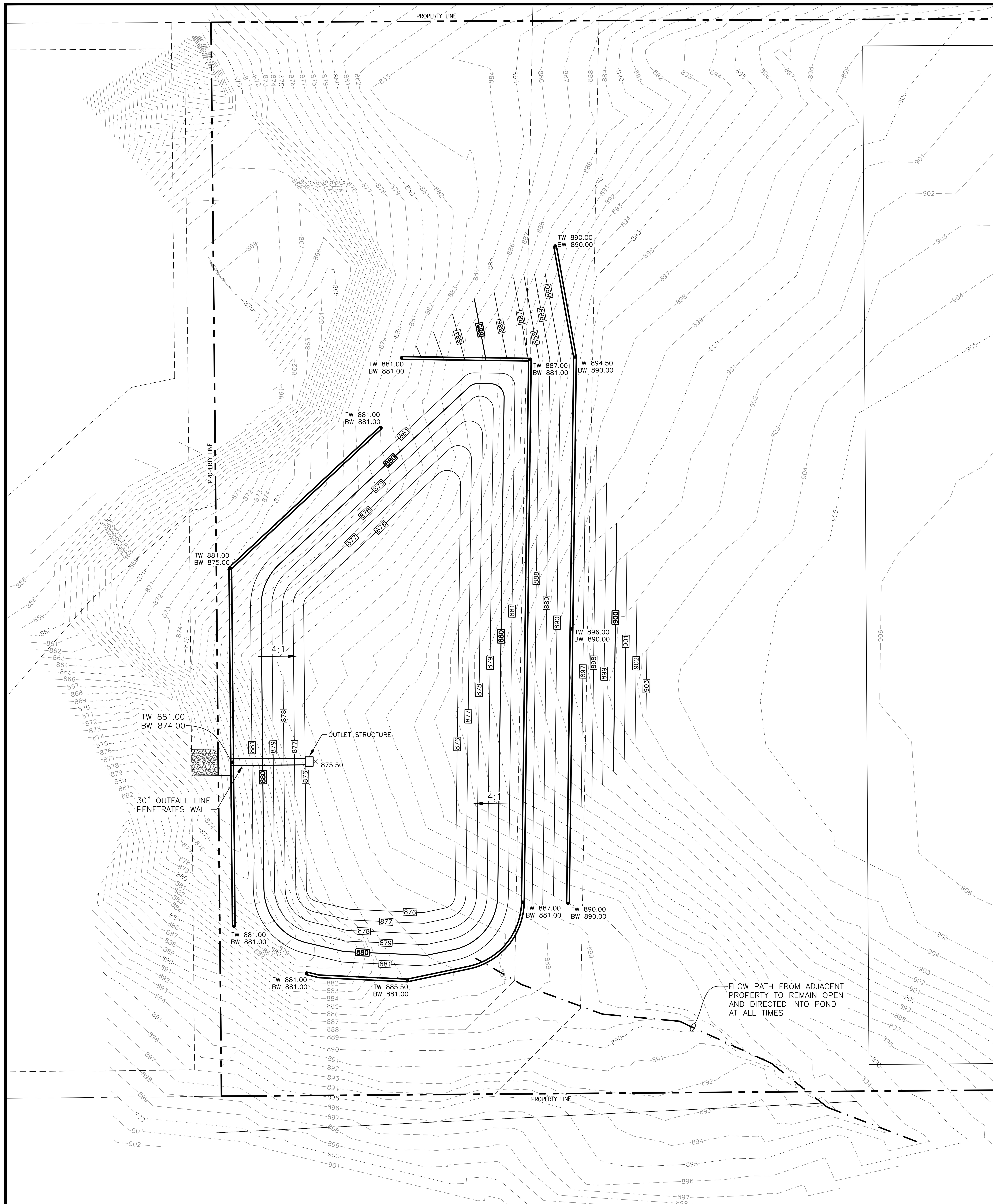
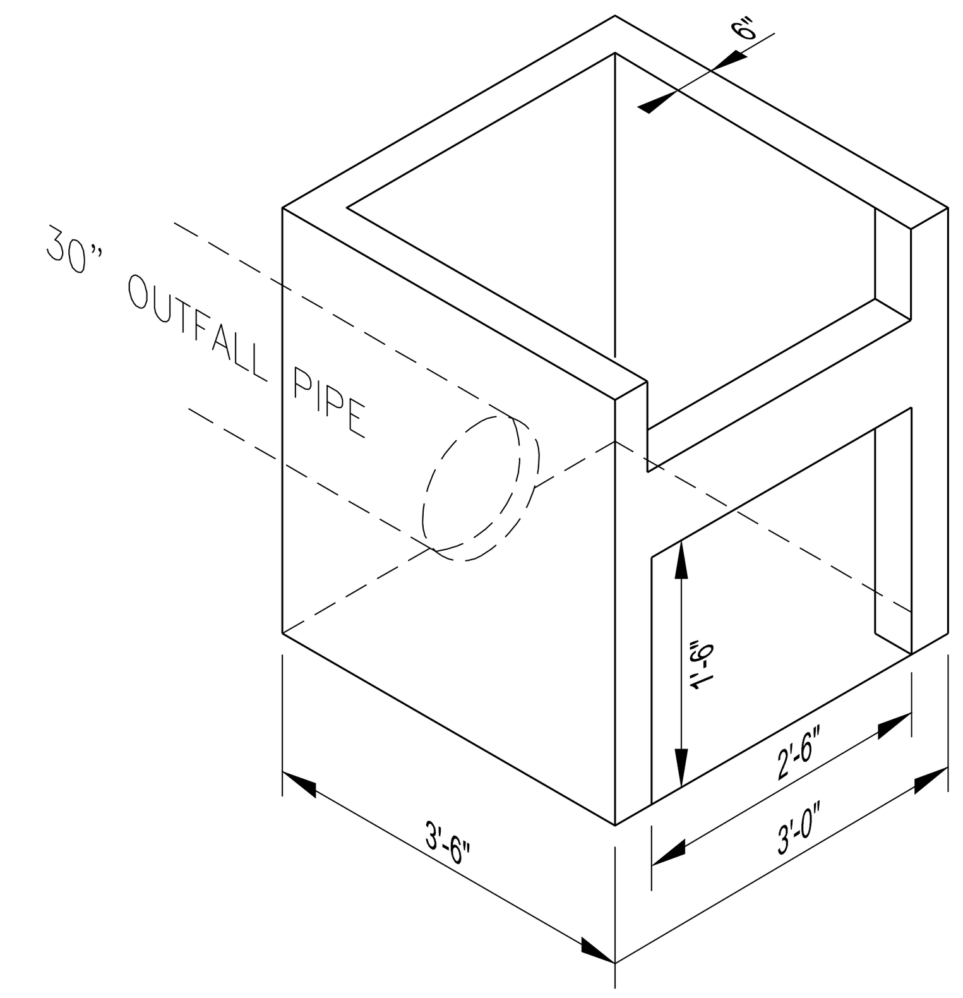
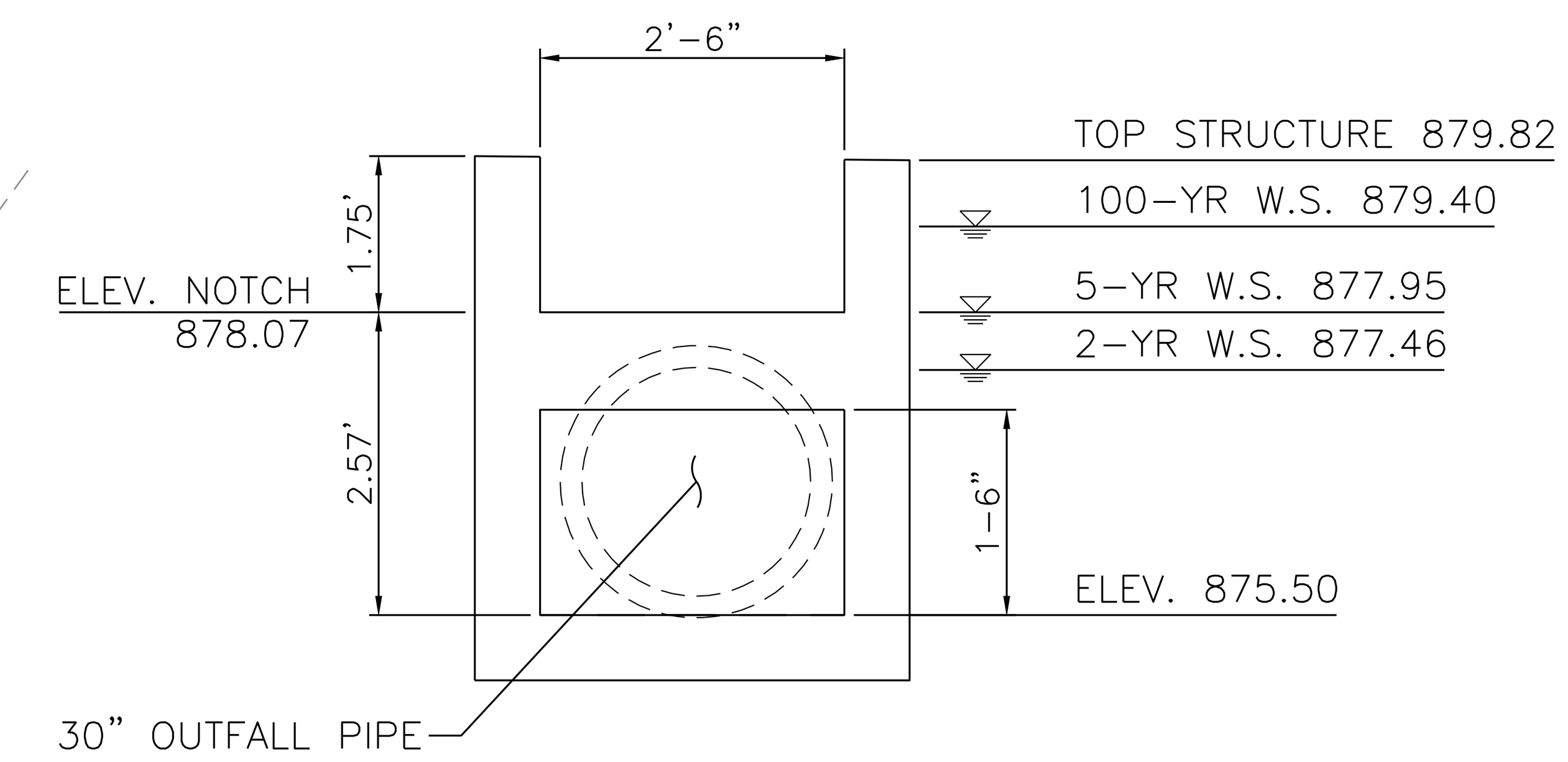


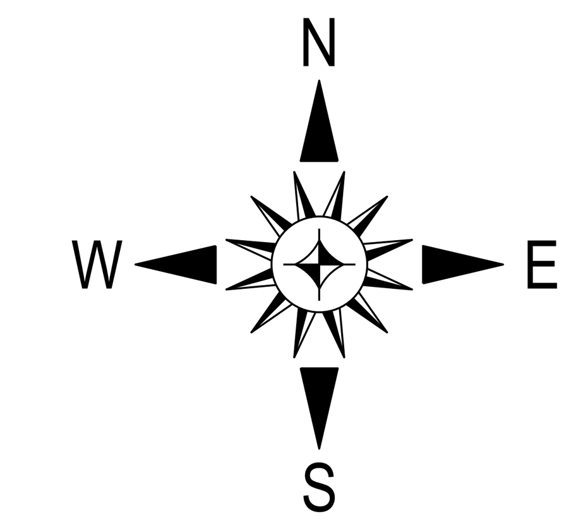


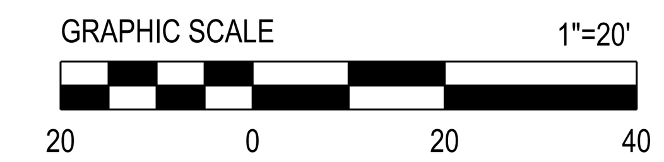
3'-0"x3'-6" OUTFALL STRUCTURE
(ISOMETRIC)
N.T.S.



3'-0"x3'-6" OUTFALL STRUCTURE
N.T.S.

**************CAUTION**************
EXISTING UTILITIES AND UNDERGROUND FACILITIES OF THESE PLANS HAVE BEEN LOCATED FROM REFERENCE INFORMATION AND AS-BUILT PLANS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ALL EXISTING UTILITIES AND WILL BE RESPONSIBLE FOR ANY DAMAGE TO SAID UTILITIES. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION.





GENERAL NOTES:

1. ALL SPOT GRADES WITHIN PAVEMENT AREAS ARE TO TOP OF FINISH PAVEMENT UNLESS OTHERWISE NOTED.
2. ALL SPOT GRADES IN NON PAVEMENT AREAS ARE TO FINISHED GRADE AFTER ALLOWANCE FOR SOD AND/OR MULCH.
3. MAXIMUM SLOPE FOR HANDICAP PARKING SPACES IS 2% IN ANY DIRECTION.
4. MAXIMUM SLOPE FOR HANDICAP ACCESSIBLE ROUTES IS 5% LONGITUDINAL AND 2% TRANSVERSE.
5. ALL FILL PLACEMENT SHALL BE IN MAXIMUM 8" LIFTS AND DENSITY TESTED TO MINIMUM 95% STANDARD PROCTOR AT -1 TO + 4% OPTIMUM MOISTURE. CONTRACTOR TO PROVIDE TESTING.

LEGEND

SYMBOL	DESCRIPTION
800	EXISTING CONTOUR
800	PROPOSED CONTOUR
	PROPERTY LINE
	DRAINAGE FLOW DIRECTION
FF=740.00	FINISH FLOOR ELEVATION
• TC G	TOP OF CURB GUTTER
• TW BW	TOP OF RETAINING WALL BOTTOM OF RETAINING WALL
• 800.00	SPOT ELEVATION
• T.I. 800.00	TOP OF INLET ELEVATION
• T.I. 800.00	MATCH EX. GRADE

OUTLET STRUCTURE SIZING
FORTIFIED METALS DETENTION POND

Design Storm	Pond Depth at Design Storage Volume	Allowable Discharge
2-Year	1.96'	27.37 cfs
5-Year	2.45'	34.24 cfs
100-Year	3.90'	56.97 cfs

Outlet to Consist of an 18" tall by 30" wide Orifice which will convey the 2-year and 5-year discharges. A weir section is added above the 5-year storage level to assist in discharging the 100-year storm.

2- YEAR STORM
Orifice Flow — Orifice h = 877.46 - 875.50 = 1.96'
Orifice Eq.: $Q = C \times A \times [64.4 \times h]^{1/2}$
$Q = (0.8) \times (3.75) \times [64.4 \times 1.21]^{1/2}$
Q = 26.48 CFS < 27.37

5- YEAR STORM
Orifice Flow — Orifice h = 877.95 - 875.50 = 2.45'
Orifice Eq.: $Q = C \times A \times [64.4 \times h]^{1/2}$
$Q = (0.8) \times (3.75) \times [64.4 \times 1.70]^{1/2}$
Q = 31.39 CFS < 34.24

100- YEAR STORM
Orifice Flow — Orifice h = 879.40 - 875.50 = 3.90'
Orifice Eq.: $Q = C \times A \times [64.4 \times h]^{1/2}$
$Q = (0.8) \times (3.75) \times [64.4 \times 3.15]^{1/2}$
Q = 42.73 cfs

Weir Flow — Weir h = 1.33'
Weir Eq.: $Q = Cx\ L \times [h]^{3/2}$
$Q = (2.70) \times (2.5) \times (1.25)^{3/2}$
Q = 9.43 CFS

Total Q = 47.23 + 9.43 = 52.16 CFS < 56.97 CFS

POND VOLUME
FORTIFIED METALS DETENTION POND

Elevation	Area (SF)	depth (FT)	Avg. Area (SF)	Incremental Volume (CF)	Cumulative Volume (CF)
875.5	0				0
		0.5	4,141	2,070	
876.0	8,281				2,070
		1.0	9,161	9,161	
877.0	10,040				11,231
		1.0	10,993	10,993	
878.0	11,945				22,223
		1.0	12,962	12,962	
879.0	13,979				35,185
		1.0	15,054	15,054	
880.0	16,129				50,239
		1.0	17,263	17,263	
881.0	18,396				67,502

2-yr Required Volume of 16,291 achieved at Elev. 877.46
5-yr Required Volume of 21,684 achieved at Elev. 877.95
100-yr Required Volume of 41,225 achieved at Elev. 879.40

REVISIONS

NO.	DESCRIPTION	DATE

6221 Southwest Boulevard, Suite 100
Fort Worth, Texas 76132
(O) 817.231.8100 (F) 817.231.8144
Texas Registered Engineering Firm F-10998
Texas Registered Survey Firm F-10158800
www.barronstark.com

Barron•Stark Engineers

FOR INTERIM REVIEW ONLY

NOT FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES, PLANS PREPARED BY CHARLES F. STARK, P.E. REGISTRATION No. 57357,

05-21-2021

STORM WATER DETENTION PLAN
FORTIFIED METALS MANUFACTURING FACILITY
PARKER COUNTY, TEXAS

CLIENT No.	445
PROJECT No.	9757
DESIGN:	CFS
DRAWN:	WWS
CHECKED:	CFS
DATE:	MAY 2021

SHEET
C4.0

USER: RANDALL PETERSON
PLOTTED ON: 5/27/2021 3:27 PM
FILE NAME: N:\BARRON STARK SWIFT ENG\445 - FORTIFIED METALS\9757 - MANUFACTURING FACILITY 11.23 AC\200 CAD\00 DWG\445-9757 C4.0 DETENTION POND.DWG