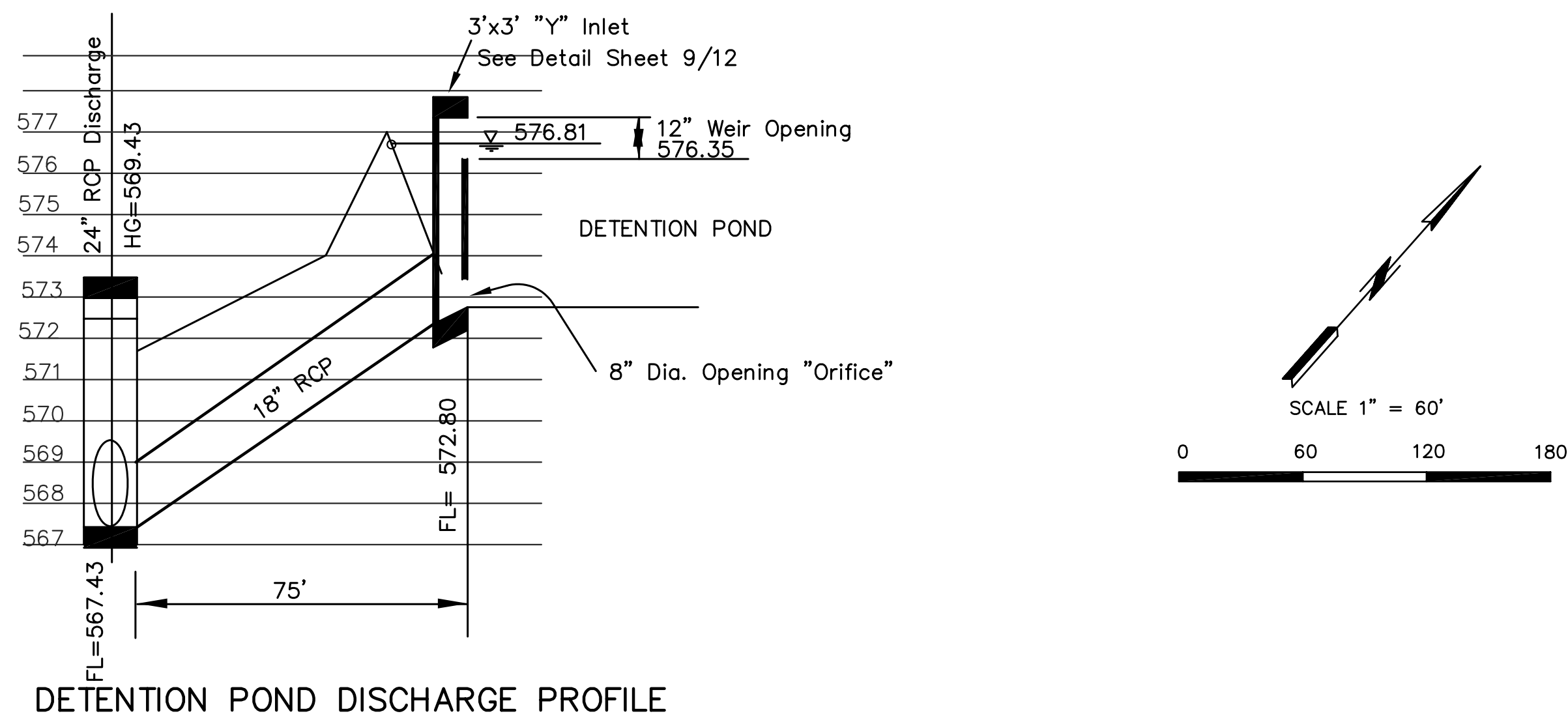


EXISTING CONDITIONS					DEVELOPED CONDITIONS				REMARKS
ID	Area Acres	Time of Concentration Minutes	Intensity I ₁₀₀ In/Hour	Runoff "C"	Q ₁₀₀ CFS	Time of Concentration Minutes	Intensity I ₁₀₀ In/Hour	Runoff "C"	
A	7.99								Drains to Detention Ponds "A", "B", and "C"
C	2.14	20	8.3	.35	6.22	10	9.8	.8	Future Development
D	1.66	20	8.3	.35	4.82	10	9.8	.8	Future Development
E	4.63	20	8.3	.35	13.45				Undeveloped
F	1.57	20	8.3	.35	4.56				Drains to Future Detention Pond
B-1	0.91	20	8.3	.35	2.64		9.8		Drains to Detention Pond "D"
B-2	0.42	20	8.3	.35	1.22		9.8		Drains to Detention Pond "D"
B-3	0.56	20	8.3	.35	1.63	10	9.8	.8	Drains to Detention Pond "D"
B-4	0.21	20	8.3	.35	0.61	10	9.8	.8	Drains to Detention Pond "D"
DETENTION POND TOTAL					6.10			16.46	Design Values for Detention Pond "D"

NOTE: Storm Sewer Design is based on flow from "B-1" and future flow from Areas "C" & "D".



DETENTION POND DESIGN
WITH SIMULATED ROUTING PROCEDURE
Prepared by : BSM Engineers
4111 E. US Hwy 80, Suite 405
Mesquite, TX 75150
(972) 681-4680

Project Name : FUMC, Rockwall 10-15-14
Storm Frequency (Years) : 100
Drainage Area (Acres) : 2.10
Existing Runoff Factor (C) : .35
Existing Time of Concentration (min) : 20
Existing Rainfall Intensity at Time of Concentration (in/hr) : 8.3
Existing Discharge (cfs) : 6.10
Future Runoff Factor (C) : .8
Future Time of Concentration (min) : 10
Future Rainfall Intensity at Future Time of Concentration (in/hr) : 9.8
Future Discharge at Future time of Concentration (cfs) : 16.46

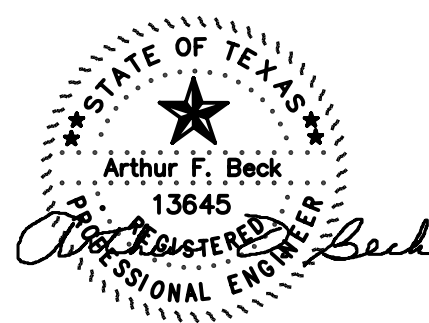
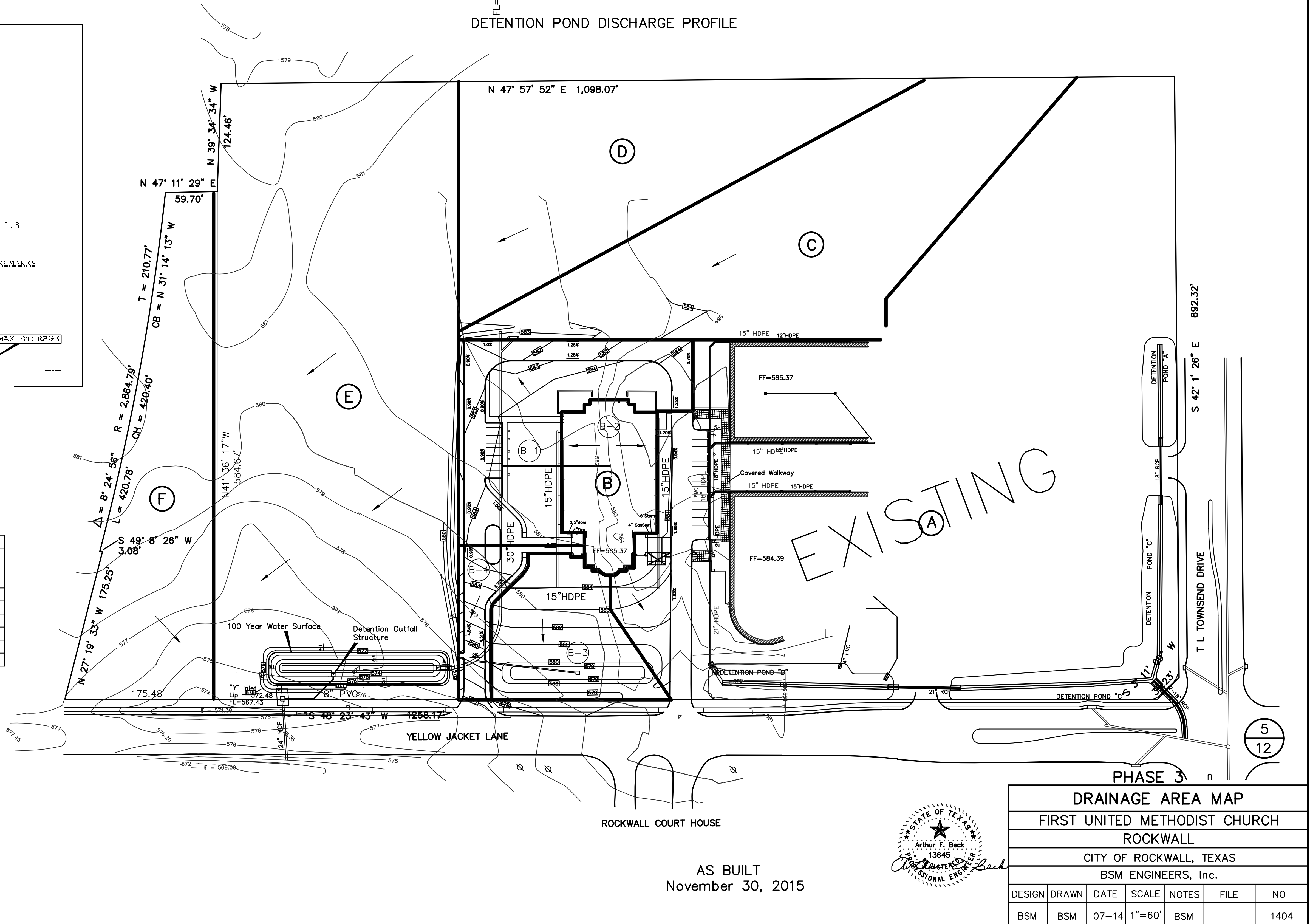
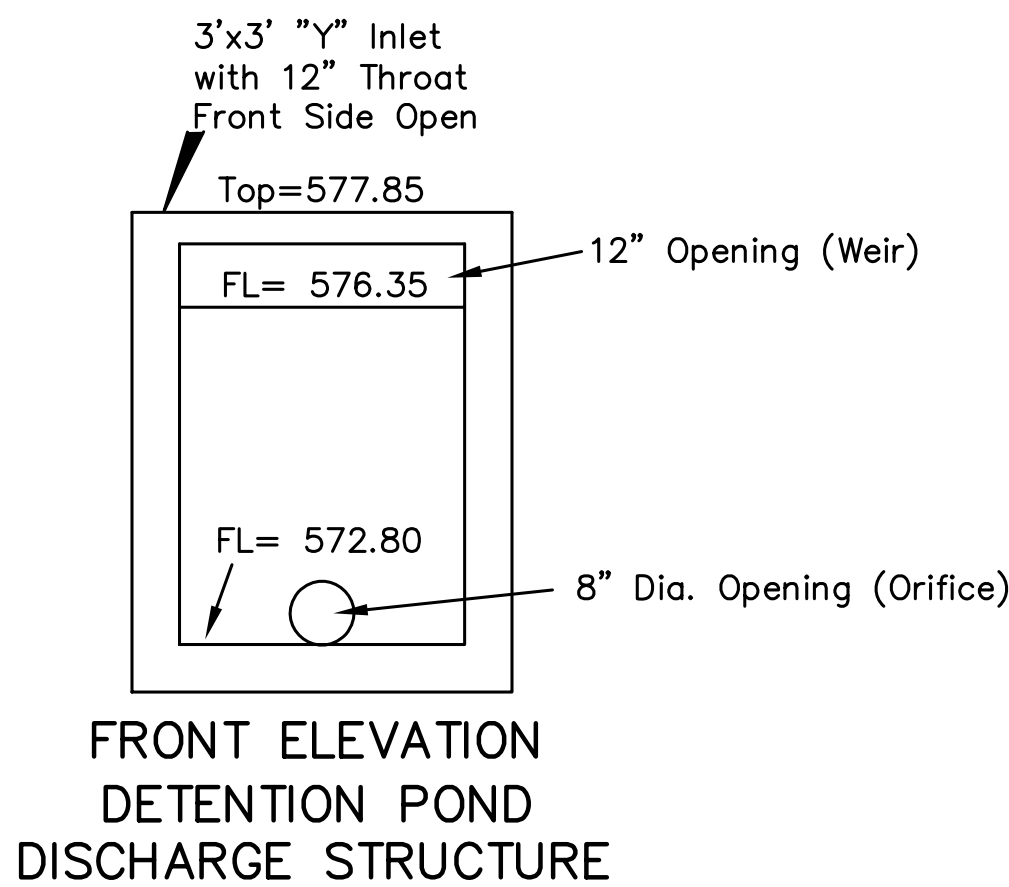
Duration (min)	C	I in/hr	A acre	Q cfs	Volume Inflow (cu ft)	Volume Outflow (cu ft)	Volume Storage (cu ft)	REMARKS
10	.8	9.80	2.10	16.46	9,200	2,982	6,218	
15	.8	9.00	2.10	15.12	12,870	3,637	9,033	
20	.8	8.30	2.10	13.94	15,932	4,690	11,242	
30	.8	6.90	2.10	11.59	19,902	6,357	13,545	
40	.8	5.80	2.10	9.74	22,240	8,005	14,235	MAX STORAGE
50	.8	5.00	2.10	8.40	23,671	9,652	14,019	
60	.8	4.50	2.10	7.56	25,739	11,334	14,405	
70	.8	4.00	2.10	6.72	26,563	12,980	13,583	

NOTES

Maximum storage required is 14,405 cubic feet.
Storage provided in Detention Pond "D" = 15,780 cubic feet.
Allowable discharge rate from Detention Pond "D" is 6.1 cubic feet per second.

ORIFICE EQUATION: $Q = 0.61 \times A \sqrt{2gH}$ WEIR EQUATION: $Q = 3 \times L \times H^{3/2}$
A = Area of 8" Orifice = 0.35 Sq Ft L = 3 ft for length of Weir
2g = 64.4 H = Depth of water over weir in feet
H = Center of Orifice to Water Surface

STORM	C.F. Max STORAGE	W.S. ELEVATION	Allowable Discharge cfs Q	Actual Discharge		
				ORIFICE cfs Q	WEIR cfs Q	TOTAL cfs Q
2 yr	6,539	575.42	2.9	2.6		2.6
5 yr	8,133	575.91	3.6	2.9		2.9
10 yr	9,834	576.17	4.3	3.0		3.0
25 yr	11,901	576.46	4.8	3.1	0.4	3.5
50 yr	13,400	576.67	5.5	3.2	1.6	4.8
100 yr	14,405	576.81	6.1	3.3	2.8	6.1



AS BUILT
November 30, 2015

DRAINAGE AREA MAP						
FIRST UNITED METHODIST CHURCH						
ROCKWALL						
CITY OF ROCKWALL, TEXAS						
BSM ENGINEERS, Inc.						
DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO
BSM	BSM	07-14	1"=60'	BSM		1404