

TIME 14:28 FILE: D007-DA-Cdes-08029.dwg

CULVERT DESIGN CALCULATIONS									
Culvert Location Storm Drain 'T-1'					RDWY. Elev. 582.60 U.S. Culv. F.L. 580.64				
Length, L 255.70					U.S. Culv. F.L. 580.64 D.S. Culv. F.L. 577.40				
Total Discharge, Q 11.3 c.f.s. Design Storm Freq. 100 yr					Difference 3.24				
Roughness Coeff., n 0.013 Max. Vel. 8 ft/s					Req'd Freeboard 0.5 FT. Culv. Slope, $s_c = \frac{D.H. ft}{Length ft}$				
Tailwater 1.00 ft. D.S. Channel Width 2.0 ft					Allow. Headwater 1.46 FT. So= 1.40%				
Entrance Description Type 4, Spigot End with Headwall									

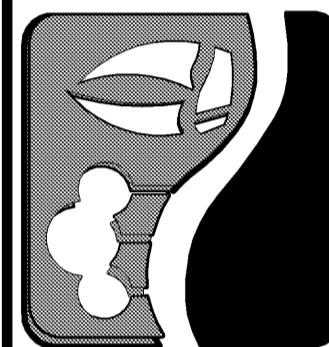
TRIAL CULVERT										HEADWATER CALCULATION										The Greater Controlling Head Water (Inlet or Outlet) (feet)	Selected Conduit Size (inches)							
Trial Area of Opening T*A=Q/V (sq. ft.)	Channel Width "W" (feet)	DEPTH RANGE		Trial Depth "D" (feet)	POSSIBLE CULVERT SIZES					INLET CONTROL					OUTLET CONTROL													
		T*Ac/W (feet)	AHW (feet)		No. Openings	Width of Box "B" (feet)	Box Depth or Pipe Diameter "D" (feet)	Total Culvert Area "Ac" (sq.ft.)	"Q" Each Opening (c.f.s.)	Entrance Type	Case NO.	Q/B (c.f.s.)	HW/D (figure 25&26)	HW	Entrance Coeff Ke	"H" (feet)	"TW" (feet)	LxSo (feet)	"HW" (feet)			"H" (feet)	ho=(dc+D)/2 or ho=TW (use larger)		LxSo	"HW"		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1.41	2.00	0.71	1.46	2.00	1.00	2.00	2.00	3.14	11.30	Type 4	Case 1	5.65	0.95	1.90	0.50	0.94	1.00	3.24	-1.30	0.94	1.18	1.59	1.00	1.59	3.24	-0.71	1.90	24.00

CULVERT DESIGN CALCULATIONS									
Culvert Location Storm Drain 'A-2.1'					RDWY. Elev. 577.83 U.S. Culv. F.L. 575.58				
Length, L 78.74 ft					U.S. Culv. F.L. 575.58 D.S. Culv. F.L. 574.41				
Total Discharge, Q 15.89 c.f.s. Design Storm Freq. 100 yr					Difference 1.17 ft				
Roughness Coeff., n 0.013 Max. Vel. 8 ft/s					Req'd Freeboard 0.50 ft. Culv. Slope, $s_c = \frac{D.H. ft}{Length ft}$				
Tailwater 1.00 ft. D.S. Channel Width 2.0 ft					Allow. Headwater 1.75 ft. So= 1.48%				
Entrance Description Type 4, Spigot End with Headwall									

TRIAL CULVERT										HEADWATER CALCULATION										The Greater Controlling Head Water (Inlet or Outlet) (feet)	Selected Conduit Size (inches)							
TRIAL AREA OF OPENING T*A=Q/V (sq. ft.)	Channel Width "W" (feet)	DEPTH RANGE		Trial Depth "D" (feet)	POSSIBLE CULVERT SIZES					INLET CONTROL					OUTLET CONTROL													
		T*Ac/W (feet)	AHW (feet)		No. Openings	Width of Box "B" (feet)	Box Depth or Pipe Diameter "D" (feet)	Total Culvert Area "Ac" (sq.ft.)	"Q" Each Opening (c.f.s.)	Entrance Type	Case NO.	Q/B (c.f.s.)	HW/D (figure 25&26)	HW	Entrance Coeff Ke	"H" (feet)	"TW" (feet)	LxSo (feet)	"HW" (feet)			"H" (feet)	ho=(dc+D)/2 or ho=TW (use larger)		LxSo	"HW"		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1.99	2.00	0.99	1.75	2.25	1.00	2.25	2.25	3.98	15.89	Type 4	Case 1	7.06	0.94	2.12	0.50	0.54	1.00	1.17	0.37	0.54	1.35	1.80	1.00	1.80	1.17	1.17	2.12	27.00

CULVERT DESIGN CALCULATIONS									
Culvert Location Storm Drain 'E-1'					RDWY. Elev. 593.58 U.S. Culv. F.L. 590.25				
Length, L 69.17 ft					U.S. Culv. F.L. 590.25 D.S. Culv. F.L. 589.90				
Total Discharge, Q 13.10 c.f.s. Design Storm Freq. 100 yr					Difference 1.17 ft				
Roughness Coeff., n 0.013 Max. Vel. 8 ft/s					Req'd Freeboard 0.50 ft. Culv. Slope, $s_c = \frac{D.H. ft}{Length ft}$				
Tailwater 1.00 ft. D.S. Channel Width 2.0 ft					Allow. Headwater 2.83 ft. So= 0.50%				
Entrance Description Type 4, Spigot End with Headwall									

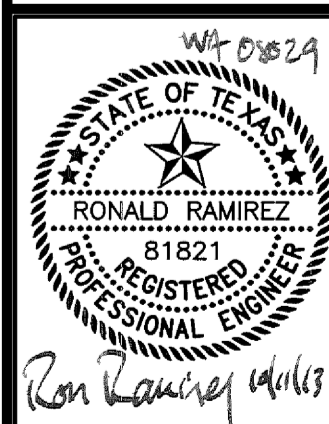
TRIAL CULVERT										HEADWATER CALCULATION										The Greater Controlling Head Water (Inlet or Outlet) (feet)	Selected Conduit Size (inches)							
TRIAL AREA OF OPENING T*A=Q/V (sq. ft.)	Channel Width "W" (feet)	DEPTH RANGE		Trial Depth "D" (feet)	POSSIBLE CULVERT SIZES					INLET CONTROL					OUTLET CONTROL													
		T*Ac/W (feet)	AHW (feet)		No. Openings	Width of Box "B" (feet)	Box Depth or Pipe Diameter "D" (feet)	Total Culvert Area "Ac" (sq.ft.)	"Q" Each Opening (c.f.s.)	Entrance Type	Case NO.	Q/B (c.f.s.)	HW/D (figure 25&26)	HW	Entrance Coeff Ke	"H" (feet)	"TW" (feet)	LxSo (feet)	"HW" (feet)			"H" (feet)	ho=(dc+D)/2 or ho=TW (use larger)		LxSo	"HW"		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1.64	2.00	0.82	2.83	2.00	1.00	2.00	2.00	3.14	13.10	Type 4	Case 2	6.55	1.04	2.08	0.50	0.74	1.00	0.35	1.39	0.74	2.05	2.03	1.00	2.03	0.35	2.42	24.00	



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**CITY OF ROCKWALL
 IMPROVEMENTS TO
 CORPORATE CROSSING
 (FROM S.H. 276 TO I.H. 30)**

**CULVERT
 CALCULATIONS**



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