

THE STORM CALCULATIONS ON THIS SHEET ARE UTILIZED FOR STORM SYSTEM CALCULATIONS ONLY. REFER TO STUDY SUBMITTED FOR ST. TERESA OF CALCUTTA CATHOLIC CHURCH FOR ANALYSIS POINT COMPARISON AND POND SIZING

ST. TERESA OF CALCUTTA CATHOLIC CHURCH
FORT WORTH, TEXAS
DRAINAGE CALCULATIONS

St. Teresa of Calcutta																	
PROPOSED CONDITIONS DRAINAGE AREA COMPUTATIONS																	
Area Name	Runoff Coef. "C"	AREA "A" (ac.)	Total "CA"	Time of Concentration (min)	Ca 1	C*Ca 1	I1 (in/hr)	Q1 (cfs)	Ca 5	C*Ca 5	I5 (in/hr)	Q5 (cfs)	Ca 100	C*Ca 100	I100 (in/hr)	Q100 (cfs)	COMMENTS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A1	0.88	0.90	0.79	10.00	1.00	0.88	3.87	3.06	1.00	0.88	5.46	4.32	1.00	0.88	9.63	7.62	TO ALTA VISTA ROAD
A2	0.88	0.66	0.58	10.00	1.00	0.88	3.87	2.25	1.00	0.88	5.46	3.17	1.00	0.88	9.63	5.59	TO ALTA VISTA ROAD
B1	0.88	1.48	1.30	10.00	1.00	0.88	3.87	5.03	1.00	0.88	5.46	7.11	1.00	0.88	9.63	12.54	TO LANDSCAPE DRAIN
B2	0.88	0.34	0.30	10.00	1.00	0.88	3.87	1.16	1.00	0.88	5.46	1.63	1.00	0.88	9.63	2.88	TO LANDSCAPE DRAIN
B3	0.88	2.70	2.38	10.00	1.00	0.88	3.87	9.18	1.00	0.88	5.46	12.96	1.00	0.88	9.63	22.87	TO DETENTION POND

NOTES:
1. RUNOFF COEFFICIENT FOR COMMERCIAL/INDUSTRIAL/HOUSE OF WORSHIP/SCHOOL FROM CITY OF FORT WORTH DESIGN CRITERIA MANUAL TABLE 3.5

Landscape Drain Sizing						
Area No.	No. of Inlets	Design Flow (cfs)	Design Head (ft.)	Inlet Size (in.)	Max Capacity (cfs)	Notes
B1	1	12.54	2.10	24	12.76	DOMESTIC INLET
B2	2	1.44	1.37	12	2.74	DOMESTIC INLET

NOTE: 1. INLETS SIZED USING 2012 NYLOPLAST GRATE INLET CAPACITY CHARTS
2. AREAS WITH MULTIPLE INLETS HAVE BEEN SIZED FOR THE SAME DESIGN HEAD AND FLOW

Culvert SD-B Summary Table											
Storm Year	Total Flow (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	
1-Year	15.31	15.31	672.07	1.13	2.12	0.65	0.66	2.42	2.42	1.27	
5-Year	21.61	21.61	672.28	1.42	2.33	0.82	0.83	2.59	2.59	1.67	
100-Year	38.12	38.12	673.47	2.06	3.52	1.21	1.22	3.00	3.67	2.54	

NOTES:
1. CULVERT CAPACITY MODELED IN HY8. SEE CALCULATIONS ABOVE.
2. RATIONAL FLOW FROM AREA B1-B3 WERE USED TO SIZE CULVERT

St. Teresa of Calcutta Storm Hydraulic Calculations																																													
Line No.	Station		Pipe Length	Drainage Area No.	Area	Total Area	C	Ca/Cf	Incremen t C*CA	Total CA	Time of Concentration					I5	I (Design Below)	Q5	Q (Design Below)	Crown Overtop	Inlet Bypass	QPipe	Pipe Size			Manning s 'n'	Pipe Capacity	Sf	Head Loss Calculations										Entrance Control		Invert		Pipe Slope	T/C	Comments
	From	To									Inlet	Travel	Design	No.	Span								Dia/Heig ht	D/S	U/S				V1	V2	V12/2g	V22/2g	Kj	kjV12/2g	Hk	Hwic	Control	Design HGL	From	To					
	ft	ft									ft	min	min	min	ft								ft	ft	ft				ft/s	ft/s	ft	ft		ft	ft	ft	ft	True/False	ft	ft	%	ft			
SD-A																																													
1	3+10.89	2+77.81	33.08	B1	1.48	1.48	0.88	1.00	1.30	1.30	10.00	0.08	10.00	5.46	9.63	7.11	12.54					12.54	1		18	0.012	15.52	1.21%	676.11	676.51	0.00	7.10	0.00	0.78	1.25	0.00	0.98	2.98	FALSE	677.49	674.20	673.59	1.86%	678.20	Inlet or Manhole at Beginning of Line
2	2+77.81	2+11.30	66.51			1.48			1.30	10.00	0.16	10.00	5.46	9.63	7.11	12.54					12.54	1		18	0.012	15.52	1.21%	675.03	675.84	7.10	7.10	0.78	0.78	0.35	0.27	0.27	0.00	FALSE	676.11	673.59	672.35	1.86%	680.48	Bend 45°	
3	2+11.30	1+00.00	111.30	B2	0.34	1.82	0.88	1.00	0.30	1.60	10.00	0.38	10.24	5.40	9.53	8.66	15.27					15.27	1		24	0.012	33.42	0.39%	674.50	674.93	7.10	4.86	0.78	0.37	0.75	0.59	0.10	0.00	FALSE	675.03	672.35	670.28	1.86%	679.35	45° Wye Connection or Cut-in
SD-A1																																													
1	4+13.37	4+02.09	11.28	B2	0.34	0.34	0.34	1.00	0.12	0.12	10.00	0.06	10.00	5.46	9.63	0.63	1.11					1.11	1		8	0.012	1.66	0.72%	678.51	678.59	0.00	3.18	0.00	0.16	1.25	0.00	0.20	0.84	TRUE	679.03	678.19	678.01	1.60%	681.53	Inlet or Manhole at Beginning of Line, Entrance Control
2	4+02.09	3+05.30	96.79			0.34			0.12	10.00	0.51	10.00	5.46	9.63	0.63	1.11					1.11	1		8	0.012	1.66	0.72%	677.30	678.41	3.18	3.18	0.16	0.16	0.35	0.06	0.10	0.00	FALSE	678.51	678.01	676.46	1.60%	681.64	Bend 45°	
3	3+05.30	2+92.79	12.51			0.34			0.12	10.00	0.07	10.00	5.46	9.63	0.63	1.11					1.11	1		8	0.012	1.66	0.72%	676.76	676.86	3.18	3.18	0.16	0.16	0.50	0.08	0.10	0.84	TRUE	677.30	676.46	676.26	1.60%	681.40	Inlet on Main Line, Entrance Control	
4	2+92.79	1+08.49	184.30			0.34			0.12	10.00	0.97	10.00	5.46	9.63	0.63	1.11					1.11	1		8	0.012	1.66	0.72%	675.19	676.66	3.18	3.18	0.16	0.16	0.35	0.06	0.10	0.00	FALSE	676.76	676.26	673.32	1.60%	682.50	Bend 45°	
5	1+08.49	1+00.00	8.49			0.34			0.12	10.00	0.04	10.00	5.46	9.63	0.63	1.11					1.11	1		8	0.012	1.66	0.72%	675.03	675.09	3.18	3.18	0.16	0.16	0.35	0.06	0.10	0.00	FALSE	675.19	673.32	673.18	1.60%	679.35	Bend 45°	

PLOTTED BY: GABRIEL SANCHEZ DATE: 2/16/2024 12:51 PM PATH: P:\37818\00\01700 Land Development\703 Construction Documents\Design\A1 Area Map.dwg



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SHEET CONTENT:
DRAINAGE CALCULATIONS

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C8.1
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