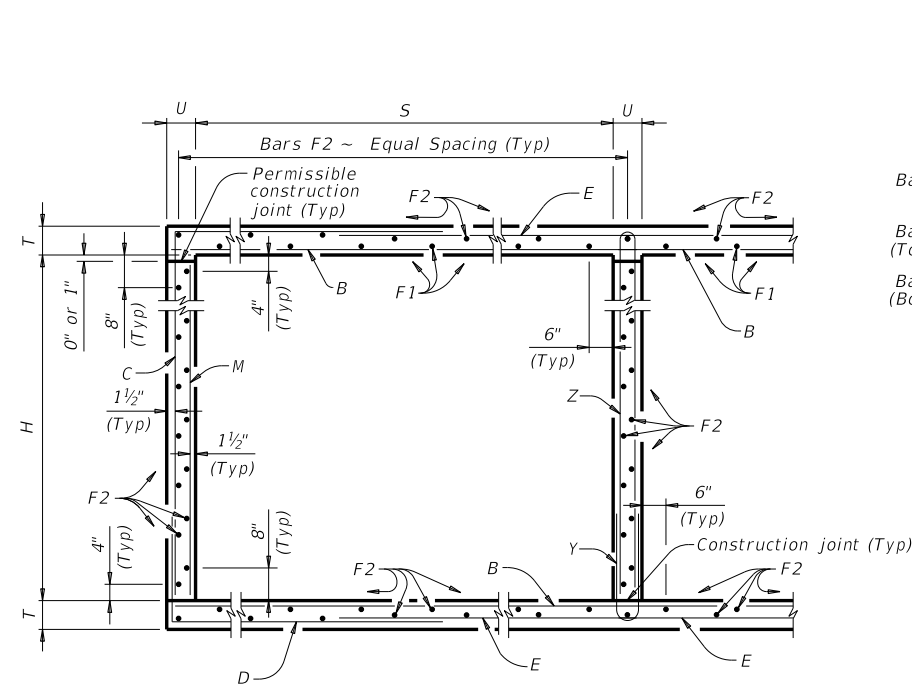
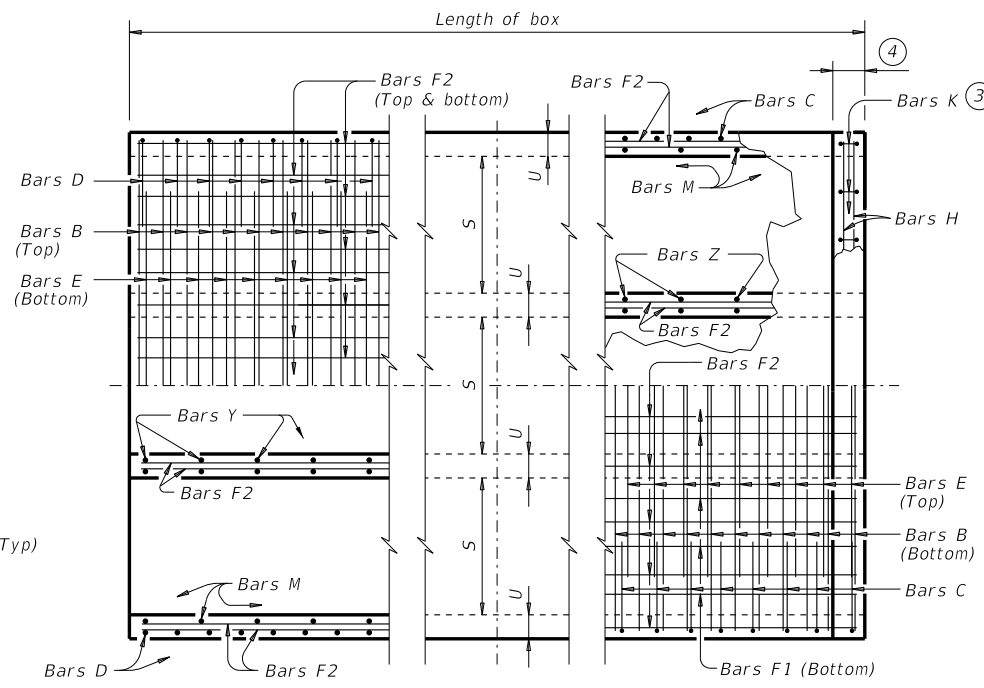


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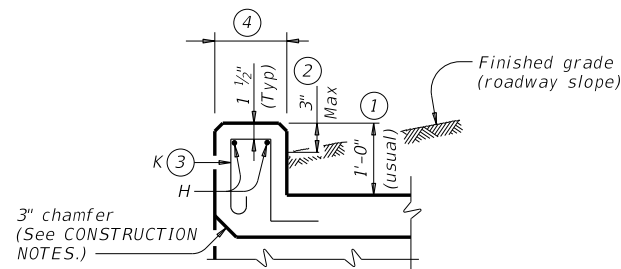
DATE: FILE:



TYPICAL SECTION

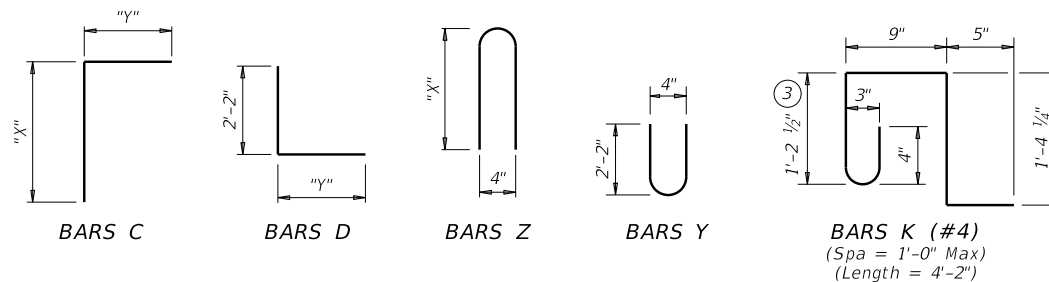


BOTTOM SLAB **TOP SLAB**
PART PLANS



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
2'-0"	2'-6 1/2"	2'-8"
3'-0"	3'-6 1/2"	3'-8"



- 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, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
 - culverts with overlay,
 - culverts with 1-to-2 course surface treatment, or
 - culverts with the top slab as the final riding surface.
- Provide bar laps, where required, as follows:
 - Uncoated or galvanized ~ #4 = 1'-8" Min
 - Uncoated or galvanized ~ #5 = 2'-1" 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.

Use this standard only when lengthening existing multiple box culverts.

HL93 LOADING SHEET 1 OF 2

		Bridge Division Standard	
MULTIPLE BOX CULVERTS CAST-IN-PLACE 3'-0" SPAN 0' TO 23' FILL FOR LENGTHENING ONLY MC-3-23			
FILE: CD-MC323-20.dgn	DN: TBE	CK: BMP	DW: TxDOT
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REVISIONS		HIGHWAY	
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	Bars Y		Bars Z		Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
2	3'-0"	2'-0"	8"	7"	108	#5	9"	7'-6"	845	108	#4	9"	5'-4"	385	5'-0"	361	108	#4	9"	5'-11"	427	6	18"	39'-9"	159	32	18"	39'-9"	850	108	9"	2'-0"	144	54	9"	4'-7"	165	5'-3"	189	7'-6"	20	18	50	0.512	88.1	0.6	70	21.1	3,595
3	3'-0"	2'-0"	8"	7"	108	#5	9"	11'-1"	1,248	108	#4	9"	5'-4"	385	5'-0"	361	108	#4	9"	9'-6"	685	9	18"	39'-9"	239	45	18"	39'-9"	1,195	108	9"	2'-0"	144	108	9"	4'-7"	331	5'-3"	379	11'-1"	30	26	72	0.733	124.2	0.8	102	30.2	5,069
4	3'-0"	2'-0"	8"	7"	108	#5	9"	14'-8"	1,652	108	#4	9"	5'-4"	385	5'-0"	361	108	#4	9"	13'-1"	944	12	18"	39'-9"	319	58	18"	39'-9"	1,540	108	9"	2'-0"	144	162	9"	4'-7"	496	5'-3"	568	14'-8"	39	32	89	0.953	160.2	1.1	128	39.2	6,537
5	3'-0"	2'-0"	8"	7"	108	#5	9"	18'-3"	2,056	108	#4	9"	5'-4"	385	5'-0"	361	108	#4	9"	16'-8"	1,202	15	18"	39'-9"	398	71	18"	39'-9"	1,885	108	9"	2'-0"	144	216	9"	4'-7"	661	5'-3"	758	18'-3"	49	40	111	1.173	196.3	1.4	160	48.3	8,010
6	3'-0"	2'-0"	8"	7"	108	#5	9"	21'-10"	2,459	108	#4	9"	5'-4"	385	5'-0"	361	108	#4	9"	20'-3"	1,461	18	18"	39'-9"	478	84	18"	39'-9"	2,230	108	9"	2'-0"	144	270	9"	4'-7"	827	5'-3"	947	21'-10"	58	46	128	1.393	232.3	1.6	186	57.4	9,478
2	3'-0"	3'-0"	8"	7"	108	#5	9"	7'-6"	845	108	#4	9"	6'-4"	457	5'-0"	361	108	#4	9"	5'-11"	427	6	18"	39'-9"	159	38	18"	39'-9"	1,009	108	9"	3'-0"	216	54	9"	4'-7"	165	7'-3"	262	7'-6"	20	18	50	0.577	97.5	0.6	70	23.7	3,971
3	3'-0"	3'-0"	8"	7"	108	#5	9"	11'-1"	1,248	108	#4	9"	6'-4"	457	5'-0"	361	108	#4	9"	9'-6"	685	9	18"	39'-9"	239	53	18"	39'-9"	1,407	108	9"	3'-0"	216	108	9"	4'-7"	331	7'-3"	523	11'-1"	30	26	72	0.819	136.7	0.8	102	33.6	5,569
4	3'-0"	3'-0"	8"	7"	108	#5	9"	14'-8"	1,652	108	#4	9"	6'-4"	457	5'-0"	361	108	#4	9"	13'-1"	944	12	18"	39'-9"	319	68	18"	39'-9"	1,806	108	9"	3'-0"	216	162	9"	4'-7"	496	7'-3"	785	14'-8"	39	32	89	1.061	175.9	1.1	128	43.5	7,164
5	3'-0"	3'-0"	8"	7"	108	#5	9"	18'-3"	2,056	108	#4	9"	6'-4"	457	5'-0"	361	108	#4	9"	16'-8"	1,202	15	18"	39'-9"	398	83	18"	39'-9"	2,204	108	9"	3'-0"	216	216	9"	4'-7"	661	7'-3"	1,046	18'-3"	49	40	111	1.302	215.0	1.4	160	53.4	8,761
6	3'-0"	3'-0"	8"	7"	108	#5	9"	21'-10"	2,459	108	#4	9"	6'-4"	457	5'-0"	361	108	#4	9"	20'-3"	1,461	18	18"	39'-9"	478	98	18"	39'-9"	2,602	108	9"	3'-0"	216	270	9"	4'-7"	827	7'-3"	1,308	21'-10"	58	46	128	1.544	254.2	1.6	186	63.4	10,355

Use this standard only when lengthening existing multiple box culverts.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE 3'-0" SPAN 0' TO 23' FILL FOR LENGTHENING ONLY MC-3-23

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