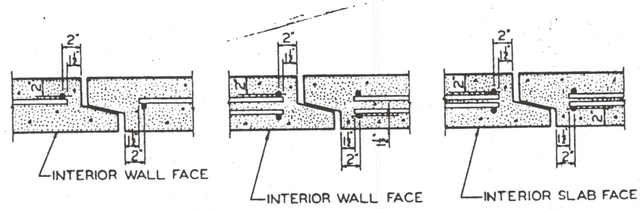
BILL OF REINFORCING STEEL FOR L=8'

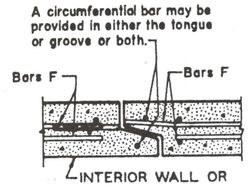
CULV. SIZE S	CULV. SIZE H	TYPE SECT.	DIMENSIONS T	DIMENSIONS U	MAX. FILL	TOTAL QUANTITIES FOR L=8' CONC. C.Y.	TOTAL QUANTITIES FOR L=8' REINF. LBS.	QUANTITIES P.L.F. OF BARREL CONC. C.Y.	QUANTITIES P.L.F. OF BARREL REINF. LBS.
3'	2'	1	4"	4"	26'	1.185	272	.1481	34.00
	3'	1	4"	4"	26'	1.383	339	.1728	42.38
4'	2'	1	5"	5"	24'	1.790	393	.2238	49.13
	3'	1	5"	5"	24'	2.037	474	.2546	59.25
	4'	1	5"	5"	24'	2.284	522	.2855	65.25
5'	2'	2	6"	6"	22'	2.518	615	.3148	76.88
	3'	2	6"	6"	22'	2.815	652	.3519	81.50
	4'	2	6"	6"	22'	3.111	650	.3889	81.25
	5'	3	6"	6"	22'	3.407	760	.4259	95.00
6'	3'	2	7"	7"	22'	3.714	893	.4643	111.63
	4'	2	7"	7"	22'	4.060	909	.5075	113.63
	5'	3	7"	7"	22'	4.405	988	.5506	123.50
	6'	3	7"	7"	22'	4.751	1049	.5939	131.13
7'	3'	2	8"	8"	23'	4.742	1127	.5928	140.88
	4'	2	8"	8"	23'	5.138	1159	.6423	144.88
	5'	3	8"	8"	23'	5.533	1262	.6916	157.75
	6'	3	8"	8"	23'	5.928	1283	.7410	160.38
	7'	3	8"	8"	23'	6.323	1347	.7904	168.38
8'	4'	2	8"	8"	20'	5.533	1415	.6916	176.88
	5'	3	8"	8"	20'	5.928	1489	.7410	186.13
	6'	3	8"	8"	20'	6.323	1581	.7904	197.63
	7'	3	8"	8"	20'	6.719	1673	.8399	209.13
	8'	3	8"	8"	20'	7.114	1670	.8893	208.75
9'	5'	3	9"	9"	20'	7.222	1936	.9208	242.00
	6'	3	9"	9"	20'	7.665	2003	.9581	250.38
	7'	3	9"	9"	20'	8.111	2007	1.014	250.88
	8'	3	9"	9"	20'	8.555	2064	1.069	258.00
	9'	3	9"	9"	20'	8.999	2141	1.125	267.63
10'	5'	3	10"	10"	21'	8.640	2300	1.080	287.50
	6'	3	10"	10"	21'	9.133	2369	1.142	296.13
	7'	3	10"	10"	21'	9.627	2376	1.203	297.00
	8'	3	10"	10"	21'	10.120	2460	1.265	307.50
	9'	3	10"	10"	21'	10.614	2526	1.327	315.75
	10'	3	10"	10"	21'	11.108	2611	1.389	326.38

BARS A TOP SLAB NO.	SIZE	SPA.	LG.	WT.	BARS B BOTTOM SLAB NO.	SIZE	SPA.	LG.	WT.	BARS C NO.	SIZE	SPA.	LG.	WT.	#4 BARS D @18"± C. TO C. NO.	LG.	WT.	#4 BARS F @ 18" MAX. LENGTH L-7" F_1	SPA.	F_2	SPA.	F_3	SPA.	TOTAL	WT.	LIFT. WEIGHT L = 8' LBS.
										12	#6	8"	12'-4"	222						8	14"	2	15"	10	50	5,000
										13	#6	7½"	14'-4"	280						8	14"	4	14"	12	59	5,850
										15	#6	6½"	14'-10"	334						10	14"	2	15"	12	59	7,530
										16	#6	6"	16'-10"	405						10	14"	4	14"	14	69	8,590
										16	#6	6"	18'-10"	453						10	14"	4	18"	14	69	9,620
10	#7	10½"	5'-6"	112	10	#7	10"	5'-6"	112	11	#6	9"	17'-8"	292				8	17"	10	17"	2	15"	20	99	10,620
11	#7	9½"	5'-6"	124	11	#7	9½"	5'-6"	124	10	#6	10"	19'-8"	295				8	17"	10	17"	4	14"	22	109	11,850
11	#7	9"	5'-6"	124	11	#7	9"	5'-6"	124	9	#6	11"	21'-8"	293				8	17"	10	17"	4	18"	22	109	13,050
11	#7	9½"	5'-6"	124	11	#7	9½"	5'-6"	124	9	#6	11"	23'-8"	320	12	5'-6"	44	8	17"	10	17"	12	17"	30	148	14,320
12	#7	8½"	6'-8"	164	12	#7	8"	6'-8"	164	13	#6	7½"	22'-4"	436				10	16"	12	16"	4	15"	26	129	15,660
12	#7	8"	6'-8"	164	13	#7	7½"	6'-8"	177	12	#6	8½"	24'-4"	439				10	16"	12	16"	4	18"	26	129	17,070
12	#7	8"	6'-8"	164	13	#7	7½"	6'-8"	177	11	#6	9"	26'-4"	435	12	5'-6"	44	10	16"	12	16"	12	17"	34	168	18,520
12	#7	8"	6'-8"	164	13	#7	7½"	6'-8"	177	11	#6	9"	28'-4"	468	12	6'-6"	52	10	16"	12	16"	16	16"	38	188	19,970
13	#7	8"	6'-8"	164	13	#7	7½"	6'-8"	177									12	16"	14	16"	4	15"	30	148	19,980
13	#7	7½"	7'-10"	208	13	#7	7½"	7'-10"	208	15	#6	6½"	25'-0"	563				12	16"	14	16"	6	15"	32	159	21,610
13	#7	7½"	7'-10"	208	14	#7	7"	7'-10"	224	14	#6	7"	27'-0"	568				12	16"	14	16"	12	18"	38	188	23,280
14	#7	7"	7'-10"	224	14	#7	6½"	7'-10"	240	13	#6	7½"	29'-0"	566	12	5'-6"	44	12	16"	14	16"	16	17"	42	208	24,890
14	#7	7"	7'-10"	224	15	#7	6½"	7'-10"	240	12	#6	8"	31'-0"	559	12	6'-6"	52	12	16"	14	16"	16	17"	42	208	24,890
14	#7	7"	7'-10"	224	15	#7	6½"	7'-10"	240	12	#6	8"	33'-0"	595	12	7'-6"	60	12	16"	14	16"	20	16"	46	228	26,540
																		12	18"	14	18"	6	15"	32	159	23,390
15	#7	6½"	8'-10"	270	16	#7	6"	8'-10"	289	16	#6	6"	29'-0"	697												
15	#7	6½"	8'-10"	270	16	#7	6"	8'-10"	289	15	#6	6½"	31'-0"	698	12	5'-6"	44	12	18"	14	18"	12	18"	38	188	25,040
15	#7	6½"	8'-10"	270	16	#7	6"	8'-10"	289	15	#6	6½"	33'-0"	743	12	6'-6"	52	12	18"	14	18"	16	17"	42	208	26,700
16	#7	6"	8'-10"	289	16	#7	6"	8'-10"	289	15	#6	6½"	35'-0"	789	12	7'-6"	60	12	18"	14	18"	20	16"	46	228	28,370
16	#7	6"	8'-10"	289	17	#7	5½"	8'-10"	307	14	#6	7"	37'-0"	778	12	8'-6"	68	12	18"	14	18"	20	18"	46	228	29,960
16	#7	6"	8'-10"	289	17	#7	5½"	8'-10"	307	14	#7	7"	33'-8"	963	12	5'-6"	44	14	18"	16	18"	12	18"	42	208	30,580
13	#8	7½"	10'-0"	347	14	#8	7"	10'-0"	374	13	#7	7½"	35'-8"	948	12	6'-6"	52	14	18"	16	18"	16	17"	46	228	32,430
14	#8	7"	10'-0"	374	15	#8	6½"	10'-0"	401	12	#7	8"	37'-8"	924	12	7'-6"	60	14	18"	16	18"	20	16"	50	248	34,230
14	#8	7"	10'-0"	374	15	#8	6½"	10'-0"	401	12	#7	8"	39'-8"	973	12	8'-6"	68	14	18"	16	18"	20	18"	50	248	36,070
14	#8	7"	10'-0"	374	15	#8	6½"	10'-0"	401	12	#7	8"	41'-8"	1022	12	9'-6"	76	14	18"	16	18"	24	17"	54	268	37,920
14	#8	7"	10'-0"	374	15	#8	6½"	10'-0"	401	12	#7	8"	41'-8"	1022	12	9'-6"	76	14	18"	16	18"	24	17"	54	268	37,920
15	#8	6½"	11'-2"	447	15	#8	6½"	11'-2"	447	15	#7	6½"	36'-4"	1114	12	5'-6"	44	16	17"	18	17"	16	15"	50	248	36,580
15	#8	6½"	11'-2"	447	15	#8	6½"	11'-2"	447	15	#7	6½"	38'-4"	1175	12	6'-6"	52	16	17"	18	17"	16	18"	50	248	38,620
15	#8	6½"	11'-2"	447	15	#8	6½"	11'-2"	447	14	#7	7"	40'-4"	1154	12	7'-6"	60	16	17"	18	17"	20	17"	54	268	40,630
15	#8	6½"	11'-2"	447	15	#8	6½"	11'-2"	447	14	#7	7"	42'-4"	1211	12	8'-6"	68	16	17"	18	17"	24	16"	58	287	42,680
15	#8	6½"	11'-2"	447	15	#8	6½"	11'-2"	447	14	#7	7"	44'-4"	1269	12	9'-6"	76	16	17"	18	17"	24	18"	58	287	44,730
15	#8	6½"	11'-2"	447	15	#8	6½"	11'-2"	447	14	#7	7"	46'-4"	1326	12	10'-6"	84	16	17"	18	17"	28	17"	62	307	46,790



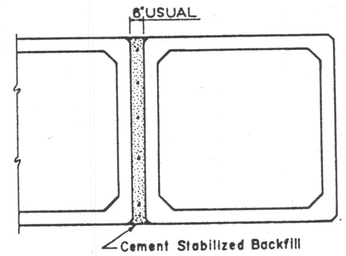
SINGLE MAT PLACEMENT

DOUBLE MAT PLACEMENT



STEEL SUPPORT DETAIL

NOTE: As many Bars F as necessary may be extended to end of box to support steel during manufacture. Bars may be slightly bent to clear slope on groove lip as shown in detail. Alternatively the steel may be supported by bar extensions welded to Bars F.



MULTIPLE UNIT PLACEMENT

GENERAL NOTES:

Cement Stabilized Backfill will be measured and paid for according to Item 400.

All welding to be done by qualified welder.

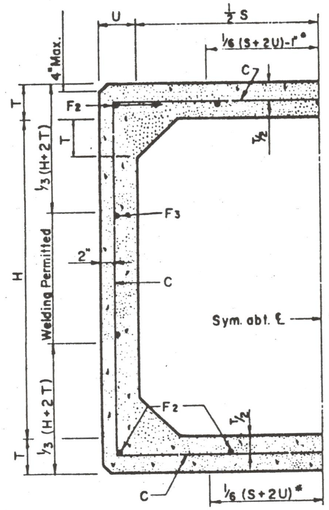
Additional splices in reinforcing steel not shown hereon, must be submitted to the Bridge Division for approval prior to fabrication.

Grade 60 Bars or Wire Fabric may be used in place of Grade 40 Steel by supplying 82 % of the area of steel per linear foot shown in the Tables for Bars A;

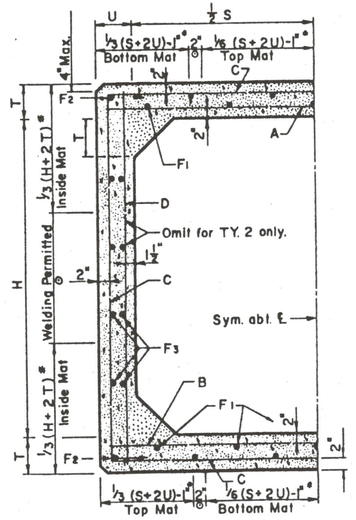
Longitudinal steel shall have at least as much area as Bars F and shall be spaced at 18" c.c. maximum.

These designs are adequate for HS 20 live loading and any fill from 2'-0" to the maximum shown in the tables.

In lieu of furnishing the designs shown on this detail the contractor may use designs from ASTM C-789, Table I. In either case, the substituted design must equal or exceed the maximum fill height for the same sized box in the table on this detail. For boxes reinforced with wire fabric the minimum cover shall be three times the wire diameter but not less than one inch. Placing of reinforcment shall otherwise conform to specification "Reinforcing Steel."

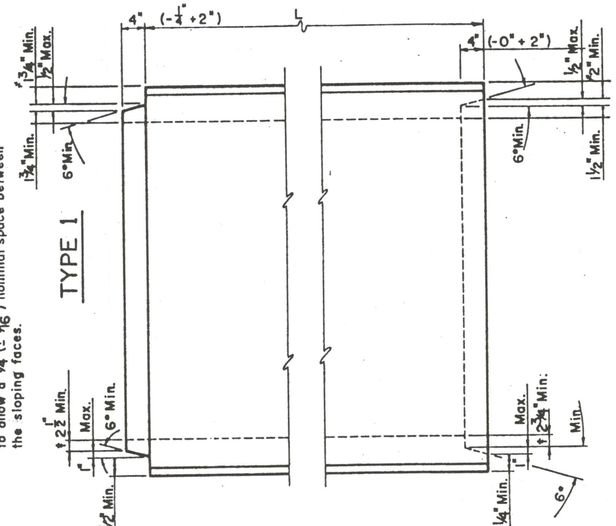


HALF SECTION TYPE 1



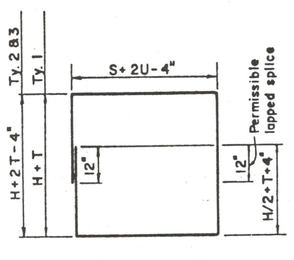
HALF SECTION TYPES 2 & 3

* These dimensions shall be sufficiently different to allow a ¼" (± 1/16") nominal space between the sloping faces.



SIDE AND TOP VIEW

NOTE: Tongue and groove dimensional controls shown are intended to allow either a 4" long 1° slope joint, a 6" long 6° slope joint or any joint configuration within these limits. Dimensions shown as minimums shall be maintained around the perimeter of the box.



BARS C

*Permissible tack welding on mats shown.
⊙Permissible tack welding both mats.

NTS

TEXAS HIGHWAY DEPARTMENT

PRECAST CONCRETE BOX CULVERTS

PC-5

ORIGINAL DRAWING DATE: MARCH 1983	REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DR.:-ADC	Rev. 1-86 (Gen. Notes)	18	6	STP 97(165) MM	635
CK.:-CCT	Rev. 7-96 (Gen. Notes)	COUNTY		CONTROL SEC. NO.	HIGHWAY
DW.:-EDS		DALLAS		9 11 138 IH 30	
CK.:-CCT					B282

20 OF 23

USED: 7/15/10 – RTUNNELL

M:\projects\10004\dwg\Sheets\10004 Precast Concrete Box Culverts.dwg

PLOT SCALE: 1:242.204 PLOT STYLE: 1050C-22X34.ctb PLOTTED BY: ROB TUNNELL ON 7/19/2010