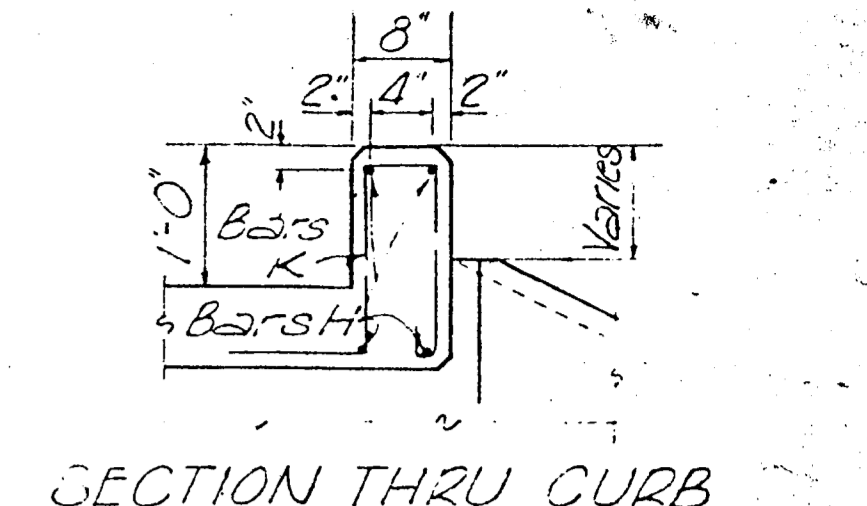
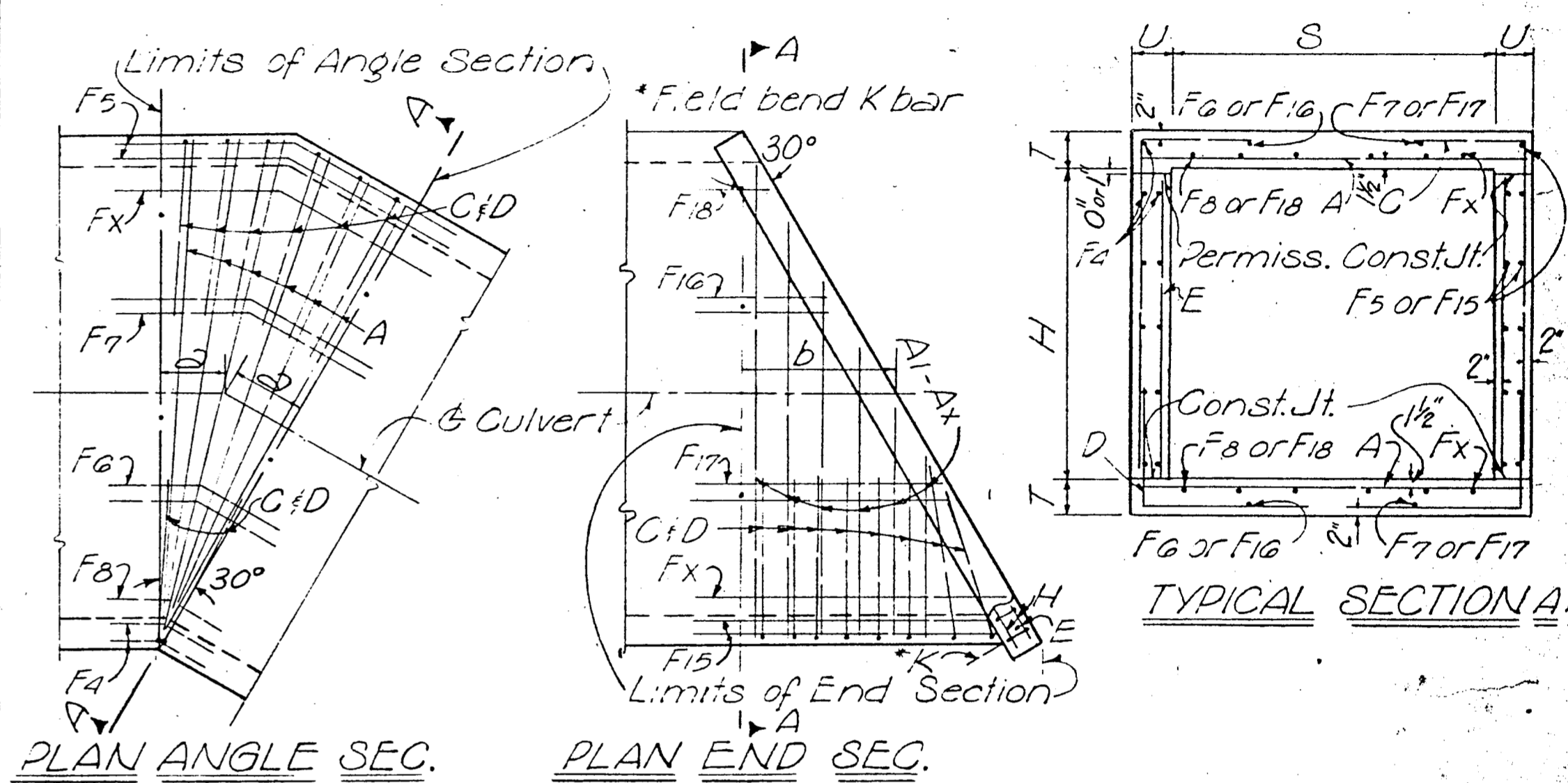


BILL OF STEEL- END SECTION

CULVERT SIZE	DIM D	TOTAL QUANTITIES		BARS A - AX IN TOP & BOTTOM SLAB				BARS C WALLS & TOP CORNER				BARS D IN BOTTOM CORNER				4 BARS E @ 18" C/O C		NUMBER OF *4 BARS F LENGTH SHOWN IN TABLE					*4 BARS K @ 12" C/O C 3'-11" LONG			*4 BARS M3 IN X IN TOP SLAB & WALLS				*4 BARS N3 IN X IN BOTTOM SLAB																								
		CONC.	STEEL	No	SIZE	SPA	LGTH	WT	No	SIZE	SPA	LGTH	WT	No	SIZE	SPA	LGTH	WT	No	LGTH	WT	F15	F16	F17	F18-X	WT	LGTH	WT	No	LGTH	WT	No	SPA	LGTH	WT	No	SPA	LGTH	WT	No	SPA	LGTH	WT											
3	2	1.7%	37	2	4	7	3'8"	10	4	7	3'8"	10						4	4	1	1	6	19	4-4"	18	5	13	2	9"	3-7"	4-1"	4-3"	2	2"	2-9"	2-1"	3-5"	2	9"	4-7"	5-1"	5-3"	7	2"	2-9"	2-1"	3-5"	5						
	3	1.7%	37	29	4	7	3'8"	10										4	4	1	1	6	19	4-4"	18	5	13	2	9"	3-7"	4-1"	4-3"	2	2"	2-9"	2-1"	3-5"	2	9"	4-7"	5-1"	5-3"	7	2"	2-9"	2-1"	3-5"	5						
4	2	1.5%	52	92	4	6	4'8"	16	4	6	4'8"	16						4	4	1	1	8	20	5'6"	23	6	16	4	7"	4'7"	6'7"	5'1"	13	4	7"	2'9"	5-9"	4'3"	11	4	7"	4'7"	6'7"	5'1"	13	4	7"	2'9"	5-9"	4'3"	11			
	3	1.5%	52	95	4	6	4'8"	16	4	6	4'8"	16						4	4	1	1	8	20	5'6"	23	6	16	4	7"	4'7"	6'7"	5'1"	13	4	7"	2'9"	5-9"	4'3"	11	4	7"	4'7"	6'7"	5'1"	13	4	7"	2'9"	5-9"	4'3"	11			
5	2	1.8%	68	144	8	5	8	13'48"	211	8	5	8	13'48"	211	4	6	4	8	4'1"	16	1	1	11	1	4	2	2	10	35	6'8"	28	8	21																					
	3	1.8%	68	149	8	5	8	13'48"	211	8	5	8	13'48"	211	4	6	4	8	4'1"	16	1	1	11	1	4	2	2	10	35	6'8"	28	8	21																					



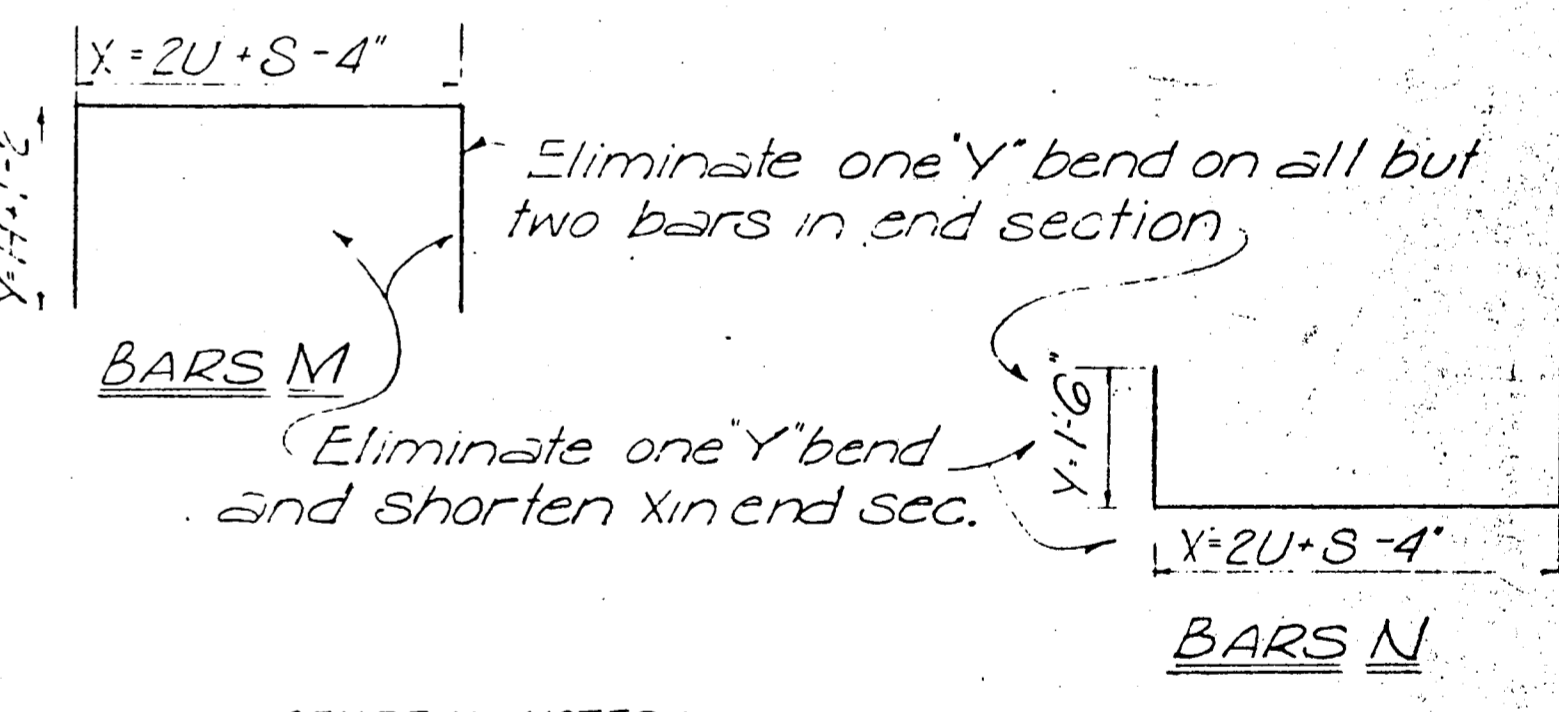
NOTE: It is desirable to have at least one foot of straight extension before beginning Angle Section. Bars F may be eliminated from this one foot section



\*Bars A in top Slab only BILL OF STEEL- ANGLE SECTION

CULVERT SIZE	DIM D	TOTAL QUANTITIES		BARS A IN TOP & BOTTOM SLAB				BARS C WALLS & TOP CORNER				BARS D IN BOTTOM CORNER				*4 BARS E @ 18" C/O C		NUMBER OF *4 BARS F (LENGTH SHOWN IN TABLE)					*4 BARS M IN TOP SLAB & WALLS			*4 BARS N IN BOTTOM SLAB																										
		CONC.	STEEL	No	SIZE	SPA	LGTH	WT	No	SIZE	SPA	LGTH	WT	No	SIZE	SPA	LGTH	WT	No	LGTH	WT	F15	F16	F17	F18-X	WT	No	LGTH	WT	No	LGTH	WT	No	LGTH	WT	No	LGTH	WT														
3	2	0.7%	24	78	4	4	7	3'8"	10									4	4	1	1	6	19	4-4"	18	5	13	2	9"	3-7"	4-1"	4-3"	2	2"	2-9"	2-1"	3-5"	2	9"	4-7"	5-1"	5-3"	7	2"	2-9"	2-1"	3-5"	5				
	3	0.7%	24	82	4	4	7	3'8"	10										4	4	1	1	6	19	4-4"	18	5	13	2	9"	3-7"	4-1"	4-3"	2	2"	2-9"	2-1"	3-5"	2	9"	4-7"	5-1"	5-3"	7	2"	2-9"	2-1"	3-5"	5			
4	2	0.8%	35	99	5	4	6	4'8"	16	4	6	4'8"	16						4	4	1	1	8	20	5'6"	23	6	16	4	7"	4'7"	6'7"	5'1"	13	4	7"	2'9"	5-9"	4'3"	11	4	7"	4'7"	6'7"	5'1"	13	4	7"	2'9"	5-9"	4'3"	11
	3	0.8%	40	103	5	4	6	4'8"	16	4	6	4'8"	16						4	4	1	1	8	20	5'6"	23	6	16	4	7"	4'7"	6'7"	5'1"	13	4	7"	2'9"	5-9"	4'3"	11	4	7"	4'7"	6'7"	5'1"	13	4	7"	2'9"	5-9"	4'3"	11

Bars M & N replace Bars C & D when shown. Bars F<sub>a</sub>, F<sub>1</sub>, F<sub>16</sub> & F<sub>17</sub> are not used in bottom slab when Bars M & N are used. When only 1 Bar E is shown it shall be placed in wall at end of barrel.



GENERAL NOTES: This Design is adopted from Texas Highway Department Standard for Lengthening Details Single Box Culverts SCL. Refer to this Standard for details not shown on this sheet. Chamfer exposed corners. Refer to Standard SCL for straight sections of culvert. All dimensions relating to reinforcing steel are to centers of bars.

LENGTH OF F BARS IN END SECTION

CULVERT	F15	F16	F17	SPA	F18	Fx
S	LGTH	LGTH	LGTH	F18-Fx	LGTH	LGTH
3	3'-0"	1'-5"	2'-7"	12"	1'-5"	F18-2'-7"
4	3'-7"	1'-8"	2'-10"	12"	1'-5"	F18-3'-1 1/2"
5	4'-2"	2'-3"	2'-10"	12"	1'-5"	F18-3'-8 1/2"
6	4'-9"	2'-3"	3'-5"	16"	1'-4"	F18-4'-4 1/2"
7	5'-5"	2'-5"	3'-11"	18"	1'-5"	F18-4'-11"
8	6'-3"	2'-5"	4'-0"	18"	1'-4"	F18-5'-7 1/2"
9	6'-7"	2'-5"	5'-1"	18"	1'-6"	F18-5'-11"
10	7'-3"	2'-7"	5'-7"	18"	1'-6"	F18-6'-8 1/2"

LENGTH OF F BARS IN ANGLE SEC.

CULVERT	F15	F16	F17	SPA	F18	Fx
S	LGTH	LGTH	LGTH	F18-Fx	LGTH	LGTH
3	3'-0"	1'-5"	2'-7"	12"	1'-5"	F18-2'-7"
4	3'-7"	1'-8"	2'-10"	12"	1'-5"	F18-3'-1 1/2"
5	4'-2"	2'-3"	2'-10"	12"	1'-5"	F18-3'-8 1/2"
6	4'-9"	2'-3"	3'-5"	16"	1'-4"	F18-4'-4 1/2"
7	5'-5"	2'-5"	3'-11"	18"	1'-5"	F18-4'-11"
8	6'-3"	2'-5"	4'-0"	18"	1'-4"	F18-5'-7 1/2"
9	6'-7"	2'-5"	5'-1"	18"	1'-6"	F18-5'-11"
10	7'-3"	2'-7"	5'-7"	18"	1'-6"	F18-6'-8 1/2"

TEXAS HIGHWAY DEPARTMENT BRIDGE DIVISION

# LENGTHENING DETAILS

SINGLE BOX CULVERTS

30° SKEW

## SCL 30°

ORIGINAL DRAWING DATE: 4-62  
 ON T.H.D. REVISIONS  
 CK THD  
 DW RDK  
 UK HW

REV. NO. 1967  
 REV. JAN. 1973

STATE: TEXAS  
 COUNTY:  
 DIST. NO.: