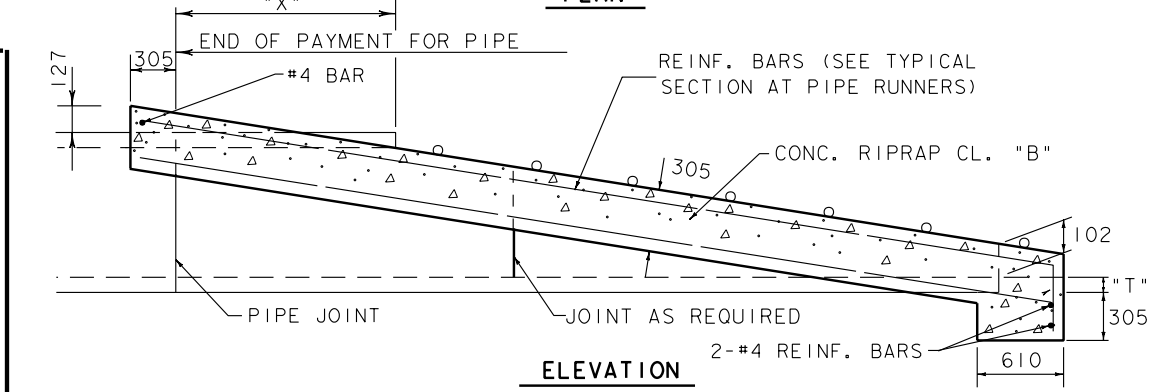
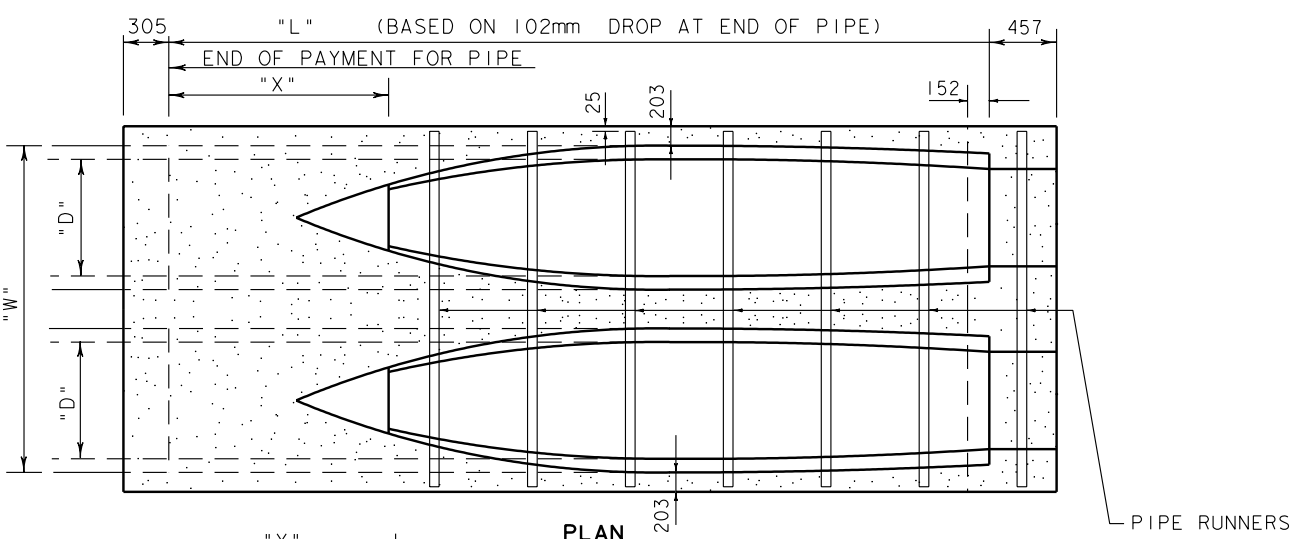


OPTION ONE DIMENSIONS AND QUANTITIES

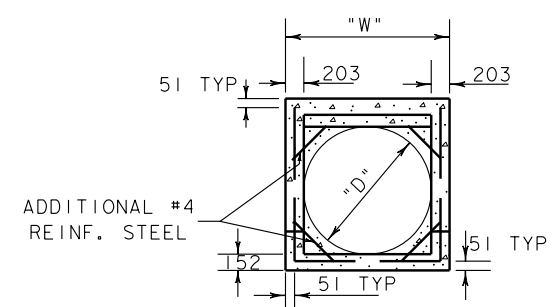
D	SLOPE	T (mm)	L (mm)	X (mm)	2 PIPES		3 PIPES		MULTIPLE PIPES, N=# OF PIPES	
					W (mm)	RIPRAP (m ³)	W (mm)	RIPRAP (m ³)	W (mm)	RIPRAP (m ³)
450	1:6	64	2972	1143	1803	1.66	2616	2.36	813(N)+178	0.246+0.705(N)
450	1:8	64	4064	1524	1803	2.00	2616	2.84	813(N)+178	0.307+0.844(N)
525	1:6	70	3467	1181	2007	1.94	2934	2.79	927(N)+152	0.234+1.853(N)
525	1:8	70	4724	1575	2007	2.35	2934	3.37	927(N)+152	0.294+1.028(N)
600	1:6	76	3962	1219	2210	2.24	3251	3.25	1041(N)+127	0.214+1.012(N)
600	1:8	76	5385	1626	2210	2.72	3251	3.95	1041(N)+127	0.270+1.226(N)
675	1:6	83	4458	1257	2413	2.55	3569	3.74	1156(N)+102	0.187+1.184(N)
675	1:8	83	6045	1676	2413	3.12	3569	4.56	1156(N)+102	0.237+1.442(N)
750	1:6	89	4953	1295	2616	2.89	3886	4.26	1270(N)+76	0.152+1.368(N)
750	1:8	89	6706	1727	2616	3.54	3886	5.21	1270(N)+76	0.193+1.673(N)

NOTE: CONCRETE QUANTITIES ARE SHOWN FOR CONTRACTOR'S INFORMATION ONLY.



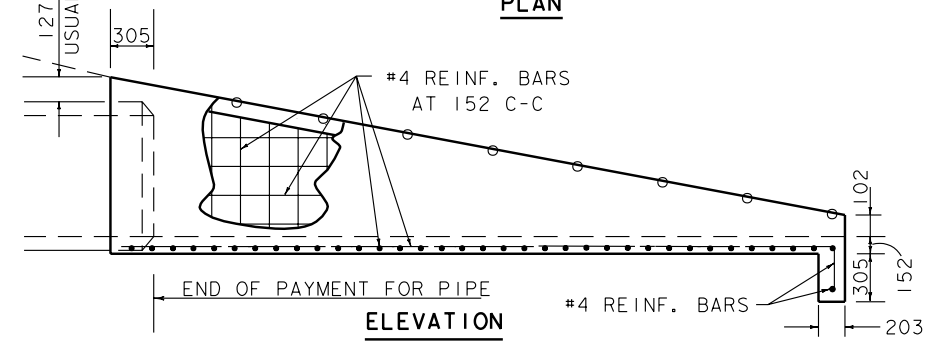
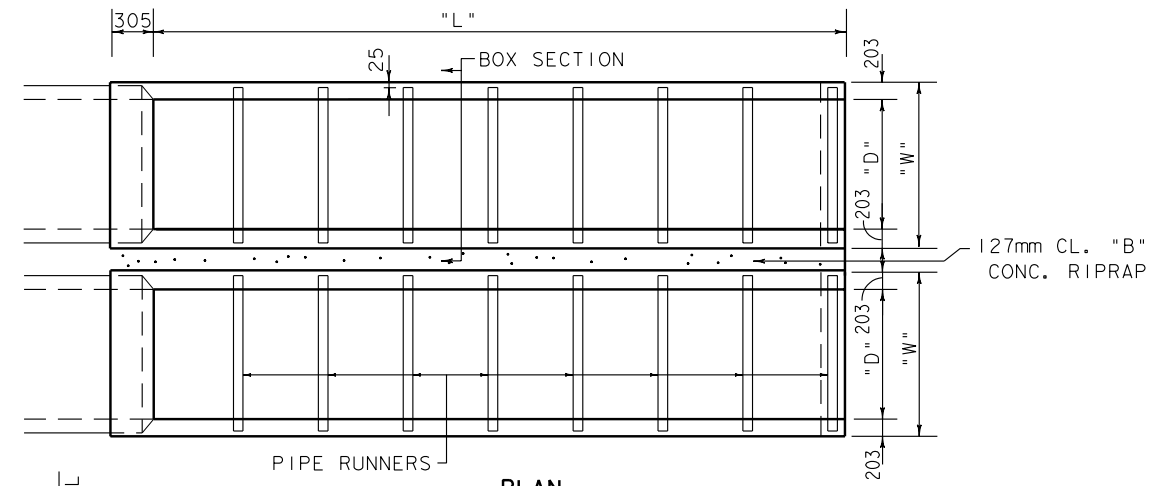
SLOPED REINFORCED CONCRETE PIPE

OPTION ONE



D	SLOPE	L	W	CL. A CONC (m ³)	127mm CL. B CONC (m ³)
450	1:6	2972	863	0.99(N)	0.00
450	1:8	4064	863	1.30(N)	0.00
525	1:6	3467	939	1.24(N)	0.00
525	1:8	4724	939	1.64(N)	0.00
600	1:6	3962	1016	1.52(N)	0.00
600	1:8	5385	1016	2.01(N)	0.00
675	1:6	4458	1092	1.84(N)	0.04(N-1)
675	1:8	6045	1092	2.42(N)	0.05(N-1)
750	1:6	4953	1168	2.17(N)	0.07(N-1)
750	1:8	6706	1168	2.87(N)	0.09(N-1)

NOTE: "N" = # OF CULVERT PIPES. CONCRETE QUANTITIES ARE SHOWN FOR CONTRACTOR'S INFORMATION ONLY.



SLOPED CLASS "A" CONCRETE BOX

OPTION TWO

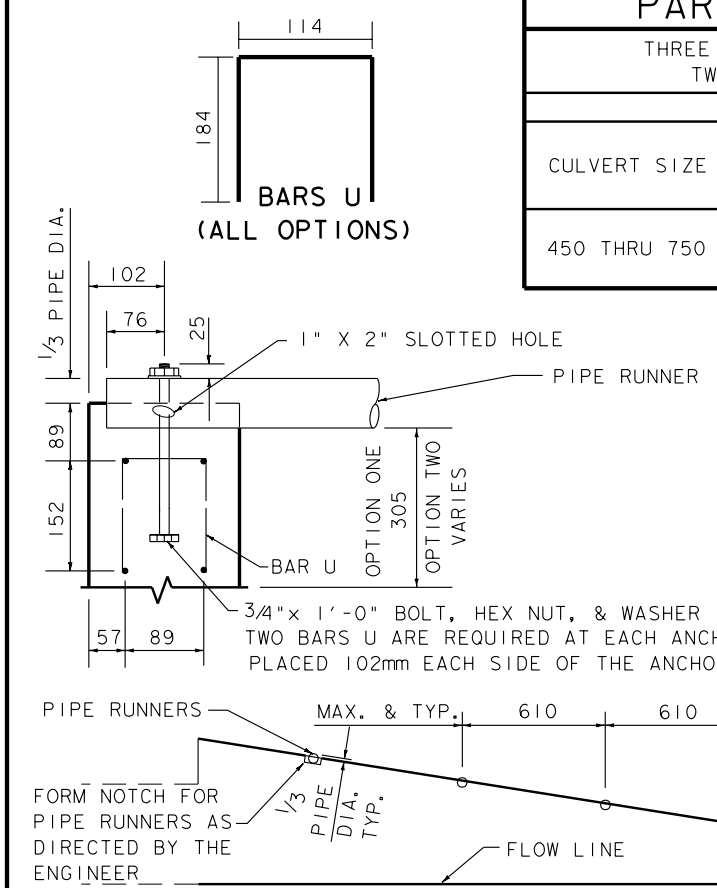
PARALLEL DRAINAGE APPLICATION

THREE (3) OR MORE 450mm THRU 600mm PIPES REQUIRE PIPE RUNNERS.
TWO (2) OR MORE 750mm R.C. PIPES REQUIRE PIPE RUNNERS.

CULVERT SIZE	35 KSI ASTM A53, TY E & S GR. B			42 KSI ASTM A500 GR. B					
	NOM.	OD (in)	ID (in)	NOM.	OD (in)	ID (in)	NOM.	OD (in)	ID (in)
450 THRU 750	3*XS 3-1/2*XS	3.500 4.000	2.300 3.364	3*XS 3-1/2*STD	3.500 4.000	2.900 3.548	3" STD.	3.500	3.068

GENERAL NOTES:

- ALL MITERED PIPE SECTIONS, REINFORCING STEEL BOLTS, NUTS, WASHERS, CONCRETE AND PIPE RUNNERS ARE CONSIDERED PARTS OF THE SAFETY END TREATMENT FOR PAYMENT.
- ALL REBARS ARE #4. UNLESS NOTED ALL REBARS SHALL HAVE 38mm MINIMUM COVER.
- DESIGN: SAFETY PIPE RUNNERS ARE DESIGNED FOR A TRAVERSING LOAD OF 4536kg AT YIELD AS RECOMMENDED BY RESEARCH REPORT 280-2F. SAFETY TREATMENT OF ROADSIDE PARALLEL DRAINAGE STRUCTURES, TEXAS TRANSPORTATION INSTITUTE, JUNE 1981.
- PIPE RUNNERS MAY BE SIMPLE SPAN OR CONTINUOUS ACROSS MULTIPLE PIPES. ADEQUATE SUPPORT AND ANCHORAGE FOR PIPE RUNNERS SHALL BE PROVIDED AS SHOWN ON THIS SHEET AND AS DIRECTED BY THE ENGINEER.



REVISIONS:

Texas Department of Transportation

TYPE II SAFETY END TREATMENT PARALLEL DRAINAGE 450mm TO 750mm MULTIPLE PIPES SET (3) (FW) (M)

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ORIG. DRAW DATE:	DESIGN:	FED. REG.	STATE	FEDERAL AID PROJ. NO.	HIGHWAY
FEB. 1996	CHECKED:	6	TEXAS		
	DRAWN:	DISTRICT	COUNTY	CONTROL SECTION	JOB SHEET
	CHECKED:	FTW			