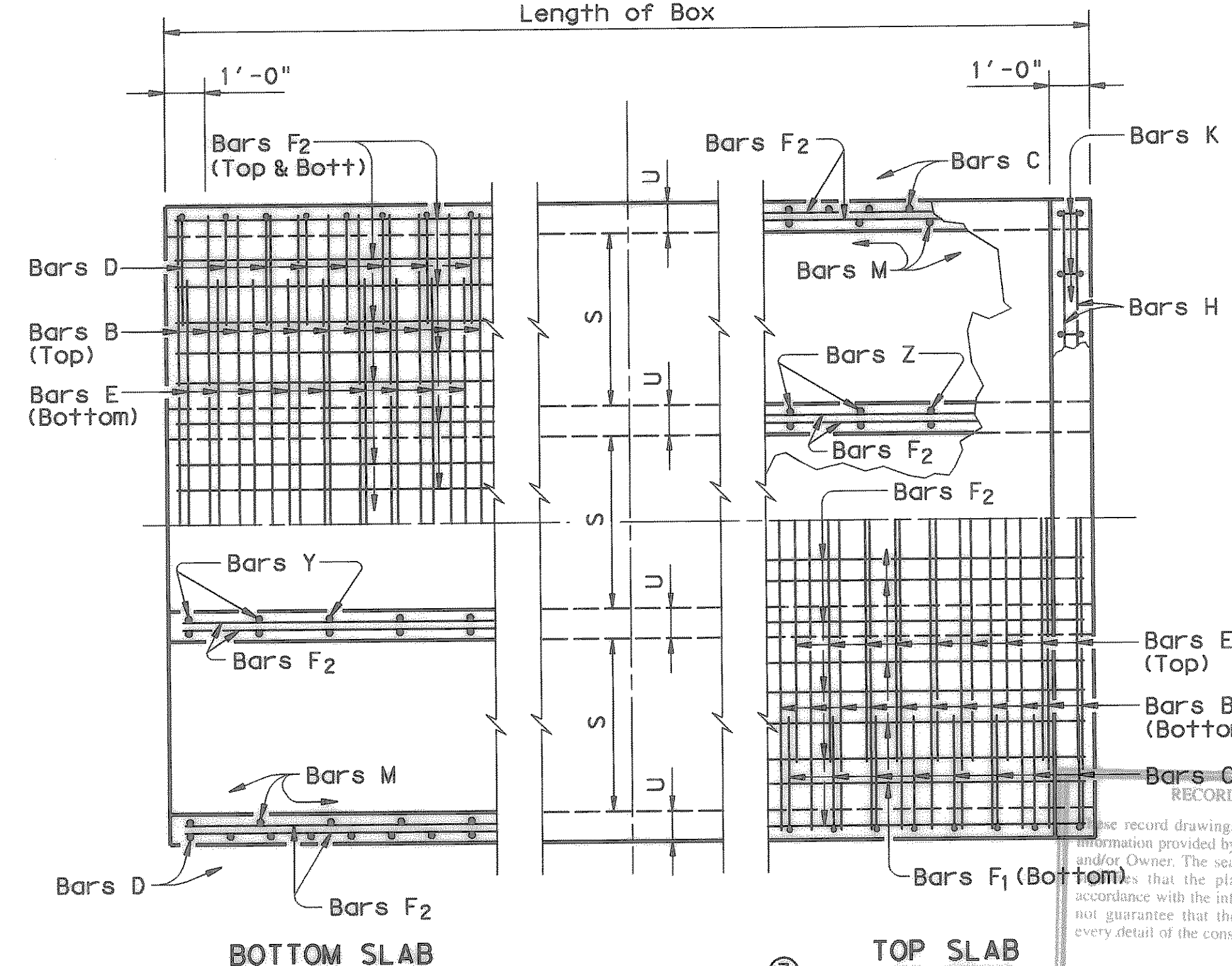
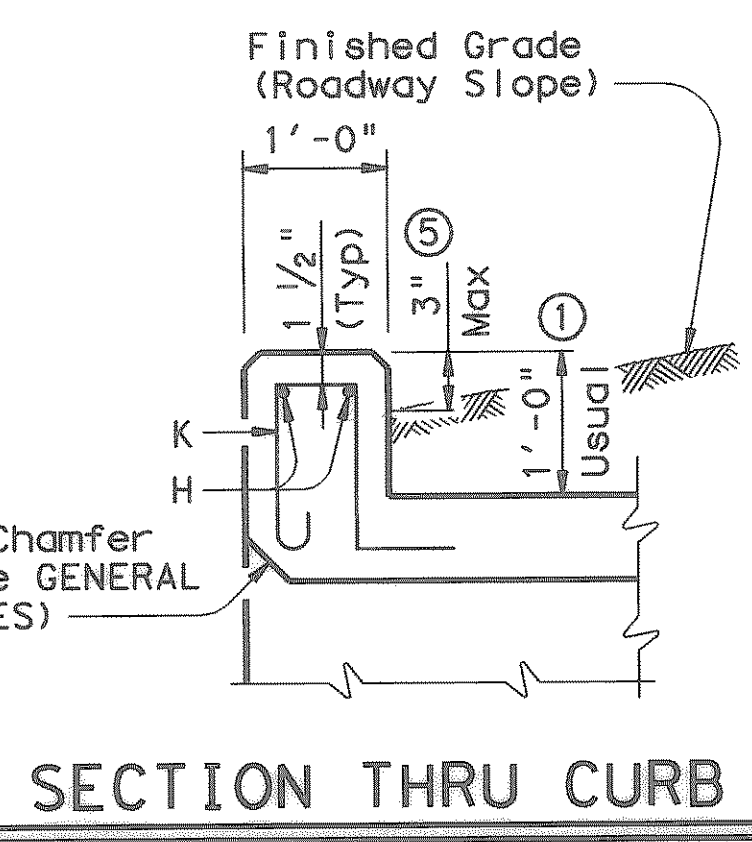
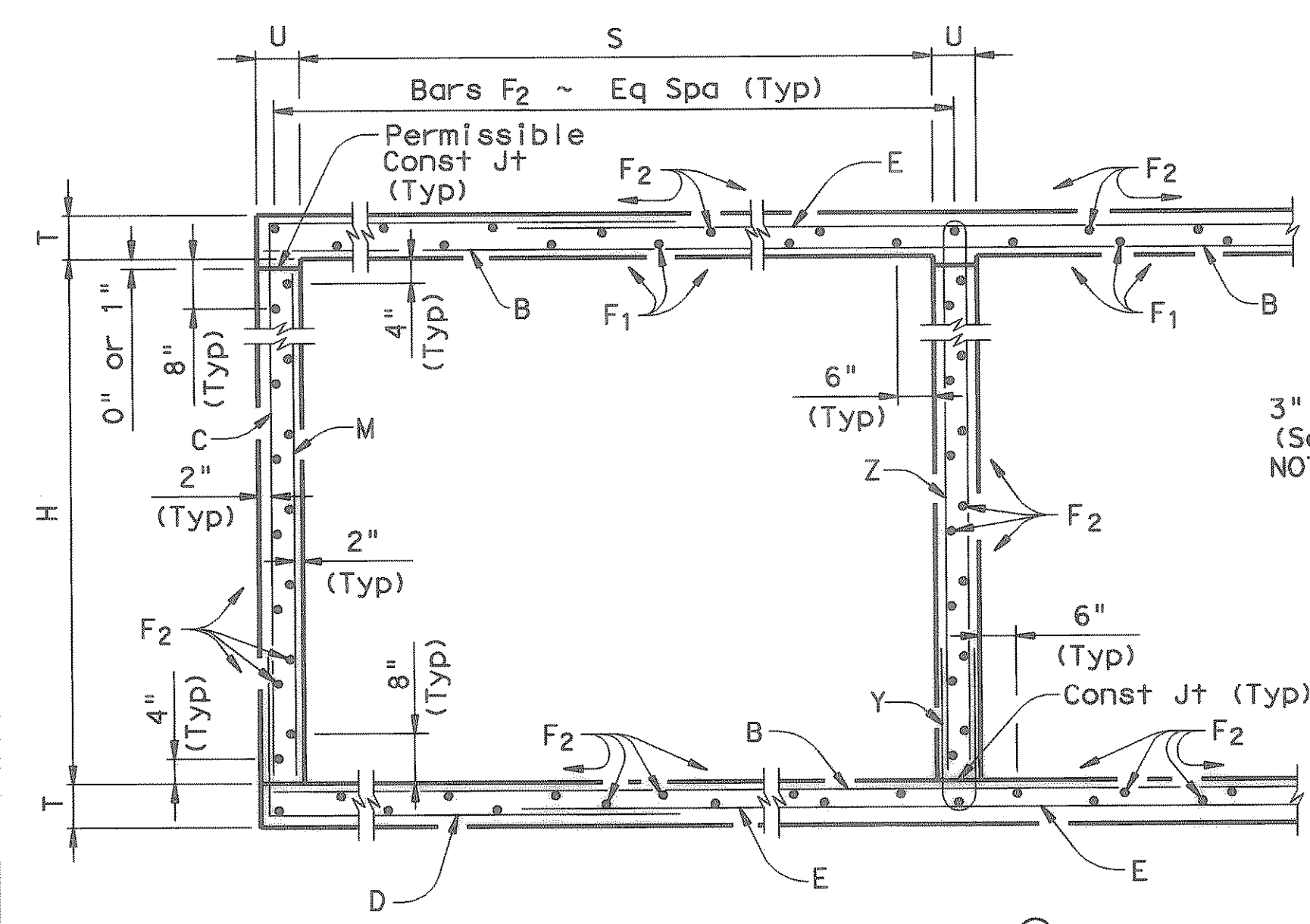
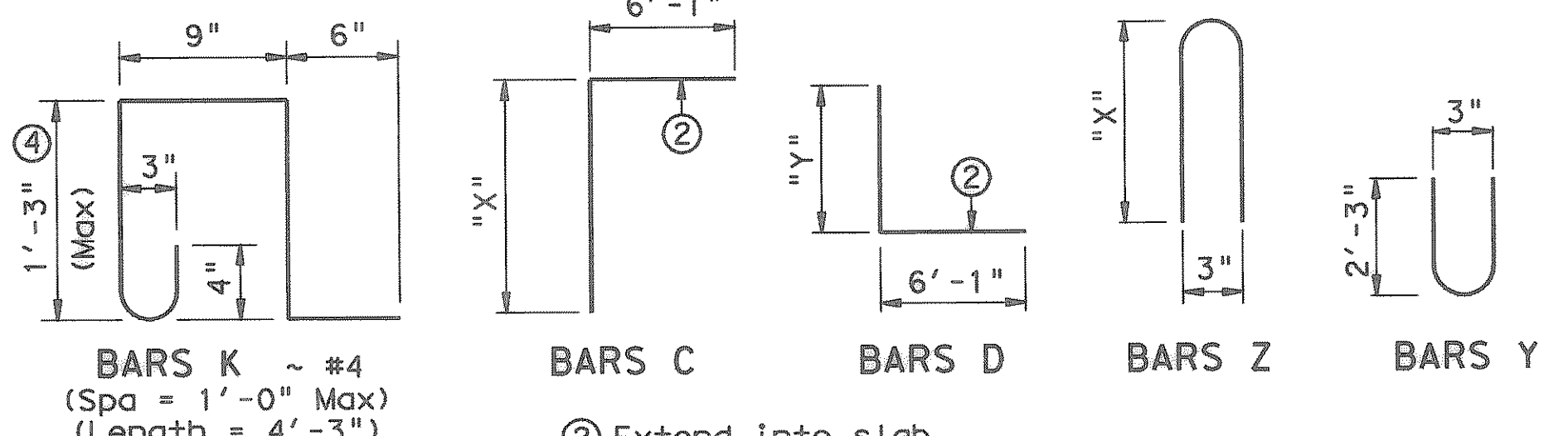


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BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

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 at 1'-6" Max				Bars M ~ #4 at 1'-6" Max				Bars Y & Z ~ #4 at 10" Max				Bars H 4 ~ #4		Bars K		Per foot of Barrel		Curb		Total						
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Length	Wt	No.	Length	Wt	No.	Length	Wt	No.	Length	Wt	No.	Weight	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)
2	8'-0"	4'-0"	8"	7"	162	#5	6"	17'-6"	2,957	194	#4	5"	10'-7"	1,372	8'-4"	1,080	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	56	39'-9"	1,487	56	4'-0"	150	49	4'-8"	153	9'-2"	300	17'-6"	47	38	108	1.136	266.4	1.3	155	46.7	10,812
3	8'-0"	4'-0"	8"	7"	162	#5	6"	26'-1"	4,407	194	#4	5"	10'-7"	1,372	8'-4"	1,080	194	#6	5"	17'-5"	5,075	36	8"	39'-9"	956	80	39'-9"	2,124	56	4'-0"	150	98	4'-8"	305	9'-2"	600	26'-1"	70	54	153	1.646	401.7	2.0	223	67.8	16,292
4	8'-0"	4'-0"	8"	7"	162	#5	6"	34'-8"	5,857	194	#4	5"	10'-7"	1,372	8'-4"	1,080	194	#6	5"	26'-0"	7,576	48	8"	39'-9"	1,275	104	39'-9"	2,762	56	4'-0"	150	147	4'-8"	458	9'-2"	900	34'-8"	93	72	204	2.156	535.8	2.6	297	88.8	21,727
5	8'-0"	4'-0"	8"	7"	162	#5	6"	43'-3"	7,308	194	#4	5"	10'-7"	1,372	8'-4"	1,080	194	#6	5"	34'-7"	10,077	60	8"	39'-9"	1,593	128	39'-9"	3,399	56	4'-0"	150	196	4'-8"	611	9'-2"	1,200	43'-3"	116	90	256	2.667	669.8	3.2	372	109.9	27,162
6	8'-0"	4'-0"	8"	7"	162	#5	6"	51'-10"	8,758	194	#4	5"	10'-7"	1,372	8'-4"	1,080	194	#6	5"	43'-2"	12,578	72	8"	39'-9"	1,912	152	39'-9"	4,036	56	4'-0"	150	245	4'-8"	764	9'-2"	1,500	51'-10"	138	106	301	3.177	803.8	3.9	439	131.0	32,589
2	8'-0"	5'-0"	8"	7"	194	#5	5"	17'-6"	3,541	194	#4	5"	11'-7"	1,501	8'-4"	1,080	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	62	39'-9"	1,646	56	5'-0"	187	49	4'-8"	153	11'-2"	366	17'-6"	47	38	108	1.201	290.8	1.3	155	49.3	11,787
3	8'-0"	5'-0"	8"	7"	194	#5	5"	26'-1"	5,278	194	#4	5"	11'-7"	1,501	8'-4"	1,080	194	#6	5"	17'-5"	5,075	36	8"	39'-9"	956	88	39'-9"	2,337	56	5'-0"	187	98	4'-8"	305	11'-2"	731	26'-1"	70	54	153	1.733	436.3	2.0	223	71.3	17,673
4	8'-0"	5'-0"	8"	7"	194	#5	5"	34'-8"	7,015	194	#4	5"	11'-7"	1,501	8'-4"	1,080	194	#6	5"	26'-0"	7,576	48	8"	39'-9"	1,275	114	39'-9"	3,027	56	5'-0"	187	147	4'-8"	458	11'-2"	1,097	34'-8"	93	72	204	2.264	580.4	2.6	297	93.2	23,513
5	8'-0"	5'-0"	8"	7"	194	#5	5"	43'-3"	8,751	194	#4	5"	11'-7"	1,501	8'-4"	1,080	194	#6	5"	34'-7"	10,077	60	8"	39'-9"	1,593	140	39'-9"	3,717	56	5'-0"	187	196	4'-8"	611	11'-2"	1,462	43'-3"	116	90	256	2.796	724.5	3.2	372	115.0	29,351
6	8'-0"	5'-0"	8"	7"	194	#5	5"	51'-10"	10,488	194	#4	5"	11'-7"	1,501	8'-4"	1,080	194	#6	5"	43'-2"	12,578	72	8"	39'-9"	1,912	166	39'-9"	4,408	56	5'-0"	187	245	4'-8"	764	11'-2"	1,828	51'-10"	138	106	301	3.328	868.7	3.9	439	137.0	35,185
2	8'-0"	6'-0"	8"	7"	194	#5	5"	17'-6"	3,541	194	#4	5"	12'-7"	1,631	8'-4"	1,080	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	68	39'-9"	1,806	56	6'-0"	224	49	4'-8"	153	13'-2"	431	17'-6"	47	38	108	1.265	300.6	1.3	155	51.9	12,179
3	8'-0"	6'-0"	8"	7"	194	#5	5"	26'-1"	5,278	194	#4	5"	12'-7"	1,631	8'-4"	1,080	194	#6	5"	17'-5"	5,075	36	8"	39'-9"	956	96	39'-9"	2,549	56	6'-0"	224	98	4'-8"	305	13'-2"	862	26'-1"	70	54	153	1.819	449.0	2.0	223	74.8	18,183
4	8'-0"	6'-0"	8"	7"	194	#5	5"	34'-8"	7,015	194	#4	5"	12'-7"	1,631	8'-4"	1,080	194	#6	5"	26'-0"	7,576	48	8"	39'-9"	1,275	124	39'-9"	3,293	56	6'-0"	224	147	4'-8"	458	13'-2"	1,293	34'-8"	93	72	204	2.372	596.1	2.6	297	97.5	24,142
5	8'-0"	6'-0"	8"	7"	194	#5	5"	43'-3"	8,751	194	#4	5"	12'-7"	1,631	8'-4"	1,080	194	#6	5"	34'-7"	10,077	60	8"	39'-9"	1,593	152	39'-9"	4,036	56	6'-0"	224	196	4'-8"	611	13'-2"	1,724	43'-3"	116	90	256	2.926	743.2	3.2	372	120.2	30,099
6	8'-0"	6'-0"	8"	7"	194	#5	5"	51'-10"	10,488	194	#4	5"	12'-7"	1,631	8'-4"	1,080	194	#6	5"	43'-2"	12,578	72	8"	39'-9"	1,912	180	39'-9"	4,780	56	6'-0"	224	245	4'-8"	764	13'-2"	2,155	51'-10"	138	106	301	3.479	890.3	3.9	439	143.1	36,051
2	8'-0"	7'-0"	8"	7"	194	#5	5"	17'-6"	3,541	194	#4	5"	13'-7"	1,760	8'-4"	1,080	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	68	39'-9"	1,806	56	7'-0"	262	49	4'-8"	153	15'-2"	496	17'-6"	47	38	108	1.330	306.4	1.3	155	54.5	12,411
3	8'-0"	7'-0"	8"	7"	194	#5	5"	26'-1"	5,278	194	#4	5"	13'-7"	1,760	8'-4"	1,080	194	#6	5"	17'-5"	5,075	36	8"	39'-9"	956	96	39'-9"	2,549	56	7'-0"	262	98	4'-8"	305	15'-2"	993	26'-1"	70	54	153	1.905	456.5	2.0	223	78.2	18,481
4	8'-0"	7'-0"	8"	7"	194	#5	5"	34'-8"	7,015	194	#4	5"	13'-7"	1,760	8'-4"	1,080	194	#6	5"	26'-0"	7,576	48	8"	39'-9"	1,275	124	39'-9"	3,293	56	7'-0"	262	147	4'-8"	458	15'-2"	1,489	34'-8"	93	72	204	2.480	605.2	2.6	297	101.8	24,505
5	8'-0"	7'-0"	8"	7"	194	#5	5"	43'-3"	8,751	194	#4	5"	13'-7"	1,760	8'-4"	1,080	194	#6	5"	34'-7"	10,077	60	8"	39'-9"	1,593	152	39'-9"	4,036	56	7'-0"	262	196	4'-8"	611	15'-2"	1,986	43'-3"	116	90	256	3.056	753.9	3.2	372	125.4	30,528
6	8'-0"	7'-0"	8"	7"	194	#5	5"	51'-10"	10,488	194	#4	5"	13'-7"	1,760	8'-4"	1,080	194	#6	5"	43'-2"	12,578	72	8"	39'-9"	1,912	180	39'-9"	4,780	56	7'-0"	262	245	4'-8"	764	15'-2"	2,482	51'-10"	138	106	301	3.631	902.7	3.9	439	149.1	36,545
2	8'-0"	8'-0"	8"	7"	194	#5	5"	17'-6"	3,541	162	#5	6"	14'-7"	2,464	8'-9"	1,478	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	74	39'-9"	1,965	56	8'-0"	299	49	4'-8"	153	17'-2"	562	17'-6"	47	38	108	1.395	340.5	1.3	155	57.1	13,775
3	8'-0"	8'-0"	8"	7"	194	#5	5"	26'-1"	5,278	162	#5	6"	14'-7"	2,464	8'-9"	1,478	194	#6	5"	17'-5"	5,075	36	8"	39'-9"	956	104	39'-9"	2,762	56	8'-0"	299	98	4'-8"	305	17'-2"	1,124	26'-1"	70	54	153	1.992	493.5	2.0	223	81.7	19,964
4	8'-0"	8'-0"	8"	7"	194	#5	5"	34'-8"	7,015	162	#5	6"	14'-7"	2,464	8'-9"	1,478	194	#6	5"	26'-0"	7,576	48	8"	39'-9"	1,275	134	39'-9"	3,558	56	8'-0"	299	147	4'-8"	458	17'-2"	1,686	34'-8"	93	72	204	2.588	645.2	2.6	297	106.1	26,106
5	8'-0"	8'-0"	8"	7"	194	#5	5"	43'-3"	8,751	162	#5	6"	14'-7"	2,464	8'-9"	1,478	194	#6	5"	34'-7"	10,077	60	8"	39'-9"	1,593	164	39'-9"	4,355	56	8'-0"	299	196	4'-8"	611	17'-2"	2,248	43'-3"	116	90	256	3.185	796.9	3.2	372	130.6	32,248
6	8'-0"	8'-0"	8"	7"	194	#5	5"	51'-10"	10,488	162	#5	6"	14'-7"	2,464	8'-9"	1,478	194	#6	5"	43'-2"	12,578	72	8"	39'-9"	1,912	194	39'-9"	5,151	56	8'-0"	299	245	4'-8"	764	17'-2"	2,809	51'-10"	138	106	301	3.782	948.6	3.9	439	155.2	38,382

Bar Dimensions		
H	"X"	"Y"
4'-0"	4'-6"	2'-3"
5'-0"	5'-6"	2'-3"
6'-0"	6'-6"	2'-3"
7'-0"	7'-6"	2'-3"
8'-0"	8'-6"	2'-8"



GENERAL NOTES:

Designed according to current AASHTO Standard and Interim Specifications.
 Designed for HS20 Loading and to the maximum fill height shown.

All reinforcing steel shall be Grade 60.
 All concrete shall be Class "C" concrete with a minimum 28 day compressive strength of 3600 psi; except for the top slab of direct traffic culverts, which shall be Class "S" concrete with a minimum 28 day 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.
 For Direct Traffic, construct top slab to conform to crown of roadway while maintaining constant thickness of slab.
 Bar Dimensions "X" and "Y" shall be adjusted as necessary.
 The maximum permissible variation in dimension H is 6 inches.

HS20 LOADING

Texas Department of Transportation
 Bridge Division

MULTIPLE BOX CULVERTS
 8'-0" SPAN
 DIRECT TRAFFIC TO 13' MAX FILL

MC-8-13

FILE: mc813ste.dgn	DW: GAF	CK: LMW	DW: BWH	CK: LDS
© TxDOT September 2000	DISTRICT	FEDERAL AID PROJECT	SHEET	
REVISIONS				
COUNTY	CONTROL	SECT	JOB	HIGHWAY

- ① 0" min to 5'-0" max. For T6 or C6 Rail, see T6-CM standard for additional details. For curbs without rail and greater than 1'-0" high, see ECD standard for additional details.
- ② Extend into slab.
- ③ Reinforcing shown for orientation purposes only. See table for number and spacing of bars.
- ④ 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.
- ⑤ For vehicle safety, curb heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.