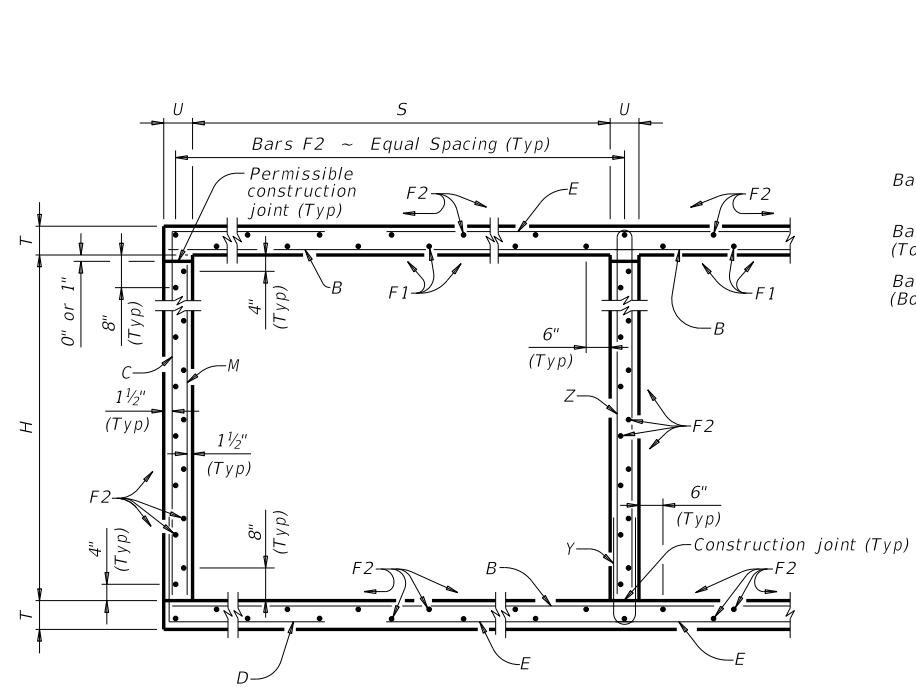
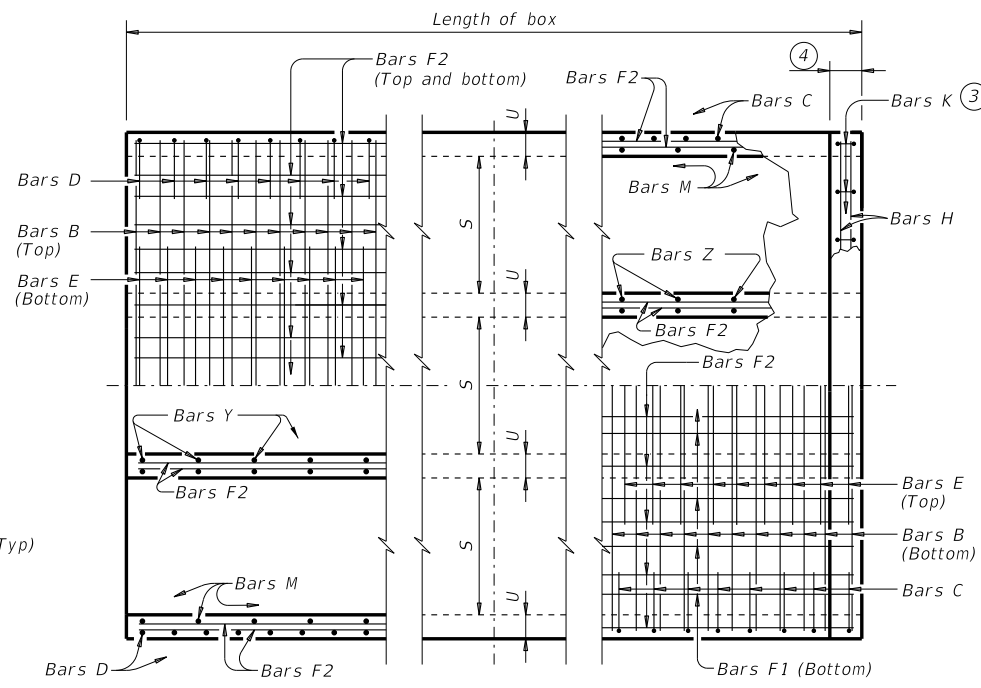


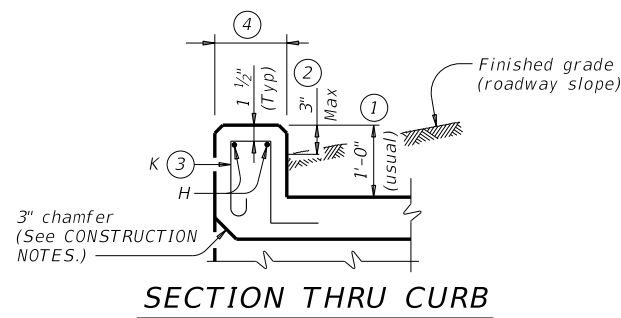
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TYPICAL SECTION

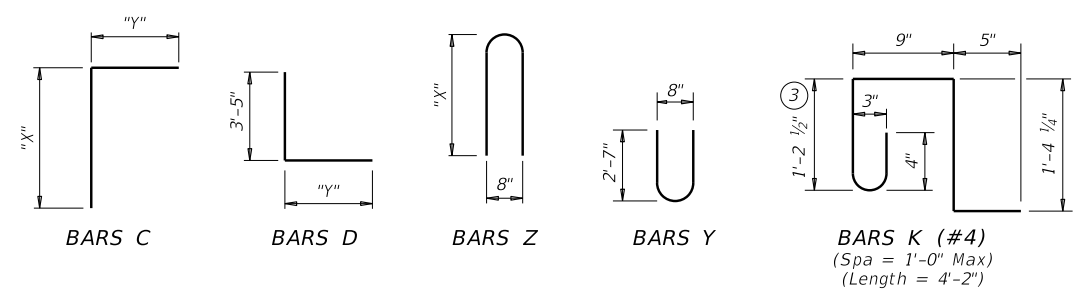


PART PLANS



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
4'-0"	4'-11 1/2"	6'-0 1/2"
5'-0"	5'-11 1/2"	6'-0 1/2"
6'-0"	6'-11 1/2"	6'-0 1/2"
7'-0"	7'-11 1/2"	6'-0 1/2"
8'-0"	8'-11 1/2"	6'-0 1/2"
9'-0"	9'-11 1/2"	6'-0 1/2"
10'-0"	10'-11 1/2"	6'-0 1/2"



- 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- For vehicle safety, the following requirements must be met:
 - For structures without bridge rail, construct curbs no more than 3" above finished grade.
 - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- 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.
- 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:
 Do not use permanent forms.
 Chamfer the bottom edge of the top slab 3" at the entrance.
 Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.

MATERIAL NOTES:
 Provide Grade 60 reinforcing steel.
 Provide galvanized reinforcing steel if required elsewhere in the plans.
 Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb.
 Provide bar laps, where required, as follows:
 • Uncoated or galvanized ~ #4 = 1'-8" Min
 • Uncoated or galvanized ~ #5 = 2'-1" Min
 • Uncoated or galvanized ~ #6 = 2'-6" Min

GENERAL NOTES:
 Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
 See the Multiple Box Culverts Cast-In-Place Miscellaneous Detail (MC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

Cover dimensions are clear dimensions, unless noted otherwise.
 Reinforcing bar dimensions shown are out-to-out of bar.



**MULTIPLE BOX CULVERTS
 CAST-IN-PLACE
 10'-0" SPAN
 2' TO 23' FILL
 MC-10-23**

FILE: CD-MC1023-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
DIST	COUNTY			SHEET NO.

DATE:
 FILE:

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NUMBER OF SPANS	SECTION DIMENSIONS				BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																								QUANTITIES																				
					Bars B ⁽⁵⁾					Bars C & D				Bars E				Bars F1 ~ #4			Bars F2 ~ #4			Bars M ~ #4			Bars Y & Z ~ #4						Bars H ⁽⁵⁾ 4 ~ #4		Bars K		Per foot of Barrel		Curb		Total								
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Bars C		Bars D		No.	Size	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Bars Y		Bars Z		Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
2	10'-0"	4'-0"	13"	11"	162	#6	6"	22'-6"	5,475	108	#6	9"	11'-0"	1,784	9'-6"	1,541	162	#6	6"	9'-10"	2,393	14	18"	39'-9"	372	66	18"	39'-9"	1,752	108	9"	4'-0"	289	54	9"	5'-7"	201	10'-3"	370	22'-6"	60	48	134	2,233	354.4	1.7	194	91.0	14,371
3	10'-0"	4'-0"	13"	11"	162	#6	6"	33'-5"	8,131	108	#6	9"	11'-0"	1,784	9'-6"	1,541	162	#6	6"	19'-10"	4,826	21	18"	39'-9"	558	95	18"	39'-9"	2,523	108	9"	4'-0"	289	108	9"	5'-7"	403	10'-3"	739	33'-5"	89	70	195	3,245	519.9	2.5	284	132.3	21,078
4	10'-0"	4'-0"	13"	11"	162	#6	6"	44'-4"	10,787	108	#6	9"	11'-0"	1,784	9'-6"	1,541	162	#6	6"	29'-10"	7,259	28	18"	39'-9"	743	124	18"	39'-9"	3,293	108	9"	4'-0"	289	162	9"	5'-7"	604	10'-3"	1,109	44'-4"	118	92	256	4,257	685.2	3.3	374	173.6	27,783
5	10'-0"	4'-0"	13"	11"	162	#6	6"	55'-3"	13,444	108	#6	9"	11'-0"	1,784	9'-6"	1,541	162	#6	6"	39'-10"	9,692	35	18"	39'-9"	929	153	18"	39'-9"	4,063	108	9"	4'-0"	289	216	9"	5'-7"	806	10'-3"	1,479	55'-3"	148	114	317	5,269	850.7	4.1	465	214.9	34,492
6	10'-0"	4'-0"	13"	11"	162	#6	6"	68'-8"	16,708	108	#6	9"	11'-0"	1,784	9'-6"	1,541	162	#6	6"	49'-10"	12,126	42	18"	39'-9"	1,115	182	18"	39'-9"	4,833	108	9"	4'-0"	289	270	9"	5'-7"	1,007	10'-3"	1,849	67'-10"	181	136	379	6,280	1,031.3	4.9	560	256.1	41,812
2	10'-0"	5'-0"	13"	11"	162	#6	6"	22'-6"	5,475	108	#6	9"	12'-0"	1,947	9'-6"	1,541	162	#6	6"	9'-10"	2,393	14	18"	39'-9"	372	72	18"	39'-9"	1,912	108	9"	5'-0"	361	54	9"	5'-7"	201	12'-3"	442	22'-6"	60	48	134	2,335	366.1	1.7	194	95.1	14,838
3	10'-0"	5'-0"	13"	11"	162	#6	6"	33'-5"	8,131	108	#6	9"	12'-0"	1,947	9'-6"	1,541	162	#6	6"	19'-10"	4,826	21	18"	39'-9"	558	103	18"	39'-9"	2,735	108	9"	5'-0"	361	108	9"	5'-7"	403	12'-3"	884	33'-5"	89	70	195	3,381	534.7	2.5	284	137.7	21,670
4	10'-0"	5'-0"	13"	11"	162	#6	6"	44'-4"	10,787	108	#6	9"	12'-0"	1,947	9'-6"	1,541	162	#6	6"	29'-10"	7,259	28	18"	39'-9"	743	134	18"	39'-9"	3,558	108	9"	5'-0"	361	162	9"	5'-7"	604	12'-3"	1,326	44'-4"	118	92	256	4,426	703.2	3.3	374	180.3	28,500
5	10'-0"	5'-0"	13"	11"	162	#6	6"	55'-3"	13,444	108	#6	9"	12'-0"	1,947	9'-6"	1,541	162	#6	6"	39'-10"	9,692	35	18"	39'-9"	929	165	18"	39'-9"	4,381	108	9"	5'-0"	361	216	9"	5'-7"	806	12'-3"	1,768	55'-3"	148	114	317	5,472	871.7	4.1	465	223.0	35,334
6	10'-0"	5'-0"	13"	11"	162	#6	6"	68'-8"	16,708	108	#6	9"	12'-0"	1,947	9'-6"	1,541	162	#6	6"	49'-10"	12,126	42	18"	39'-9"	1,115	196	18"	39'-9"	5,204	108	9"	5'-0"	361	270	9"	5'-7"	1,007	12'-3"	2,209	67'-10"	181	136	379	6,518	1,055.5	4.9	560	265.6	42,778
2	10'-0"	6'-0"	13"	11"	162	#6	6"	22'-6"	5,475	108	#6	9"	13'-0"	2,109	9'-6"	1,541	162	#6	6"	9'-10"	2,393	14	18"	39'-9"	372	78	18"	39'-9"	2,071	108	9"	6'-0"	433	54	9"	5'-7"	201	14'-3"	514	22'-6"	60	48	134	2,437	377.7	1.7	194	99.2	15,303
3	10'-0"	6'-0"	13"	11"	162	#6	6"	33'-5"	8,131	108	#6	9"	13'-0"	2,109	9'-6"	1,541	162	#6	6"	19'-10"	4,826	21	18"	39'-9"	558	111	18"	39'-9"	2,947	108	9"	6'-0"	433	108	9"	5'-7"	403	14'-3"	1,028	33'-5"	89	70	195	3,516	549.4	2.5	284	143.1	22,260
4	10'-0"	6'-0"	13"	11"	162	#6	6"	44'-4"	10,787	108	#6	9"	13'-0"	2,109	9'-6"	1,541	162	#6	6"	29'-10"	7,259	28	18"	39'-9"	743	144	18"	39'-9"	3,824	108	9"	6'-0"	433	162	9"	5'-7"	604	14'-3"	1,542	44'-4"	118	92	256	4,596	721.1	3.3	374	187.1	29,216
5	10'-0"	6'-0"	13"	11"	162	#6	6"	55'-3"	13,444	108	#6	9"	13'-0"	2,109	9'-6"	1,541	162	#6	6"	39'-10"	9,692	35	18"	39'-9"	929	177	18"	39'-9"	4,700	108	9"	6'-0"	433	216	9"	5'-7"	806	14'-3"	2,056	55'-3"	148	114	317	5,676	892.8	4.1	465	231.1	36,175
6	10'-0"	6'-0"	13"	11"	162	#6	6"	68'-8"	16,708	108	#6	9"	13'-0"	2,109	9'-6"	1,541	162	#6	6"	49'-10"	12,126	42	18"	39'-9"	1,115	210	18"	39'-9"	5,576	108	9"	6'-0"	433	270	9"	5'-7"	1,007	14'-3"	2,570	67'-10"	181	136	379	6,756	1,079.6	4.9	560	275.1	43,745
2	10'-0"	7'-0"	13"	11"	162	#6	6"	22'-6"	5,475	108	#6	9"	14'-0"	2,271	9'-6"	1,541	162	#6	6"	9'-10"	2,393	14	18"	39'-9"	372	78	18"	39'-9"	2,071	108	9"	7'-0"	505	54	9"	5'-7"	201	16'-3"	586	22'-6"	60	48	134	2,539	385.4	1.7	194	103.2	15,609
3	10'-0"	7'-0"	13"	11"	162	#6	6"	33'-5"	8,131	108	#6	9"	14'-0"	2,271	9'-6"	1,541	162	#6	6"	19'-10"	4,826	21	18"	39'-9"	558	111	18"	39'-9"	2,947	108	9"	7'-0"	505	108	9"	5'-7"	403	16'-3"	1,172	33'-5"	89	70	195	3,652	558.9	2.5	284	148.6	22,638
4	10'-0"	7'-0"	13"	11"	162	#6	6"	44'-4"	10,787	108	#6	9"	14'-0"	2,271	9'-6"	1,541	162	#6	6"	29'-10"	7,259	28	18"	39'-9"	743	144	18"	39'-9"	3,824	108	9"	7'-0"	505	162	9"	5'-7"	604	16'-3"	1,759	44'-4"	118	92	256	4,766	732.3	3.3	374	193.9	29,667
5	10'-0"	7'-0"	13"	11"	162	#6	6"	55'-3"	13,444	108	#6	9"	14'-0"	2,271	9'-6"	1,541	162	#6	6"	39'-10"	9,692	35	18"	39'-9"	929	177	18"	39'-9"	4,700	108	9"	7'-0"	505	216	9"	5'-7"	806	16'-3"	2,345	55'-3"	148	114	317	5,880	905.8	4.1	465	239.3	36,698
6	10'-0"	7'-0"	13"	11"	162	#6	6"	68'-8"	16,708	108	#6	9"	14'-0"	2,271	9'-6"	1,541	162	#6	6"	49'-10"	12,126	42	18"	39'-9"	1,115	210	18"	39'-9"	5,576	108	9"	7'-0"	505	270	9"	5'-7"	1,007	16'-3"	2,931	67'-10"	181	136	379	6,993	1,094.5	4.9	560	284.6	44,340
2	10'-0"	8'-0"	13"	11"	162	#6	6"	22'-6"	5,475	108	#6	9"	15'-0"	2,433	9'-6"	1,541	162	#6	6"	9'-10"	2,393	14	18"	39'-9"	372	84	18"	39'-9"	2,230	108	9"	8'-0"	577	54	9"	5'-7"	201	18'-3"	658	22'-6"	60	48	134	2,640	397.0	1.7	194	107.3	16,074
3	10'-0"	8'-0"	13"	11"	162	#6	6"	33'-5"	8,131	108	#6	9"	15'-0"	2,433	9'-6"	1,541	162	#6	6"	19'-10"	4,826	21	18"	39'-9"	558	119	18"	39'-9"	3,160	108	9"	8'-0"	577	108	9"	5'-7"	403	18'-3"	1,317	33'-5"	89	70	195	3,788	573.7	2.5	284	154.0	23,230
4	10'-0"	8'-0"	13"	11"	162	#6	6"	44'-4"	10,787	108	#6	9"	15'-0"	2,433	9'-6"	1,541	162	#6	6"	29'-10"	7,259	28	18"	39'-9"	743	154	18"	39'-9"	4,089	108	9"	8'-0"	577	162	9"	5'-7"	604	18'-3"	1,975	44'-4"	118	92	256	4,936	750.2	3.3	374	200.7	30,382
5	10'-0"	8'-0"	13"	11"	162	#6	6"	55'-3"	13,444	108	#6	9"	15'-0"	2,433	9'-6"	1,541	162	#6	6"	39'-10"	9,692	35	18"	39'-9"	929	189	18"	39'-9"	5,019	108	9"	8'-0"	577	216	9"	5'-7"	806	18'-3"	2,633	55'-3"	148	114	317	6,083	926.9	4.1	465	247.4	37,539
6	10'-0"	8'-0"	13"	11"	162	#6	6"	68'-8"	16,708	108	#6	9"	15'-0"	2,433	9'-6"	1,541	162	#6	6"	49'-10"	12,126	42	18"	39'-9"	1,115	224	18"	39'-9"	5,948	108	9"	8'-0"	577	270	9"	5'-7"	1,007	18'-3"	3,292	67'-10"	181	136	379	7,231	1,118.7	4.9	560	294.1	45,307
2																																																	