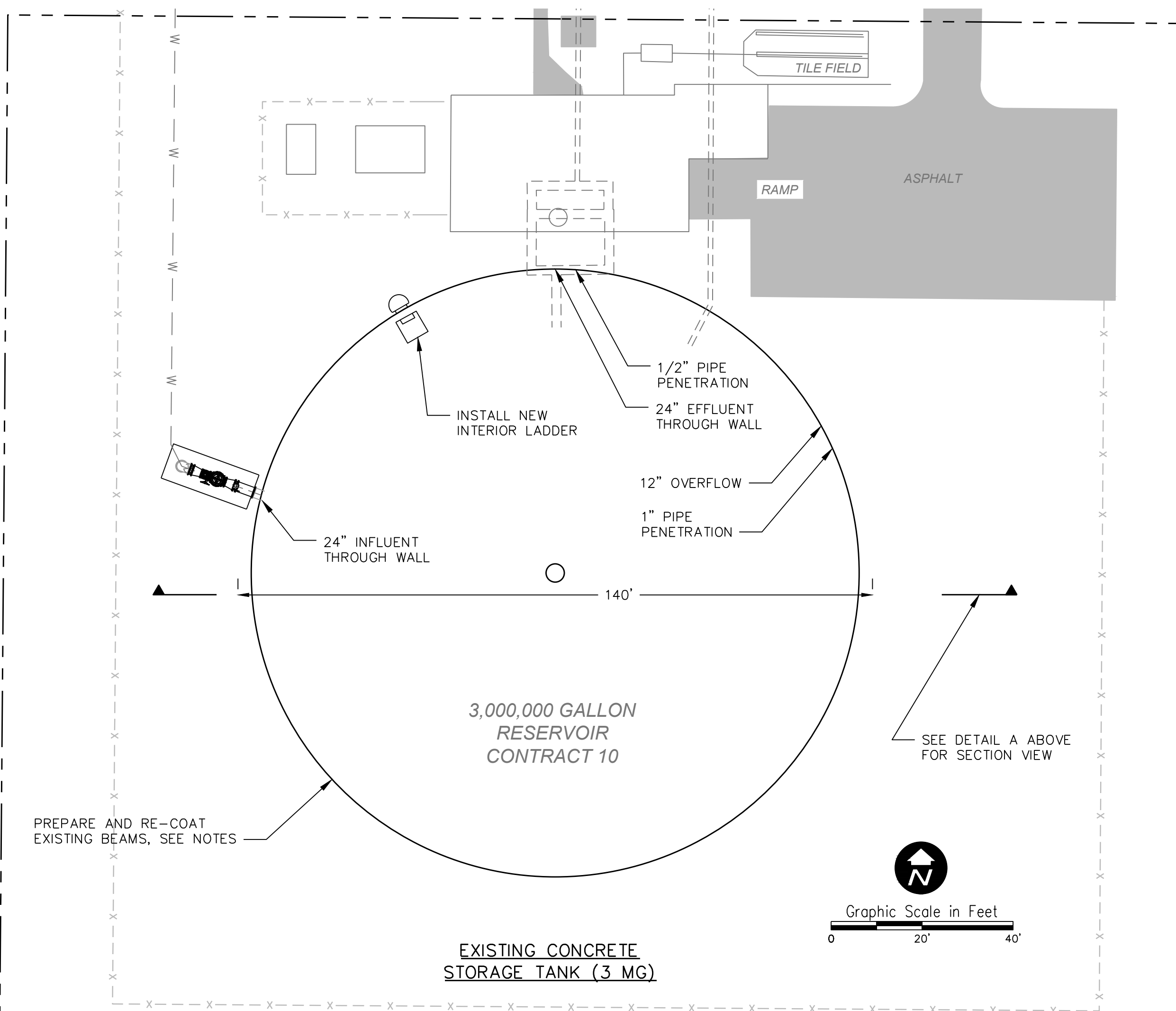




TYPICAL INTERIOR SECTION



TYPICAL EXTERIOR SECTION



(B) PLAN VIEW
SCALE: 1"=20'

NOTES

- NOTES ARE INTENDED TO COMPLEMENT THE EXTERIOR AND INTERIOR COATING SPECIFICATIONS AND ARE FURNISHED IN THE DRAWINGS FOR CONVENIENCE. THE CONTRACTOR SHALL REFER TO THE TECHNICAL SPECIFICATIONS.
- ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.
- THE CONTRACTOR SHALL PERFORM OR OBTAIN AN ASBESTOS SURVEY PER NESHAP REGULATIONS PRIOR TO MOBILIZING.
- THE CONTRACTOR SHALL PERFORM LEAD BASED PAINT SURVEY PER NLLAP REQUIREMENTS PRIOR TO MOBILIZING.
- THE CONTRACTOR SHALL PROVIDE A DETAILED PROJECT SUMMARY TO INCLUDE BUT NOT BE LIMITED TO THE PROVISION OF ALL SAFETY LOGS SHOWING NAMES OF PERSONS WHO ENTERED THE WORKSPACE INCLUDING DATE AND TIMES OF ENTRY AND EXIT. RECORDS OF ANY EMERGENCIES, SAFETY, OR HEALTH INCIDENTS, WASTE MANIFESTS, ETC.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY PROTECTING AREAS NOT TO BE COATED DURING ALL PHASES OF HTE PROJECT INCLUDING REPAIR, WASHING, BLASTING, AND PAINTING. ITEMS NOT TO BE COATED SHALL BE RELOCATED IF POSSIBLE OR PROTECTED AS REQUIRED. ANY DAMAGE CAUSED BY NOT PROPERLY PROTECTING SHALL BE REPAIRED AT HTE CONTRACTOR'S EXPENSE.
- SURFACES TO BE COATED SHALL BE CLEANED AND PREPARED IN ACCORDANCE WITH SSPC REQUIREMENTS BEFORE APPLYING COATING OR SURFACE TREATMENTS. ANY OIL, GREASE, RUST, LOOSE MILL SCALE, OLD WEATHERING COATING, AND ALL OTHER FOREIGN SUBSTANCES SHALL BE REMOVED EXCEPT AS SPECIFIED.
- INTERIOR COATING:
 - ALL MOLD, MILDEW, CHALK, LOOSE PAINT, ORGANIC DEPOSITS, OR OTHER SURFACE CONTAMINATION FROM THE ENTIRE WET AREA SHALL BE REMOVED USING LOW PRESSURE WASHER CLEANING (MIN 4000 PSI) PRIOR TO ABRASIVE CLEANING.
 - ALL SPECIFIED INTERIOR SURFACES SHALL BE PRESSURE WASHED, PREPARED, AND COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - ALL PIPING AND DRAINS SHALL BE SUFFICIENTLY COVERED TO KEEP BLAST MATERIAL FROM ENTERING THE PIPING.
- EXTERIOR COATING:
 - ALL SPECIFIED EXTERIOR SURFACES SHALL BE PRESSURE WASHED, PREPARED, AND COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
- REFER TO SPECIFICATIONS FOR ADDITIONAL DETAIL AND INFORMATION FOR RESULTS OF METALS TESTING.

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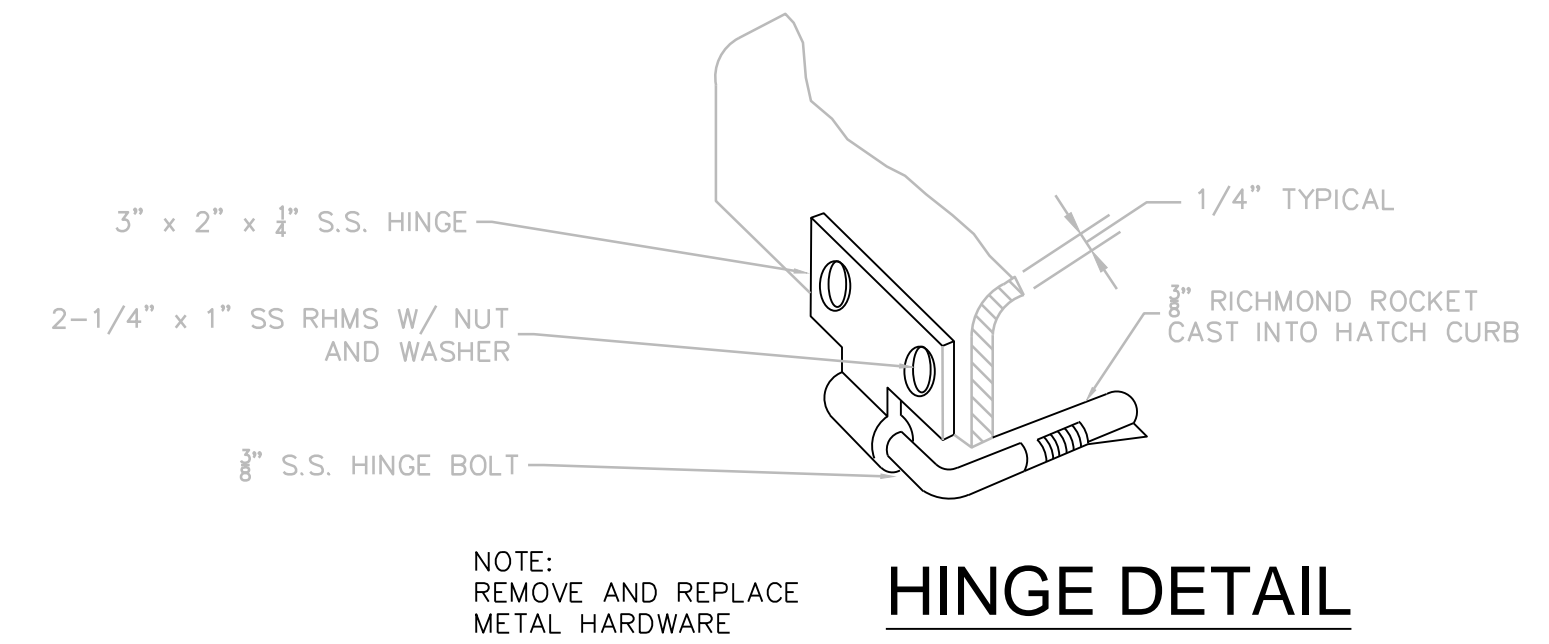
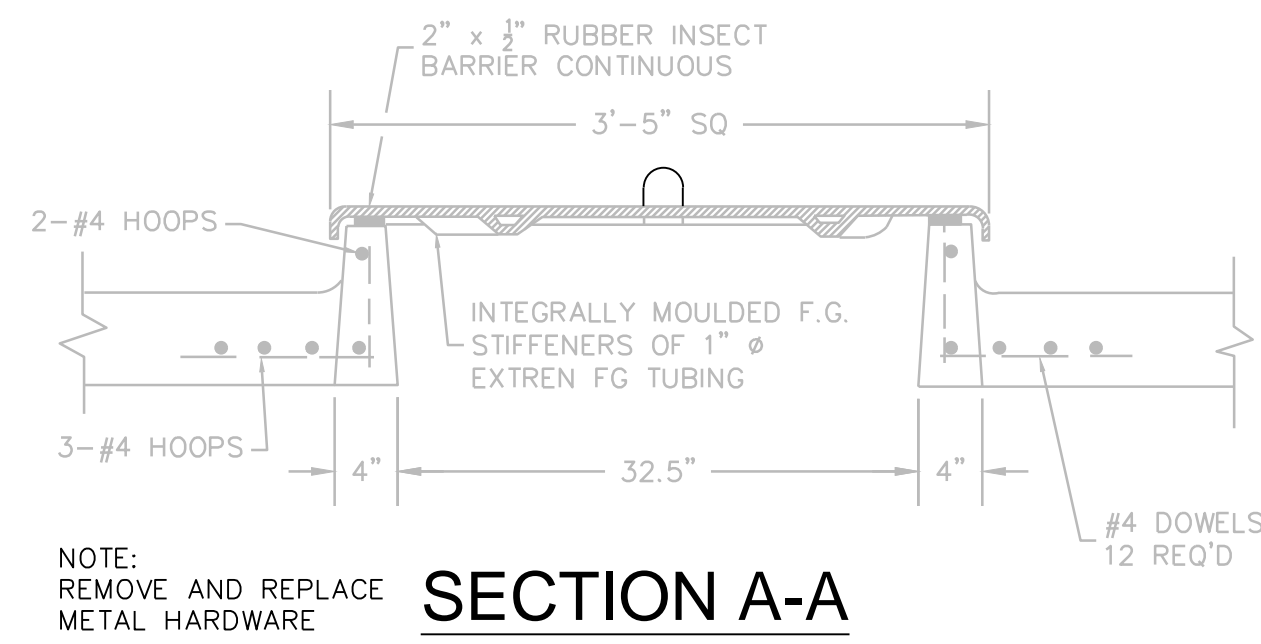
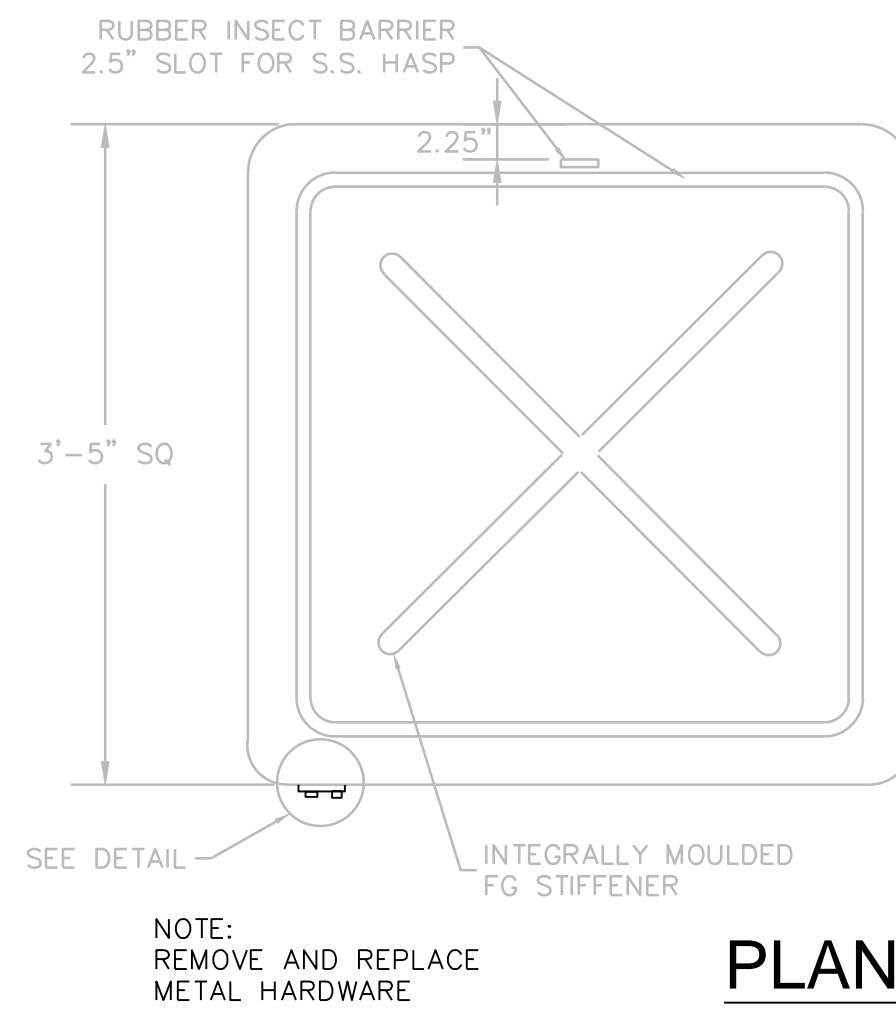
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 Drawn PFH
 Checked WTH
 Reviewed GWD
 Approved WTH

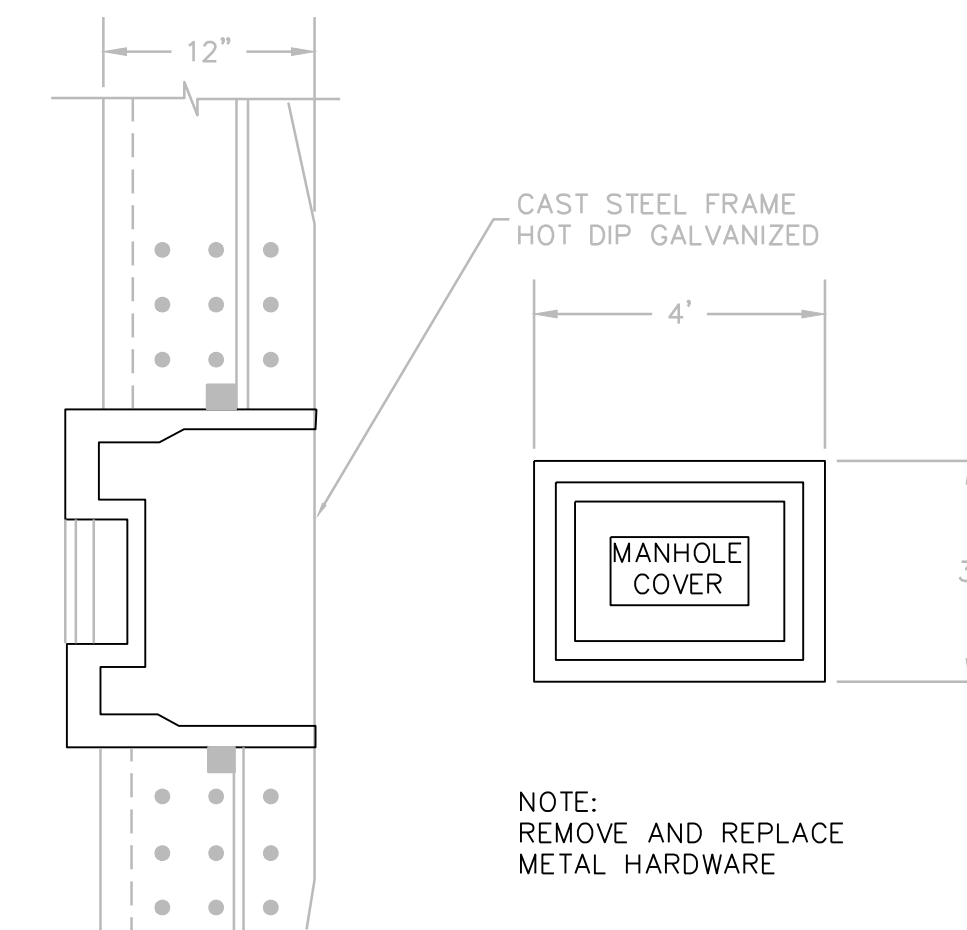
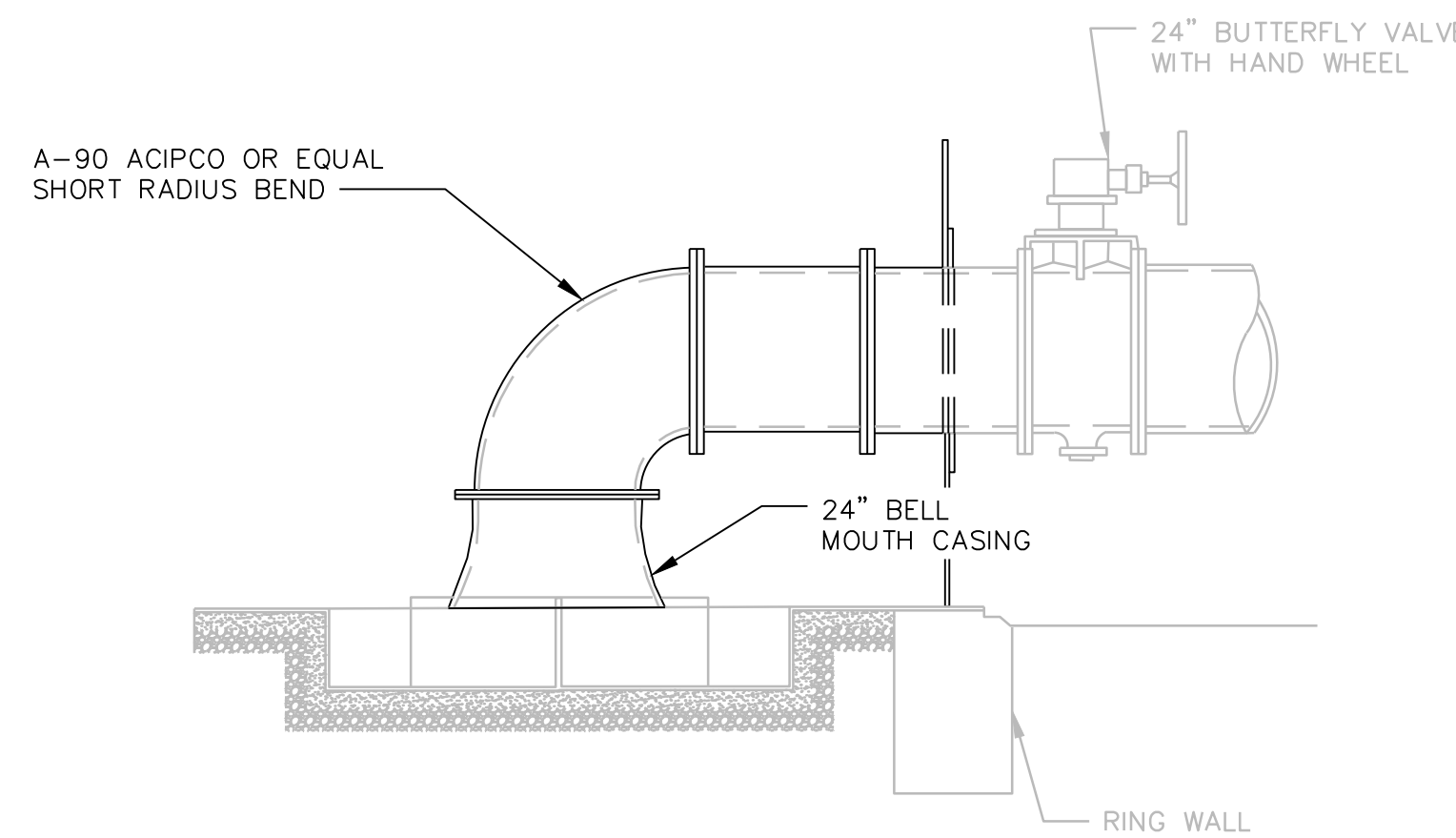
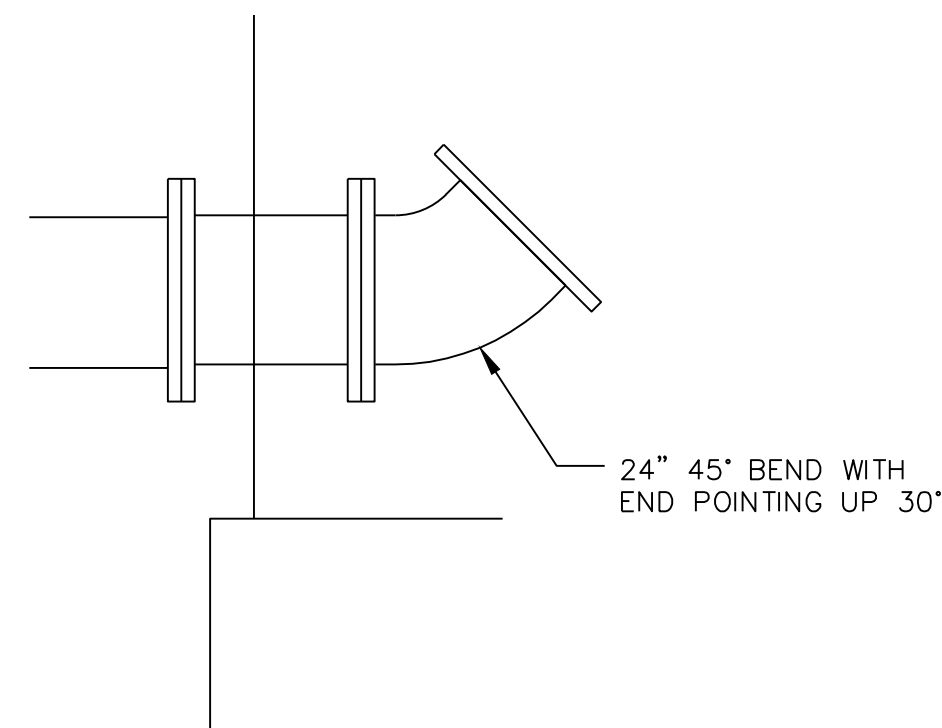
CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 CIVIL
 NORTHWEST GST STORAGE TANK COATING PLAN AND SECTION

PROJECT NO.: 0818	
SCALE: NOTED	REVISION: 0
DRAWING NO. C04	SHEET NO.: 08 OF 17

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 CERTIFICATE OF AUTH. 28386
 3507 EAST FRONTAGE ROAD
 SUITE 180
 TAMPA, FL 33607
 (813) 549-0919



1 FIBERGLASS HATCH AND CURB DETAILS
SCALE: N.T.S.



- NOTES:
1. Prepare interior ductile iron surfaces in accordance with NAPF 500-03 Surface Preparation Standard or Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings.
 2. Prepare interior carbon steel surfaces for painting in accordance with SSPC SP-1 Solvent Cleaning and SSPC-SP-10 Near White Abrasive Blast Cleaning.
 3. Apply three coats of an NSF/ANSI 61 approved epoxy coating system to all metal surfaces per specifications. Each coat should be of a contrasting color and applied in accordance with the coating manufacturer's published recommendations.
 4. Following application of the epoxy coating system apply an approved, flexible caulk compatible with the coating and concrete at seams, crevices caulk edges. The caulk shall be one approved product recommended by the coating manufacturer.

2 COATING DETAIL
SCALE: N.T.S.

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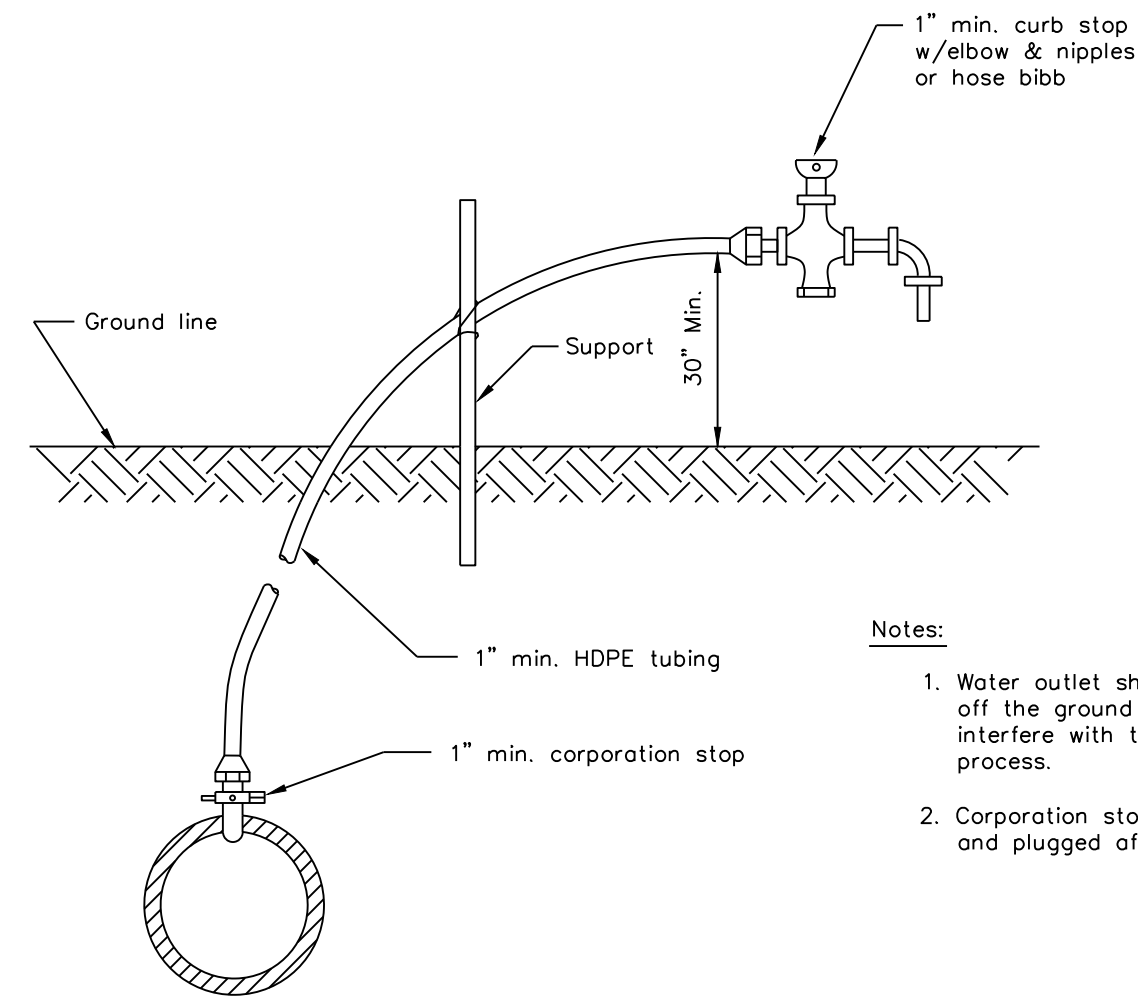
1" = 1" AT FULL SIZE

CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS

DETAILS
DETAILS

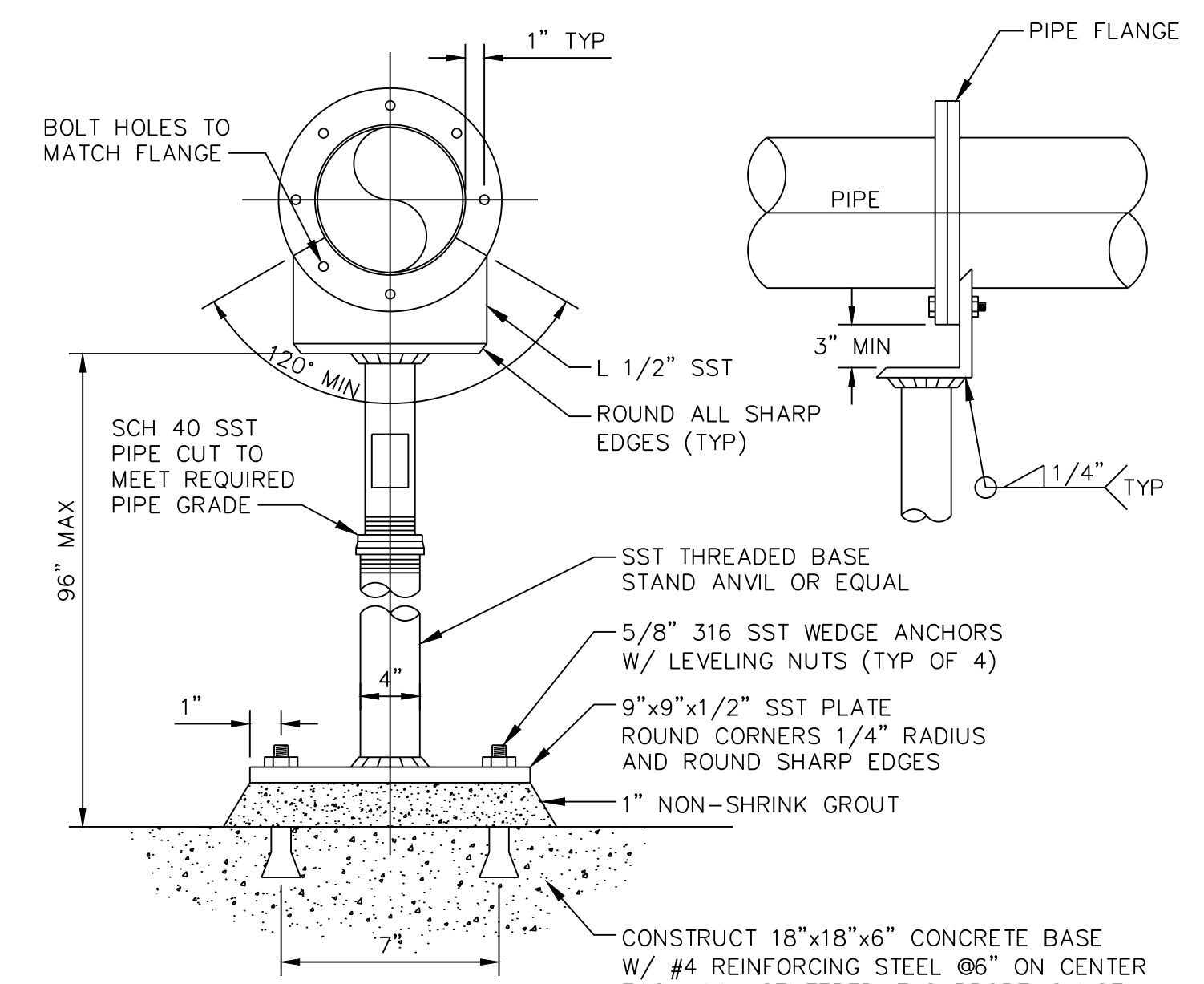
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SCALE: NOTED	REVISION: 0
DRAWING NO. C05	SHEET NO.: 09 OF 17





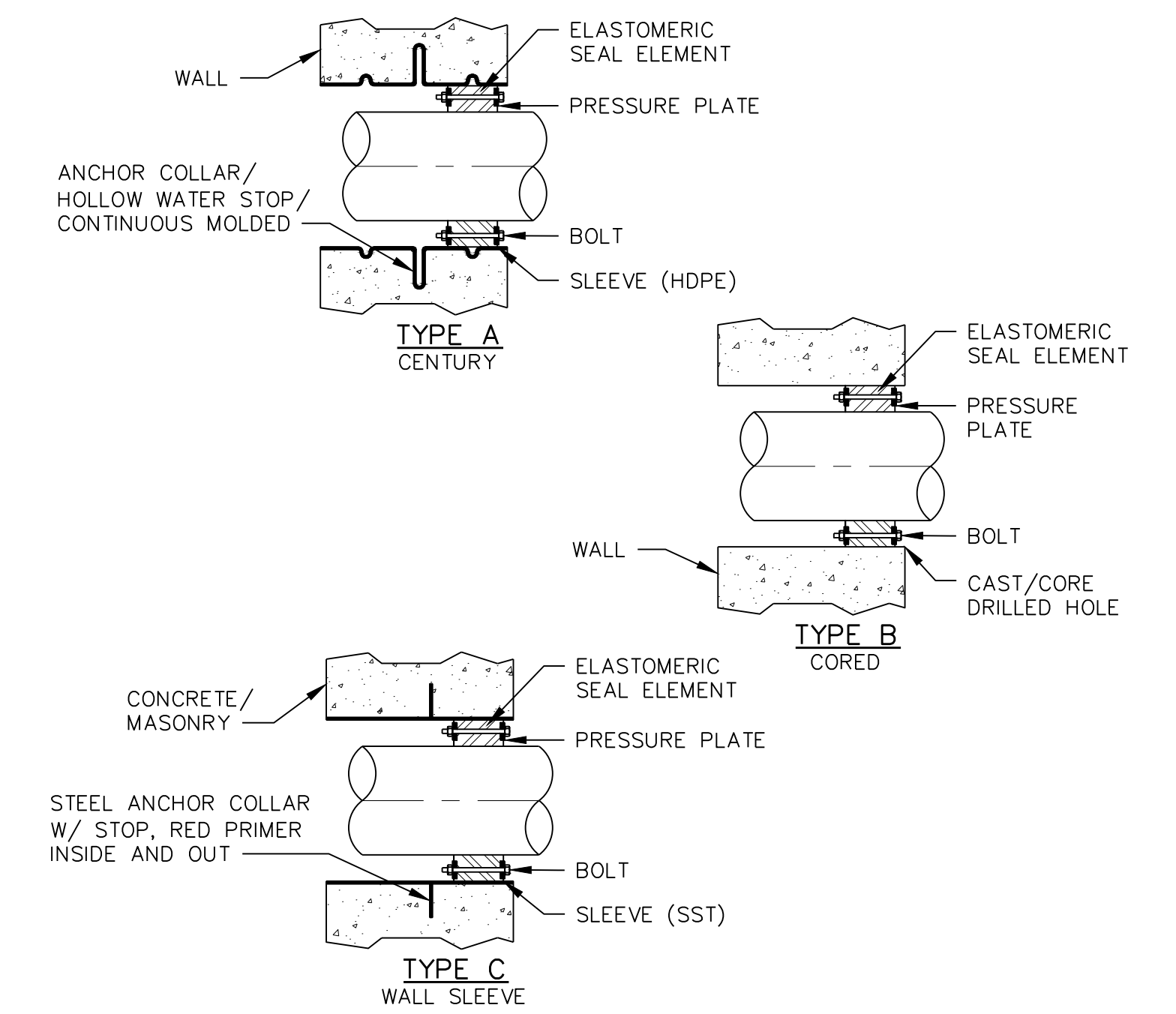
- Notes:
1. Water outlet shall be held up off the ground so as not to interfere with the sampling process.
 2. Corporation stop to be removed and plugged after operation.

3 TEMPORARY SAMPLE TAP INSTALLATION FOR DISINFECTION
SCALE: N.T.S.



- NOTES:
1. THE DRAWINGS INDICATE SUPPORTS FOR DEPICTION ONLY. ALL SUPPORT SPACING AND TYPE SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. SUPPORT SPACING SHOWN ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF SUPPLYING AND INSTALLING ADEQUATE SUPPORTS PER THE SPECIFICATIONS.
 2. SEE PLANS AND SECTIONS FOR PIPE GRADE REQUIREMENT.
 3. PIPE SUPPORT SUITABLE FOR PIPE SIZES 3" THROUGH 24" DIAMETER.

4 STANCHION FLANGE PIPE SUPPORT
SCALE: N.T.S.



- NOTES:
1. PENETRATIONS SHALL BE LINK SEAL MODEL S-316 OR EQUAL.
 2. WALL SLEEVES SHALL BE SUPPLIED BY THE SAME OR LS 316 MANUFACTURER AS THE PENETRATION SEAL.
 3. ALL SEAL ELEMENTS SHALL BE EPDM.
 4. ALL BOLTS AND NUTS SHALL BE 316 STAINLESS STEEL.
 5. COORDINATE WALL PENETRATION DIAMETER WITH PENETRATION SEAL MANUFACTURER AND PIPE OUTSIDE DIAMETER.

5 WALL PENETRATION DETAILS
SCALE: N.T.S.

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	REVIEWED	GWD	
	APPROVED	WTH	
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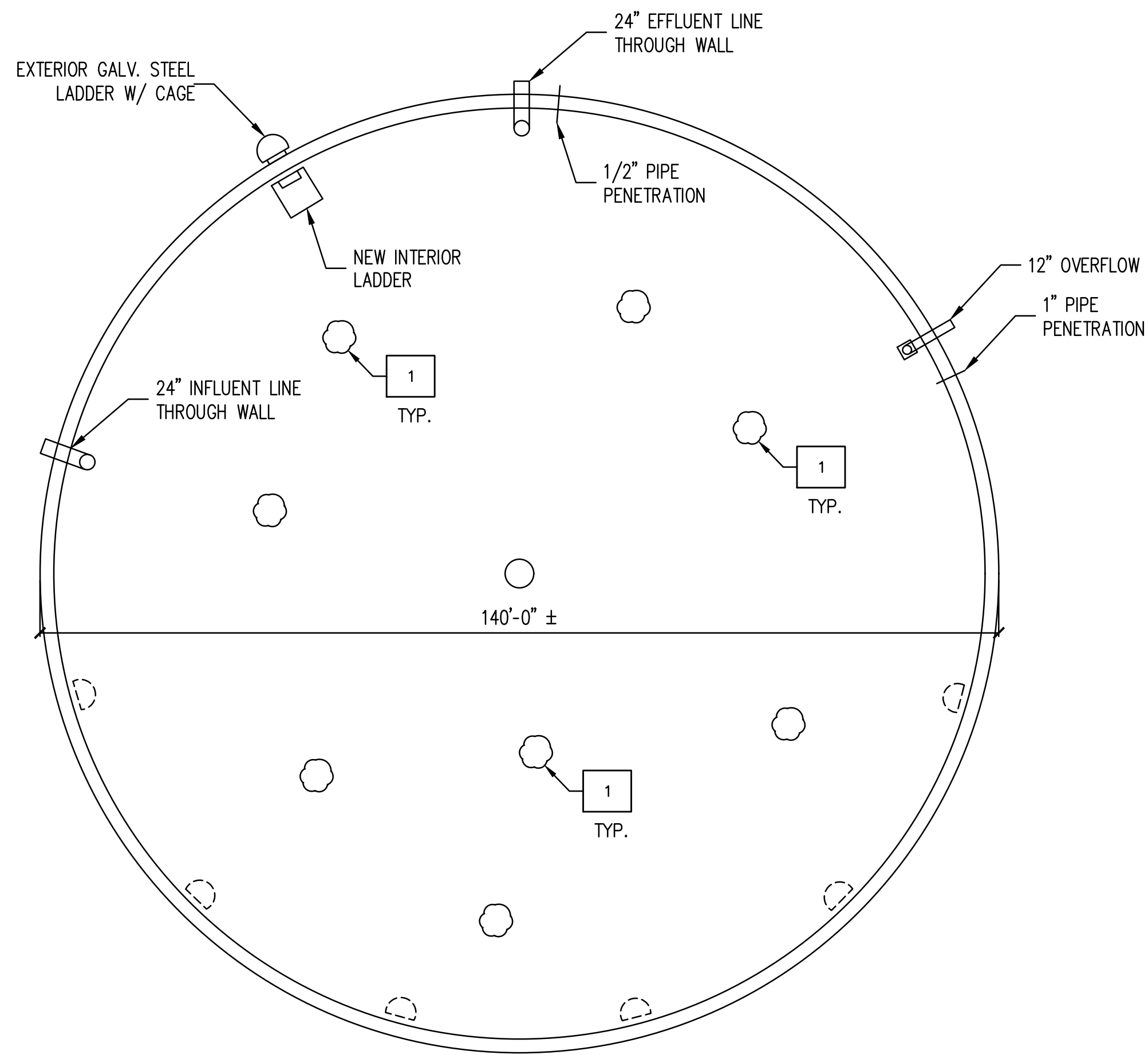
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CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

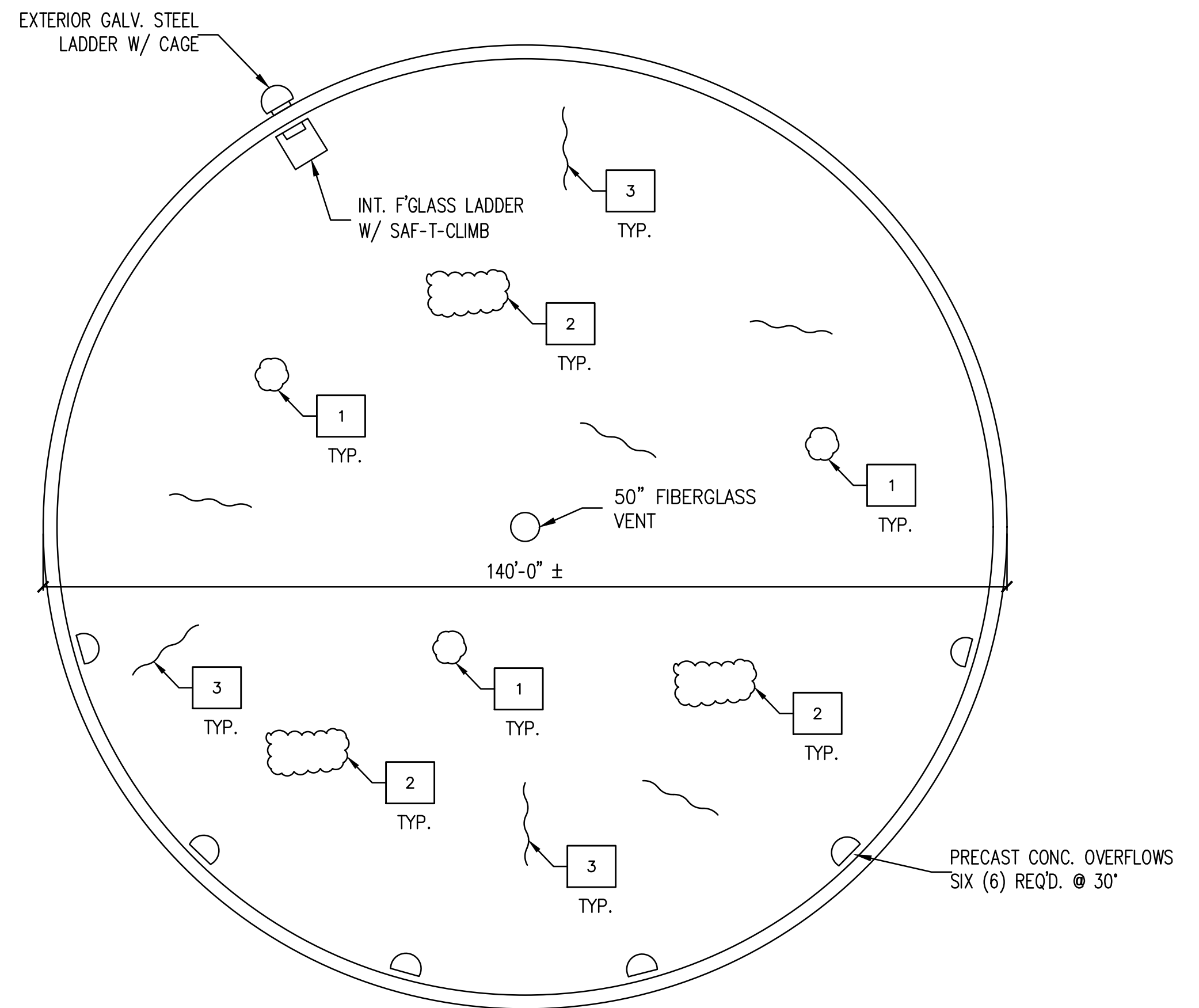
DETAILS
 DETAILS

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SCALE:	NOTED
REVISION:	0
DRAWING NO.:	C06
SHEET NO.:	10 OF 17

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 SUITE 180
 TAMPA, FL 33607
 (813) 549-0919



1 GROUND STORAGE TANK - INTERIOR CONCRETE FLOOR PLAN
 S01 SCALE: 1/16" = 1'-0"



2 GROUND STORAGE TANK - INTERIOR REFLECTED DOME PLAN
 S01 SCALE: 1/16" = 1'-0"

KEY NOTES

- 1 AREAS REQUIRING PATCHING - SEE CONCRETE PATCHING NOTES
- 2 AREAS REQUIRING RESTORATION - SEE CONCRETE RESTORATION NOTES
- 3 CRACKS REQUIRING REPAIR - SEE CRACK REPAIR NOTES
- 4 AREAS REQUIRING GROUT - SEE GROUT NOTES

NOTES:

1. REPAIR AREAS SHOWN ARE FOR REFERENCE ONLY AND DO NOT REPRESENT ACTUAL LOCATIONS AND QUANTITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL TYPES OF REPAIRS, LOCATIONS AND QUANTITIES.

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 BE-5230 Certificate of Authorization No. 4599

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 Drawn DEG
 Checked EAB
 Reviewed ---
 Approved EAB

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

STRUCTURAL
 NORTHWEST GST STORAGE TANK STRUCTURAL REPAIR PLAN

PROJECT NO.: 0818
 SCALE: NOTED
 REVISION: 0
 DRAWING NO. S01
 SHEET NO.: 11 17

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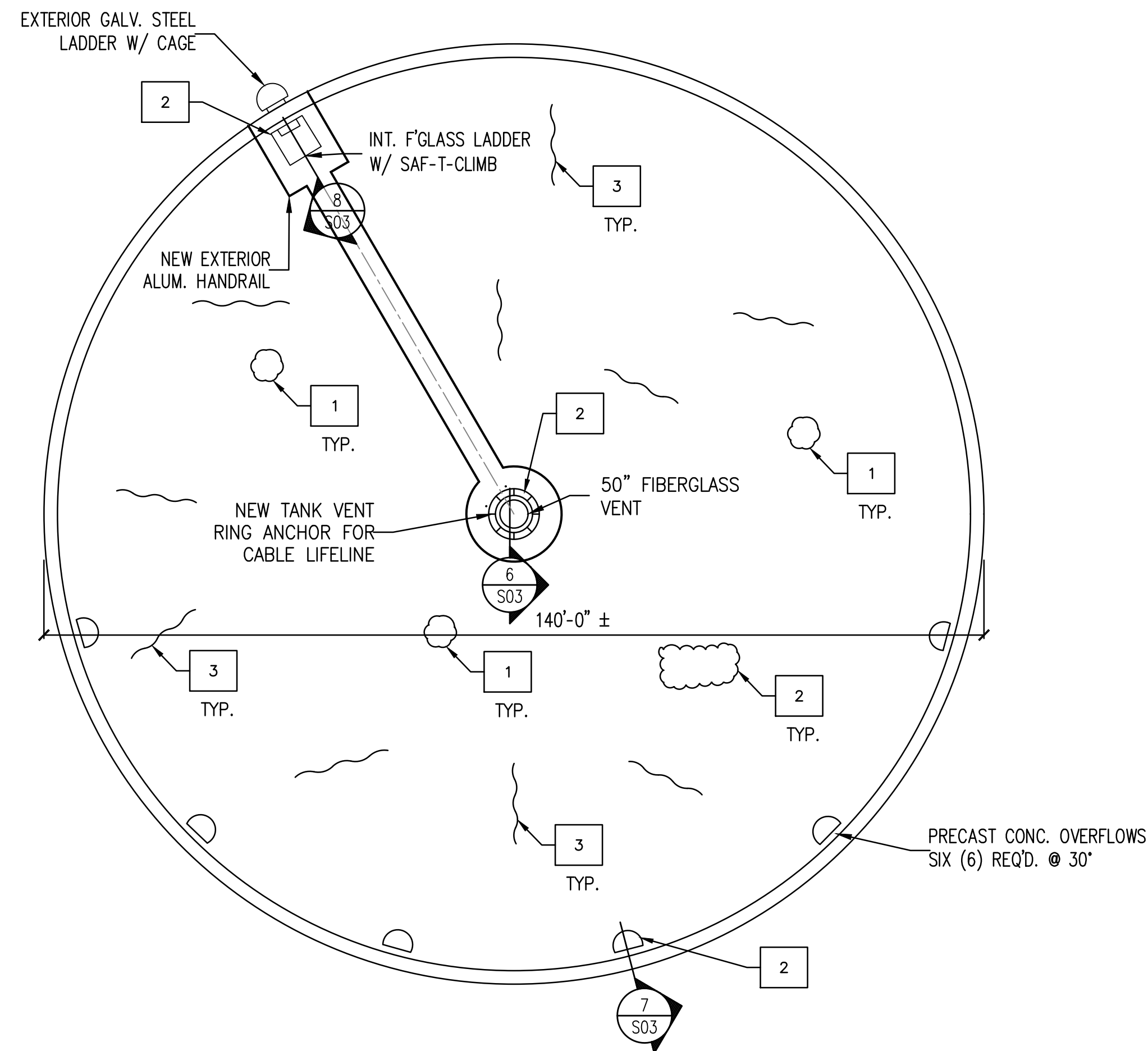


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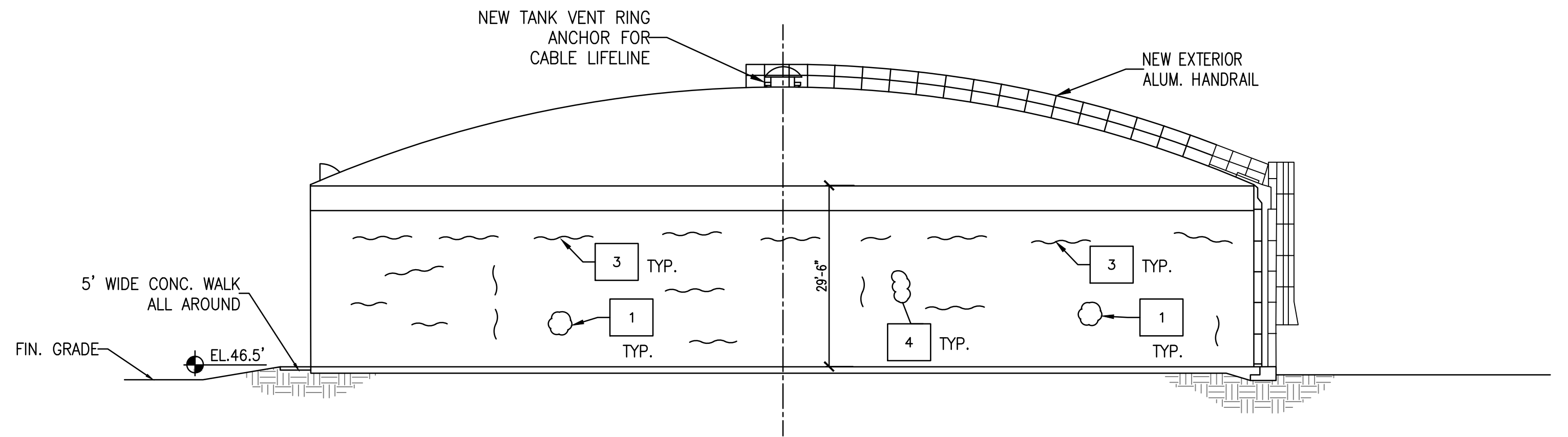
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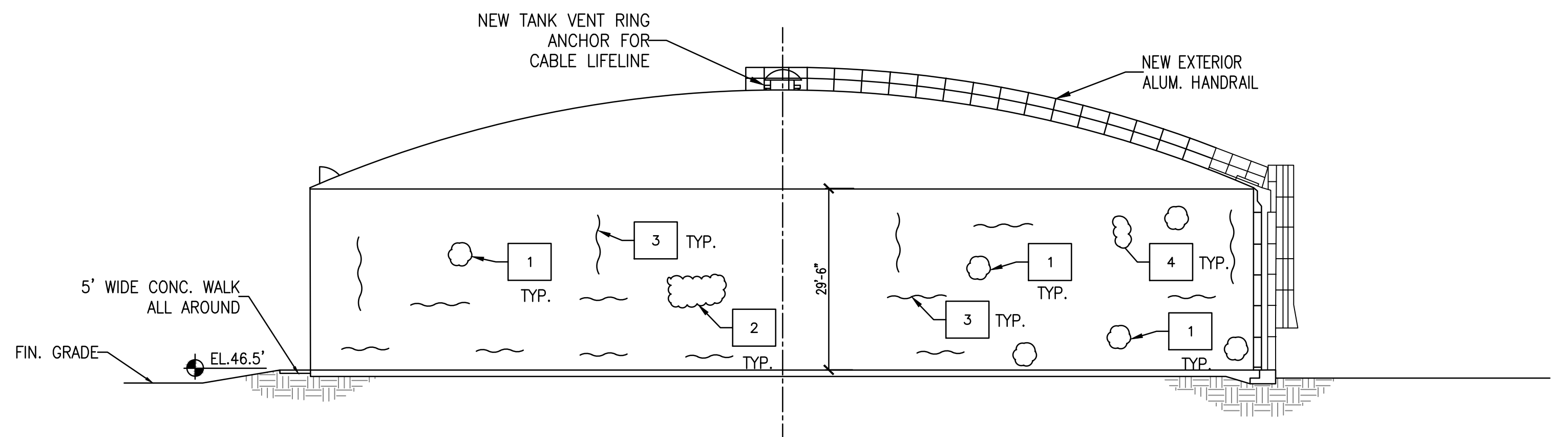
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3 GROUND STORAGE TANK - EXTERIOR DOME PLAN
S02 SCALE: 1/16" = 1'-0"



4 GROUND STORAGE TANK - TYPICAL EXTERIOR SIDE ELEVATION
S02 SCALE: 1/16" = 1'-0"



5 GROUND STORAGE TANK - TYPICAL INTERIOR ELEVATION
S02 SCALE: 1/16" = 1'-0"

KEY NOTES

- 1 AREAS REQUIRING PATCHING - SEE CONCRETE PATCHING NOTES
- 2 AREAS REQUIRING RESTORATION - SEE CONCRETE RESTORATION NOTES
- 3 CRACKS REQUIRING REPAIR - SEE CRACK REPAIR NOTES
- 4 AREAS REQUIRING GROUT - SEE GROUT NOTES

NOTES:

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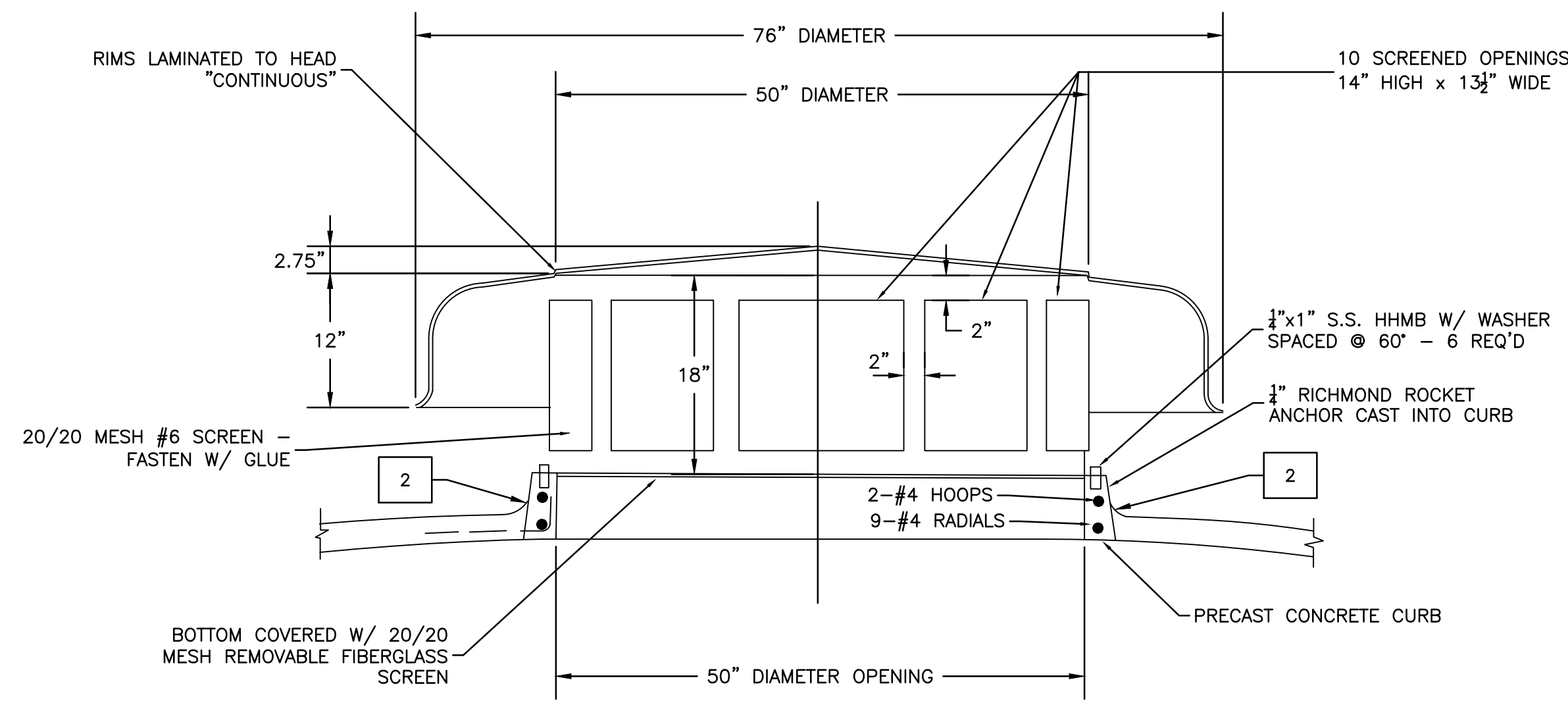
1" = 1" AT FULL SIZE

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 STRUCTURAL
 NORTHWEST GST STORAGE TANK STRUCTURAL PLAN & ELEVATIONS

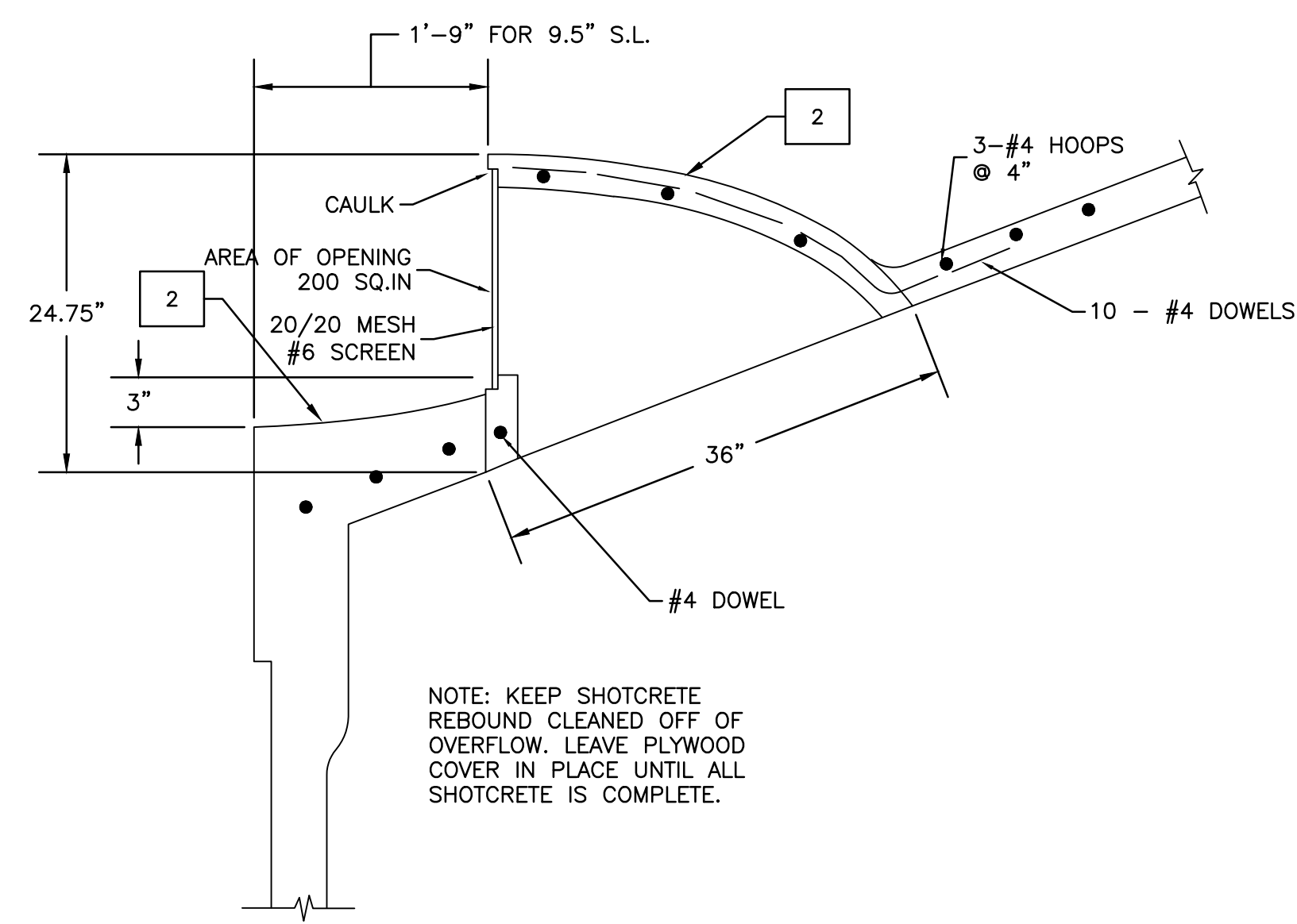
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REVISION:	0
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SHEET NO.:	12 17

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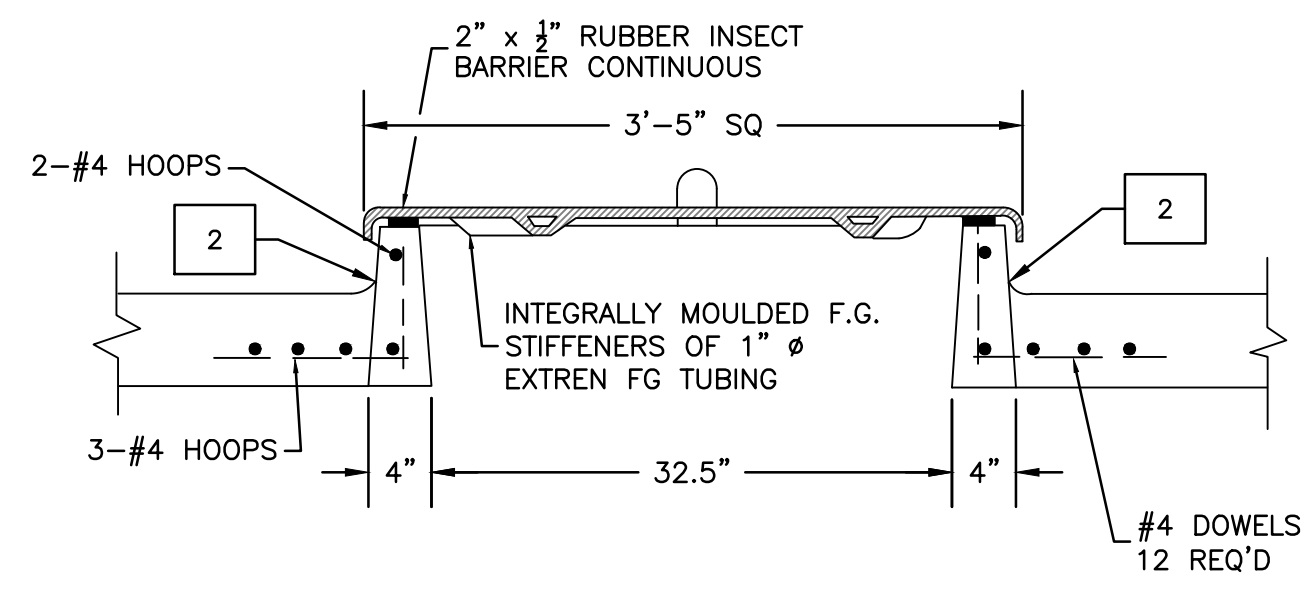
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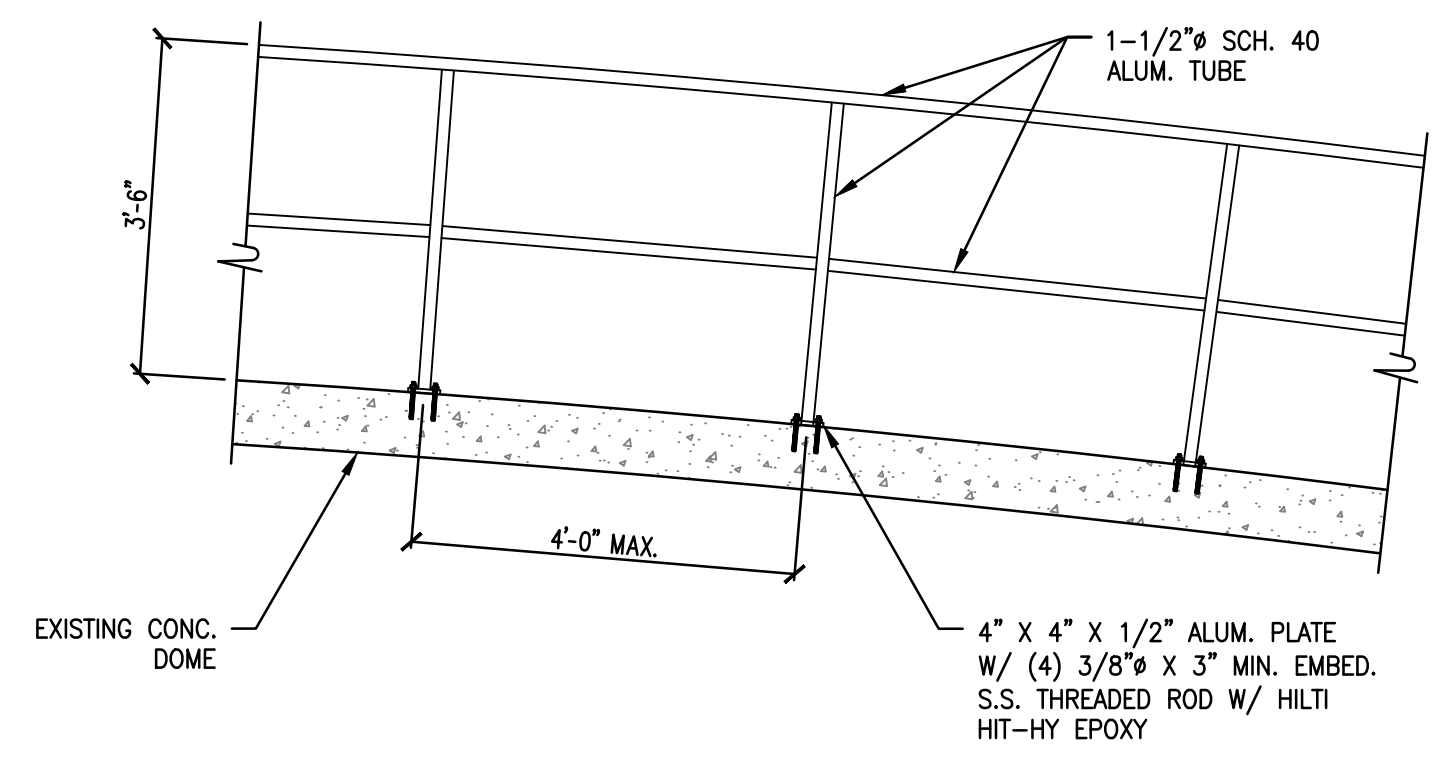
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S03 SCALE: N.T.S.



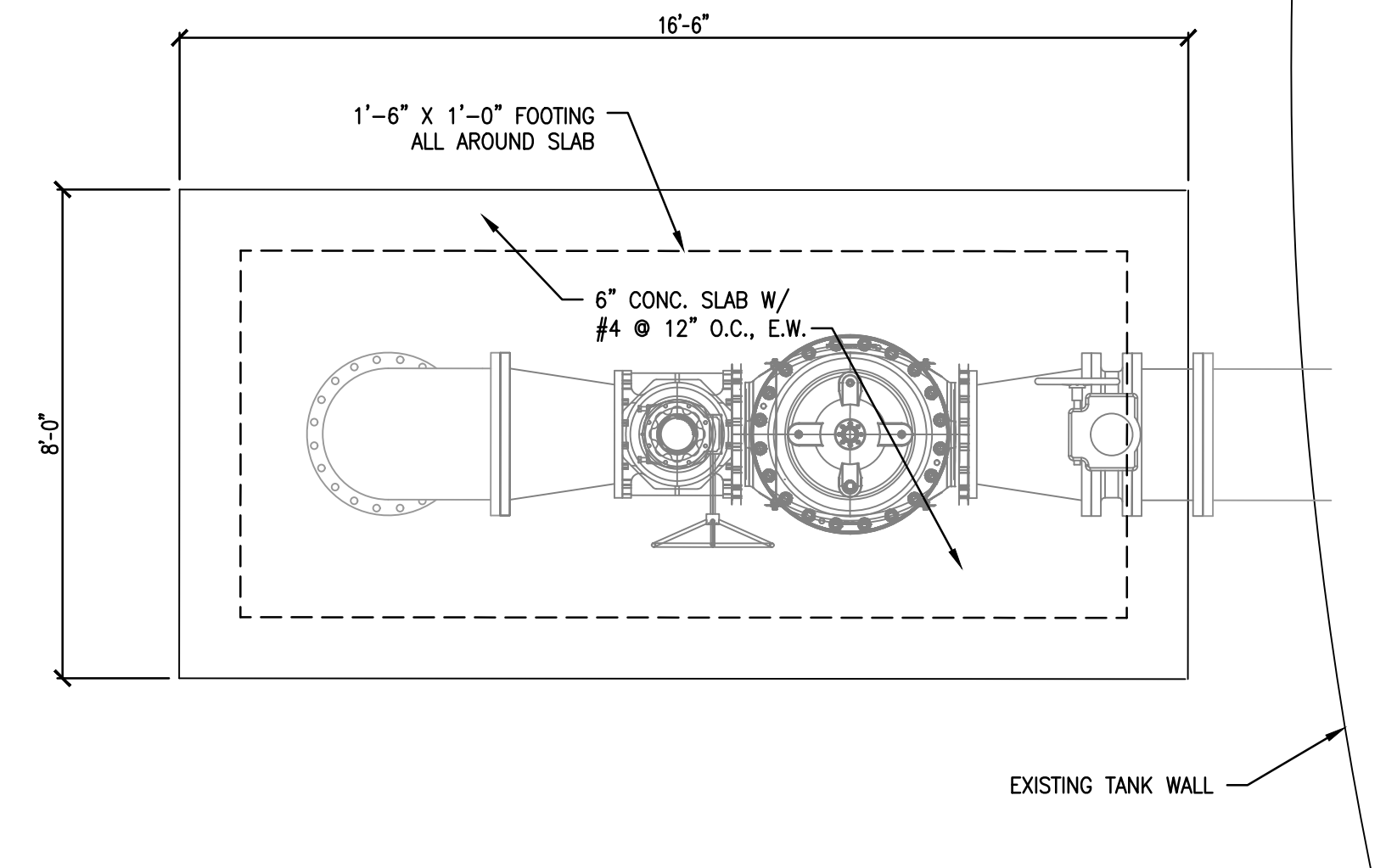
7 OVERFLOW DETAIL
S03 SCALE: N.T.S.



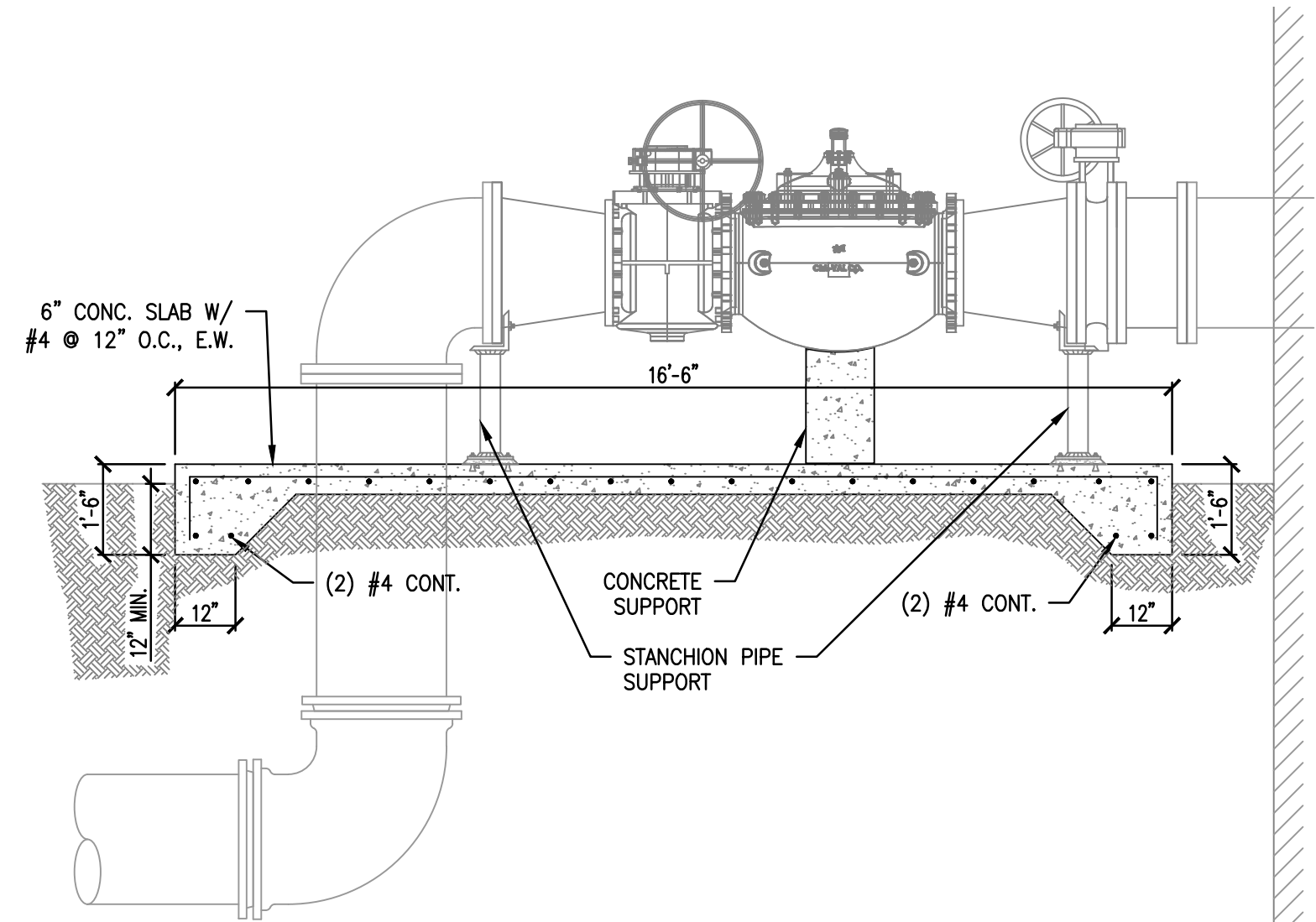
8 ACCESS HATCH DETAIL
S03 SCALE: N.T.S.



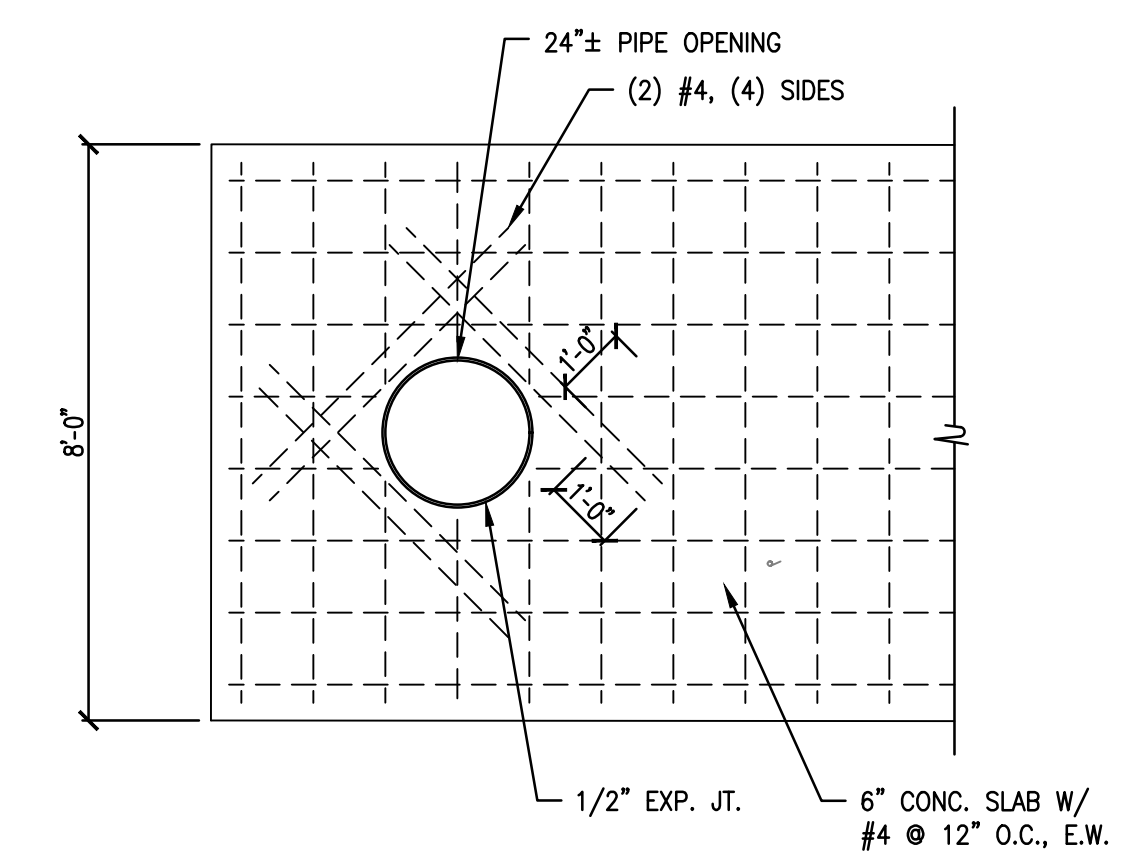
9 HANDRAIL DETAIL
S03 SCALE: 1/2" = 1'-0"



10 NORTHWEST GST PIPING FOUNDATION PLAN
S03 SCALE: 3/8" = 1'-0"



11 NORTHWEST GST PIPING FOUNDATION SECTION
S03 SCALE: 3/8" = 1'-0"



12 REINF. @ PIPE OPENING
S03 SCALE: 3/8" = 1'-0"

- KEY NOTES**
- 1 AREAS REQUIRING PATCHING - SEE CONCRETE PATCHING NOTES
 - 2 AREAS REQUIRING RESTORATION - SEE CONCRETE RESTORATION NOTES
 - 3 CRACKS REQUIRING REPAIR - SEE CRACK REPAIR NOTES
 - 4 AREAS REQUIRING GROUT - SEE GROUT NOTES

- NOTES:**
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Reviewed ---
Approved EAB

CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS
STRUCTURAL
NORTHWEST GST STORAGE TANK STRUCTURAL DETAILS

PROJECT NO.: 0818
SCALE: NOTED
REVISION: 0
DRAWING NO. S03
SHEET NO.: 13 17



Parent Sheet Set: 0818_NW Rev on: 3/22/2022 8:03 AM Rev/Plot by: MILLER, JAY Individual File Path: S03

GENERAL NOTES

GENERAL

- 1.- ALL DRAWINGS SHALL BE USED IN CONJUNCTION WITH EACH OTHER TO COORDINATE WITH MECHANICAL, ELECTRICAL, PLUMBING AND SITE PLANS.
- 2.- CHECK ALL SHOP DRAWINGS FOR SLEEVES, DEPRESSIONS, AND PLUMBING DETAILS NOT SHOWN ON THESE DRAWINGS.
- 3.- AS A MINIMUM, CONSTRUCTION SHALL COMPLY WITH CITY OF TAMPA, THE 2020 (7TH ED.) FLORIDA BUILDING CODE, AND LATEST ACI SPECIFICATIONS.
- 4.- ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSEWHERE ON THE PROJECT, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.
- 5.- ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD. DO NOT SCALE THE DRAWINGS. FOLLOW WRITTEN DIMENSIONS ONLY. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE AFFECTED PART OF THE WORK.
- 6.- ALL EXISTING STRUCTURES NOT DESIGNED BY BROADWAY ENGINEERING ARE ASSUMED TO BE ADEQUATE AND NOT THE RESPONSIBILITY OF BROADWAY ENGINEERING.
- 7.- CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MINIMIZE DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE CAUSED BY CONTRACTOR SHALL BE REPAIRED AT NO EXTRA COST TO OWNER.
- 8.- MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, AND SAFETY PRECAUTIONS ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
- 9.- FIELD VERIFY EXISTING CONDITIONS, DIMENSIONS, SIZE, VOLTAGE, AND LOCATION OF UTILITIES PRIOR TO NEW OR REMODELING WORK.
- 10.- DEVIATIONS FROM DRAWINGS SHALL BE APPROVED BY THE ENGINEER.
- 11.- INFORM ENGINEER OF CONSTRUCTION CONFLICTS FOUND AMONG TRADES FOR ANY REQUIRED CHANGES FROM THESE DRAWINGS.
- 12.- REFER TO "TANK INSPECTION REPORT" PREPARED BY CROM ENGINEERING & CONSTRUCTION SERVICES, DATED MAY 13, 2016, FOR ADDITIONAL INFORMATION.

SHOP DRAWING REVIEW

- 1.- SHOP DRAWINGS SHALL BE REVIEWED FOR GENERAL COMPLIANCE WITH THE DESIGN INTENT OF THE CONTRACT DOCUMENTS ONLY.
- 2.- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY COMPLIANCE WITH THE CONTRACT DOCUMENTS AS TO QUANTITY, LENGTH, ELEVATIONS, DIMENSIONS, ETC.
- 3.- IN ALL INSTANCES, THE CONTRACT DOCUMENTS SHALL GOVERN THE SHOP DRAWINGS UNLESS OTHERWISE SPECIFIED IN WRITING BY THE ENGINEER.

FORMWORK (IF REQUIRED)

- 1.- FORMWORK, SHORING, AND BRACING FOR ALL CONCRETE BEAMS, SLABS, COLUMNS, AND WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ACI 347, "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK".

REINFORCING STEEL (IF REQUIRED)

- 1.- REBAR SHALL BE ASTM A615 GRADE 60 DEFORMED BARS, FREE FROM OIL, SCALE, AND RUST.
- 2.- REINFORCING BARS SHALL BE PLACED IN ACCORDANCE WITH THE TYPICAL BENDING DIAGRAM AND PLACING DETAILS OF THE ACI STANDARDS AND SPECIFICATIONS.
- 3.- HORIZONTAL AND VERTICAL BARS SHALL LAP A MINIMUM OF 5 X BAR NO. = INCHES, (40 BAR DIAMETERS) UNLESS OTHERWISE NOTED.

WELDED WIRE MESH FIBERS (IF REQUIRED)

- 1.- WELDED WIRE MESH IF USED, SHALL BE ASTM A185, GRADE 65, FREE FROM OIL, SCALE, AND RUST.
- 2.- WIRE MESH SHALL BE PLACED IN ACCORDANCE WITH ACI DETAILS.
- 3.- MINIMUM WIRE MESH LAP SHALL BE ONE WIRE SPACE PLUS TWO INCHES.

CONCRETE PATCHING

- 1.- CONCRETE PATCHING SHALL BE PERFORMED AT LOCATIONS THAT ARE DEFINED AS AREAS OF CONCRETE ON THE FLOOR, WALLS, OR DOME, INTERIOR OR EXTERIOR, THAT ARE CHIPPED OR SPALLED WITHOUT EXPOSED REBAR OR WIRE MESH.
- 2.- CONCRETE RESTORATION PRODUCT SHALL BE MASTEREMACO N424 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 3.- BONDING AGENT FOR CONCRETE SHALL BE LIQUID EPOXY SUCH AS MASTEREMACO ADH 326 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 4.- SURFACES TO BE REPAIRED SHALL BE PREPARED IN ACCORDANCE WITH CONCRETE RESTORATION PRODUCT MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. SAW CUT THE PERIMETER OF THE AREA BEING REPAIRED INTO A SQUARE OR RECTANGLE WITH A MINIMUM DEPTH OF 1/4".
 - B. THE SURFACE MUST BE CLEAN AND FREE OF ALL DUST, DIRT, OR GREASE.
- 5.- BONDING AGENT SHALL BE APPLIED TO CONCRETE PRIOR TO PATCHING IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 6.- CONCRETE RESTORATION PRODUCT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 7.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 8.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED WITHIN THE TEMPERATURE RANGE RECOMMENDED BY THE MANUFACTURER. FOLLOW ACI 305 AND 306 IF PRODUCT WILL BE APPLIED OUTSIDE OF THE MANUFACTURER'S RECOMMENDED TEMPERATURE RANGE.
- 9.- ALLOW CONCRETE RESTORATION PRODUCT TO CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO SANDING, COATING, OR PAINTING.

CONCRETE RESTORATION

- 1.- CONCRETE RESTORATION SHALL BE PERFORMED AT LOCATIONS THAT ARE DEFINED AS AREAS OF CONCRETE ON THE FLOOR, WALLS, OR DOME, INTERIOR OR EXTERIOR, THAT ARE CHIPPED OR SPALLED AND HAVE EXPOSED REBAR OR WIRE MESH.
- 2.- CONCRETE RESTORATION PRODUCT SHALL BE MASTEREMACO N424 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 3.- PRIMER FOR STEEL REINFORCEMENT SHALL BE ONE-COMPONENT ZINC-RICH EPOXY SUCH AS MASTERPROTECT P8100AP AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 4.- BONDING AGENT FOR CONCRETE SHALL BE LIQUID EPOXY SUCH AS MASTEREMACO ADH 326 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 5.- SURFACES TO BE REPAIRED SHALL BE PREPARED IN ACCORDANCE WITH CONCRETE RESTORATION PRODUCT AND PRIMER MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. SAW CUT THE PERIMETER OF THE AREA BEING REPAIRED INTO A SQUARE OR RECTANGLE WITH A MINIMUM DEPTH OF 1/4".
 - B. FULLY EXPOSE ANY CORRODED STEEL IN THE REPAIR AREA.
 - C. REMOVE ALL LOOSE SCALE AND CORROSION DEPOSITS, PAYING PARTICULAR ATTENTION TO THE BACK OF EXPOSED STEEL.
 - D. MECHANICALLY ABRABE ALL EXPOSED STEEL TO REMOVE CORROSION FROM PITS AND IMPERFECTIONS WITHIN THE SURFACE.
 - E. THE SURFACE MUST BE CLEAN AND FREE OF ALL DUST, DIRT, RUST, OR GREASE.
- 6.- PRIMER SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 7.- PRIMER SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 8.- PRIMER SHALL BE ALLOWED TO COMPLETELY DRY PRIOR TO APPLYING CONCRETE RESTORATION PRODUCT.
- 9.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED TO EXPOSED STEEL WITHIN 7 DAYS OF THE PRIMER APPLICATION.
- 10.- BONDING AGENT SHALL BE APPLIED TO CONCRETE PRIOR TO PATCHING IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 11.- CONCRETE RESTORATION PRODUCT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

- 12.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 13.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED WITHIN THE TEMPERATURE RANGE RECOMMENDED BY THE MANUFACTURER. FOLLOW ACI 305 AND 306 IF PRODUCT WILL BE APPLIED OUTSIDE OF THE MANUFACTURER'S RECOMMENDED TEMPERATURE RANGE.
- 14.- ALLOW CONCRETE RESTORATION PRODUCT TO CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO SANDING, COATING, OR PAINTING.

CRACK REPAIR

- 1.- CRACK REPAIR SHALL BE PERFORMED AT LOCATIONS THAT ARE DEFINED AS AREAS OF CONCRETE ON THE FLOOR, WALLS, OR DOME, INTERIOR OR EXTERIOR, THAT ARE CRACKED LESS THAN 1/4" WIDE WITHOUT EXPOSED REBAR OR WIRE MESH.
- 2.- EPOXY CAULK SHALL BE SIKADUR AS MANUFACTURED BY SIKA OR APPROVED EQUAL.
- 3.- SURFACES TO BE REPAIRED SHALL BE PREPARED IN ACCORDANCE WITH CAULK MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. ROUT ALL CRACKS TO A SMOOTH EVEN FINISH.
 - B. THE SURFACE MUST BE CLEAN AND FREE OF ALL DUST, DIRT, OR GREASE.
- 4.- CAULK SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 5.- CAULK SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 6.- ALLOW CAULK TO CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO COATING OR PAINTING.

GROUT

- 1.- GROUTING SHALL BE PERFORMED AT LOCATIONS THAT ARE DEFINED AS AREAS OF CONCRETE ON THE WALLS THAT HAVE VOIDS WHERE THE SHOTCRETE HAS DELAMINATED.
- 2.- EPOXY GROUT SHALL BE MASTERFLOW 647 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 3.- SURFACES TO BE REPAIRED SHALL BE PREPARED IN ACCORDANCE WITH GROUT MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. THE CONCRETE MUST BE AS CLEAN, SOUND, AND AS OIL- AND WATER-FREE AS POSSIBLE.
- 4.- GROUT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 5.- GROUT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 6.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED WITHIN THE TEMPERATURE RANGE RECOMMENDED BY THE MANUFACTURER.
- 7.- ALLOW GROUT TO CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

ALUMINUM HANDRAIL

- 1.- THE MATERIAL, FABRICATION, AND ERECTION OF STRUCTURAL ALUMINUM SHALL COMPLY WITH THE ALUMINUM DESIGN MANUAL BY THE ALUMINUM ASSOCIATION.
- 2.- STRUCTURAL ALUMINUM PIPE SHALL BE MIN. ASTM B529, 6063-T5 ALLOY, Fty = 16 KSI.
- 3.- THREADED ROD ANCHOR BOLTS SHALL BE AISI 316 STAINLESS STEEL.
- 4.- WELDING SHALL BE DONE BY AWS CERTIFIED WELDERS USING THE MOST RECENT AWS APPROVED TECHNIQUES.
- 5.- HANDRAIL DESIGN SHALL COMPLY WITH THE REQUIREMENTS OF 2017 (6TH ED.) FLORIDA BUILDING CODE, CHAPTER 16, TO RESIST A LINEAR LOAD OF 50 PLF AND A CONCENTRATED LOAD OF 200 LB. HANDRAIL SHALL ALSO COMPLY WITH ALL APPLICABLE OSHA REQUIREMENTS.

CONCRETE

- 1.- CONCRETE SHALL ACHIEVE MINIMUM 28 DAY COMPRESSIVE STRENGTHS AS LISTED BELOW:
 - 4000 PSI FOR SLABS ON GRADE, AND FOOTINGS.
- 2.- CONCRETE SLUMP SHALL NOT EXCEED 4±1" (EXCEPT FOR GROUTS).
- 3.- CONCRETE SHALL COMPLY WITH ALL THE REQUIREMENTS OF ACI 301 AND ASTM C94 FOR MEASURING, MIXING, TRANSPORTING, ETC.
- 4.- CONCRETE TICKETS SHALL BE STAMPED WHEN CONCRETE IS BATCHED.
- 5.- THE MAXIMUM TIME ALLOWED FROM THE TIME THE WATER IS ADDED TO CONCRETE UNTIL IT IS DEPOSITED IN ITS FINAL POSITION SHALL NOT EXCEED ONE AND ONE-HALF (1-1/2) HOURS.
- 6.- IF FOR ANY REASON THERE IS A LONGER DELAY THAN THAT STATED ABOVE, THE CONCRETE SHALL BE DISCARDED.
- 7.- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S RETAINED TESTING LAB TO NOTIFY THE OWNER'S REPRESENTATIVE AND THE ENGINEER OF ANY NONCOMPLIANCE WITH THE ABOVE.
- 8.- ALL CONCRETE SHALL BE CURED USING CURING COMPOUND MEETING ASTM STANDARD C309 TYPE 1 AND SHALL HAVE A FUGITIVE DYE.
- 9.- THE CURING COMPOUND SHALL BE PLACED AS SOON AS THE FINISHING IS COMPLETED OR AS SOON AS THE VISIBLE WATER HAS LEFT THE UNFINISHED CONCRETE.
- 10.- ALL SCUFFED OR BROKEN AREAS IN THE CURING MEMBRANE SHALL BE RECOATED DAILY.
- 11.- CALCIUM CHLORIDES SHALL NOT BE UTILIZED; OTHER ADMIXTURES MAY BE USED ONLY WITH THE APPROVAL OF THE ENGINEER.
- 12.- REQUIRED CONCRETE COVERAGE OVER REBAR SHALL BE AS FOLLOWS:
 - A: 3" FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.
 - B: FOR CONCRETE EXPOSED TO EARTH AND/OR WEATHER:
 - 1-1/2" FOR #5 AND SMALLER
 - 2" FOR #6 AND LARGER
 - C: FOR CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
 - 3/4" FOR SLABS, WALLS, AND JOISTS
 - 1-1/2" FOR BEAM AND COLUMN PRIMARY REINF., TIES, AND STIRRUPS.

Parent Sheet Set:0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/22/2022 8:03 AM Individual File Path: S04



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 Checked EAB
 Reviewed ---
 Approved EAB

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

STRUCTURAL

NORTHWEST GST STORAGE TANK STRUCTURAL GENERAL NOTES

PROJECT NO.: 0818

SCALE: NOTED REVISION: 0

DRAWING NO. S04 SHEET NO.: 14 17

BROADWAY ENGINEERING, P.A.
 CIVIL, MECHANICAL, STRUCTURAL AND BUILDING DESIGN
 See Us At www.Broadway-Eng.Com
 1335 W. Cass Street
 Tampa, Florida 33606 813-251-9244
 Fax 813-251-9330 Bus. Email: Info@Broadway-Eng.Com
 Cadd. Email: DGorr@Broadway-Eng.Com
 BB-5230 Certificate of Authorization No. 4599

CHA
 CHA CONSULTING, INC.
 3507 EAST FRONTAGE ROAD
 SUITE 180
 TAMPA, FL 33607
 (813) 549-0919

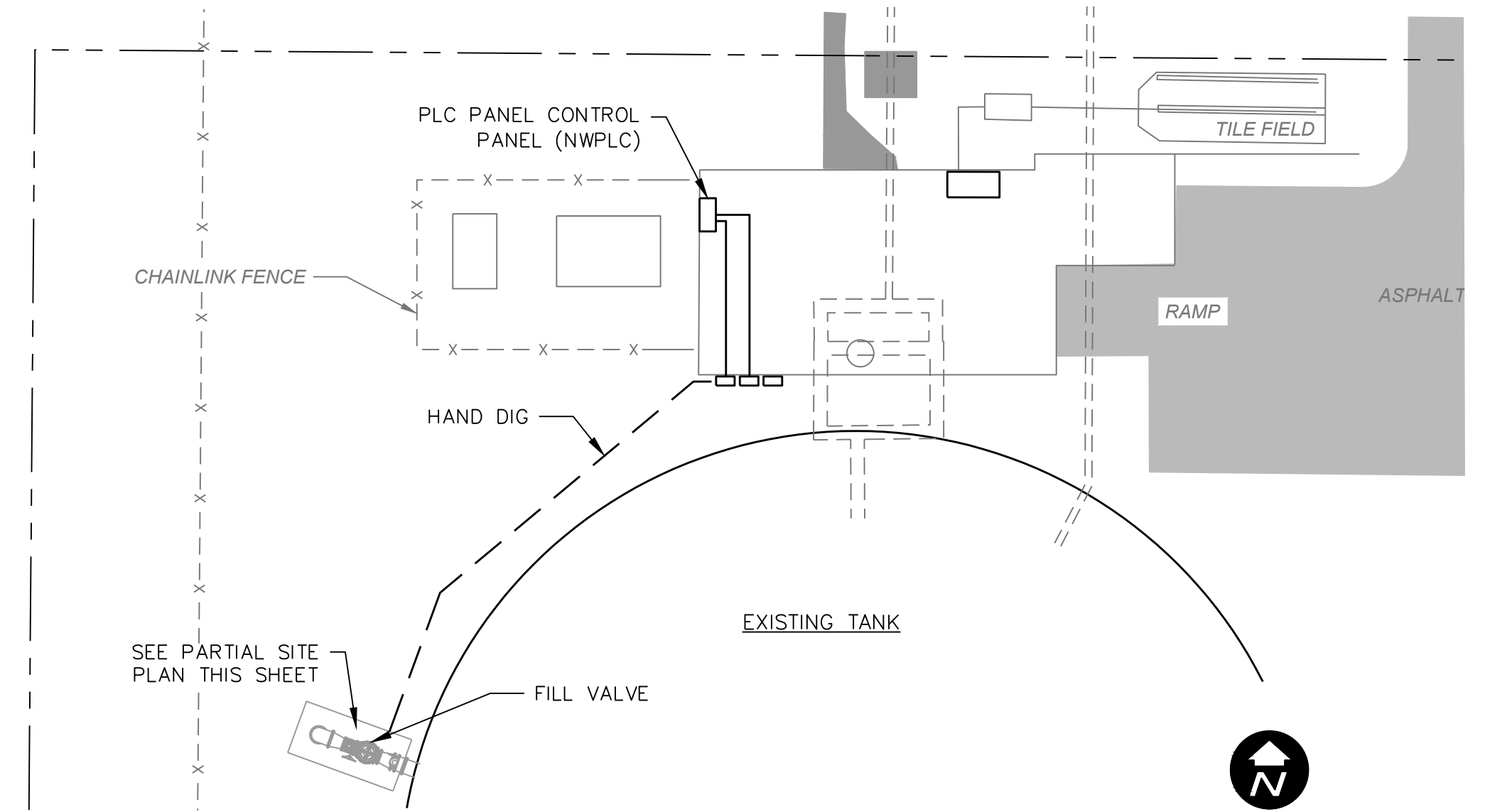
- SYMBOLS**
- HOME RUN TO PANELBOARD. NO. OF ARROWS INDICATE NO. OF CIRCUITS, HASH MARKS INDICATE NO. OF #12 AWG. CONDUCTORS. NO HASH MARKS INDICATE 2 #12 CONDUCTORS.
 - CONDUIT CONCEALED IN WALL OR ABOVE CEILING.
 - CONDUIT CONCEALED IN OR BELOW FLOOR OR UNDERGROUND.
 - CONDUIT RUN EXPOSED. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL.
 - FLEXIBLE CONDUIT WITH EQUIPMENT CONNECTION.
 - FUSE
 - MOLDED CASE CIRCUIT BREAKER

GENERAL NOTES

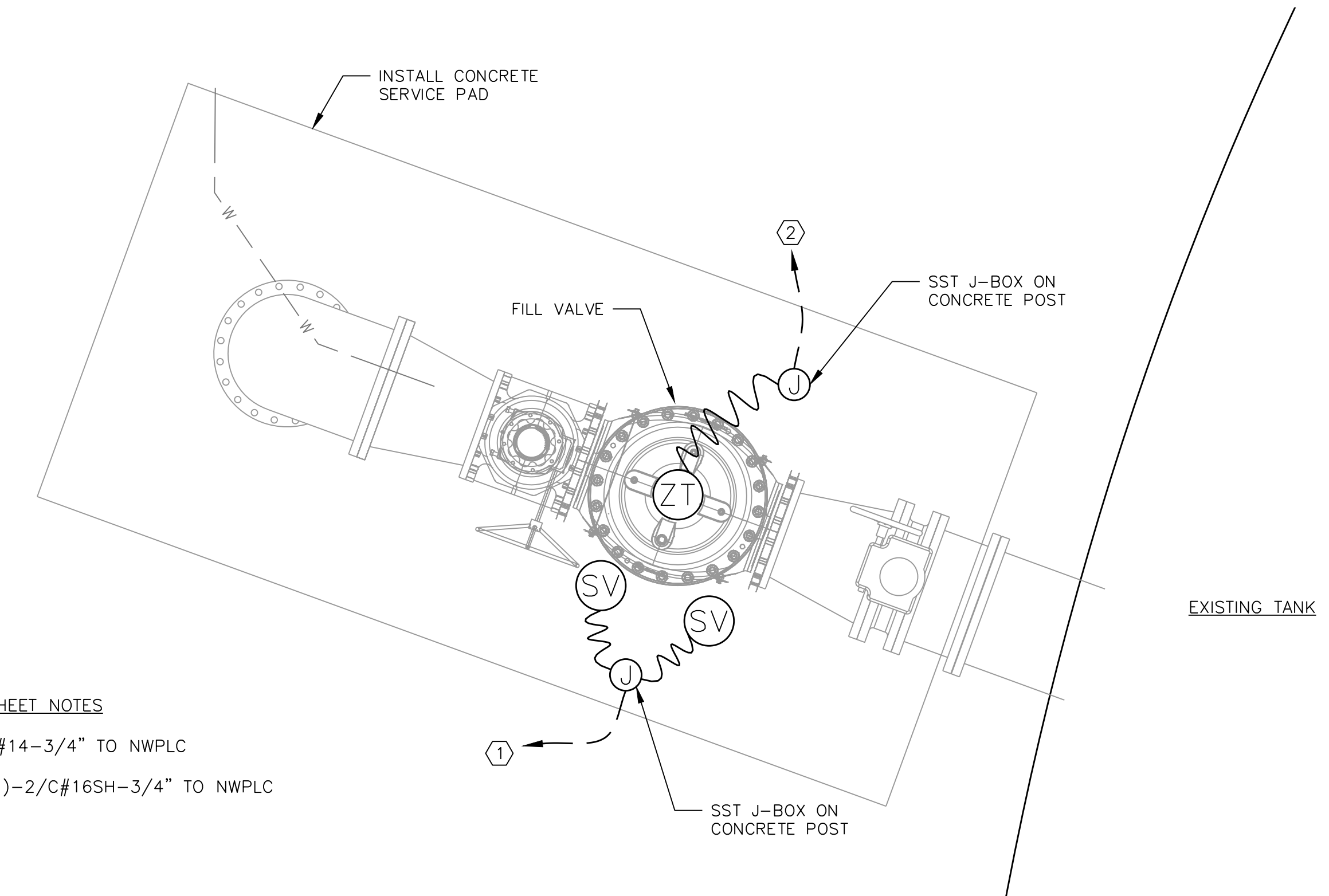
1. ALL WORK SHALL COMPLY WITH N.E.C. AND LOCAL CODES.
2. REFER TO EQUIPMENT SHOP DRAWINGS FOR EXACT LOCATION OF CONDUITS.
3. INSTALL BOND WIRE IN ALL RACEWAYS PER N.E.C.
4. DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO THE MECHANICAL, CIVIL AND STRUCTURAL DRAWINGS FOR DETAILED LOCATIONS OF ALL PIPING AND EQUIPMENT.

ABBREVIATIONS

- A AMPERES
- AI ANALOG INPUT
- AIC ASYMMETRICAL INTERRUPTING CURRENT BREAKER
- BLDG BUILDING
- CAB CABINET
- CIR CIRCUIT
- CONT CONTROL
- CP CONTROL PANEL
- CPT CONTROL POWER TRANSFORMER
- CT CURRENT TRANSFORMER
- EC EMPTY CONDUIT
- ELEC ELECTRICAL
- EM EMERGENCY
- ENCL ENCLOSURE
- ETM ELAPSE TIME METER
- EXIST EXISTING
- GEN GENERATOR
- GND GROUND
- HOA HAND-OFF-AUTOMATIC
- HP HORSEPOWER
- HPS HIGH PRESSURE SODIUM
- KCMIL THOUSAND CIRCULAR MILS
- KVA KILOVOLT-AMPERES
- LS LIMIT SWITCH
- LSCP LIFT STATION CONTROL PANEL
- LT LEVEL TRANSMITTER
- MAX MAXIMUM
- MB MAIN BREAKER
- MCC MOTOR CONTROL CENTER
- MCP MOTOR CIRCUIT PROTECTOR
- MFR MANUFACTURER
- MIN MINIMUM
- MTD MOUNTED
- NEC NATIONAL ELECTRIC CODE
- NEMA NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
- P POLE
- PNL PANEL
- RTU REMOTE TELEMETRY UNIT
- SW SWITCH
- SS STAINLESS STEEL
- TYP TYPICAL
- UG UNDERGROUND
- V VOLT
- VAC VOLTS ALTERNATING CURRENT
- W WIRE
- WP WEATHER PROOF
- XMFR TRANSFORMER



OVERALL SITE PLAN



SHEET NOTES

- ① 5#14-3/4" TO NWPLC
- ② (1)-2/C#16SH-3/4" TO NWPLC

PARTIAL SITE PLAN

EMI EMI CONSULTING SPECIALTIES, INC.
 5742 River Bed Road
 Groveland, FL 34736
 COA# 6160 (407) 322-0500

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 Reviewed WCH
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CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 ELECTRICAL
 NORTHWEST GST PLANS

PROJECT NO.: 0818
 SCALE: NOTED
 REVISION: 0
 DRAWING NO. E01
 SHEET NO.: 15 OF 17

CHA
 CHA CONSULTING, INC.
 3507 EAST FRONTAGE ROAD
 SUITE 180
 TAMPA, FL 33607
 (813) 549-0919

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Parent Sheet Set: 0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 11:03 AM Individual File Path: 01

- SCADA DISPLAY OR CONTROL
- PANEL MOUNTED (MAIN OR REMOTE)
- PANEL BEHIND (MAIN OR REMOTE)
- PANEL MOUNTED (LOCAL)
- LOCALLY MOUNTED
- SINGLE LINE TAG
- MOUNTED BEHIND PANEL (LOCAL)
- PILOT LIGHT
- PANEL PILOT LIGHT
- SHEET NOTE
- CONTROL TYPE (DI, DO, AI, AO)
- (I) DATA LINK
- INTERLOCKING FUNCTION
- PANEL
- DIAPHRAGM CONTROL
- GROUND
- POLYMER FEED HOPPER
- POLYMER FEED SYSTEM (DRY)
- DRY FEEDER
- PROGRESSIVE CAVITY PUMP
- ULTRA SONIC SENSOR
- ELECTRICAL SIGNAL
- 3 PHASE AC POWER
- DATALINK
- 24VDC SIGNAL
- DC POWER

- GLOBE VALVE
- BALL VALVE
- HALF SIZE BALL VALVE
- GATE VALVE
- PLUG VALVE
- CHECK VALVE
- NEEDLE VALVE
- PINCH VALVE
- FOOT VALVE
- DIAPHRAGM
- BUTTERFLY VALVE
- FILL VALVE
- REDUCER
- FLEXIBLE CONNECTOR
- INLINE STATIC MIXER
- CENTRIFUGAL PUMP
- BLOWER PUMP
- SUBMERSIBLE PUMP
- METERING PUMP
- ROTAMETER
- MOTOR
- MIXER
- FLANGE
- VACUUM BREAKER
- RELIEF AND/OR SAFETY
- SOLENOID VALVE
- 3-WAY SOLENOID
- 4-WAY SOLENOID
- DRAIN

- DOUBLE LEAF CHECK VALVE
- WYE STRAINER
- VIC COUPLING
- 3-WAY VALVE
- 4-WAY VALVE
- HOSE CONNECTION
- VENT WITH SCREEN
- LEVEL GAUGE
- GAS CYLINDERS
- EDUCTOR
- AIR RELEASE VALVE
- BACK PRESSURE VALVE
- HOSE PUMP
- ANALOG SIGNAL
- DISCRETE SIGNAL
- ANALOG & DISCRETE SIGNALS

- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE
- TIE POINT
- SELF ACTUATED REGULATOR
- PILOT OPERATED PRESSURE REGULATOR
- PILOT OPERATED BACKPRESSURE REGULATOR
- MOTOR OPERATED
- CYLINDER OR PISTON OPERATED
- DIAPHRAGM ACTUATOR W/DOUBLE ACTING OPERATOR W/O ACCESSORIES
- DIAPHRAGM ACTUATOR W/DOUBLE ACTING OPERATOR WITH HANDWHEEL
- DIAPHRAGM ACTUATOR W/DOUBLE ACTING OPERATOR WITH ADJUSTABLE OPENING LIMIT STOP
- VANE TYPE ACTUATOR
- AIR OPERATOR W/POSITIONER
- FAIL OPEN
- FAIL CLOSED
- FAIL LAST POSITION
- STEAM TRAP
- RESIN OR MEDIA TRAP
- DESICCANT BREATHING
- VENT PIPE
- RUPTURE DISC
- DIAPHRAGM SEAL
- SPECTACLE BLIND
- PULSATION DAMPENING
- TURBINE DRIVE
- PNEUMATIC PISTON
- PADDLE WHEEL FLOW SENSOR
- END CLOSURE (CLEANING CONNECTION)
- EJECTOR

- VACUUM PUMP
- POSITIVE DISPLACEMENT PUMP W/MANUAL STROKE ADJUSTMENT
- POSITIVE DISPLACEMENT PUMP W/PNEUMATIC STROKE ADJUSTMENT
- POSITIVE DISPLACEMENT PUMP W/ELECTRIC STROKE ADJUSTMENT
- HEAT EXCHANGER
- VENT TO ATMOSPHERE
- ROTARY COMPRESSOR OR BLOWER
- VENTURI
- VORTEX SENSOR
- FLOW NOZZLE
- SONIC FLOW SENSOR
- INJECTION SPARGER
- RO BLOCK OR TUBE
- DOUBLE SKIN OF CARTRIDGE
- FLOW SIGHT GLASS
- SIGHTGLASS (ON VESSEL)
- LEVEL GAUGE
- AIR SUPPLY
- NITROGEN SUPPLY
- FLOW ELEMENT (ORIFICE PLATE)
- INLINE FLOW INDICATOR (ROTAMETER)
- FLOW ELEMENT (ANNUBAR)
- FLOW TOTALIZING INDICATOR (TURBINE METER)
- FLOW ELEMENT (MAGNETIC)
- FLOW ELEMENT (VENTURI)

INTERNATIONAL SOCIETY OF AUTOMATION

LETTER	FIRST LETTER (S)		SUCCEEDING LETTERS		
	PROCESS OF INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER FLAME		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
C	USERS CHOICE (+)			CONTROL	
D	USERS CHOICE	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT/SENSOR		
F	FLOW RATE	RATIO/FRACTION			
G	USERS CHOICE		GLASS/VIEWING DEVICE		
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRIC)		INDICATE		
J	POWER/TORQUE	SCAN			
K	TIME OR SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTOR	MOMENTARY			MIDDLE/INTERMEDIATE
N	DATA		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
O	USERS CHOICE (+)		ORIFICE		
P	PRESSURE (OR VACUUM)		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE			INTEGRATE/TOTALIZE
R	RADIATION		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	STARTER
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (+)		MULTIFUNCTION (+)	MULTIFUNCTION (+)	MULTIFUNCTION (+)
V	VIBRATION MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT OR FORCE		WELL		
X	MALFUNCTION/FAULT	X AXIS	UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	EVENT STATE OR PRESENCE	Y AXIS		RELAY OR COMPUTE (+)	
Z	POSITION	Z AXIS		DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTERS SYMBOLS.

TRANSDUCER SUBSCRIPTS

- A ANALOG
- D DIGITAL
- E VOLTAGE
- F FREQUENCY
- H HYDRAULIC
- I CURRENT
- P PNEUMATIC
- PF PULSE FREQUENCY
- PD PULSE DURATION
- R RESISTANCE
- POT POTENTIOMETER

EXAMPLE: CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

ANALYSIS INDICATING TRANSMITTER WITH THE SUBSCRIPT SHOWING THE TYPE, SUCH AS pH, TURBIDITY, CI RESIDUAL, ETC.

DEVICES FURNISHED BY OTHER THAN SYSTEM SUPPLIER OR EXISTING

EMI EMI CONSULTING SPECIALTIES, INC.
 5742 River Bend Road
 Groveland, FL 34736
 (407) 322-0500
 COA# 6160



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CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

INSTRUMENTATION & CONTROLS

SYMBOLS

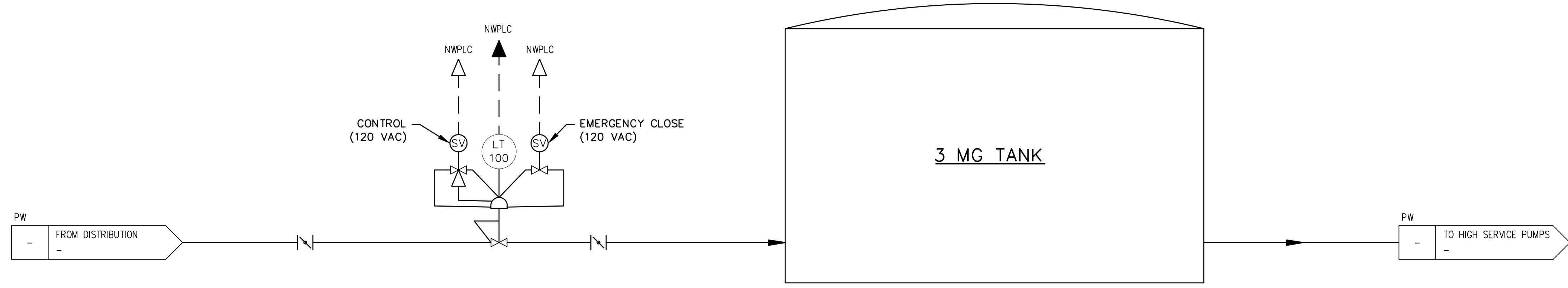
PROJECT NO.: 0818

SCALE: NOTED REVISION: 0

DRAWING NO. 101 SHEET NO.: 15 OF 17

CHA
 CHA CONSULTING, INC.
 3507 EAST FRONTAGE ROAD
 SUITE 180
 TAMPA, FL 33607
 (813) 549-0919

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EMI EMI CONSULTING SPECIALTIES, INC.
 5742 River Bed Road
 Groveland, FL 34736
 COA# 6160 (407) 322-0500



REV	DATE	DESCRIPTION	BY
0	03/2022	ISSUED FOR BID	WCH

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Designed WCH
 Drawn JPH
 Checked WCH
 Reviewed WCH
 Approved WCH

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

INSTRUMENTATION & CONTROLS

GST P&ID

PROJECT NO.: 0818	
SCALE: NOTED	REVISION: 0
DRAWING NO. 102	SHEET NO.: 17 OF 17

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