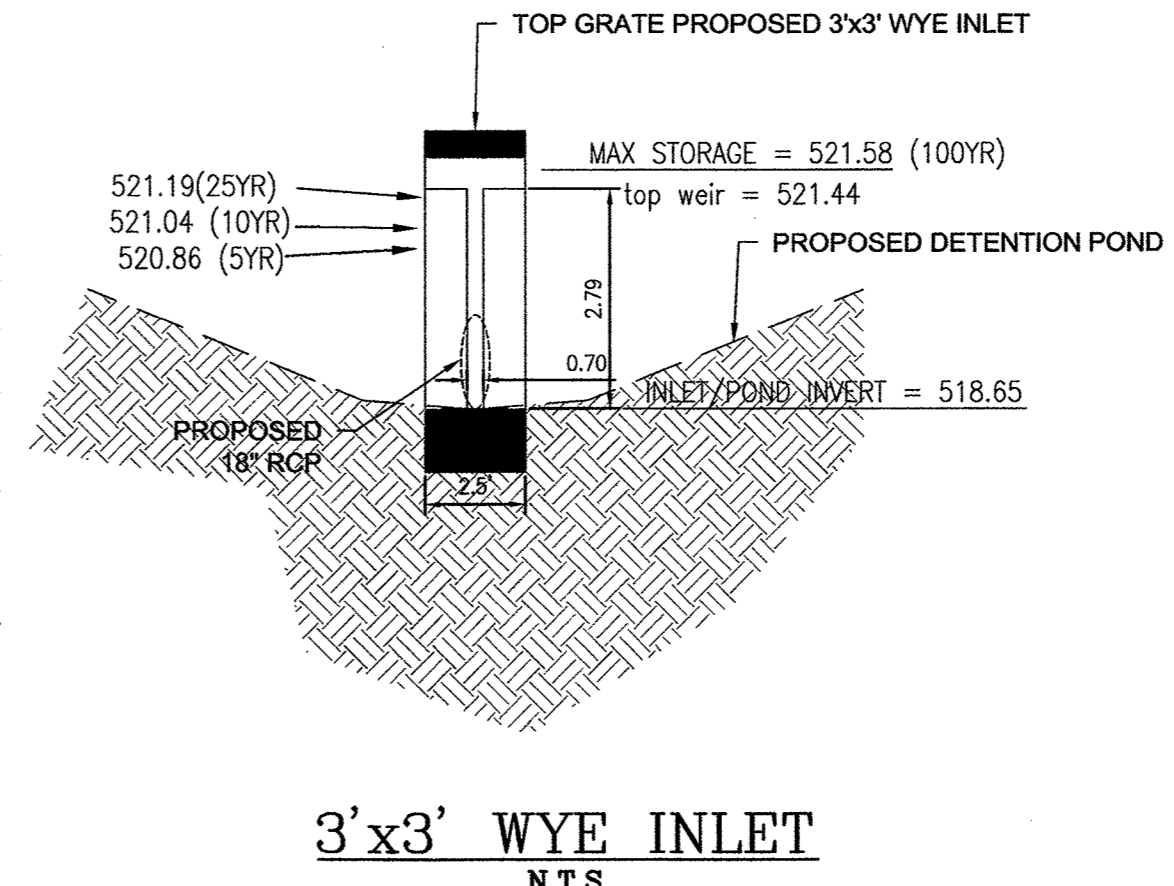
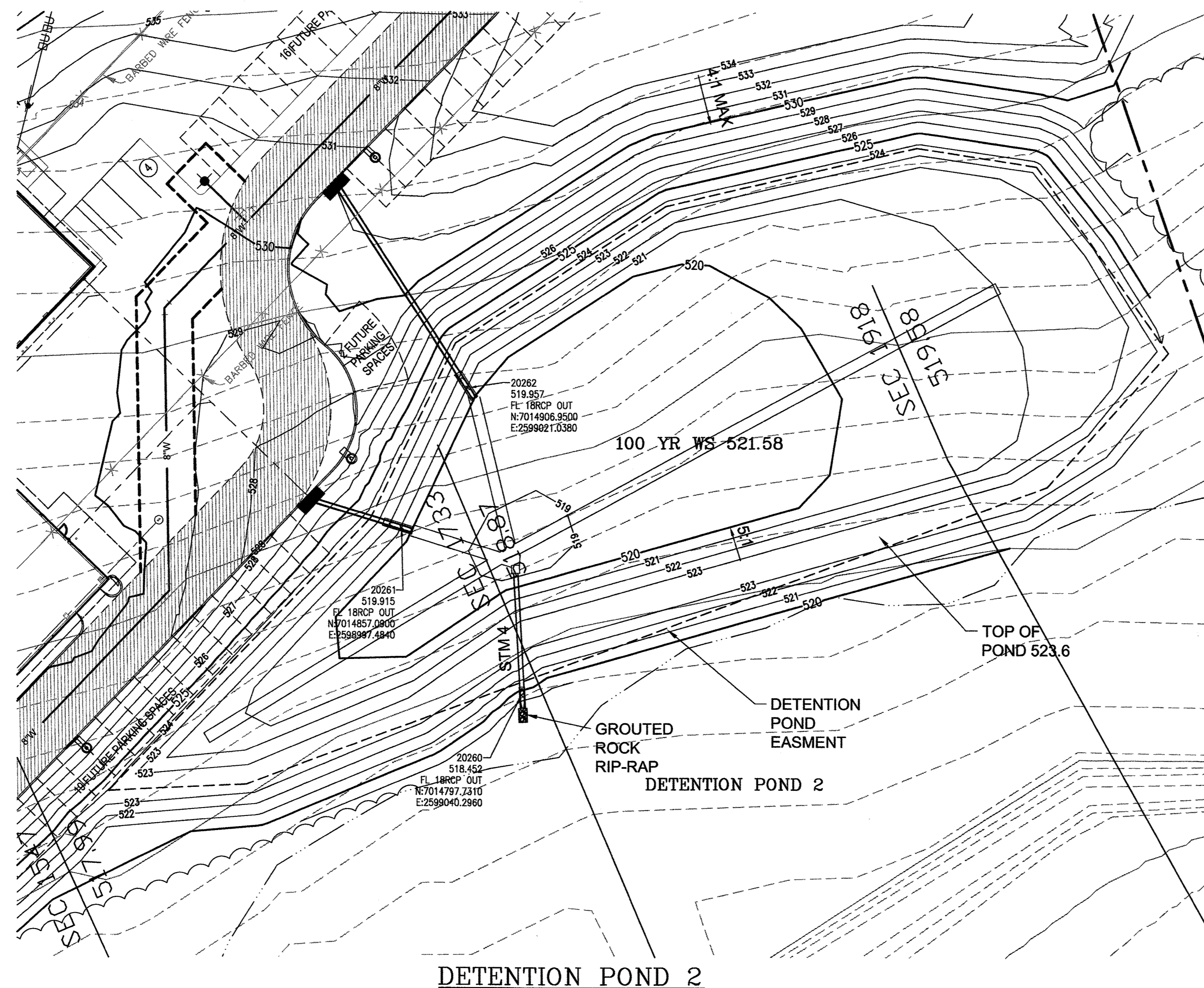


DETENTION POND VOLUME CALCULATOR			
MODIFIED RATIONAL METHOD			
100 YEAR FREQUENCY			
DETENTION REQUIRED			
Acres	Q		
site total	4.28	12.43	
ByPass	0	0.00	
Area, acre	4.28		
Present Conditions		Proposed Conditions	
C	0.35	C	0.90
Tc	20.00	Tc	10.00
i (100)	6.30	i (100)	9.89
Q (100)	12.43	Q (100)	37.75
Proposed Intensities			
Time	Inflow	Outflow	Storage (cf)
5	17218	5595	11623
10	22850	7480	15190
15	31201	9325	21976
20	38366	11190	27176
30	47842	14920	32922
40	53620	18650	34970
50	57780	22380	35400
60	62402	26110	36292
70	64714	29840	34673
80	67487	33570	33917
90	72803	37300	35503
100	78581	41030	37551
110	81354	44760	36594

DETENTION POND VOLUME CALCULATOR			
MODIFIED RATIONAL METHOD			
25 YEAR FREQUENCY			
DETENTION REQUIRED			
Acres	Q		
site total	4.28	10.04	
ByPass	0	0.00	
Area, acre	4.28		
Present Conditions		Proposed Conditions	
C	0.35	C	0.90
Tc	20.00	Tc	10.00
i (100)	6.70	i (100)	9.30
Q (100)	10.04	Q (100)	35.82
Proposed Intensities			
Time	Inflow	Outflow	Storage (cf)
5	13887	4516	9351
10	21494	6022	15472
15	27041	7527	19514
20	30970	9033	21937
30	36748	12044	24704
40	41602	15055	26547
50	47148	18088	27003
60	47148	21072	26072
70	50153	2408	26085
80	51771	27099	24572
90	54082	30110	23972
100	55469	33121	22348
110	55931	36132	19799

DETENTION POND VOLUME CALCULATOR			
MODIFIED RATIONAL METHOD			
10 YEAR FREQUENCY			
DETENTION REQUIRED			
Acres	Q		
site total	4.28	8.54	
ByPass	0	0.00	
Area, acre	4.28		
Present Conditions		Proposed Conditions	
C	0.35	C	0.90
Tc	20.00	Tc	10.00
i (100)	5.70	i (100)	8.00
Q (100)	8.54	Q (100)	30.82
Proposed Intensities			
Time	Inflow	Outflow	Storage (cf)
5	11672	3842	7829
10	18490	5123	13366
15	22881	6404	16477
20	26348	7685	18863
30	31201	10246	20955
40	35130	12808	22322
50	38135	15369	22765
60	40215	17931	22294
70	42064	20493	21571
80	44375	23054	21321
90	45762	25616	20146
100	46224	28177	18047
110	45762	30739	15023

DETENTION POND VOLUME CALCULATOR			
MODIFIED RATIONAL METHOD			
5 YEAR FREQUENCY			
DETENTION REQUIRED			
Acres	Q		
site total	4.28	7.49	
ByPass	0	0.00	
Area, acre	4.28		
Present Conditions		Proposed Conditions	
C	0.35	C	0.90
Tc	20.00	Tc	10.00
i (100)	5.00	i (100)	6.90
Q (100)	7.49	Q (100)	26.58
Proposed Intensities			
Time	Inflow	Outflow	Storage (cf)
5	9961	3371	6591
10	15947	4494	11453
15	20107	5618	14490
20	23112	6741	16371
30	27041	8988	18053
40	30508	11235	19273
50	32357	13482	18875
60	34668	15729	18939
70	35592	17976	17616
80	36979	20223	16756
90	38522	22470	17052
100	39290	24717	14573



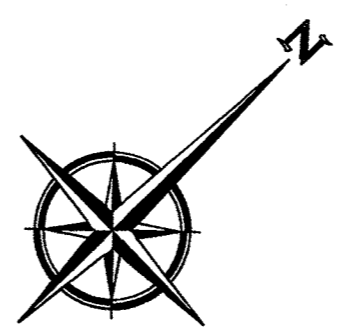
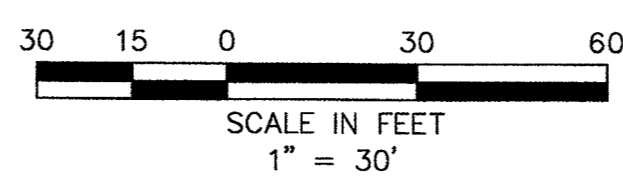
NOTE:
PROPOSED STRUCTURE HAS A WEIR OPENING OF 0.70 FEET TO RELEASE AT EXISTING RATES FOR 5/10/25 AND 100 YEAR STORMS FOR POND 2 AREA.

RECORD DRAWINGS

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

Todd Winters 6-13-19
TODD WINTERS DATE

NOTE:
ENTIRE DETENTION SYSTEM TO BE MAINTAINED BY PROPERTY OWNER.



DETENTION POND

TOTAL DRAINAGE AREA POND 2 4.28 AC.
EXISTING C FACTOR: C=0.35
DEVELOPED C FACTOR: C=0.90

ALLOWABLE RELEASE, 5 YEAR (Q= CIA)
5 YEAR 20 MINUTE INTENSITY I=5.00
C=0.35
Q(5)= 7.5 cfs (ALLOWABLE RELEASE)

ALLOWABLE RELEASE, 10 YEAR (Q= CIA)
10 YEAR 20 MINUTE INTENSITY I=5.7
C=0.35
Q(10)= 8.5 cfs (ALLOWABLE RELEASE)

ALLOWABLE RELEASE, 25 YEAR (Q= CIA)
25 YEAR 20 MINUTE INTENSITY I=6.7
C=0.35
Q(25)= 10.0 cfs (ALLOWABLE RELEASE)

ALLOWABLE RELEASE, 100 YEAR (Q= CIA)
100 YEAR 20 MINUTE INTENSITY I=8.3
C=0.35
Q(100)= 12.4 cfs (ALLOWABLE RELEASE)

Detention Pond Volume Calculations

Pond Overflow Elevation =	523.6		
100yr Water Surface Elevation =	521.58		
INVERT ELEVATION	518.65		
Contour Elevation	Surface Area (sf)	Average Area	Cumulative Volume (cf)
518.65	0		
519.00	396	198	69
520.00	13,194	6,795	3,467
521.00	23,410	18,302	21,769
522.00	30,674	27,042	48,811
5yr WS 520.86			19,273 CF
10yr WS 521.04			22,765 CF
25yr WS 521.19			27,003 CF
100yr WS 521.58			37,551 CF

Outlet Structure Calculations
5 Year Discharge @ Max Water Surface

Q total = 7.5 cfs Allowed
Storage Elevation = 520.85
Invert Elevation = 518.65
Width Weir (1) = 0.70

Q total = 7.61 cfs Provided
Q ALLOW TO Q DESIGN, 10yr DIFFERENCE = 1.5%

WEIR (1)
Q=0.1(H)^{1.5}
C=3.333
H=2.20 [H = Storage elev. minus FL of weir]
L=0.70
Q=7.61 cfs
Weir opening 0.70 feet x 2.20' @ WS 520.85

Outlet Structure Calculations
10 Year Discharge @ Max Water Surface

Q total = 8.5 cfs Allowed
Storage Elevation = 521.04
Invert Elevation = 518.65
Width Weir (1) = 0.70

Q total = 8.62 cfs Provided
Q ALLOW TO Q DESIGN, 10yr DIFFERENCE = 1.4%

WEIR (1)
Q=0.1(H)^{1.5}
C=3.333
H=2.39 [H = Storage elev. minus FL of weir]
L=0.70
Q=8.62 cfs
Weir opening 0.70 feet x 2.39' @ WS 521.04

Outlet Structure Calculations
25 Year Discharge @ Max Water Surface

Q total = 10.0 cfs Allowed
Storage Elevation = 521.19
Invert Elevation = 518.65
Width Weir (1) = 0.70

Q total = 9.44 cfs Provided
Q ALLOW TO Q DESIGN, 10yr DIFFERENCE = -5.6%

WEIR (1)
Q=0.1(H)^{1.5}
C=3.333
H=2.54 [H = Storage elev. minus FL of weir]
L=0.70
Q=9.44 cfs
Weir opening 0.70 feet x 2.54' @ WS 521.19

Outlet Structure Calculations
100 Year Discharge @ Max Water Surface

Q total = 12.4 cfs Allowed
Storage Elevation = 521.44
Invert Elevation = 518.65
Width Weir (1) = 0.70

Q total = 12.62 cfs Provided
Q ALLOW TO Q DESIGN, 10yr DIFFERENCE = 1.6%

WEIR (1)
Q=0.1(H)^{1.5}
C=3.333
H=2.78 [H = Storage elev. minus FL of weir]
L=0.70
Q=12.62 cfs
Weir opening 0.70 feet x 2.78' @ FL 521.44

WEIR (2)
Q=0.1(H)^{1.5}
C=3.333
H=0.14 [H = Storage elev. minus FL of weir]
L=10.0
Q=1.75 cfs
Weir opening 10.0 feet x 0.14' @ FL 521.58

"Case No. SP2017-041"

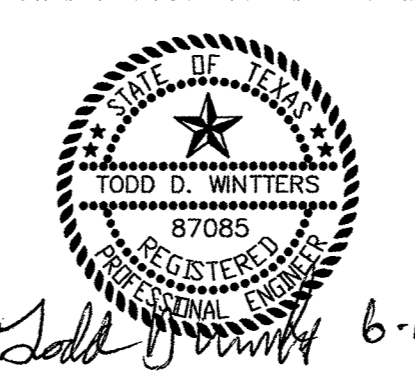
BENCHMARK:
"X" CUT IN CURB 23± SOUTH OF EAST DRIVE APPROACH OF EXISTING RAYBURN COUNTRY ELECTRIC BUILDING.

ENGINEERINGCONCEPTS
& DESIGN, L.P.

ENGINEERING / PROJECT MANAGEMENT /
CONSTRUCTION SERVICES - FIRM REG. #F-001145
201 WINDCO CIR. STE 200, WYLIE, TX 75098
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
DRAWN: TONY	DATE: JUNE 7, 2018
CHECKED: TW	DATE: MAY 23, 2018
PROJECT NO.: 3560	
DWG FILE NAME:	

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF CONSTRUCTION.



Todd D. Winters 6-13-19

DETENTION POND 2
RAYBURN ELECTRIC COOP. PHASE 2
LOT 5, BLK 1 RAYBURN COUNTRY ADDITION
CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS

SHEET
12
OF
20