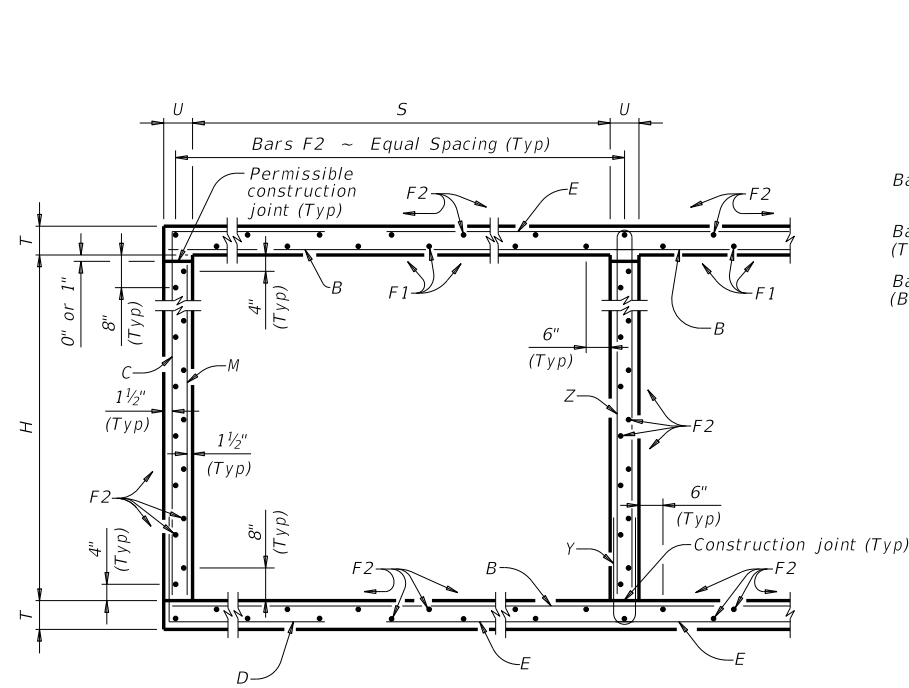
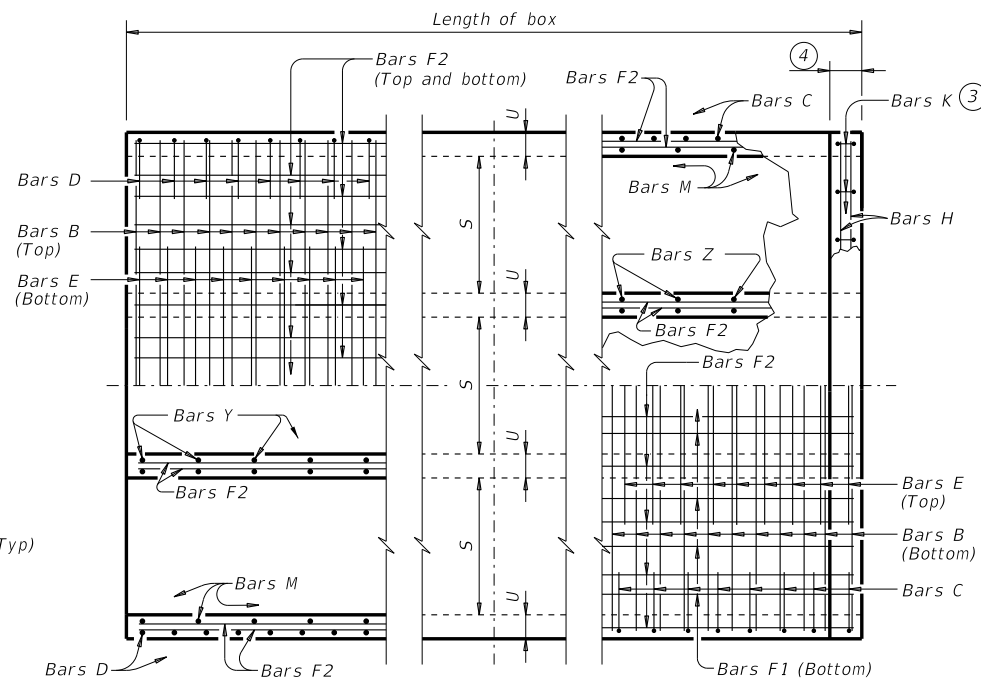


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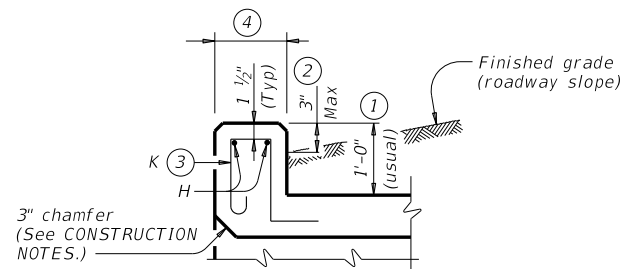
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TYPICAL SECTION

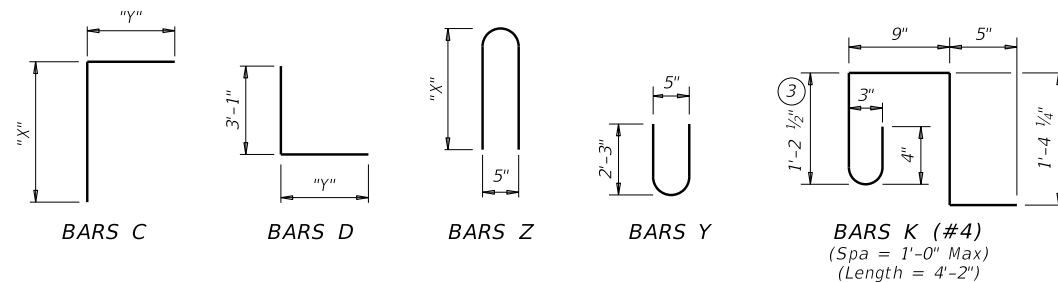


PART PLANS



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"x"	"y"
3'-0"	3'-7 1/2"	5'-1 1/2"
4'-0"	4'-7 1/2"	5'-1 1/2"
5'-0"	5'-7 1/2"	5'-1 1/2"
6'-0"	6'-7 1/2"	5'-1 1/2"
7'-0"	7'-7 1/2"	5'-1 1/2"
8'-0"	8'-7 1/2"	5'-1 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
8'-0" SPAN
2' TO 16' FILL
MC-8-16

FILE: CD-MC816-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
DIST	COUNTY			SHEET NO.

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DATE: FILE:

NUMBER OF SPANS	SECTION DIMENSIONS				BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																												QUANTITIES																				
					Bars B				Bars C & D				Bars E				Bars F1 ~ #4				Bars F2 ~ #4				Bars M ~ #4				Bars Y & Z ~ #4				Bars H 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	Length	Wt	No.	Spa	Bars Y		Bars Z		Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
													Length	Wt	Length	Wt																								Length	Wt	Length	Wt										
2	8'-0"	3'-0"	9"	8"	162	#6	6"	17'-9"	4,319	108	#6	9"	8'-9"	1,419	8'-3"	1,338	162	#6	6"	8'-3"	2,007	12	18"	39'-9"	319	56	18"	39'-9"	1,487	82	12"	3'-0"	164	41	12"	4'-10"	132	7'-6"	205	17'-9"	47	38	106	1.222	284.8	1.3	153	50.2	11,543				
3	8'-0"	3'-0"	9"	8"	162	#6	6"	26'-5"	6,428	108	#6	9"	8'-9"	1,419	8'-3"	1,338	162	#6	6"	16'-3"	3,954	18	18"	39'-9"	478	80	18"	39'-9"	2,124	82	12"	3'-0"	164	82	12"	4'-10"	265	7'-6"	411	26'-5"	71	56	156	1.778	414.5	2.0	227	73.1	16,808				
4	8'-0"	3'-0"	9"	8"	162	#6	6"	35'-1"	8,537	108	#6	9"	8'-9"	1,419	8'-3"	1,338	162	#6	6"	24'-3"	5,901	24	18"	39'-9"	637	104	18"	39'-9"	2,762	82	12"	3'-0"	164	123	12"	4'-10"	397	7'-6"	616	35'-1"	94	74	206	2.333	544.3	2.6	300	95.9	22,071				
5	8'-0"	3'-0"	9"	8"	162	#6	6"	43'-9"	10,645	108	#6	9"	8'-9"	1,419	8'-3"	1,338	162	#6	6"	32'-3"	7,847	30	18"	39'-9"	797	128	18"	39'-9"	3,399	82	12"	3'-0"	164	164	12"	4'-10"	530	7'-6"	822	43'-9"	117	90	251	2.889	674.0	3.2	368	118.8	27,329				
6	8'-0"	3'-0"	9"	8"	162	#6	6"	52'-5"	12,754	108	#6	9"	8'-9"	1,419	8'-3"	1,338	162	#6	6"	40'-3"	9,794	36	18"	39'-9"	956	152	18"	39'-9"	4,036	82	12"	3'-0"	164	205	12"	4'-10"	662	7'-6"	1,027	52'-5"	140	108	301	3.444	803.8	3.9	441	141.6	32,591				
2	8'-0"	4'-0"	9"	8"	162	#6	6"	17'-9"	4,319	108	#6	9"	9'-9"	1,582	8'-3"	1,338	162	#6	6"	8'-3"	2,007	12	18"	39'-9"	319	56	18"	39'-9"	1,487	82	12"	4'-0"	219	41	12"	4'-10"	132	9'-6"	260	17'-9"	47	38	106	1.296	291.6	1.3	153	53.2	11,816				
3	8'-0"	4'-0"	9"	8"	162	#6	6"	26'-5"	6,428	108	#6	9"	9'-9"	1,582	8'-3"	1,338	162	#6	6"	16'-3"	3,954	18	18"	39'-9"	478	80	18"	39'-9"	2,124	82	12"	4'-0"	219	82	12"	4'-10"	265	9'-6"	520	26'-5"	71	56	156	1.877	422.7	2.0	227	77.0	17,135				
4	8'-0"	4'-0"	9"	8"	162	#6	6"	35'-1"	8,537	108	#6	9"	9'-9"	1,582	8'-3"	1,338	162	#6	6"	24'-3"	5,901	24	18"	39'-9"	637	104	18"	39'-9"	2,762	82	12"	4'-0"	219	123	12"	4'-10"	397	9'-6"	781	35'-1"	94	74	206	2.457	553.9	2.6	300	100.9	22,454				
5	8'-0"	4'-0"	9"	8"	162	#6	6"	43'-9"	10,645	108	#6	9"	9'-9"	1,582	8'-3"	1,338	162	#6	6"	32'-3"	7,847	30	18"	39'-9"	797	128	18"	39'-9"	3,399	82	12"	4'-0"	219	164	12"	4'-10"	530	9'-6"	1,041	43'-9"	117	90	251	3.037	685.0	3.2	368	124.7	27,766				
6	8'-0"	4'-0"	9"	8"	162	#6	6"	52'-5"	12,754	108	#6	9"	9'-9"	1,582	8'-3"	1,338	162	#6	6"	40'-3"	9,794	36	18"	39'-9"	956	152	18"	39'-9"	4,036	82	12"	4'-0"	219	205	12"	4'-10"	662	9'-6"	1,301	52'-5"	140	108	301	3.617	816.1	3.9	441	148.6	33,083				
2	8'-0"	5'-0"	9"	8"	162	#6	6"	17'-9"	4,319	108	#6	9"	10'-9"	1,744	8'-3"	1,338	162	#6	6"	8'-3"	2,007	12	18"	39'-9"	319	62	18"	39'-9"	1,646	82	12"	5'-0"	274	41	12"	4'-10"	132	11'-6"	315	17'-9"	47	38	106	1.370	302.4	1.3	153	56.1	12,247				
3	8'-0"	5'-0"	9"	8"	162	#6	6"	26'-5"	6,428	108	#6	9"	10'-9"	1,744	8'-3"	1,338	162	#6	6"	16'-3"	3,954	18	18"	39'-9"	478	88	18"	39'-9"	2,337	82	12"	5'-0"	274	82	12"	4'-10"	265	11'-6"	630	26'-5"	71	56	156	1.975	436.2	2.0	227	81.0	17,675				
4	8'-0"	5'-0"	9"	8"	162	#6	6"	35'-1"	8,537	108	#6	9"	10'-9"	1,744	8'-3"	1,338	162	#6	6"	24'-3"	5,901	24	18"	39'-9"	637	114	18"	39'-9"	3,027	82	12"	5'-0"	274	123	12"	4'-10"	397	11'-6"	945	35'-1"	94	74	206	2.580	570.0	2.6	300	105.8	23,100				
5	8'-0"	5'-0"	9"	8"	162	#6	6"	43'-9"	10,645	108	#6	9"	10'-9"	1,744	8'-3"	1,338	162	#6	6"	32'-3"	7,847	30	18"	39'-9"	797	140	18"	39'-9"	3,717	82	12"	5'-0"	274	164	12"	4'-10"	530	11'-6"	1,260	43'-9"	117	90	251	3.185	703.8	3.2	368	130.6	28,520				
6	8'-0"	5'-0"	9"	8"	162	#6	6"	52'-5"	12,754	108	#6	9"	10'-9"	1,744	8'-3"	1,338	162	#6	6"	40'-3"	9,794	36	18"	39'-9"	956	166	18"	39'-9"	4,408	82	12"	5'-0"	274	205	12"	4'-10"	662	11'-6"	1,575	52'-5"	140	108	301	3.790	837.6	3.9	441	155.5	33,946				
2	8'-0"	6'-0"	9"	8"	162	#6	6"	17'-9"	4,319	108	#6	9"	11'-9"	1,906	8'-3"	1,338	162	#6	6"	8'-3"	2,007	12	18"	39'-9"	319	68	18"	39'-9"	1,806	82	12"	6'-0"	329	41	12"	4'-10"	132	13'-6"	370	17'-9"	47	38	106	1.444	313.2	1.3	153	59.1	12,679				
3	8'-0"	6'-0"	9"	8"	162	#6	6"	26'-5"	6,428	108	#6	9"	11'-9"	1,906	8'-3"	1,338	162	#6	6"	16'-3"	3,954	18	18"	39'-9"	478	96	18"	39'-9"	2,549	82	12"	6'-0"	329	82	12"	4'-10"	265	13'-6"	739	26'-5"	71	56	156	2.074	449.7	2.0	227	84.9	18,213				
4	8'-0"	6'-0"	9"	8"	162	#6	6"	35'-1"	8,537	108	#6	9"	11'-9"	1,906	8'-3"	1,338	162	#6	6"	24'-3"	5,901	24	18"	39'-9"	637	124	18"	39'-9"	3,293	82	12"	6'-0"	329	123	12"	4'-10"	397	13'-6"	1,109	35'-1"	94	74	206	2.704	586.2	2.6	300	110.8	23,747				
5	8'-0"	6'-0"	9"	8"	162	#6	6"	43'-9"	10,645	108	#6	9"	11'-9"	1,906	8'-3"	1,338	162	#6	6"	32'-3"	7,847	30	18"	39'-9"	797	152	18"	39'-9"	4,036	82	12"	6'-0"	329	164	12"	4'-10"	530	13'-6"	1,479	43'-9"	117	90	251	3.333	722.7	3.2	368	136.6	29,275				
6	8'-0"	6'-0"	9"	8"	162	#6	6"	52'-5"	12,754	108	#6	9"	11'-9"	1,906	8'-3"	1,338	162	#6	6"	40'-3"	9,794	36	18"	39'-9"	956	180	18"	39'-9"	4,780	82	12"	6'-0"	329	205	12"	4'-10"	662	13'-6"	1,849	52'-5"	140	108	301	3.963	859.2	3.9	441	162.4	34,809				
2	8'-0"	7'-0"	9"	8"	162	#6	6"	17'-9"	4,319	108	#6	9"	12'-9"	2,068	8'-3"	1,338	162	#6	6"	8'-3"	2,007	12	18"	39'-9"	319	68	18"	39'-9"	1,806	82	12"	7'-0"	383	41	12"	4'-10"	132	15'-6"	425	17'-9"	47	38	106	1.519	319.9	1.3	153	62.1	12,950				
3	8'-0"	7'-0"	9"	8"	162	#6	6"	26'-5"	6,428	108	#6	9"	12'-9"	2,068	8'-3"	1,338	162	#6	6"	16'-3"	3,954	18	18"	39'-9"	478	96	18"	39'-9"	2,549	82	12"	7'-0"	383	82	12"	4'-10"	265	15'-6"	849	26'-5"	71	56	156	2.173	457.8	2.0	227	88.9	18,539				
4	8'-0"	7'-0"	9"	8"	162	#6	6"	35'-1"	8,537	108	#6	9"	12'-9"	2,068	8'-3"	1,338	162	#6	6"	24'-3"	5,901	24	18"	39'-9"	637	124	18"	39'-9"	3,293	82	12"	7'-0"	383	123	12"	4'-10"	397	15'-6"	1,274	35'-1"	94	74	206	2.827	595.7	2.6	300	115.7	24,128				
5	8'-0"	7'-0"	9"	8"	162	#6	6"	43'-9"	10,645	108	#6	9"	12'-9"	2,068	8'-3"	1,338	162	#6	6"	32'-3"	7,847	30	18"	39'-9"	797	152	18"	39'-9"	4,036	82	12"	7'-0"	383	164	12"	4'-10"	530	15'-6"	1,698	43'-9"	117	90	251	3.481	733.6	3.2	368	142.5	29,710				
6	8'-0"	7'-0"	9"	8"	162	#6	6"	52'-5"	12,754	108	#6	9"	12'-9"	2,068	8'-3"	1,338	162	#6	6"	40'-3"	9,794	36	18"	39'-9"	956	180	18"	39'-9"	4,780	82	12"	7'-0"	383	205	12"	4'-10"	662	15'-6"	2,123	52'-5"	140	108	301	4.136	871.5	3.9	441	169.3	35,299				
2	8'-0"	8'-0"	9"	8"	162	#6	6"	17'-9"	4,319	108	#6	9"	13'-9"	2,230	8'-3"	1,338	162	#6	6"	8'-3"	2,007	12	18"	39'-9"	319	74	18"	39'-9"	1,965	82	12"	8'-0"	438	41	12"	4'-10"	132	17'-6"	479	17'-9"	47	38	106	1.593	330.7	1.3	153	65.0	13,380				
3	8'-0"	8'-0"	9"	8"	162	#6	6"	26'-5"	6,428	108	#6	9"	13'-9"	2,230	8'-3"	1,338	162	#6	6"	16'-3"	3,954	18	18"	39'-9"	478	104	18"	39'-9"	2,762	108	9"	8'-0"	577	82	12"	4'-10"	265	17'-6"	959	26'-5"	71	56	156	2.272	474.8	2.0	227	92.8	19,218				
4	8'-0"	8'-0"	9"	8"	162	#6	6"	35'-1"	8,537	108	#6	9"	13'-9"	2,230	8'-3"	1,338	162	#6	6"	24'-3"	5,901	24	18"	39'-9"	637	134	18"	39'-9"	3,558	108	9"	8'-0"	577	123	12"	4'-10"	397	17'-6"	1,438	35'-													