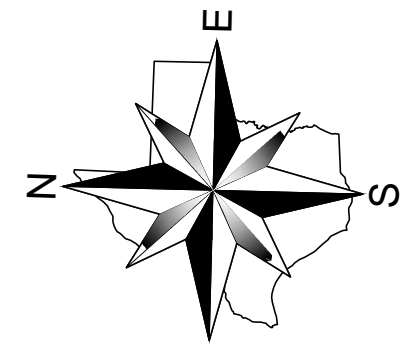


VICINITY MAP  
NOT TO SCALE

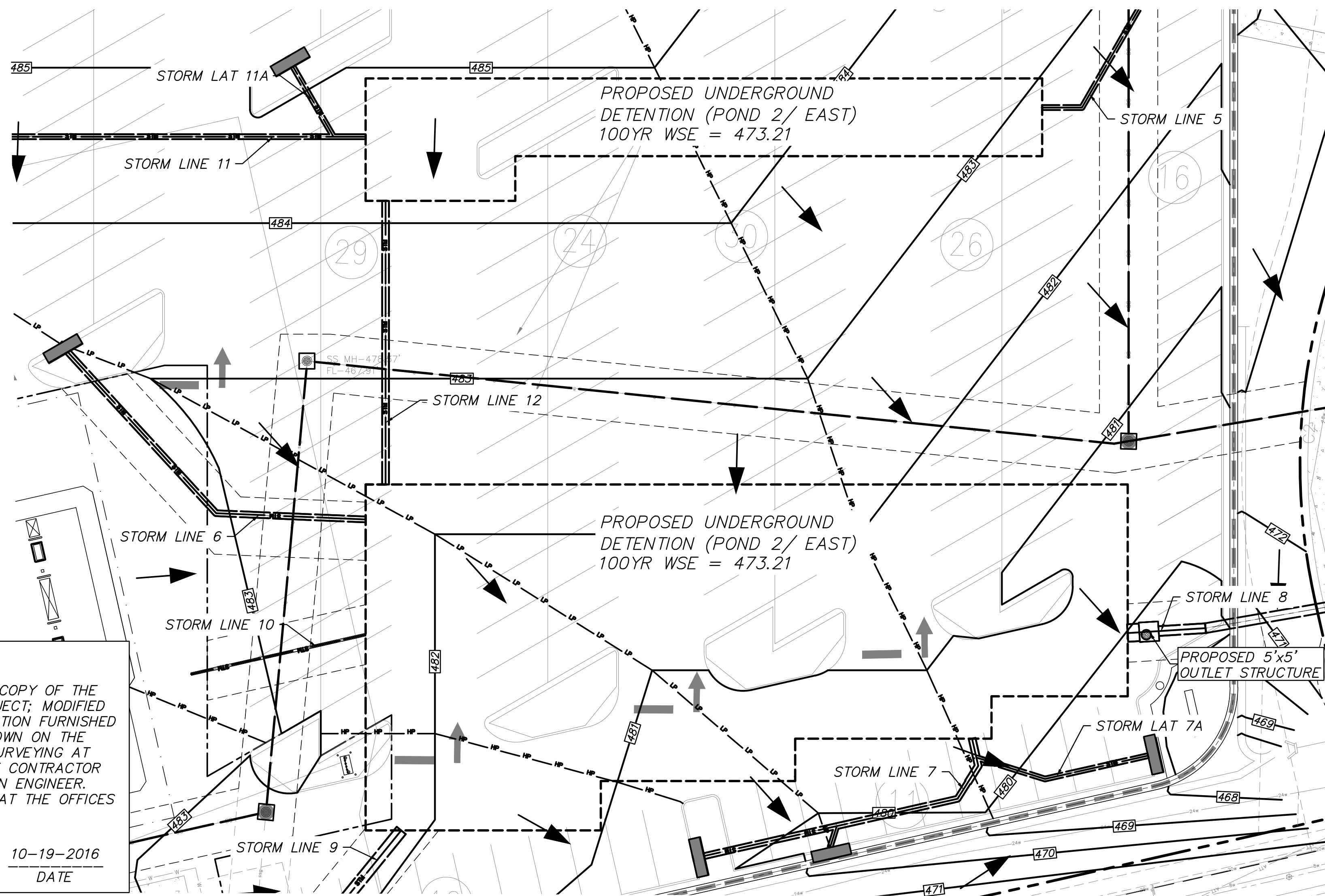


AS-BUILT

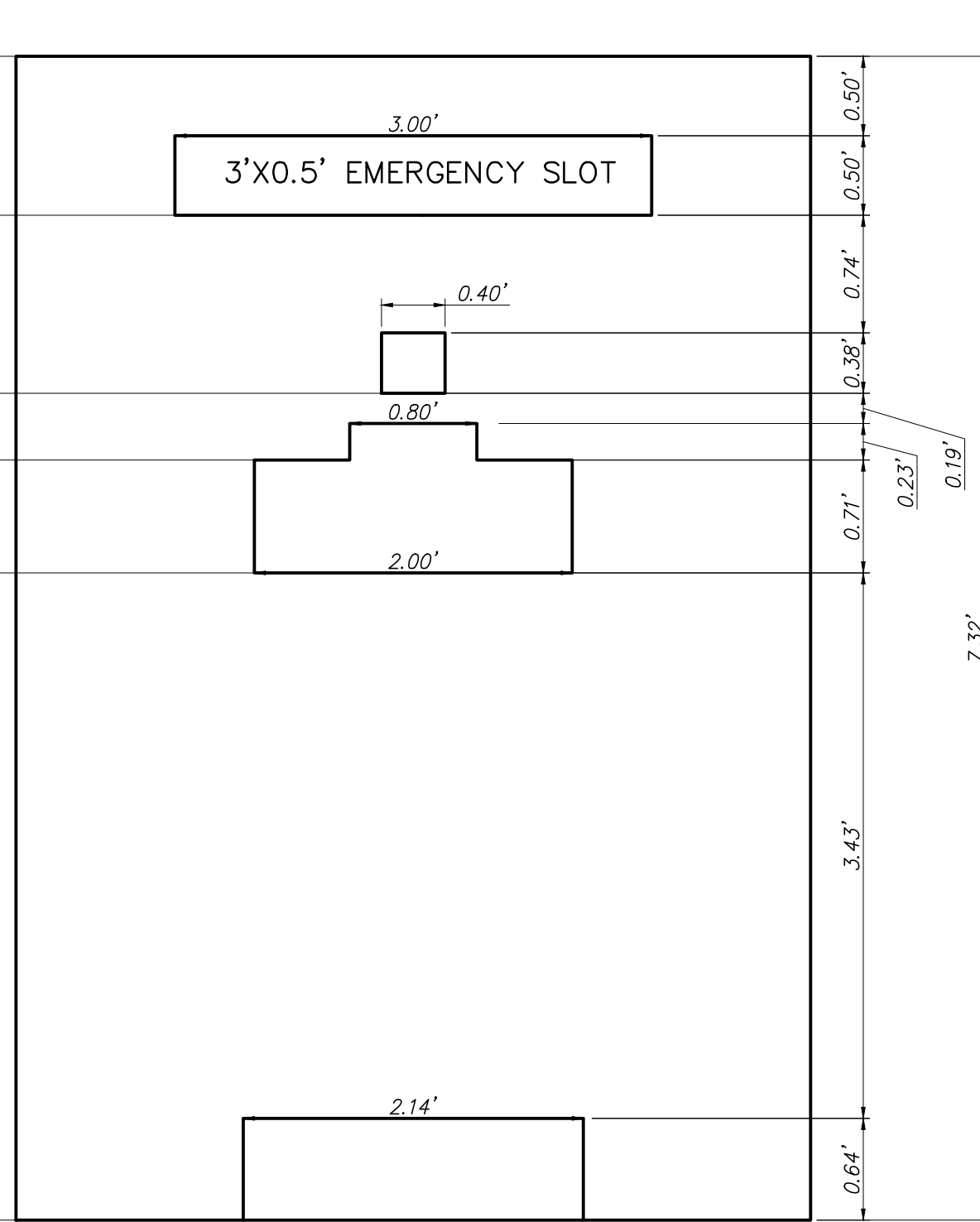
THIS RECORD DRAWING IS COMPILATION OF A COPY OF THE SEALED ENGINEERING DRAWING FOR THIS PROJECT; MODIFIED BY ADDENDA, CHANGE ORDERS, AND INFORMATION FURNISHED BY THE CONTRACTOR. THE INFORMATION SHOWN ON THE RECORD DRAWINGS IS PROVIDED BASED ON SURVEYING AT THE SITE AND INFORMATION PROVIDED BY THE CONTRACTOR OR OTHERS NOT ASSOCIATED WITH THE DESIGN ENGINEER. THE ORIGINAL SEALED DRAWING ARE ON FILE AT THE OFFICES OF WINKELMANN AND ASSOCIATES, INC.

*Maria L. Boilla*  
WINKELMANN AND ASSOCIATES, INC.

10-19-2016  
DATE



TOP ELEV. = 474.21  
100 YEAR STORM PEAK ELEV. = 473.21  
25 YEAR STORM PEAK ELEV. = 472.09  
10 YEAR STORM PEAK ELEV. = 471.67  
5 YEAR STORM PEAK ELEV. = 470.96



PERFORATED METAL PLATE  
SCALE: 1" = 10'

5 YEAR STORM AT WS ELEVATION= 470.96 FT  
MAX RELEASE= 12.99 CFS  
STORAGE VOLUME= 57616 CF  
10 YEAR STORM AT WS ELEVATION= 471.67 FT  
MAX RELEASE= 15.64 CFS  
STORAGE VOLUME= 71140 CF  
25 YEAR STORM AT WS ELEVATION= 472.09 FT  
MAX RELEASE= 17.49 CFS  
STORAGE VOLUME= 78987 CF  
100 YEAR STORM AT WS ELEVATION= 473.21 FT  
MAX RELEASE= 22.00 CFS  
STORAGE VOLUME= 98662 CF  
PROVIDED STORAGE= 123,310 CF

Elevation (FT)	Release Rate (CFS)	Volume (CF)
475	26.24	123310
474	23.79	111288
473	21.48	95308
472	17.11	77274
471	13.07	58430
470	11.21	39851
469	8.98	22667
468	5.97	8341
467	0.27	536
466.89	0	0

**BENCH MARKS:**

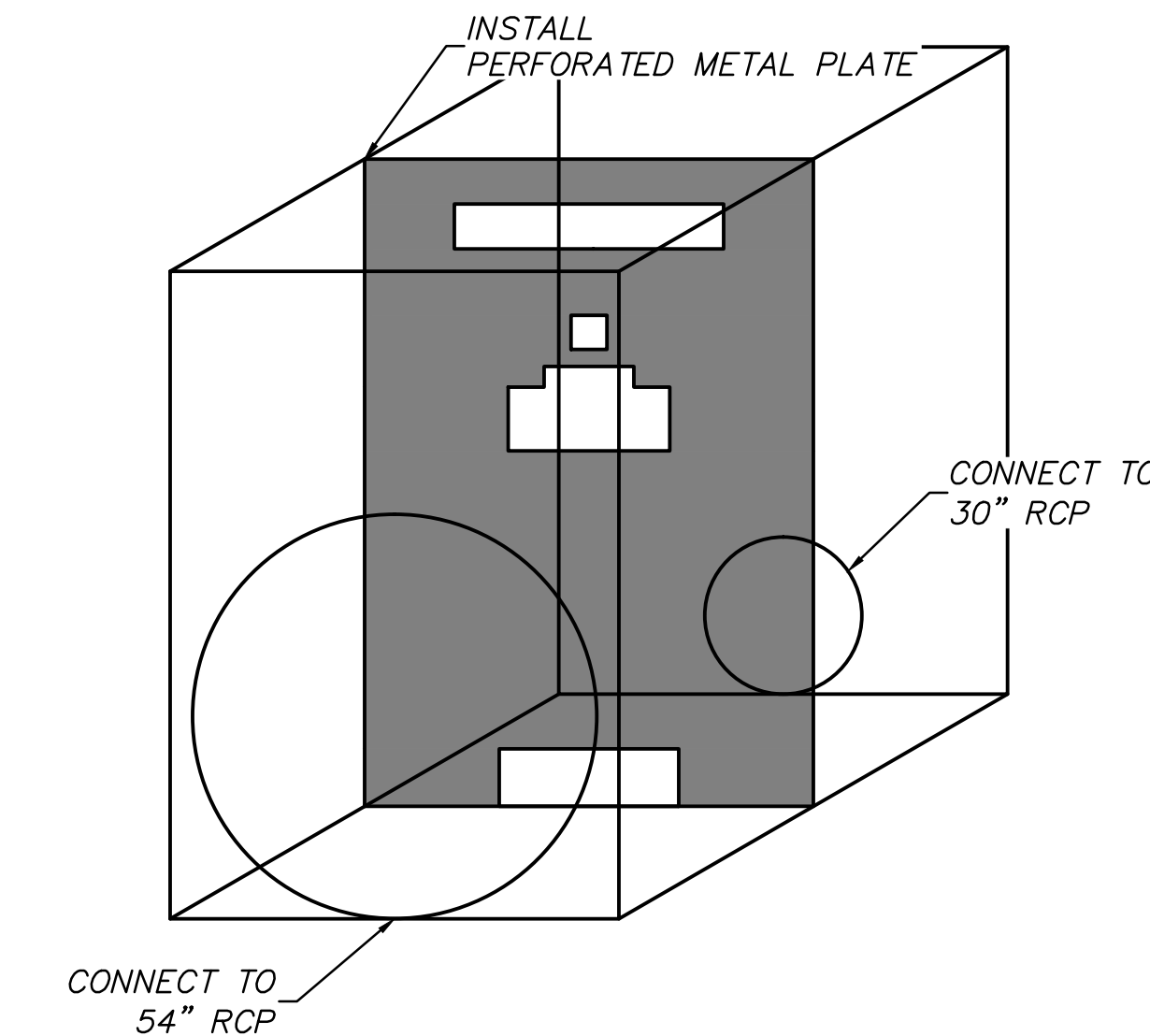
BM#1 - "X" cut inside of "u" cut at the centerline of a curb inlet, southeasterly curb line of Quail Run, ±23.6 feet northeast of the POINT OF BEGINNING.

ELEVATION - 482.71 feet

BM#2 - "X" cut at the southeast end of a curb inlet, northeasterly curb line of Memorial Drive, ±13.4 feet southeast of the southeast property corner.

ELEVATION - 472.19 feet

3 REFER TO TXDOT DETAIL JB-1-02 (FW) FOR REINFORCING SIZES & WALL THICKNESS. (SHEET C-15.06)



5'x5' JUNCTION/MANHOLE (OUTLET STRUCTURE)  
NOT TO SCALE

**DETENTION-2 CALCULATIONS (5 year)**

AREA TO BE DETAINED P17A,P17B,P23,P25A,P25B,P26,P27,P28,A1,A2,B1,B2,B3,B4,OFF18,OFF19  
9.328 ACRES

DETENTION AREA (I)  
REFEREN TECHNICAL PAPER 40  
ALLOWABLE STORMWATER FLOW FROM DETENTION: 12.99 CFS

STORM DURATION DATA:

MIN	I-5YR	C	AREA	TOTAL CFS	TOTAL FLOW	OUTFLOW	STORAGE
10	6.10	0.9	9.328	51.21	30726.43	7793	22934
15	5.50	0.9	9.328	46.17	41556.24	9741	31815
20	4.90	0.9	9.328	41.14	49363.78	11689	37675
30	4.10	0.9	9.328	34.42	61956.58	15586	46371
40	3.40	0.9	9.328	28.54	68504.83	19482	49023
50	2.80	0.9	9.328	23.51	70519.68	23378	47141
60	2.60	0.9	9.328	21.83	78579.07	27275	51304
70	2.40	0.9	9.328	20.15	84623.62	31171	53453
80	2.30	0.9	9.328	19.31	92683.01	35067	57616
90	2.10	0.9	9.328	17.63	95201.57	38964	56238
100	1.90	0.9	9.328	15.95	95705.28	42860	52845
110	1.80	0.9	9.328	15.11	99734.98	46757	52978

**DETENTION-2 CALCULATIONS (10 year)**

AREA TO BE DETAINED P17A,P17B,P23,P25A,P25B,P26,P27,P28,A1,A2,B1,B2,B3,B4,OFF18,OFF19  
9.328 ACRES

DETENTION AREA (I)  
REFEREN TECHNICAL PAPER 40  
ALLOWABLE STORMWATER FLOW FROM DETENTION: 15.64 CFS

STORM DURATION DATA:

MIN	I-10YR	C	AREA	TOTAL CFS	TOTAL FLOW	OUTFLOW	STORAGE
10	7.10	0.9	9.328	59.61	35764	9383.13253	26380
15	6.50	0.9	9.328	54.57	49112	11728.91566	37383
20	5.90	0.9	9.328	49.53	59438	0	59438
30	4.80	0.9	9.328	40.30	72535	18766.26506	53768
40	4.00	0.9	9.328	33.58	80594	23457.83133	57136
50	3.50	0.9	9.328	29.38	88150	28149.39759	60000
60	3.00	0.9	9.328	25.19	90668	32840.96386	57827
70	2.80	0.9	9.328	23.51	98728	37532.53012	61195
80	2.60	0.9	9.328	21.83	104772	42224.09639	62548
90	2.50	0.9	9.328	20.99	113335	46915.66265	66420
100	2.40	0.9	9.328	20.15	120891	51607.22892	69284
110	2.30	0.9	9.328	19.31	127439	56298.79518	71140

**DETENTION-2 CALCULATIONS (25 year)**

AREA TO BE DETAINED P17A,P17B,P23,P25A,P25B,P26,P27,P28,A1,A2,B1,B2,B3,B4,OFF18,OFF19  
9.328 ACRES

DETENTION TECHNICAL PAPER 40  
REFERENCE :  
ALLOWABLE STORMWATER FLOW FROM DETENTION: 17.49 CFS

STORM DURATION DATA:

MIN	I-25YR	C	AREA	TOTAL CFS	TOTAL FLOW	OUTFLOW	STORAGE
10	8.30	0.9	9.328	69.68	41808	10496	31312
15	7.50	0.9	9.328	62.96	56668	13120	43547
20	6.60	0.9	9.328	55.41	66490	15745	50745
30	5.50	0.9	9.328	46.17	83112	20993	62120
40	4.80	0.9	9.328	38.62	92883	26241	66442
50	4.00	0.9	9.328	33.58	100742	31489	69253
60	3.50	0.9	9.328	29.38	105780	36737	69042
70	3.30	0.9	9.328	27.70	116357	41986	74372
80	3.10	0.9	9.328	26.03	124921	47234	77687
90	2.90	0.9	9.328	24.35	131469	52482	78987
100	2.70	0.9	9.328	22.67	136002	57730	78272
110	2.50	0.9	9.328	20.99	138521	62978	75542

**DETENTION-2 CALCULATIONS (100 year)**

AREA TO BE DETAINED P17A,P17B,P23,P25A,P25B,P26,P27,P28,A1,A2,B1,B2,B3,B4,OFF18,OFF19  
9.328 ACRES

DETENTION AREA (I)  
REFEREN TECHNICAL PAPER 40  
ALLOWABLE STORMWATER FLOW FROM DETENTION: 22.00 CFS

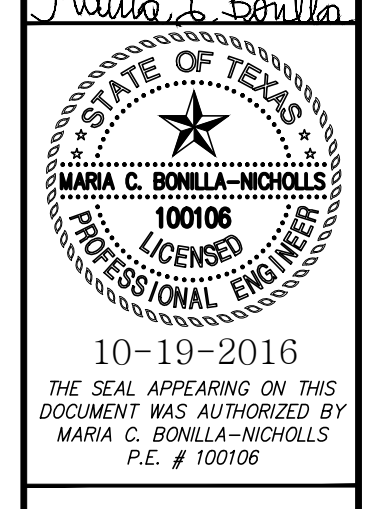
STORM DURATION DATA:

MIN	I-100YR	C	AREA	TOTAL CFS	TOTAL FLOW	OUTFLOW	STORAGE
10	9.80	0.90	9.328	82.27	49364	13200	36164
15	9.00	0.90	9.328	75.56	68001	16500	51501
20	8.30	0.90	9.328	69.68	83616	19800	63816
30	6.90	0.90	9.328	57.93	104268	26400	77868
40	5.80	0.90	9.328	48.69	116861	33000	83861
50	5.00	0.90	9.328	41.98	125928	39600	86328
60	4.50	0.90	9.328	37.78	136002	46200	89802
70	4.00	0.90	9.328	33.58	141039	52800	88239
80	3.70	0.90	9.328	31.06	149099	59400	89699
90	3.50	0.90	9.328	29.38	158669	66000	92669
100	3.40	0.90	9.328	28.54	171262	72600	98662
110	3.20	0.90	9.328	26.86	177307	79200	98662

ALL RESPONSIBILITY FOR ADEQUACY OF DESIGN REMAINS WITH THE DESIGN ENGINEER. THE CITY OF ROCKWALL, IN REVIEWING AND RELEASING PLANS FOR CONSTRUCTION, ASSUMES NO RESPONSIBILITY FOR ADEQUACY OR ACCURACY OF DESIGN.

No.	DATE	REVISION
6.		
5.		
4.	03/25/2016	RESPONSE TO RFI 032
3.	12/18/2015	ISSUE FOR CONSTRUCTION
2.	12/09/2015	BULLETIN #1
1.		

**Winkelmann & Associates, Inc.**  
CONSULTING CIVIL ENGINEERS • SURVEYORS  
(972) 460-7090  
1700 HILLCREST PLAZA DRIVE, SUITE 325  
ROCKWALL, TEXAS 75087  
Professional Engineer Registration No. 8910  
Professional Surveyor Registration No. 100866-00  
State of Texas, Surveyor & Associate, Inc.



10-19-2016  
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MARIA C. BOILLA-NICHOLLS, P.E. # 100106

**DETENTION POND 2 CALCULATIONS**  
SEC. N. GOLIAD ST. AND E. QUAIL RUN RD., ROCKWALL, TEXAS

C-11.20  
DAL574