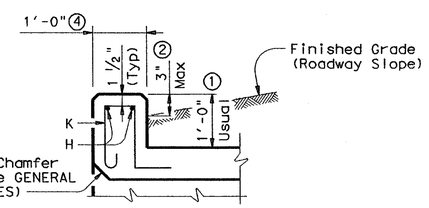
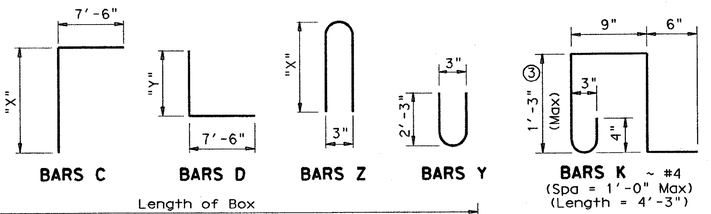
BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

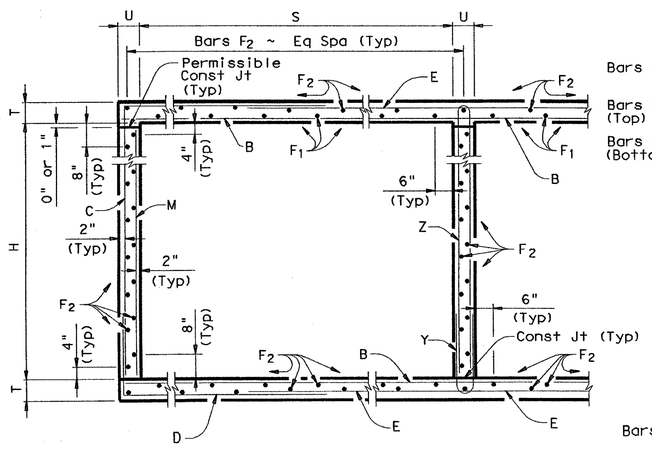
NUMBER OF SPANS	SECTION DIMENSIONS				Bars B					Bars C & D							Bars E					Bars F_1 ~#4				Bars F_2 ~#4 at 1'-6" Max			Bars M~#4 at 1'-6" Max			Bars Y & Z~#4 at 9" Max					Bars H 4~#4		Bars K		QUANTITIES					
													Bar C		Bar D																												Per foot of Barrel		Curb		Total	
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	Length	Wt	No.	Size	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Length	Wt	No.	Length	Wt	No.	Bar Y Length	Bar Y Wt	Bar Z Length	Bar Z Wt	Length	Weight	No.	Weight	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
2	9'-0"	5'-0"	8"	7"	194	#5	5"	19'- 6"	3,946	194	#4	5"	13'- 0"	1,685	9'- 9"	1,264	194	#6	5"	8'-10"	2,574	24	9"	39'-9"	637	68	39'-9"	1,806	56	5'- 0"	187	54	4'- 8"	168	11'- 2"	403	19'- 6"	52	42	119	1.299	316.8	1.5	171	53.5	12,841
3	9'-0"	5'-0"	8"	7"	194	#5	5"	29'- 1"	5,885	194	#4	5"	13'- 0"	1,685	9'- 9"	1,264	194	#6	5"	18'- 5"	5,366	36	9"	39'-9"	956	97	39'-9"	2,576	56	5'- 0"	187	108	4'- 8"	337	11'- 2"	806	29'- 1"	78	60	170	1.881	476.6	2.2	248	77.4	19,310
4	9'-0"	5'-0"	8"	7"	194	#5	5"	38'- 8"	7,824	194	#4	5"	13'- 0"	1,685	9'- 9"	1,264	194	#6	5"	28'- 0"	8,159	48	9"	39'-9"	1,275	126	39'-9"	3,346	56	5'- 0"	187	162	4'- 8"	505	11'- 2"	1,208	38'- 8"	103	80	227	2.462	636.3	2.9	330	101.4	25,783
5	9'-0"	5'-0"	8"	7"	194	#5	5"	48'- 3"	9,763	194	#4	5"	13'- 0"	1,685	9'- 9"	1,264	194	#6	5"	37'- 7"	10,951	60	9"	39'-9"	1,593	155	39'-9"	4,116	56	5'- 0"	187	216	4'- 8"	673	11'- 2"	1,611	48'- 3"	129	100	284	3.043	796.1	3.6	413	125.3	32,256
6	9'-0"	5'-0"	8"	7"	194	#5	5"	57'-10"	11,702	194	#4	5"	13'- 0"	1,685	9'- 9"	1,264	194	#6	5"	47'- 2"	13,744	72	9"	39'-9"	1,912	184	39'-9"	4,886	56	5'- 0"	187	270	4'- 8"	842	11'- 2"	2,014	57'-10"	155	118	335	3.624	955.9	4.3	490	149.3	38,726
2	9'-0"	6'-0"	8"	7"	194	#5	5"	19'- 6"	3,946	194	#4	5"	14'- 0"	1,814	9'- 9"	1,264	194	#6	5"	8'-10"	2,574	24	9"	39'-9"	637	74	39'-9"	1,965	56	6'- 0"	224	54	4'- 8"	168	13'- 2"	475	19'- 6"	52	42	119	1.364	326.7	1.5	171	56.1	13,238
3	9'-0"	6'-0"	8"	7"	194	#5	5"	29'- 1"	5,885	194	#4	5"	14'- 0"	1,814	9'- 9"	1,264	194	#6	5"	18'- 5"	5,366	36	9"	39'-9"	956	105	39'-9"	2,788	56	6'- 0"	224	108	4'- 8"	337	13'- 2"	950	29'- 1"	78	60	170	1.967	489.6	2.2	248	80.9	19,832
4	9'-0"	6'-0"	8"	7"	194	#5	5"	38'- 8"	7,824	194	#4	5"	14'- 0"	1,814	9'- 9"	1,264	194	#6	5"	28'- 0"	8,159	48	9"	39'-9"	1,275	136	39'-9"	3,611	56	6'- 0"	224	162	4'- 8"	505	13'- 2"	1,425	38'- 8"	103	80	227	2.570	652.5	2.9	330	105.7	26,431
5	9'-0"	6'-0"	8"	7"	194	#5	5"	48'- 3"	9,763	194	#4	5"	14'- 0"	1,814	9'- 9"	1,264	194	#6	5"	37'- 7"	10,951	60	9"	39'-9"	1,593	167	39'-9"	4,434	56	6'- 0"	224	216	4'- 8"	673	13'- 2"	1,900	48'- 3"	129	100	284	3.173	815.4	3.6	413	130.5	33,029
6	9'-0"	6'-0"	8"	7"	194	#5	5"	57'-10"	11,702	194	#4	5"	14'- 0"	1,814	9'- 9"	1,264	194	#6	5"	47'- 2"	13,744	72	9"	39'-9"	1,912	198	39'-9"	5,257	56	6'- 0"	224	270	4'- 8"	842	13'- 2"	2,375	57'-10"	155	118	335	3.776	978.4	4.3	490	155.3	39,624
2	9'-0"	7'-0"	8"	7"	194	#5	5"	19'- 6"	3,946	162	#5	6"	15'- 0"	2,534	10'- 2"	1,718	194	#6	5"	8'-10"	2,574	24	9"	39'-9"	637	74	39'-9"	1,965	56	7'- 0"	262	54	4'- 8"	168	15'- 2"	547	19'- 6"	52	42	119	1.429	358.8	1.5	171	58.7	14,522
3	9'-0"	7'-0"	8"	7"	194	#5	5"	29'- 1"	5,885	162	#5	6"	15'- 0"	2,534	10'- 2"	1,718	194	#6	5"	18'- 5"	5,366	36	9"	39'-9"	956	105	39'-9"	2,788	56	7'- 0"	262	108	4'- 8"	337	15'- 2"	1,094	29'- 1"	78	60	170	2.053	523.5	2.2	248	84.3	21,188
4	9'-0"	7'-0"	8"	7"	194	#5	5"	38'- 8"	7,824	162	#5	6"	15'- 0"	2,534	10'- 2"	1,718	194	#6	5"	28'- 0"	8,159	48	9"	39'-9"	1,275	136	39'-9"	3,611	56	7'- 0"	262	162	4'- 8"	505	15'- 2"	1,641	38'- 8"	103	80	227	2.678	688.2	2.9	330	110.0	27,859
5	9'-0"	7'-0"	8"	7"	194	#5	5"	48'- 3"	9,763	162	#5	6"	15'- 0"	2,534	10'- 2"	1,718	194	#6	5"	37'- 7"	10,951	60	9"	39'-9"	1,593	167	39'-9"	4,434	56	7'- 0"	262	216	4'- 8"	673	15'- 2"	2,188	48'- 3"	129	100	284	3.302	852.9	3.6	413	135.7	34,529
6	9'-0"	7'-0"	8"	7"	194	#5	5"	57'-10"	11,702	162	#5	6"	15'- 0"	2,534	10'- 2"	1,718	194	#6	5"	47'- 2"	13,744	72	9"	39'-9"	1,912	198	39'-9"	5,257	56	7'- 0"	262	270	4'- 8"	842	15'- 2"	2,735	57'-10"	155	118	335	3.927	1,017.7	4.3	490	161.4	41,196
2	9'-0"	8'-0"	8"	7"	194	#5	5"	19'- 6"	3,946	162	#5	6"	16'- 0"	2,703	10'- 2"	1,718	194	#6	5"	8'-10"	2,574	24	9"	39'-9"	637	80	39'-9"	2,124	56	8'- 0"	299	54	4'- 8"	168	17'- 2"	619	19'- 6"	52	42	119	1.494	369.7	1.5	171	61.3	14,959
3	9'-0"	8'-0"	8"	7"	194	#5	5"	29'- 1"	5,885	162	#5	6"	16'- 0"	2,703	10'- 2"	1,718	194	#6	5"	18'- 5"	5,366	36	9"	39'-9"	956	113	39'-9"	3,000	56	8'- 0"	299	108	4'- 8"	337	17'- 2"	1,238	29'- 1"	78	60	170	2.140	537.6	2.2	248	87.8	21,750
4	9'-0"	8'-0"	8"	7"	194	#5	5"	38'- 8"	7,824	162	#5	6"	16'- 0"	2,703	10'- 2"	1,718	194	#6	5"	28'- 0"	8,159	48	9"	39'-9"	1,275	146	39'-9"	3,877	56	8'- 0"	299	162	4'- 8"	505	17'- 2"	1,858	38'- 8"	103	80	227	2.786	705.5	2.9	330	114.3	28,548
5	9'-0"	8'-0"	8"	7"	194	#5	5"	48'- 3"	9,763	162	#5	6"	16'- 0"	2,703	10'- 2"	1,718	194	#6	5"	37'- 7"	10,951	60	9"	39'-9"	1,593	179	39'-9"	4,753	56	8'- 0"	299	216	4'- 8"	673	17'- 2"	2,477	48'- 3"	129	100	284	3.432	873.3	3.6	413	140.9	35,343
6	9'-0"	8'-0"	8"	7"	194	#5	5"	57'-10"	11,702	162	#5	6"	16'- 0"	2,703	10'- 2"	1,718	194	#6	5"	47'- 2"	13,744	72	9"	39'-9"	1,912	212	39'-9"	5,629	56	8'- 0"	299	270	4'- 8"	842	17'- 2"	3,096	57'-10"	155	118	335	4.078	1,041.1	4.3	490	167.4	42,135
2	9'-0"	9'-0"	8"	7"	194	#5	5"	19'- 6"	3,946	194	#5	5"	17'- 0"	3,440	10'- 2"	2,057	194	#6	5"	8'-10"	2,574	24	9"	39'-9"	637	86	39'-9"	2,284	56	9'- 0"	337	54	4'- 8"	168	19'- 2"	691	19'- 6"	52	42	119	1.559	403.4	1.5	171	63.9	16,305
3	9'-0"	9'-0"	8"	7"	194	#5	5"	29'- 1"	5,885	194	#5	5"	17'- 0"	3,440	10'- 2"	2,057	194	#6	5"	18'- 5"	5,366	36	9"	39'-9"	956	121	39'-9"	3,213	56	9'- 0"	337	108	4'- 8"	337	19'- 2"	1,383	29'- 1"	78	60	170	2.226	574.4	2.2	248	91.2	23,222
4	9'-0"	9'-0"	8"	7"	194	#5	5"	38'- 8"	7,824	194	#5	5"	17'- 0"	3,440	10'- 2"	2,057	194	#6	5"	28'- 0"	8,159	48	9"	39'-9"	1,275	156	39'-9"	4,142	56	9'- 0"	337	162	4'- 8"	505	19'- 2"	2,074	38'- 8"	103	80	227	2.894	745.3	2.9	330	118.7	30,143
5	9'-0"	9'-0"	8"	7"	194	#5	5"	48'- 3"	9,763	194	#5	5"	17'- 0"	3,440	10'- 2"	2,057	194	#6	5"	37'- 7"	10,951	60	9"	39'-9"	1,593	191	39'-9"	5,072	56	9'- 0"	337	216	4'- 8"	673	19'- 2"	2,766	48'- 3"	129	100	284	3.562	916.3	3.6	413	146.1	37,065
6	9'-0"	9'-0"	8"	7"	194	#5	5"	57'-10"	11,702	194	#5	5"	17'- 0"	3,440	10'- 2"	2,057	194	#6	5"	47'- 2"	13,744	72	9"	39'-9"	1,912	226	39'-9"	6,001	56	9'- 0"	337	270	4'- 8"	842	19'- 2"	3,457	57'-10"	155	118	335	4.229	1,087.3	4.3	490	173.5	43,982

H	Bar Dimensions	
	"X"	"Y"
5'-0"	5'-6"	2'- 3"
6'-0"	6'-6"	2'- 3"
7'-0"	7'-6"	2'- 8"
8'-0"	8'-6"	2'- 8"
9'-0"	9'-6"	2'- 8"

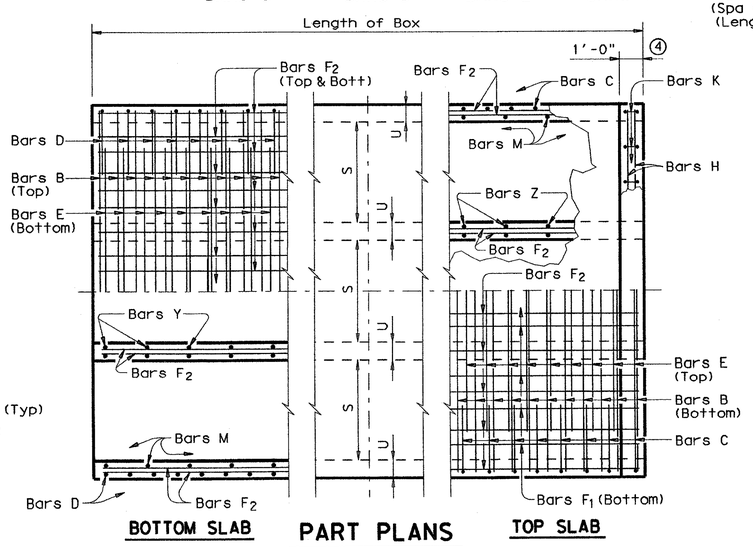


SECTION THRU CURB





TYPICAL SECTION



BOTTOM SLAB | PART PLANS | TOP SLAB

GENERAL NOTES:

Designed according to current AASHTO Standard and Interim Specifications.
Designed to the maximum fill height shown.
All reinforcing steel shall be Grade 60.
All concrete shall be Class "C" with these exceptions: use Class "S" for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.
Class "C" concrete shall have a minimum compressive strength of 3600 psi.
Class "S" concrete shall have a minimum compressive strength of 4000 psi.
The bottom edge of the top slab shall be chamfered 3" at the entrance.
Reinforcing bars shall be adjusted to provide a minimum of 1 1/4" clear cover.
Construction joints shown at the flow line may be raised a maximum of 6" at the Contractor's option. If this option is used, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.
See standard MC-MD for skewed ends, angle sections and lengthening details.

① 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to ECD standard. For structures with T6 bridge rail, refer to T6-CM standard. For structures with bridge rail, other than T6, refer to RAC standard.

② For vehicle safety, the following requirements must be met:
- For structures without bridge rail, curbs shall project no more than 3" above finished grade.
- For structures with bridge rail, curbs shall be flush with finished grade.

Curb heights shall be reduced, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

③ For curbs less than 1'-0" high, tilt bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, bars K may be omitted.

④ 1'-0" typical. 2'-0" when RAC standard is referred to elsewhere in the plans.

HS20 LOADING

Texas Department of Transportation
Bridge Division

MULTIPLE BOX CULVERTS CAST-IN-PLACE 9'-0" SPAN 0' TO 10' FILL

MC-9-10

FILE: mc910ste.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
©TxDOT December 2003	DISTRICT	FEDERAL AID PROJECT		SHEET
REVISIONS				
	COUNTY		CONTROL SECT JOB	HIGHWAY

ACC:
LEVELS DISPLAYED
1