

CONVENTIONAL SIGNS & ABBREVIATIONS

STATE LINE	TIMBER	TRUNK HIGHWAY R/W LINE	EXC.
COUNTY LINE	BRUSH	RAILROAD R/W LINE	E
TOWNSHIP OR RANGE LINE	ORCHARD	PRESENT ROAD R/W LINE	L.R.
SECTION LINE	ROCK LEDGE	EXCAVATION	S.R.
QUARTER LINE	SAND	EARTH	H.
SIXTEENTH LINE	EDGE OF CUT	LOOSE ROCK	S.
RIGHT-OF-WAY LINE	TOE OF EMBANKMENT	SOLID ROCK	H.D.
PROPERTY LINE (Except for d. Lines)	CATCH BASIN	EMBANKMENT	S.E.
VACATED PLATTED PROPERTY	MANHOLE	OVERHAUL	S.P.
CORPORATE OR CITY LIMITS	FIRE HYDRANT	SURFACING	S.R.
TRUNK HIGHWAY CENTER LINE	ARC LAMP	HAND DITCHING	S.C.
RETAINING WALL	OTHER LAMPS (Globe, etc.)	SPECIAL EXCAVATION	S.P.
STEAM RAILROAD	RAILROAD CROSSING SIGN	SPECIAL BLOWING	S.R.
ELECTRIC RAILROAD	RAILROAD CROSSING BELL	GUARD RAIL	S.C.
RAILROAD RIGHT-OF-WAY LINE	ELECTRIC WARNING SIGN	CORRUGATED METAL CULVERT	C.M. CULV.
CREEK	CROSSING GATE	SECTIONAL CONCRETE CULVERT (Heavy Type)	P.C. CULV.
RAPIDS OR WATERFALL	CAATTLE GUARD	TON MILES	T.M.
DRY RUN	OVERHEAD (High Way Over)	TELEPHONE POLE	T.E.P.
DRAINAGE DITCH	UNDERPASS (Highway Under)	POWER POLE	P.P.
HIGH TENSION LINE	ABUTMENT, WALL & PIER	PLACE	P.P.
POWER POLE LINE	GIRDER BRIDGE	IN PLACE	I.N.P.
TELEPHONE OR TELEGRAPH LINE	TRUSS	REPLACE	R.P.
CULVERTS - PLAIN	TRESTLE	RIGHT	R.T.
WITH END WALLS	BUILDING (One Story Frame)	LEFT	L.T.
WITH WIND WALLS	F-FRAME C-CONCRETE	INTERSECTION ANGLE	I.A.
DROP INLET	S-STONE T-TILE	RADIUS	R.
GUARD RAIL	B-BRICK S-STUCCO	TANGENT	T.
WIRE FENCE	IRON PIPE	LENGTH OF CURVE	L.
RAILROAD SNOW FENCE	STONE MONUMENT	POINT OF CURVE	P.C.
BOARD OR HIGHWAY SNOW FENCE	WOOD STAKE OR HUB	POINT OF TANGENT	P.T.
STONE WALL OR FENCE	MEANDER CORNER	POINT OF INTERSECTION	P.I.
LEDGE		VERTICAL CURVE	V.C.
WATER PIPE		BENCH MARK	B.M.
SEWER PIPE		ELEVATION	E.L.
DRAIN TILE		ACRES	A.
GRAVEL PIT			
SAND PIT			
CLAY PIT			
ROCK QUARRY			
SPRINGS			
MARSH			

HENNEPIN COUNTY JOB NO. 784 DIVS. A & C.  
MINNESOTA HIGHWAY DEPARTMENT  
CONSTRUCTION PLAN FOR

**TRUNK HIGHWAY NO. 8-63**

BETWEEN MINNEAPOLIS AND FOREST LAKE  
From A Point on the West Line of Sec. 9, T.29 N. R.23 W. 102' South of West's Corner To LT. Leg. - A Point 1128.3' East and 558.5' North of South's Cor. Sec. 17 T.29 N. R.21 W.  
RT. Leg. - A Point 1086.6' East and 182.3' North of South's Cor. Sec. 17 T.29 N. R.21 W.

MINNESOTA F.A.P. NO. 383, SECTION

SHOULDERING OCT. 18, 1927 LETTING  
GROSS LENGTH 33673 FEET 151 MI.  
EXCEPTIONS 31810 - 1733  
NET LENGTH 30492.7 - 5779

GROSS LENGTH 119218.3 FEET 22.579 MILES  
LENGTH OF EXCEPTIONS 15437 FEET 0.292 MILES  
NET LENGTH 103781.3 FEET 19.287 MILES (INCL. 4122 FT 0.073 MI) RT. LEG. OF WYE

SCALES  
PLAN: 1 Inch = 200 Feet  
PROFILE, Horiz.: 1 Inch = 200 Feet, Vert.: 1 Inch = 20 Feet  
WORKING PLANS: Horiz.: 1 Inch = 100 Feet, Vert.: 1 Inch = 10 Feet  
Cross-Sections: 1 Inch = 10 Feet

LAYOUT  
SCALE: 1 Inch = 10,560 Feet

PAVING  
DIVS. A-B-C-D  
LETTING OF AUG. 16, 1927  
GROSS LENGTH 73,593.2 FEET 13.936 MILES  
LENGTH OF EXCEPTION 116.25 FEET .002 MILES  
NET LENGTH 73,476.95 FEET 13.914 MILES

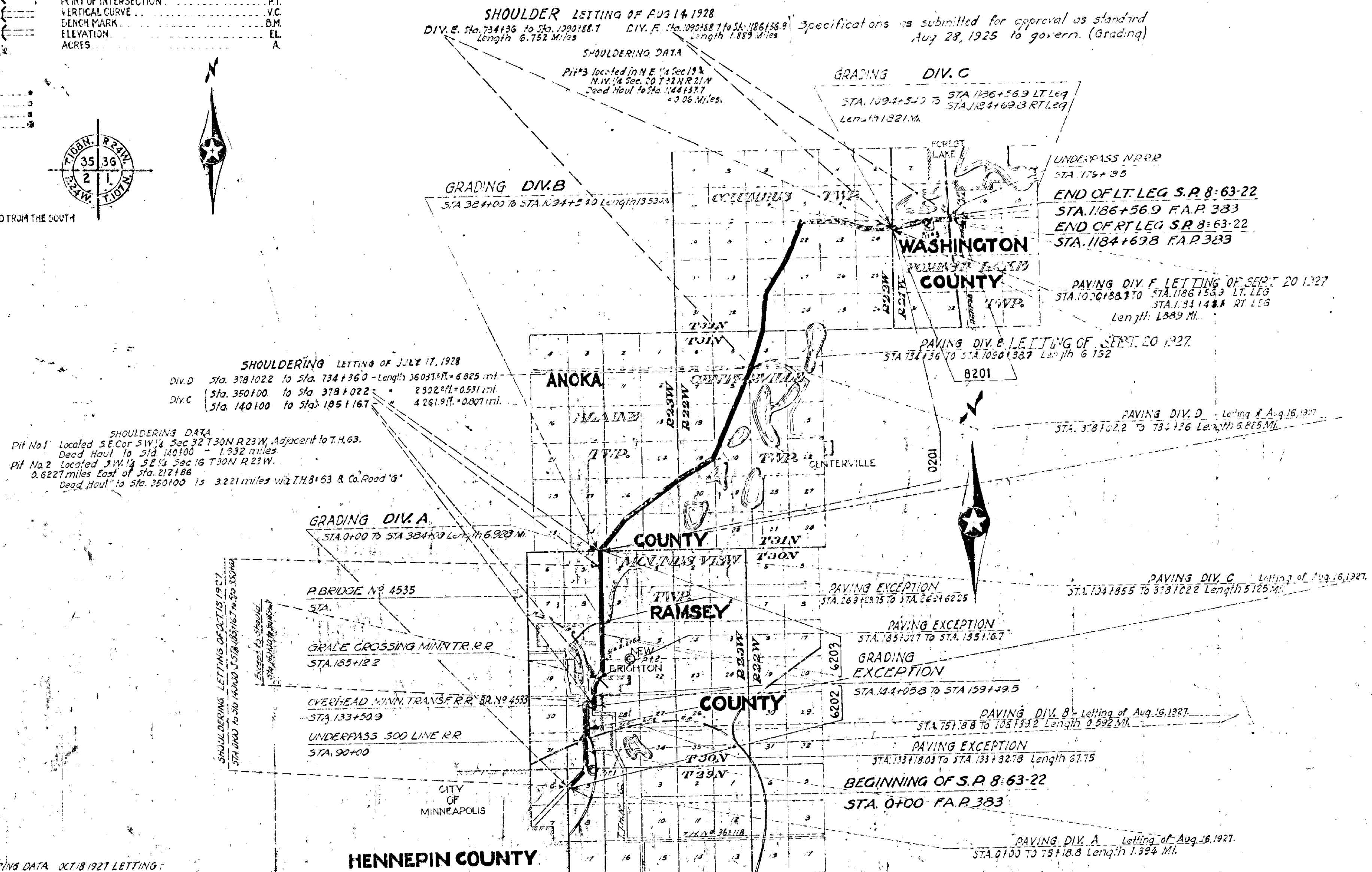
Specifications approved March 22, 1927 to apply (Paving)  
LETTING OF SEPT. 20, 1927

GROSS AND NET LENGTH DIV. E 55,537 FEET 1.02 MILES  
GROSS AND NET LENGTH DIV. F 33,714 FEET .629 MILES  
TOTAL NET LENGTH 4,562.1 FEET .841 MILES

INDEX OF SHEETS

Sheet No. 1	Title Sheet and Layout Map
No. 2	Typical Cross-Sections and Statement
No. 3	Curve Widening, Superelevation & Misc. Standards
No. 4	Plan and Profile Sta. 0+00 to Sta. 112+41.0
No. 5	" " " " 112+41.0 " 213+46.0
" 6	" " " " 213+46.0 " 323+00
" 7	" " " " 323+00 " 422+00
" 8	" " " " 422+00 " 527+23
" 9	" " " " 527+23 " 621+00
" 10	" " " " 621+00 " 738+30
" 11	" " " " 738+30 " 841+00
" 12	" " " " 841+00 " 947+16
" 13	" " " " 947+16 " 1052+73
" 14	" " " " 1052+73 " 1159+35
" 15	" " " " 1159+35 " 126+56.3 LT. 1184+09.8 RT.
16 to 48 Incl.	Cross Section Sheets

NOTE: SECTION NUMBERS SHOULD BE MADE TO READ FROM THE OUT



Ramsey Co. S.P. 6202 (T.H. 8-63)  
Ramsey Co. S.P. 6203 (T.H. 8-63)  
Anoka Co. S.P. 0201 (T.H. 8-63)  
Washington Co. S.P. 8201 (T.H. 8-63)

Planned by \_\_\_\_\_  
Recommended for Approval \_\_\_\_\_  
Recommended for Approval \_\_\_\_\_  
Approved March 17, 1926 \_\_\_\_\_  
Recommended for Approval \_\_\_\_\_  
Recommended for Approval \_\_\_\_\_  
Approved \_\_\_\_\_

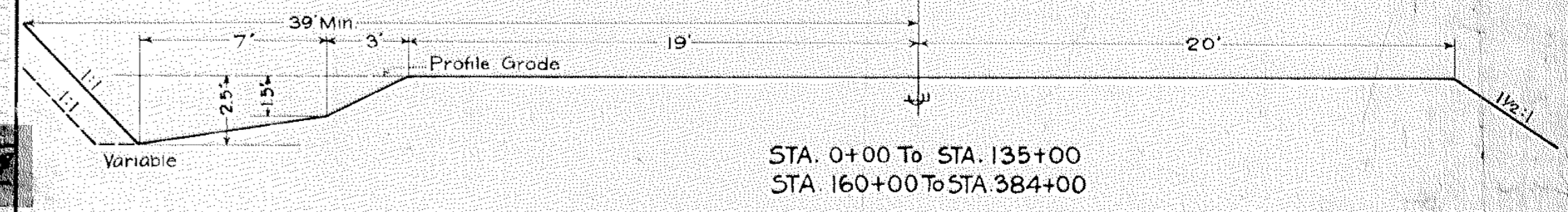
STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

ITEM	UNIT	MILE 1		MILE 2		MILE 3		MILE 4		MILE 5		MILE 6		MILE 7		TOTAL ESTIMATED QUANTITIES	ESTIMATED UNIT PRICES	AMOUNTS	TOTALS
		Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.				
1	Clearing	Acre														2.05	7500	15375	
2	Clearing	Tree	54	146	29	219										324	100	32400	
3	Grubbing	Acre														1.00	12500	12500	
4	Grubbing	Tree	399	275	34	43										1000	150	150000	
5	Excavation - Earth	Cu. Yd.	31396	13265	14286	25311										131036	0.30	3930050	
6	Excavation - Loose Rock	Cu. Yd.														500	0.70	35000	
7	Excavation - Solid Rock	Cu. Yd.														100	1.40	14000	
8	Excavation - Overhaul	Cu. Yd.	64947	29361	25460	49298										230507	0.02	461014	
9	Channel Excavation	Lin. Ft.														800	0.50	40000	
10	Hand Ditching	Cu. Yd.		200	100											1300	0.40	52000	
11	Tile Drain 6 in.	Lin. Ft.		900												900	0.25	22500	
12	Tile Drain 10 in.	Lin. Ft.		125												125	0.35	4375	
13	Tile Drain in.	Lin. Ft.																	
14	Porous Back Fill Material	Cu. Yd.																	
15	Stone Rip - Rap	Cu. Yd.	28	18	12	26										152	3.00	45600	
16	Shoring 3/4" x 4" x 8"	Cu. Yd. mile																	
17	Install 15" Port. Cuv.	Lin. Ft.	315	100	170	185										1145	0.30	34350	
18	Install 18" " "	Lin. Ft.	60	135		170										920	0.35	32200	
19	Install	Lin. Ft.																	
20	Install	Lin. Ft.																	
21	Install	Lin. Ft.																	
22	Install	Lin. Ft.																	
23	Install	Lin. Ft.																	
24	Install	Lin. Ft.																	
25	Install 24" P3	Lin. Ft.	426	48	114	156										894	0.50	44700	
26	Install 36" P3	Lin. Ft.		120												204	0.80	16320	
27	Install 30" P3	Lin. Ft.																	
28	P3 Culvert Haul	Ton Mile	3561	1114	797	5070										38739	0.65	25180	
29	P3 Culvert Haul	Ton Mile	12125	1661	1761	6039										41413	0.75	31060	
30	Drop Inlet	Inlet		2												2	2000	4000	
TOTAL ESTIMATED COST OF GRADING				IN 'TOTALS' COLUMN												1145		0.95	10875
33	15" Cuv. Material	Lin. Ft.	315	100	170	185										920	1.05	96600	
34	18" Cuv. Material	Lin. Ft.	60	135		170													
35	Cuv. Material	Lin. Ft.																	
36	Cuv. Material	Lin. Ft.																	
37	Cuv. Material	Lin. Ft.																	
38	Cuv. Material	Lin. Ft.																	
39	P3 Cuv. Material 24"	Lin. Ft.	426	48	114	156										894	3.00	268200	
40	P3 Cuv. Material 30"	Lin. Ft.																	
41	P3 Cuv. Material 36"	Lin. Ft.		120												204	4.75	96900	
TOTAL ESTIMATED COST OF PORTABLE CULVERT MATERIAL				IN 'TOTALS' COLUMN												204		4.75	96900
42	Gravel Pit Stripping	Cu. Yd.																	
43	Screening	Cu. Yd.																	
44	Loading	Cu. Yd.																	
45	Hauling	Cu. Yd. Mile																	
46	Shaping & Compacting	Man Hour																	
47	Shaping & Compacting	Man Hour																	
48																			
49																			
50																			
51																			
TOTAL ESTIMATED COST OF GRAVEL HAUL				IN 'TOTALS' COLUMN															
52	Gravel Material F. O. B. Pit	Cu. Yd.																	
53	Freight (if any)	Cu. Yd.																	
54	Unloading from Cars	Cu. Yd.																	
TOTAL ESTIMATED COST OF GRAVEL MATERIAL				IN 'TOTALS' COLUMN															
55	Fine Grading - Exc. & Emb.	Cu. Yd.																	
56	Shoulders - Earth	Cu. Yd.																	
57																			
58	Pavement	Sq. Yd.																	
59	Integral Curb (One Course Concrete)	Lin. Ft.																	
60	Sloping Curb	Lin. Ft.																	
61	Surface Drain	Lin. Ft.																	
62	Surface Drain Basins	Basin																	
63	Bridge Approach Slabs (square)	Slab																	
64	Bridge Approach Slabs (skew)	Slab																	
65																			
66																			
67																			
68																			
TOTAL ESTIMATED COST OF PAVEMENT CONSTRUCTION				IN 'TOTALS' COLUMN															
69	Concrete	Cu. Yd.			4158	3782										7940	20.00	158800	
70	Reinforcing Steel	Lb.			4009	3138										7207	0.05	36035	
71	Excavation - Earth	Cu. Yd.			37	88										125	1.00	12500	
72	Excavation - Loose Rock	Cu. Yd.																	
73	Excavation - Solid Rock	Cu. Yd.																	
74	Bridge	Br. No.										4535							
75	Station											269 + 43							
76	Concrete	Cu. Yd.																	
77	Reinforcing Steel	Lb.																	
78	Structural Steel	Lb.																	
79	Piling	Lin. Ft.																	
80	Temporary Crossing	Lump Sum																	
81	Removing old Bridge	Lump Sum																	
82	Bituminous Surface	Sq. Yd.																	
83																			
84																			
TOTAL ESTIMATED COST OF STRUCTURES				IN 'TOTALS' COLUMN															
85	Guard Rail	Lin. Ft.																	
86	Gutter	Lin. Ft.																	
87	Excavation for Gutter	Cu. Yd.																	
TOTAL ESTIMATED COST OF MISCELLANEOUS ITEMS				IN 'TOTALS' COLUMN															
																<b>Total</b>		<b>DIV. A</b>	
																10% For Engineering & Contingencies			
																Grand Total			

TYPICAL CROSS SECTIONS AND DETAILS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MINN.	383	26	2	48	

2 1/2' GRADING SECTION

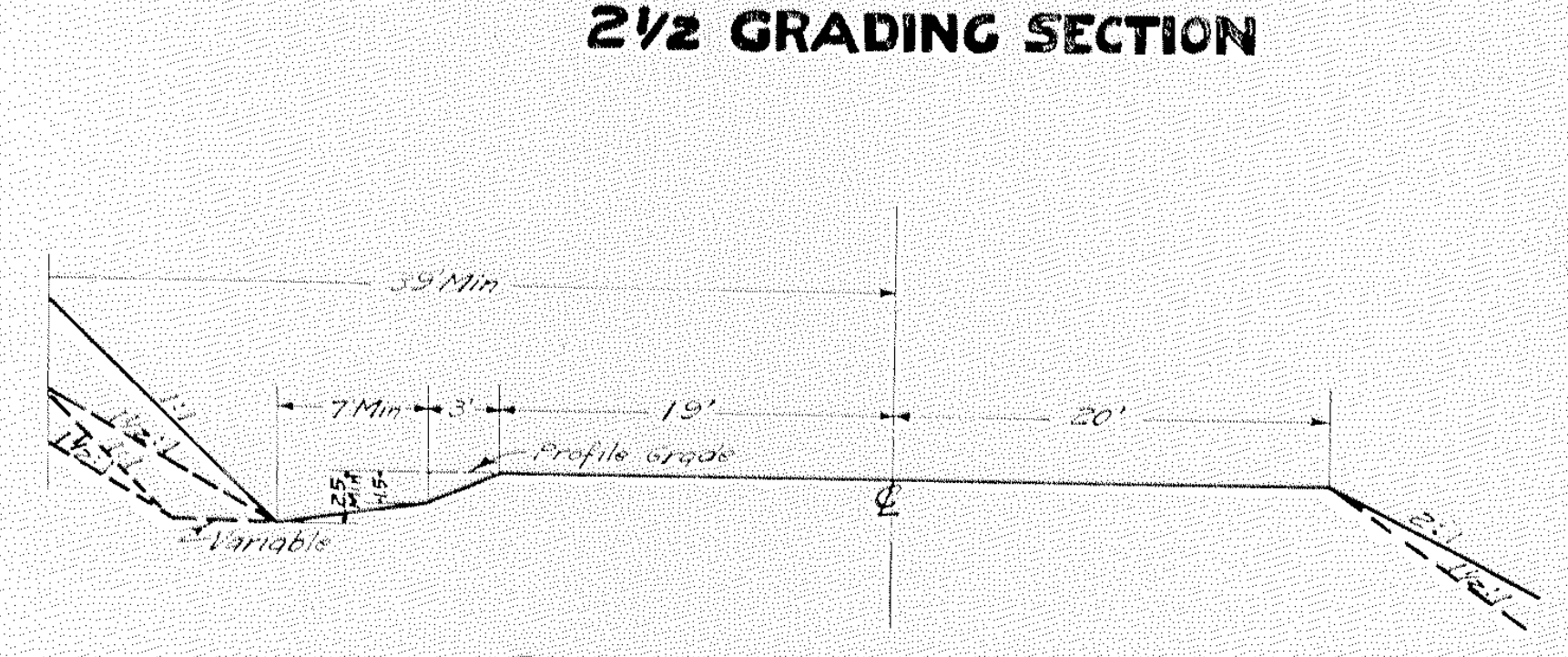


STATEMENT OF ESTIMATED QUANTITIES AND COSTS

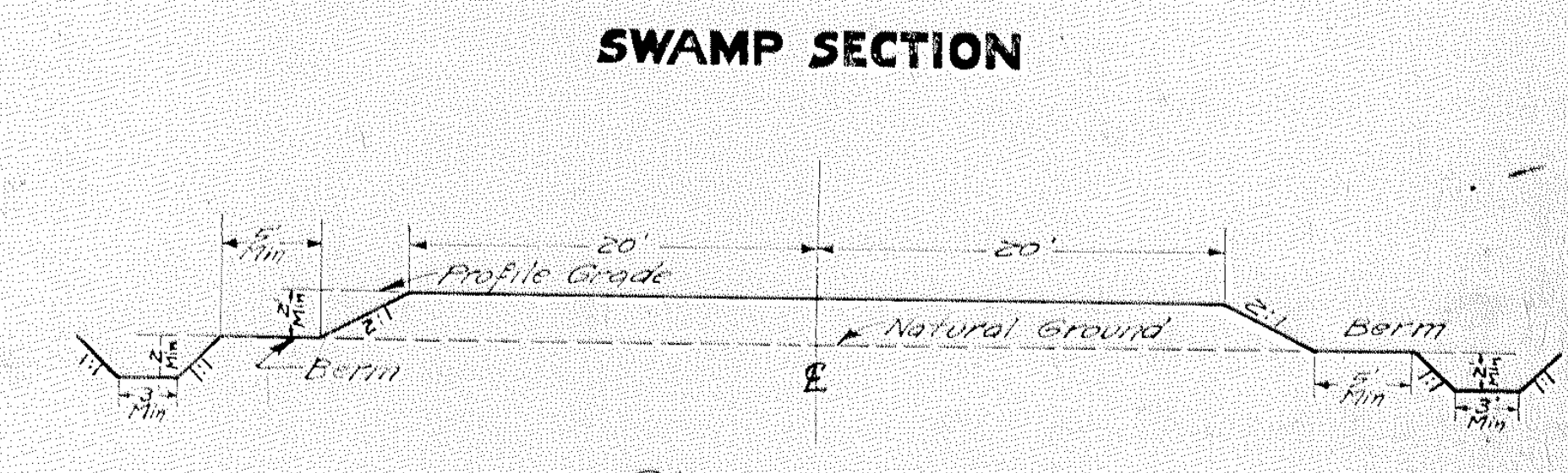
Main table with columns for Item, Unit, Mile 8 to Mile 21, Total Estimated Quantities, Estimated Unit Prices, Amounts, and Totals. Includes sub-totals for Grading, Portable Culverts, Gravel Haul, Gravel Material, Pavement Construction, and Structures.

TYPICAL CROSS SECTIONS AND DETAILS

Table with columns: FED. ROAD DIST. NO., STATE, FED. AID PROJ. NO., SEC., FISCAL YEAR, SHEET NO., TOTAL SHEETS. Values: 4, MINN., 383, 2, 48.



Sta 384+00 to 465+00 Cut 1:1, Fill 1 1/2:1, 465+00 - 472+20 " 1 1/2:1 " 2:1, 472+20 " 966+00 " 1 1/2:1 " 2:1, 966+00 " 979+00 " 1 1/2:1 " 2:1.



Sta 972+20 to 978+00, 966+00 - 979+00

THE UNIT FOR CLEARING AND GRUBBING ON DIV. B SHALL BE TREES EXCEPT BETWEEN STA. 469+50 - STA. 479+50, AND STA. 538+00 - 546+00, AND STA. 558+00 - STA. 571+50 WHERE THE UNIT SHALL BE ACRES

80,919.48

6720.00

11713.10

Total Div. B\* 99352.88, 10% For Engineering & Contingencies 9935.26, Grand Total 109288.14

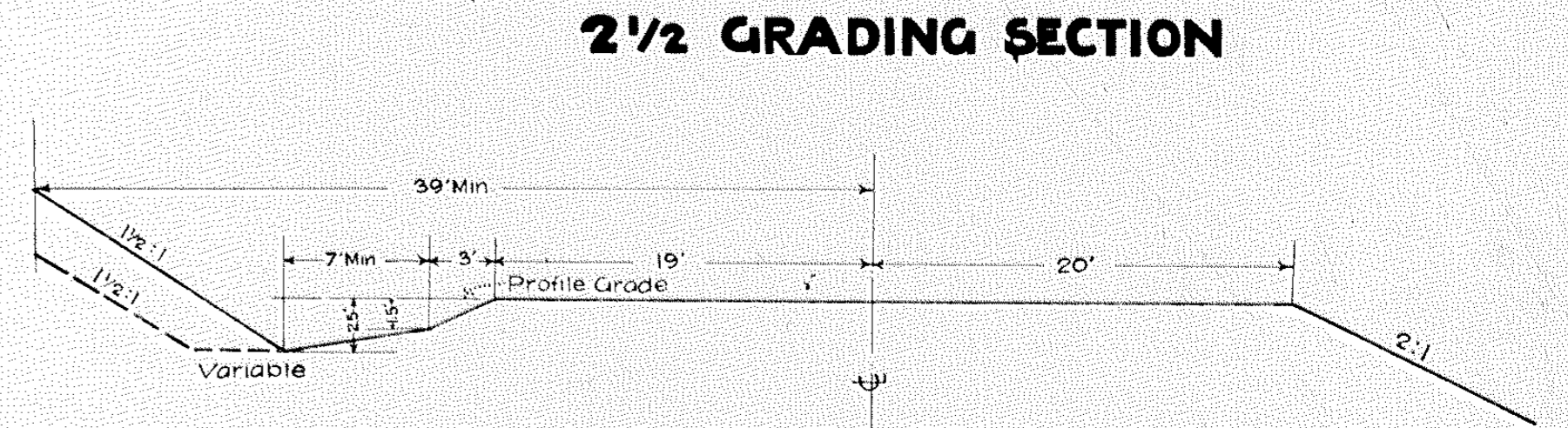
NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

Main table with columns for ITEM, UNIT, MILE, and TOTAL ESTIMATED QUANTITIES. Rows include items like Clearing, Excavation, Gravel Haul, and Structures.

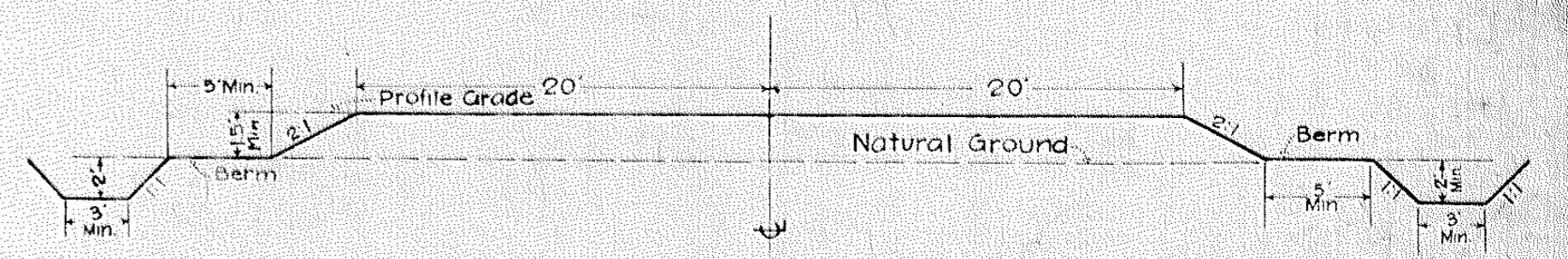
TYPICAL CROSS SECTIONS AND DETAILS

FED. ROAD DIST. NO. 4, STATE MINN., FED. AID PROJ. NO. 383, SHEET NO. 2



STA. 1094+50 TO STA. 1104+00  
STA. 1112+00 TO STA. 1186+56.9 LT. LEG  
STA. 1184+69.8 RT. LEG

SWAMP SECTION



STA. 1104+00 TO STA. 1112+00

Summary table with columns for item name and cost. Total Div A: 63398.10, Grand Total: 189322.88.

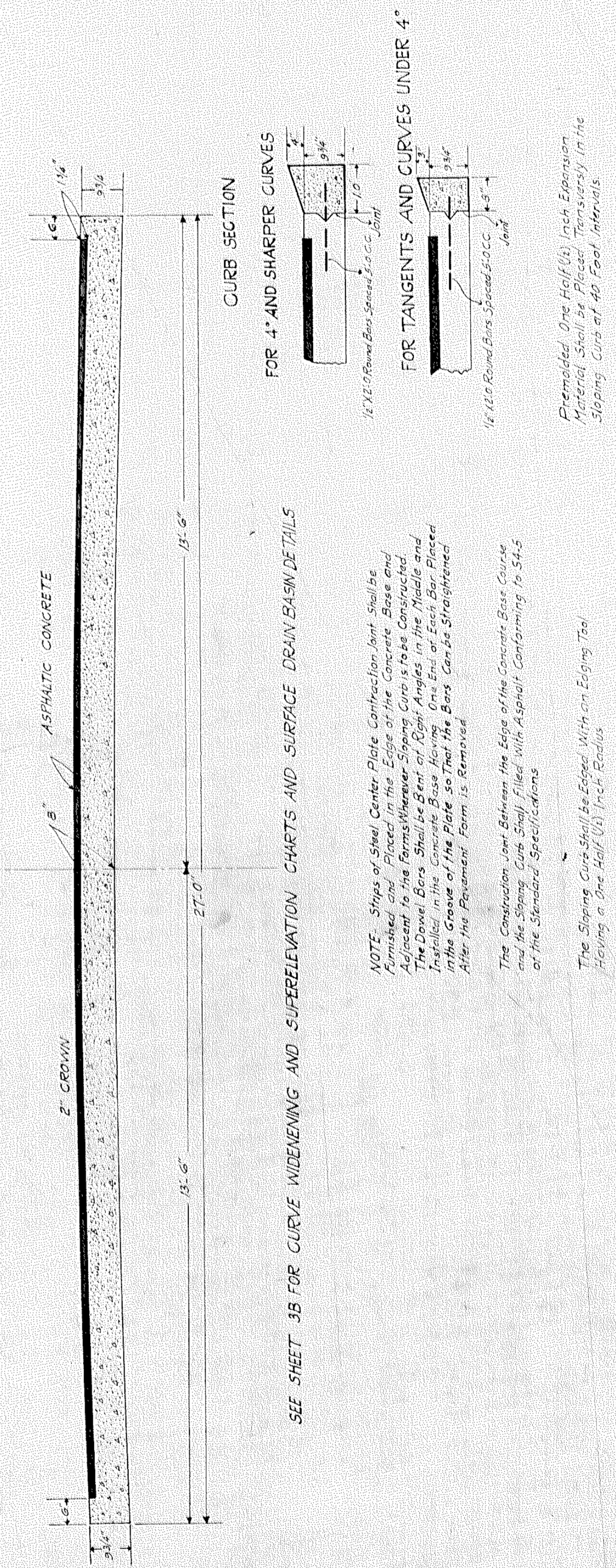
NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

Main table with columns for ITEM, UNIT, MILE 1, MILE 2, MILE, TOTAL ESTIMATED QUANTITIES, ESTIMATED UNIT PRICES, AMOUNTS, TOTALS. Includes sub-sections for GRADING, PORTABLE CULVERTS, WASHOUT MATERIAL HAUL, WASHOUT MATERIAL, PAVEMENT CONSTRUCTION, and STRUCTURES.

TYPICAL CROSS SECTIONS AND DETAILS

Table with columns: FED. ROAD DIST. NO., STATE, FED. AID PROJ. NO., SEC., FISCAL YEAR, SHEET NO., TOTAL SHEETS. Values: 4, MINN., 383, 2 A, 48.



ASPHALTIC CONCRETE  
PAVING SECTION  
ALTERNATE PAVING PLAN B

ALTERNATE PLAN B PAVEMENT  
ASPHALTIC CONCRETE

Total  
Engr. & Cont 10%  
Div A Grand Total  
80004.83  
8000.48  
88005.31

\* NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

STATEMENT OF ESTIMATED QUANTITIES AND COSTS

Table with columns for ITEM, UNIT, MILE 2, MILE 3, MILE 4, MILE 5, MILE 6, MILE 7, MILE 8, MILE 9, MILE 10, MILE 11, MILE 12, MILE 13, MILE 14, MILE 15, MILE 16, MILE 17, MILE 18, MILE 19, MILE 20, MILE 21, MILE 22, MILE 23, MILE 24, MILE 25, MILE 26, MILE 27, MILE 28, MILE 29, MILE 30, MILE 31, MILE 32, TOTAL ESTIMATED QUANTITIES, ESTIMATED UNIT PRICES, AMOUNTS, TOTALS. Rows include categories like GRADING, PORTABLE CULVERTS, WASHOUT MATERIAL HAUL, WASHOUT MATERIAL, PAVEMENT CONSTRUCTION, and STRUCTURES.

TYPICAL CROSS SECTIONS AND DETAILS

Table with columns: FED. ROAD DIST. NO. (4), STATE (MINN.), FED. AID PROJ. NO. (383), FISCAL YEAR, SHEET NO. (2-C), TOTAL SHEETS (48).

SEE SHEETS 3-B-C-D FOR PAVING DETAILS

ONE COURSE CONCRETE

S.P. 6202 (T.H. 8-63) Dated Aug. 16, 1927.

S.P. 6203 (T.H. 8-63)

NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION



STATEMENT OF ESTIMATED QUANTITIES AND COSTS

ITEM	UNIT	MILE																TOTAL ESTIMATED QUANTITIES	ESTIMATED UNIT PRICES	AMOUNTS	TOTALS																			
		2 Sta. 106+39.2 to Sta. 106+39.2	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to	MILE to																							
1	Clearing	Acre																																						
2	Clearing	Tree																																						
3	Grubbing	Acre																																						
4	Grubbing	Tree																																						
5	Excavation - Earth	Cu. Yd.																																						
6	Excavation - Loose Rock	Cu. Yd.																																						
7	Excavation - Solid Rock	Cu. Yd.																																						
8	Excavation - Overhaul	Cu. Yd.																																						
9	Special Excavation	Lin. Ft.																																						
10	Hand Ditching	Cu. Yd.																																						
11	Tile Drain in.	Lin. Ft.																																						
12	Tile Drain in.	Lin. Ft.																																						
13	Tile Drain in.	Lin. Ft.																																						
14	Porous Back Fill Material	Cu. Yd.																																						
15	Stone Rip - Rap	Cu. Yd.																																						
16	Repeating Stone Rip - Rap	Cu. Yd. mile																																						
17	Install	Lin. Ft.																																						
18	Install	Lin. Ft.																																						
19	Install	Lin. Ft.																																						
20	Install	Lin. Ft.																																						
21	Install	Lin. Ft.																																						
22	Install	Lin. Ft.																																						
23	Install	Lin. Ft.																																						
24	Install	Lin. Ft.																																						
25	Install 24" P <sub>3</sub>	Lin. Ft.																																						
26	Install 30" P <sub>3</sub>	Lin. Ft.																																						
27	Install 36" P <sub>3</sub>	Lin. Ft.																																						
28	P <sub>1</sub> Culvert Haul	Ton Mile																																						
29	P <sub>3</sub> Culvert Haul	Ton Mile																																						
30																																								
31																																								
32																																								
TOTAL ESTIMATED COST OF GRADING			IN 'TOTALS' COLUMN																																					
33	Culv. Material	Lin. Ft.																																						
34	Culv. Material	Lin. Ft.																																						
35	Culv. Material	Lin. Ft.																																						
36	Culv. Material	Lin. Ft.																																						
37	Culv. Material	Lin. Ft.																																						
38	Culv. Material	Lin. Ft.																																						
39	P <sub>3</sub> Culv. Material 24"	Lin. Ft.																																						
40	P <sub>3</sub> Culv. Material 30"	Lin. Ft.																																						
41	P <sub>3</sub> Culv. Material 36"	Lin. Ft.																																						
TOTAL ESTIMATED COST OF PORTABLE CULVERT MATERIAL			IN 'TOTALS' COLUMN																																					
42	Gravel Pit Stripping	Cu. Yd.																																						
43	Screening	Cu. Yd.																																						
44	Loading (Washout Material)	Cu. Yd.	296																																					
45	Hauling (Washout Material)	Cu. Yd. Mile	581																																					
46	Shaping & Compacting	Man. Hour																																						
47	Shaping & Compacting	Man. Hour																																						
48																																								
49																																								
50																																								
51																																								
TOTAL ESTIMATED COST OF WASHOUT MATERIAL HAUL			IN 'TOTALS' COLUMN																		175.40																			
52	Washout Material	Cu. Yd.	296																																					
53	Freight (If any)	Cu. Yd.																																						
54	Unloading from Cars	Cu. Yd.																																						
TOTAL ESTIMATED COST OF WASHOUT MATERIAL			IN 'TOTALS' COLUMN																		14.80																			
55	Fine Grading - Exc. & Emb.	Cu. Yd.	296																																					
56	Shoulders - Earth	Cu. Yd.																																						
57																																								
58																																								
59	Pavement	Sq. Yd.	9653.01																																					
60	Integral Curb	Lin. Ft.																																						
61	Sloping Curb	Lin. Ft.	2632																																					
62	Surface Drain	Lin. Ft.	245																																					
63	Surface Drain Basins	Basin	5																																					
64	Bridge Approach Slabs	Slab																																						
65	Bridge Approach Slabs	Slab																																						
66																																								
67																																								
68																																								



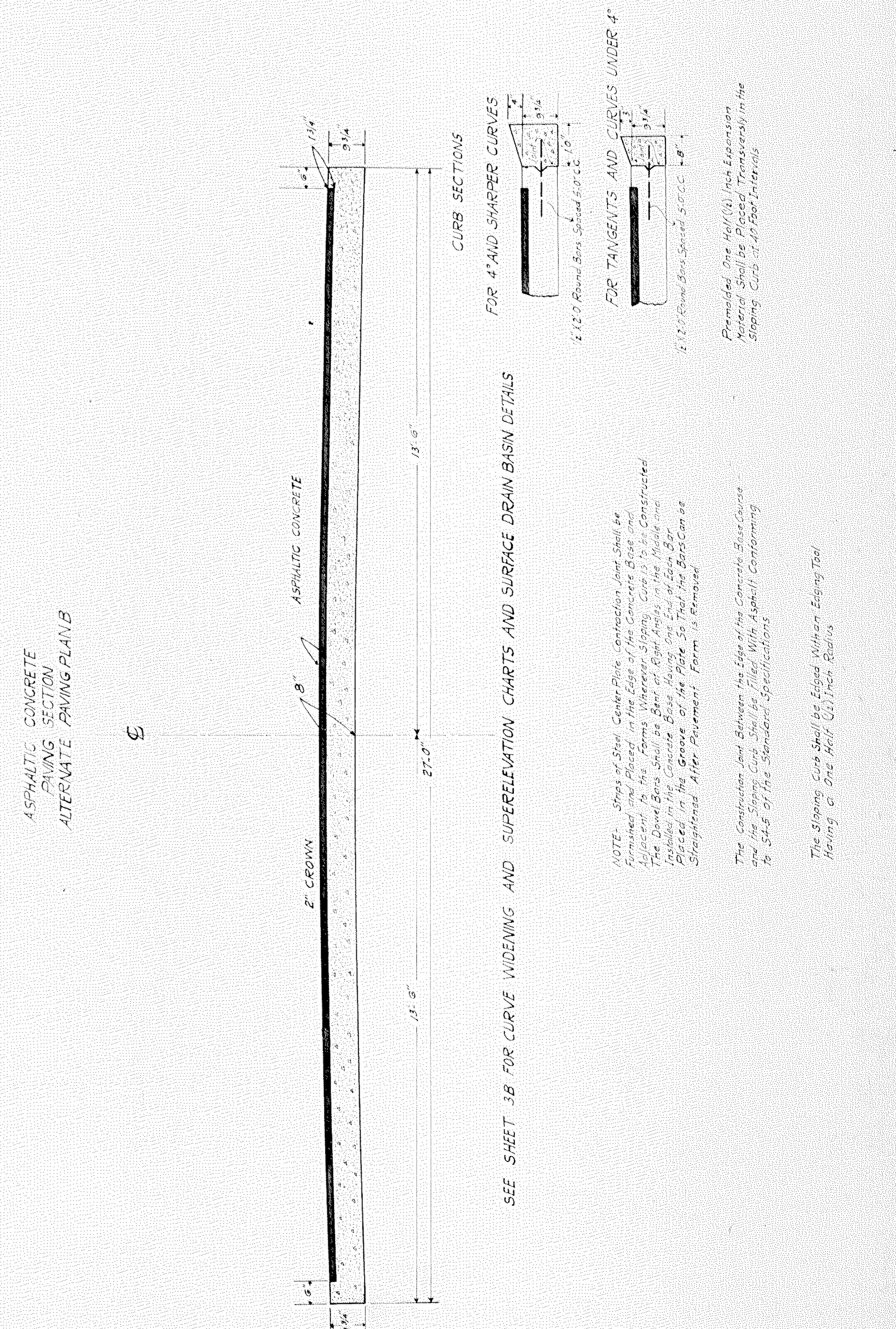
STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

ITEM	UNIT	MILE														TOTAL ESTIMATED QUANTITIES	ESTIMATED UNIT PRICES	AMOUNTS	TOTALS
		MILE 2 Sta. 124+05.5 to Sta. 112+41.0	MILE 3 Sta. 112+41.0 to Sta. 107+80.0	MILE 4 Sta. 107+80.0 to Sta. 213+16	MILE 5 Sta. 213+16 to Sta. 206+75	MILE 6 Sta. 206+75 to Sta. 223+02	MILE 7 Sta. 223+02 to Sta. 100	MILE 8 Sta. 100 to Sta. 100	MILE 9 Sta. 100 to Sta. 100	MILE 10 Sta. 100 to Sta. 100	MILE 11 Sta. 100 to Sta. 100	MILE 12 Sta. 100 to Sta. 100	MILE 13 Sta. 100 to Sta. 100	MILE 14 Sta. 100 to Sta. 100					
1	Clearing	Acre																	
2	Clearing	Tree																	
3	Grubbing	Acre																	
4	Grubbing	Tree																	
5	Excavation - Earth	Cu. Yd.																	
6	Excavation - Loose Rock	Cu. Yd.																	
7	Excavation - Solid Rock	Cu. Yd.																	
8	Excavation - Overhaul	Cu. Yd.																	
9	Special Excavation	Lin. Ft.																	
10	Hand Ditching	Cu. Yd.																	
11	Tile Drain	in.																	
12	Tile Drain	in.																	
13	Tile Drain	in.																	
14	Perous Back Fill Material	Cu. Yd.																	
15	Stone Rip - Rap	Cu. Yd.																	
16	Wearing Surface of Road or Highway	Cu. Yd. malle																	
17	Install	Lin. Ft.																	
18	Install	Lin. Ft.																	
19	Install	Lin. Ft.																	
20	Install	Lin. Ft.																	
21	Install	Lin. Ft.																	
22	Install	Lin. Ft.																	
23	Install	Lin. Ft.																	
24	Install	Lin. Ft.																	
25	Install 24" P3	Lin. Ft.																	
26	Install 30" P3	Lin. Ft.																	
27	Install 36" P3	Lin. Ft.																	
28	P3 Culvert Haul	Ton-Mile																	
29	P3 Culvert Haul	Ton-Mile																	
30																			
31																			
32																			
TOTAL ESTIMATED COST OF GRADING (IN 'TOTALS' COLUMN)																			
33	Culv. Material	Lin. Ft.																	
34	Culv. Material	Lin. Ft.																	
35	Culv. Material	Lin. Ft.																	
36	Culv. Material	Lin. Ft.																	
37	Culv. Material	Lin. Ft.																	
38	Culv. Material	Lin. Ft.																	
39	P3 Culv. Material 24"	Lin. Ft.																	
40	P3 Culv. Material 30"	Lin. Ft.																	
41	P3 Culv. Material 36"	Lin. Ft.																	
TOTAL ESTIMATED COST OF PORTABLE CULVERT MATERIAL (IN 'TOTALS' COLUMN)																			
42	Gravel Pit Stripping	Cu. Yd.																	
43	Screening	Cu. Yd.																	
44	Screening	Cu. Yd.																	
45	Loading Washout Material	Cu. Yd.	68	2250	510	505	530	520							4383	20	876.60		
46	Hauling Washout Material	Cu. Yd.	132	1255	255	485	864	286							3277	20	655.40		
47	Shaping & Compacting	MA & T&M																	
48																			
49																			
50																			
51																			
TOTAL ESTIMATED COST OF WASHOUT MATERIAL HAUL (IN 'TOTALS' COLUMN)																			
52	Washout Material	Cu. Yd.	68	2250	510	505	530	520							4383	05	219.15		1532.00
53	Freight (If any)	Cu. Yd.																	
54	Unloading from Cars	Cu. Yd.																	
TOTAL ESTIMATED COST OF WASHOUT MATERIAL (IN 'TOTALS' COLUMN)																			
55	Fine Grading - Exc. & Emb.	Cu. Yd.	68	250	510	505	530	520							2383	30	1429.30		
56	Shoulders - Earth	Cu. Yd.																	
57																			
58	Asphaltic Conc.	Sq. Yd.	2182.55	12965.19	15638.46	15400.37	15997.22	15895.24							78079.03	1.0	85886.23		
59	Pavement Base	Sq. Yd.	2266.50	10416.23	16235.32	15992.70	16612.50	16506.60							78029.85	2.00	156059.70		
60	Integral Curb	Lin. Ft.																	
61	Sloping Curb	Lin. Ft.		4159	7520	5000	6200								22879	1.00	22879.00		
62	Surface Drain	Lin. Ft.		27	74	49	64								214	1.50	321.00		
63	Surface Drain Basins	Basin		3	12	6	10								31	25.00	775.00		
64	Bridge Approach Slabs	Slab		2			2								4	275.00	1100.00		
65	Bridge Approach Slabs	Slab																	
66	Remove Sloping Curb	Lin. Ft.		3087											3087	05	154.35		
67																			
68																			
TOTAL ESTIMATED COST OF PAVEMENT CONSTRUCTION (IN 'TOTALS' COLUMN)																			
69	Concrete	Cu. Yd.																	
70	Reinforcing Steel	Lb.																	
71	Excavation - Earth	Cu. Yd.																	
72	Excavation - Loose Rock	Cu. Yd.																	
73	Excavation - Solid Rock	Cu. Yd.																	
74	Bridge	Br. No.	Dr. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	
75																			
76	Concrete	Cu. Yd.																	
77	Reinforcing Steel	Lb.																	
78	Structural Steel	Lb.																	
79	Piling	Lin. Ft.																	
80	Temporary Crossing	Lump Sum																	
81	Removing old Bridge	Lump Sum																	
82	Bituminous Surface	Sq. Yd.																	
83																			
84																			
TOTAL ESTIMATED COST OF STRUCTURES (IN 'TOTALS' COLUMN)																			
85	Gard Rail	Lin. Ft.																	
86	Gutter	Lin. Ft.																	
87	Excavation for Gutter	Cu. Yd.																	
TOTAL ESTIMATED COST OF MISCELLANEOUS ITEMS (IN 'TOTALS' COLUMN)																			
													Div C Grand Total	Eng & Cont. 10%		270356.93			
																27035.69			
																297392.62			

NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

TYPICAL CROSS SECTIONS AND DETAILS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MINN.	383			2 C	48



ALTERNATE PLAN B PAVEMENT  
ASPHALTIC CONCRETE

S.P. 6202 (T.H. 8-63)  
S.P. 6203 (T.H. 8-63)

STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

TYPICAL CROSS SECTIONS AND DETAILS

Table with project details: FED. ROAD DIST. NO. 4, STATE MINN., PROJ. NO. 363, SHEET NO. 2-D, TOTAL SHEETS 48.

Main table with columns for Mile 8-15, Total Estimated Quantities, Estimated Unit Prices, Amounts, and Totals. Rows include Grading, Portable Culverts, Washout Materials, Pavement Construction, and Structures.

SEE SHEET 3B FOR PAVING DETAILS

NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

S.P.0201 (T.H. 8-63)

Letting of Aug. 16, 1927.

6-65-22-10.pdf

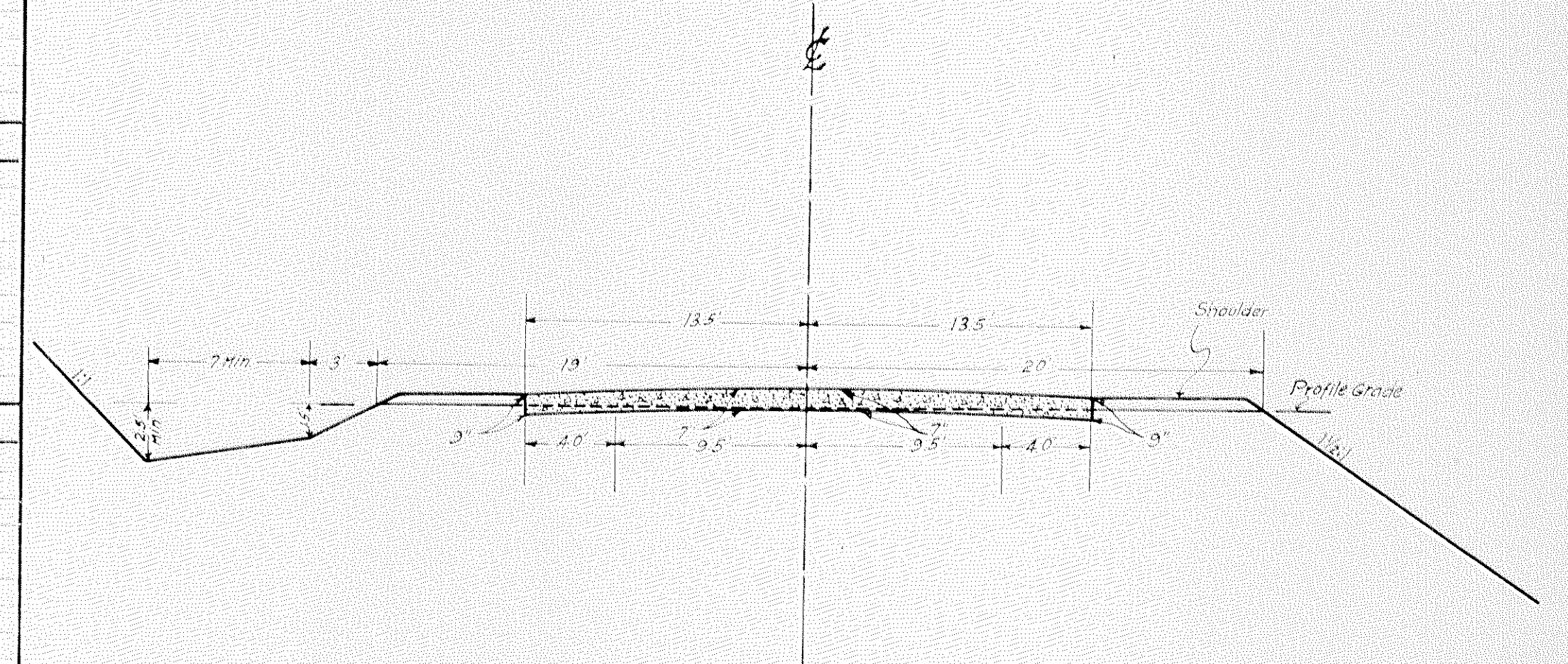
STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

ITEM	UNIT	MILE 15		MILE 16		MILE 17		MILE 18		MILE 19		MILE 20		MILE 21		TOTAL ESTIMATED QUANTITIES	ESTIMATED UNIT PRICES	AMOUNTS	TOTALS
		Sta. 734.136 to Sta. 732.00	Sta. 732.00 to Sta. 811.00	Sta. 811.00 to Sta. 835.72	Sta. 835.72 to Sta. 847.15	Sta. 847.15 to Sta. 871.52	Sta. 871.52 to Sta. 936.13	Sta. 936.13 to Sta. 1052.73	Sta. 1052.73 to Sta. 1090.867	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.						
1 Clearing	Acre																		
2 Clearing	Tree																		
3 Grubbing	Acre																		
4 Grubbing	Tree																		
5 Excavation - Earth	Cu. Yd.																		
6 Excavation - Loose Rock	Cu. Yd.																		
7 Excavation - Solid Rock	Cu. Yd.																		
8 Excavation - Overhaul	Cu. Yd.																		
9 Special Excavation	Lin. Ft.																		
10 Hand Ditching	Cu. Yd.																		
11 Tile Drain	in.																		
12 Tile Drain	in.																		
13 Tile Drain	in.																		
14 Porous Back Fill Material	Cu. Yd.																		
15 Stone Rip - Rap	Cu. Yd.																		
16 Rip and Place	Cu. Yd. mile																		
17 Install	Lin. Ft.																		
18 Install	Lin. Ft.																		
19 Install	Lin. Ft.																		
20 Install	Lin. Ft.																		
21 Install	Lin. Ft.																		
22 Install	Lin. Ft.																		
23 Install	Lin. Ft.																		
24 Install	Lin. Ft.																		
25 Install 24" Pa.	Lin. Ft.																		
26 Install 30" Pa.	Lin. Ft.																		
27 Install 36" Pa.	Lin. Ft.																		
28 P.Culvert Haul	Ton Mile																		
29 P.Culvert Haul	Ton Mile																		
30																			
31																			
32																			
TOTAL ESTIMATED COST OF GRADING		IN 'TOTALS' COLUMN																	
33 Culv. Material	Lin. Ft.																		
34 Culv. Material	Lin. Ft.																		
35 Culv. Material	Lin. Ft.																		
36 Culv. Material	Lin. Ft.																		
37 Culv. Material	Lin. Ft.																		
38 Culv. Material	Lin. Ft.																		
39 P <sub>3</sub> Culv. Material 24"	Lin. Ft.																		
40 P <sub>3</sub> Culv. Material 30"	Lin. Ft.																		
41 P <sub>3</sub> Culv. Material 36"	Lin. Ft.																		
TOTAL ESTIMATED COST OF PORTABLE CULVERT MATERIAL		IN 'TOTALS' COLUMN																	
42 Gravel Pit Stripping	Cu. Yd.																		
43 Screening	Cu. Yd.																		
44 Loading	Cu. Yd.																		
45 Hauling	Cu. Yd. Mile																		
46 Shaping & Compacting	Man Hour																		
47 Shaping & Compacting	Man & Team Hour																		
48																			
49																			
50																			
51																			
TOTAL ESTIMATED COST OF GRAVEL HAUL		IN 'TOTALS' COLUMN																	
52 Gravel Material F. O. B. Pit	Cu. Yd.																		
53 Freight (If any)	Cu. Yd.																		
54 Unloading from Cars	Cu. Yd.																		
TOTAL ESTIMATED COST OF GRAVEL MATERIAL		IN 'TOTALS' COLUMN																	
55 Fine Grading - Exc. & Emb.	Cu. Yd.	546	464	513	487	469	532	361											
56 Shoulders - Earth	Cu. Yd.																		
57																			
58																			
59 Pavement	Sq. Yd.																		
60 Integral Curb	Lin. Ft.	17355.16	14700.00	16410.00	15438.00	15061.27	16821.00	11447.10											
61 Sloping Curb	Lin. Ft.																		
62 Surface Drain	Lin. Ft.	1604	638	518	1331	1581	1875	1203											
63 Surface Drain Basins	Basin	17	5	5	10	27	35	18											
64 Bridge Approach Slabs	Slab	3	1	1	2	3	3	3											
65 Bridge Approach Slabs	Slab																		
66																			
67																			
68																			
TOTAL ESTIMATED COST OF PAVEMENT CONSTRUCTION		IN 'TOTALS' COLUMN																	
69 Concrete	Cu. Yd.																		256009.65
70 Reinforcing Steel	Lb.																		
71 Excavation - Earth	Cu. Yd.																		
72 Excavation - Loose Rock	Cu. Yd.																		
73 Excavation - Solid Rock	Cu. Yd.																		
74 Bridge	Bridge No.																		
75	Station																		
76 Concrete	Cu. Yd.																		
77 Reinforcing Steel	Lb.																		
78 Structural Steel	Lb.																		
79 Piling	Lin. Ft.																		
80 Temporary Crossing	Lump Sum																		
81 Removing old Bridge	Lump Sum																		
82 Bituminous Surface	Sq. Yd.																		
83																			
84																			
TOTAL ESTIMATED COST OF STRUCTURES		IN 'TOTALS' COLUMN																	
85 Guard Rail	Lin. Ft.																		
86 Gutter	Lin. Ft.																		
87 Excavation for Gutter	Cu. Yd.																		
TOTAL ESTIMATED COST OF MISCELLANEOUS ITEMS		IN 'TOTALS' COLUMN																	
																	Total		256009.65
																	Eng. & Cont 10%		25600.96
																	Grand Total		281610.61

TYPICAL CROSS SECTIONS AND DETAILS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MINN.	383			2E	48

TYPICAL GRADING SECTION WITH PAVEMENT



SEE SHEETS 3B&3C FOR PAVEMENT DETAILS

NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

ITEM	UNIT	MILE		MILE		MILE		MILE		MILE		MILE		MILE		MILE		TOTAL ESTIMATED QUANTITIES	ESTIMATED UNIT PRICES	AMOUNTS	TOTALS	
		Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.					
<b>TOTAL ESTIMATED COST OF GRADING (IN 'TOTALS' COLUMN)</b>																						
<b>TOTAL ESTIMATED COST OF PORTABLE CULVERT MATERIAL (IN 'TOTALS' COLUMN)</b>																						
<b>TOTAL ESTIMATED COST OF GRAVEL HAUL (IN 'TOTALS' COLUMN)</b>																						
<b>TOTAL ESTIMATED COST OF GRAVEL MATERIAL (IN 'TOTALS' COLUMN)</b>																						
<b>TOTAL ESTIMATED COST OF PAVEMENT CONSTRUCTION (IN 'TOTALS' COLUMN)</b>																						
<b>TOTAL ESTIMATED COST OF STRUCTURES (IN 'TOTALS' COLUMN)</b>																						
<b>TOTAL ESTIMATED COST OF MISCELLANEOUS ITEMS IN 'TOTALS' COLUMN</b>																						
																			Total Est. Cost	9397.70		
																			10% Eng. Cont.	939.77		
																			Grand Total Est. Cost	10337.47		

GRADING

PORTABLE CULVERTS

SHOULDER HAUL

SHOULDER MATERIAL

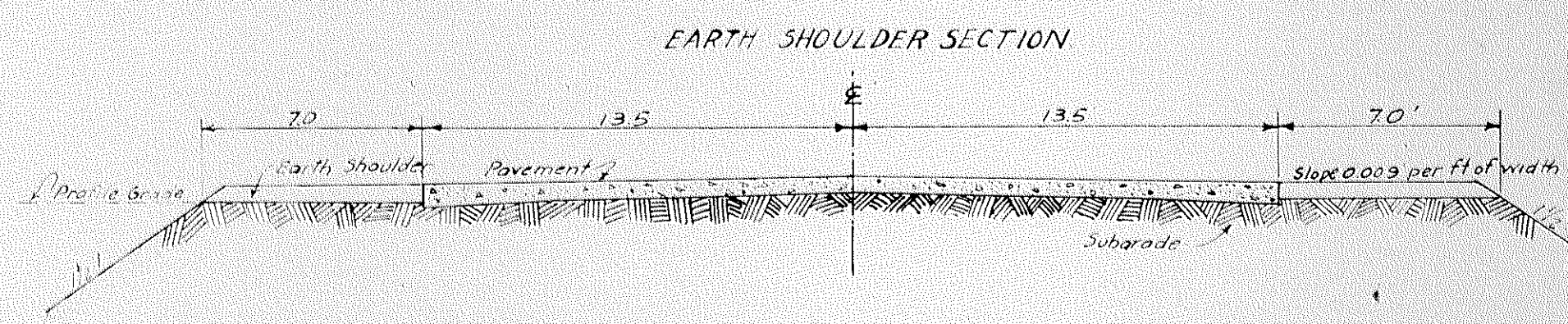
PAVEMENT CONSTRUCTION

STRUCTURES

MISCELLANEOUS

TYPICAL CROSS SECTIONS AND DETAILS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	REC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MINN.					



LETTING OF OCTOBER 18, 1927.

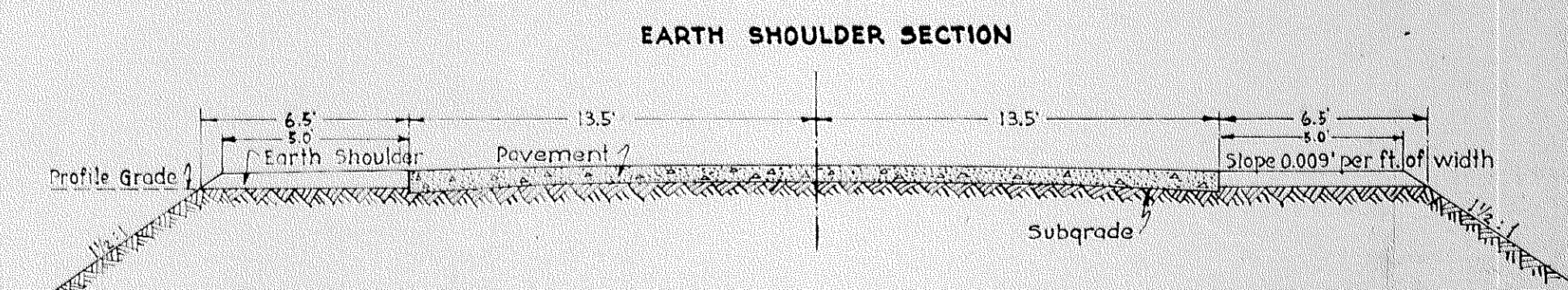
\* NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

TYPICAL CROSS SECTIONS AND DETAILS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MINN.					

ITEM	UNIT	Div. C		Div. C		Div. D		MILE		MILE		MILE		MILE		MILE		TOTAL ESTIMATED QUANTITIES	ESTIMATED UNIT PRICES	AMOUNTS	TOTALS
		Sta. 140+00 to Sta. 185+16.7	Sta. 350+00 to Sta. 378+02.2	Sta. 378+10.2 to Sta. 391+13.6	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.	to Sta.	Sta.				
1	Clearing	Acre																			
2	Clearing	Tree																			
3	Grubbing	Acre																			
4	Grubbing	Tree																			
5	Excavation - Earth	Cu. Yd.																			
6	Excavation - Loose Rock	Cu. Yd.																			
7	Excavation - Solid Rock	Cu. Yd.																			
8	Excavation - Overhaul	Cu. Yd.																			
9	Special Excavation	Lin. Ft.																			
10	Hand Ditching	Cu. Yd.																			
11	Tile Drain	in. Lin. Ft.																			
12	Tile Drain	in. Lin. Ft.																			
13	Tile Drain	in. Lin. Ft.																			
14	Porous Back Fill Material	Cu. Yd.																			
15	Stone Rip - Rip	Cu. Yd.																			
16	Shaping Rip - Rip	Cu. Yd. mile																			
17	Install	Lin. Ft.																			
18	Install	Lin. Ft.																			
19	Install	Lin. Ft.																			
20	Install	Lin. Ft.																			
21	Install	Lin. Ft.																			
22	Install	Lin. Ft.																			
23	Install	Lin. Ft.																			
24	Install	Lin. Ft.																			
25	Install 24' P <sub>3</sub>	Lin. Ft.																			
26	Install 30' P <sub>3</sub>	Lin. Ft.																			
27	Install 36' P <sub>3</sub>	Lin. Ft.																			
28	P <sub>1</sub> Culvert Haul	Ton Mile																			
29	P <sub>3</sub> Culvert Haul	Ton Mile																			
30																					
31																					
32																					
TOTAL ESTIMATED COST OF GRADING (IN 'TOTALS' COLUMN)																					
33	Culv. Material	Lin. Ft.																			
34	Culv. Material	Lin. Ft.																			
35	Culv. Material	Lin. Ft.																			
36	Culv. Material	Lin. Ft.																			
37	Culv. Material	Lin. Ft.																			
38	Culv. Material	Lin. Ft.																			
39	P <sub>3</sub> Culv. Material 24'	Lin. Ft.																			
40	P <sub>3</sub> Culv. Material 30'	Lin. Ft.																			
41	P <sub>3</sub> Culv. Material 36'	Lin. Ft.																			
TOTAL ESTIMATED COST OF PORTABLE CULVERT MATERIAL (IN 'TOTALS' COLUMN)																					
42	Gravel Pit Stripping	Cu. Yd.																			
43	Screening	Cu. Yd.																			
44	Loading	Cu. Yd.	2131	1401	18019												21551	0.25	5387.75		
45	Hauling	Cu. Yd. Mile	4978	4884	129088												138950	0.20	27790.00		
46	Shaping & Compacting	Man Hour																			
47	Shaping & Compacting	Max. & Team Hour																			
48																					
49																					
50																					
51																					
TOTAL ESTIMATED COST OF GRAVEL HAUL (IN 'TOTALS' COLUMN)																					
52	Should. Material	Cu. Yd.	2131	1401	18019												21551	0.05	1077.55		
53	Freight (If any)	Cu. Yd.																			
54	Unloading from Cars	Cu. Yd.																			
TOTAL ESTIMATED COST OF GRAVEL MATERIAL (IN 'TOTALS' COLUMN)																					
55	Fine Grading - Exc. & Emb.	Cu. Yd.																			
56	Shoulders - Earth	Cu. Yd.																			
57																					
58																					
59	Pavement	Sq. Yd.																			
60	Integral Curb	Lin. Ft.																			
61	Sloping Curb	Lin. Ft.																			
62	Surface Drain	Lin. Ft.																			
63	Surface Drain Basins	Basin																			
64	Bridge Approach Slabs	Slab																			
65	Bridge Approach Slabs	Slab																			
66																					
67																					
68																					
TOTAL ESTIMATED COST OF PAVEMENT CONSTRUCTION (IN 'TOTALS' COLUMN)																					
69	Concrete	Cu. Yd.																			
70	Reinforcing Steel	Lb.																			
71	Excavation - Earth	Cu. Yd.																			
72	Excavation - Loose Rock	Cu. Yd.																			
73	Excavation - Solid Rock	Cu. Yd.																			
74	Bridge	Br. No.																			
75	Concrete	Cu. Yd.																			
76	Reinforcing Steel	Lb.																			
77	Structural Steel	Lb.																			
78	Piling	Lin. Ft.																			
79	Temporary Crossing	Lump Sum																			
80	Removing old Bridge	Lump Sum																			
81	Bituminous Surface	Sq. Yd.																			
82																					
83																					
84																					
TOTAL ESTIMATED COST OF STRUCTURES (IN 'TOTALS' COLUMN)																					
85	Guard Rail	Lin. Ft.																			
86	Gutter	Lin. Ft.																			
87	Excavation for Gutter	Cu. Yd.																			
TOTAL ESTIMATED COST OF MISCELLANEOUS ITEMS (IN 'TOTALS' COLUMN)																					
																		Total Est. Cost	34255.90		
																		10% Eng. & Cont.	3425.59		
																		Grand Tot. Est. Cost	37681.49		



Letting of July 17, 1928. S.P. 6202 (T.H. 8-63) S.P. 6203 (T.H. 8-63)

NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

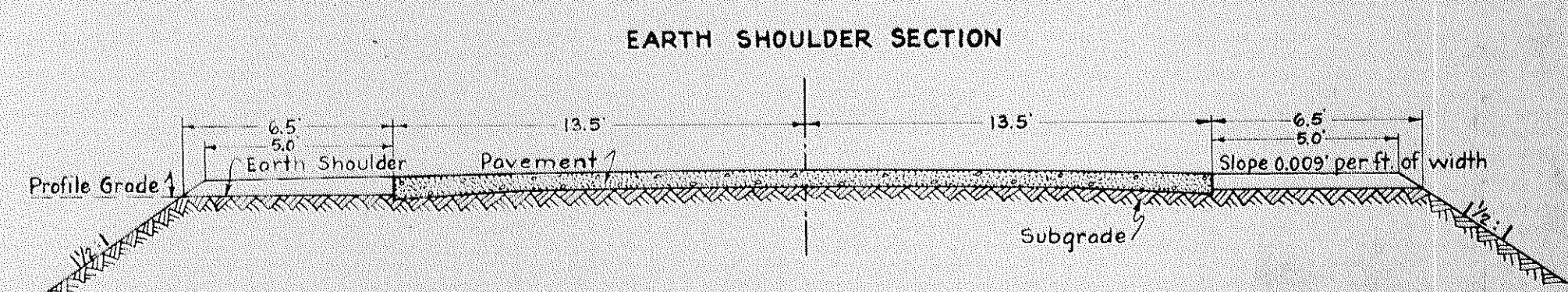


STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

ITEM	UNIT	MILE		MILE		MILE		MILE		MILE		MILE		MILE		MILE		TOTAL ESTIMATED QUANTITIES	ESTIMATED UNIT PRICES	AMOUNTS	TOTALS
		Sta. 734+36.0 to Sta. 1090+88.7	Sta. 1090+88.7 to Sta. 1186+56.9	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.	Sta. to Sta.							
1	Clearing	Acres																			
2	Clearing	Tree																			
3	Grubbing	Acres																			
4	Grubbing	Tree																			
5	Excavation - Earth	Cu. Yd.																			
6	Excavation - Loose Rock	Cu. Yd.																			
7	Excavation - Solid Rock	Cu. Yd.	Div. E	Div. F																	
8	Excavation - Overhaul	Cu. Yd.																			
9	Special Excavation	Lin. Ft.																			
10	Hand Ditching	Cu. Yd.																			
11	Tile Drain	in. Lin. Ft.																			
12	Tile Drain	in. Lin. Ft.																			
13	Tile Drain	in. Lin. Ft.																			
14	Porous Back Fill Material	Cu. Yd.																			
15	Stone Rip - Rap	Cu. Yd.																			
16	Heavy Rip - Rap or Stone Back Material	Cu. Yd. mile																			
17	Install	Lin. Ft.																			
18	Install	Lin. Ft.																			
19	Install	Lin. Ft.																			
20	Install	Lin. Ft.																			
21	Install	Lin. Ft.																			
22	Install	Lin. Ft.																			
23	Install	Lin. Ft.																			
24	Install	Lin. Ft.																			
25	Install 24" P <sub>3</sub>	Lin. Ft.																			
26	Install 30" P <sub>3</sub>	Lin. Ft.																			
27	Install 36" P <sub>3</sub>	Lin. Ft.																			
28	P <sub>1</sub> Culvert Haul	Ton Mile																			
29	P <sub>3</sub> Culvert Haul	Ton Mile																			
30																					
31																					
32																					
TOTAL ESTIMATED COST OF GRADING (IN 'TOTALS' COLUMN)																					
33	Culv. Material	Lin. Ft.																			
34	Culv. Material	Lin. Ft.																			
35	Culv. Material	Lin. Ft.																			
36	Culv. Material	Lin. Ft.																			
37	Culv. Material	Lin. Ft.																			
38	Culv. Material	Lin. Ft.																			
39	P <sub>3</sub> Culv. Material 24"	Lin. Ft.																			
40	P <sub>3</sub> Culv. Material 30"	Lin. Ft.																			
41	P <sub>3</sub> Culv. Material 36"	Lin. Ft.																			
TOTAL ESTIMATED COST OF PORTABLE CULVERT MATERIAL (IN 'TOTALS' COLUMN)																					
42	Gravel Pit Stripping	Cu. Yd.																			
43	Screening	Cu. Yd.	17827	4785															22612	0.25	5653.00
44	Loading	Cu. Yd.	79414	3003															82417	0.20	16483.40
45	Hauling	Cu. Yd. Mile																			
46	Shaping & Compacting	Man Hour																			
47	Shaping & Compacting	Man & Team Hour																			
48																					
49																					
50																					
51																					
TOTAL ESTIMATED COST OF GRAVEL HAUL (IN 'TOTALS' COLUMN)																					
																				22136.40	
52	Shoulder Material F. O. B. Pit	Cu. Yd.	17827	4785															22612	0.05	1130.60
53	Freight (If any)	Cu. Yd.																			
54	Unloading from Cars	Cu. Yd.																			
TOTAL ESTIMATED COST OF GRAVEL MATERIAL (IN 'TOTALS' COLUMN)																					
																				1130.60	
55	Fine Grading - Exc. & Emb.	Cu. Yd.																			
56	Shoulders - Earth	Cu. Yd.																			
57																					
58																					
59	Pavement	Sq. Yd.																			
60	Integral Curb - Concrete	Lin. Ft.																			
61	Sloping Curb	Lin. Ft.																			
62	Surface Drain	Lin. Ft.																			
63	Surface Drain Basins	Basin																			
64	Bridge Approach Slabs	Slab																			
65	Bridge Approach Slabs	Slab																			
66																					
67																					
68																					
TOTAL ESTIMATED COST OF PAVEMENT CONSTRUCTION (IN 'TOTALS' COLUMN)																					
69	Concrete	Cu. Yd.																			
70	Reinforcing Steel	Lb.																			
71	Excavation - Earth	Cu. Yd.																			
72	Excavation - Loose Rock	Cu. Yd.																			
73	Excavation - Solid Rock	Cu. Yd.																			
74	Bridge	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.	Br. No.
75		Station																			
76	Concrete	Cu. Yd.																			
77	Reinforcing Steel	Lb.																			
78	Structural Steel	Lb.																			
79	Piling	Lin. Ft.																			
80	Temporary Crossing	Lump Sum																			
81	Removing old Bridge	Lump Sum																			
82	Bituminous Surface	Sq. Yd.																			
83																					
84																					
TOTAL ESTIMATED COST OF STRUCTURES (IN 'TOTALS' COLUMN)																					
85	Guard Rail	Lin. Ft.																			
86	Gutter	Lin. Ft.																			
87	Excavation for Gutter	Cu. Yd.																			
TOTAL ESTIMATED COST OF MISCELLANEOUS ITEMS (IN 'TOTALS' COLUMN)																					
																				23267.00	
																				Engineering & Cont. 10%	
																				2326.70	
																				Grand Total	
																				25593.70	

TYPICAL CROSS SECTIONS AND DETAILS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MINN.				26	48



NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION

Letting of Aug. 14, 1928  
S.P.0201 (T.H.8-63)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MINN.	363			3A	43

**CHART No. 4 TABLE OF OFFSETS AND AREAS FOR WIDENING OF CURVES ON GRADING & PAVEMENT**

DEGREE OF CURVE	TYPE OF PAVEMENT	WIDTH OF PAVEMENT	DISTANCE FROM POINT OF BEGINNING OF SUPERELEVATION TRANS. (B.S.T.)										MAXIMUM PERCENTAGE OF SUPERELEVATION TRANSITION	(L) LENGTH OF TRANSITION IN FT.	(L) 1/2 LENGTH OF TRANSITION IN FT.		
			DISTANCE FROM POINT OF BEGINNING OF SUPERELEVATION TRANS. (B.S.T.)														
			0	20	40	50	60	80	100	110	120	140				160	180
2	ONE COURSE CONCRETE	18'	0.009	-0.015	0.025	0.050	0.075							+0.18		75.0	37.5
		20'	0.009	-0.022	0.050	0.075	0.102							+0.17			
3	ONE COURSE CONCRETE	18'	0.018	-0.030	0.045	0.090	0.135							+0.13		80.0	40.0
		20'	0.018	-0.038	0.055	0.102	0.150							+0.11			
4	ONE COURSE CONCRETE	18'	0.027	-0.045	0.060	0.120	0.180							+0.09		100.0	50.0
		20'	0.027	-0.055	0.075	0.135	0.200							+0.07			
5	ONE COURSE CONCRETE	18'	0.036	-0.060	0.080	0.160	0.240							+0.06		110.0	55.0
		20'	0.036	-0.072	0.095	0.180	0.270							+0.05			
6	ONE COURSE CONCRETE	18'	0.045	-0.075	0.100	0.200	0.300							+0.05		125.0	62.5
		20'	0.045	-0.090	0.120	0.240	0.360							+0.04			
7	ONE COURSE CONCRETE	18'	0.054	-0.090	0.120	0.240	0.360							+0.04		150.0	75.0
		20'	0.054	-0.108	0.140	0.280	0.420							+0.03			
8	ONE COURSE CONCRETE	18'	0.063	-0.108	0.150	0.300	0.450							+0.03		175.0	87.5
		20'	0.063	-0.126	0.170	0.340	0.510							+0.02			
9	ONE COURSE CONCRETE	18'	0.072	-0.135	0.180	0.360	0.540							+0.02		200.0	100.0
		20'	0.072	-0.162	0.210	0.420	0.630							+0.01			
10	ONE COURSE CONCRETE	18'	0.081	-0.162	0.210	0.420	0.630							+0.01		200.0	100.0
		20'	0.081	-0.198	0.270	0.540	0.810							-0.01			

**LEGEND**  
+ Indicates Inner Slab  
- Indicates Outer Slab  
+ Indicates above Elev.  
- Indicates below Elev.

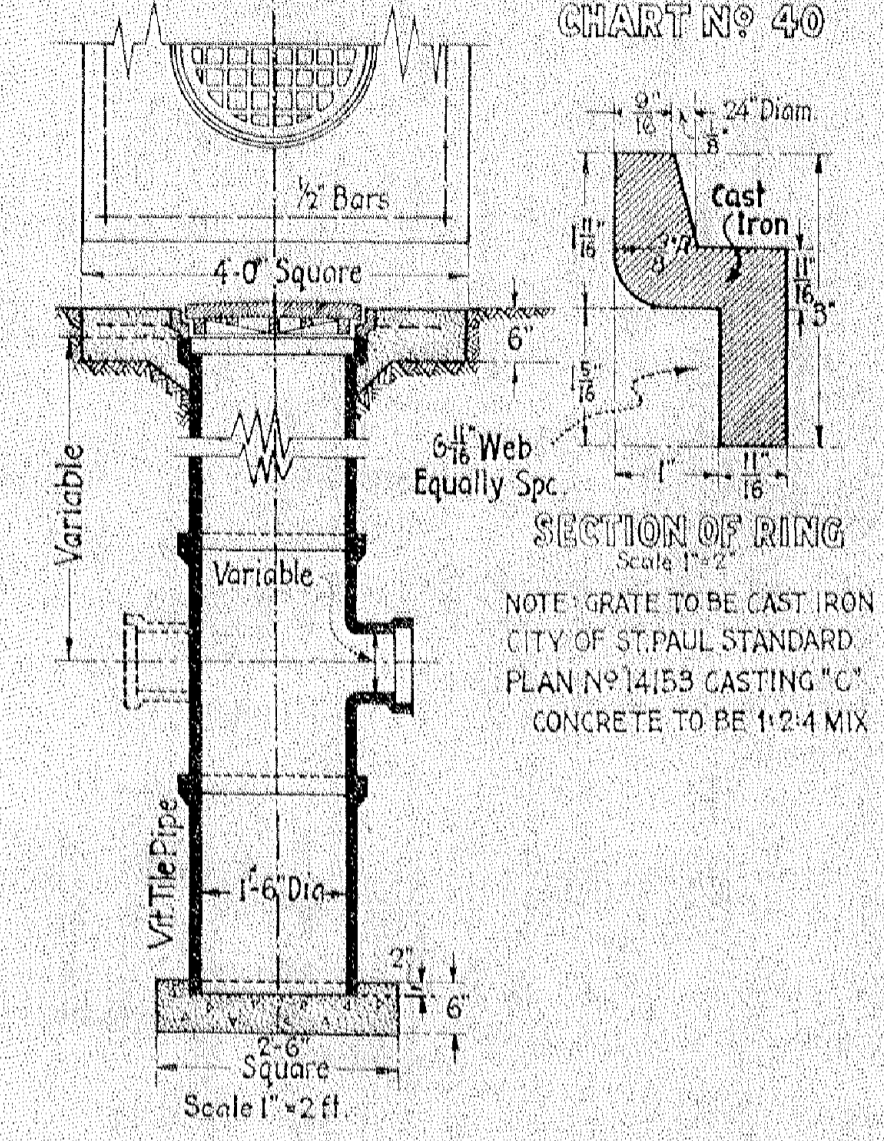
**EXPLANATION**  
Superelevation transition is not identical with widening transition. Super-elevation transition begins at B.S.T. or 1/2 L back of the R.C. of regular curve and increases uniformly to E.S.T. which is 1/2 L past the R.C. (3/4 L) = 1/2 L. From this point E.S.T. to 1/2 L before the P.T. of regular curve is reached or E.S.T. the super-elevation is uniform, and beyond this point it decreases uniformly to a point B.S.T. which is 1/2 L past the P.T.

**EXAMPLE**  
From table shown on Chart No. 4 under heading "Area in Sq. Yds. for the transition curves" 18 ft. width of pavement opposite 26° the sum of areas A and A' is obtained, and is equal to 48.819 sq. yds. From the same table, under heading "Area for sq. yds. per 100 lin. ft. of curve for extra pavement 18 ft. width, opposite 26° the figure 48.816 is obtained, the product of this figure multiplied by 1/2 L or 0.090 is equal to the area B' or 4.394 sq. yds. 26.425 sq. yds. The area of the extra pavement required is therefore 48.819 + 4.394 = 53.213 sq. yds.

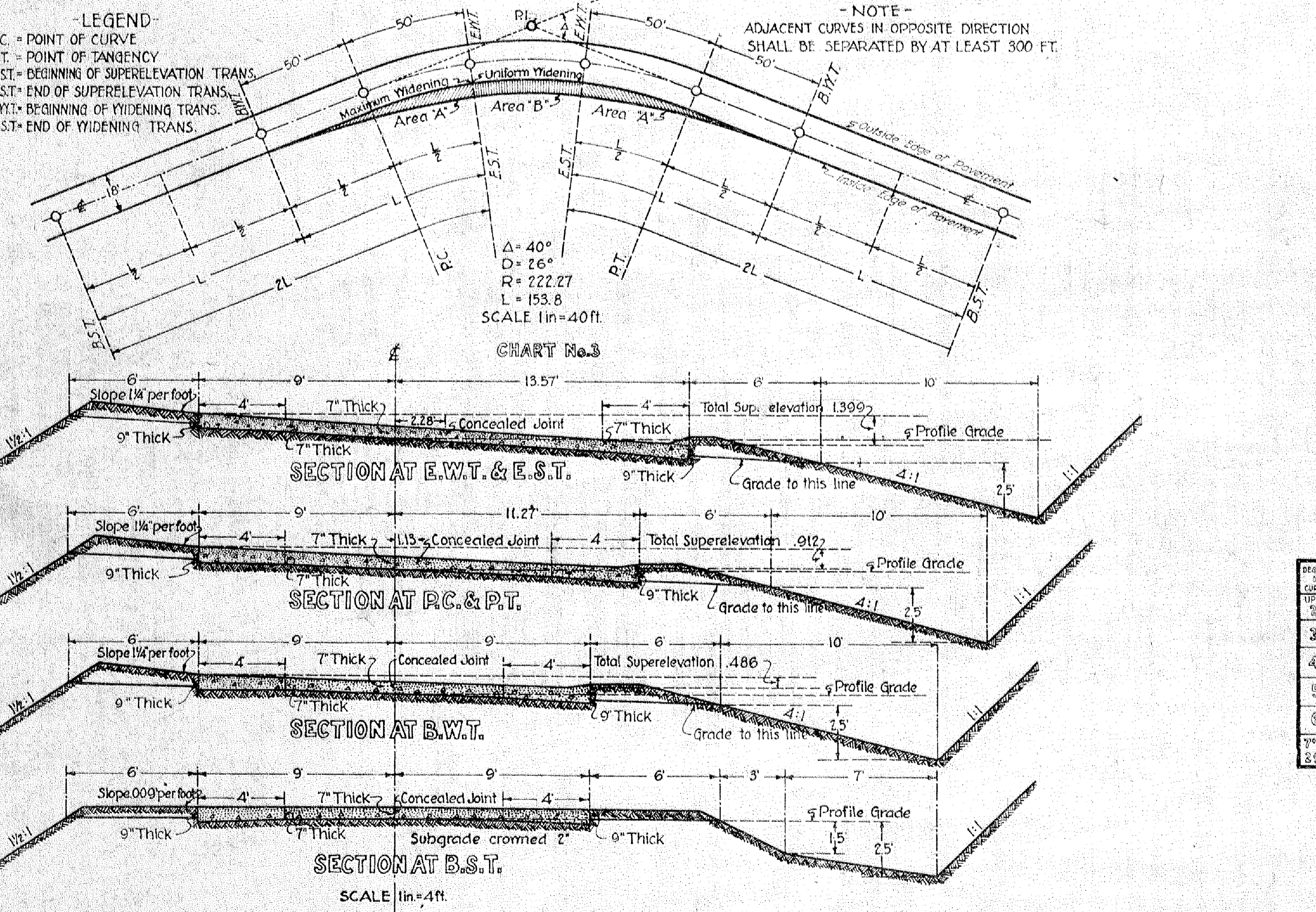
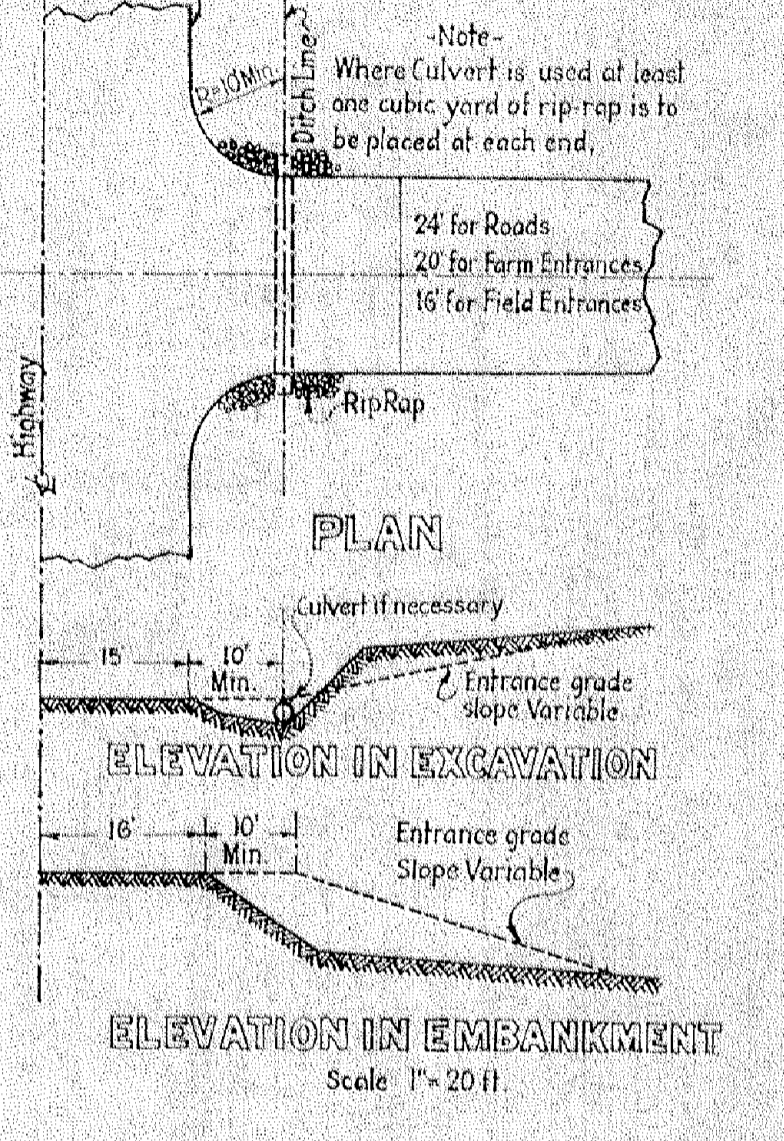
From the same table the offsets to the transition curve from the inner edge of pavement are given for every 10 ft. of width.  
**EXAMPLE**  
See example used on Charts 3 and 5 where D=26°, 2L=200 ft. Width of Pavement = 18 ft. Additional width "W" may be obtained from Table of Offsets and Areas for widening Curves on Pavement or Chart 4 for a 26° curve. The additional width at any point from B.W.T. or beginning of widening transition may be found direct. The following is an example of the computation for this case.  
AT 50 FT. SLAB IS NORMAL  
At 50 ft. from B.S.T.  
Outer Slab 9 x + .009 = +.081  
Inner Slab 9 x - .009 = -.081  
At 100 ft. from B.S.T. (B.W.T.)  
Outer Slab 9 x + .027 = +.243  
Inner Slab 9 x - .027 = -.243  
At 150 ft. from B.S.T. (P.C.)  
Outer Slab 9 x + .045 = +.405  
Inner Slab 11.27 x -.045 = -.507  
At 200 ft. from B.S.T. (E.S.T.)  
Outer Slab 9 x + .062 = +.558  
Inner Slab 13.57 x -.062 = -.841  
Minus (-) results indicate the amount in feet to be deducted and plus (+) the amount to be added to the center line elevation.

DEGREE OF CURVE	PERPENDICULAR OFFSET FROM INNER EDGE OF PAVEMENT ON TANGENT					RADIAL OFFSET FROM INNER EDGE OF PAVEMENT ON CURVE					AREA IN SQ. YD. FOR THE TYPICAL TRANSITION CURVES		AREA IN SQ. YDS. PER 100 LIN. FT. OF CURVE FOR EXTRA PAVEMENT	
	DISTANCE FROM B.W.T.					DISTANCE FROM B.W.T.					WIDTH OF PAVEMENT		WIDTH OF PAVEMENT	
	10'	20'	30'	40'	50'	10'	20'	30'	40'	50'	18'	20'	18'	20'
4°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.960	21.931	22.072	22.056
5°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.934	21.906	22.035	22.016
6°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.909	21.882	22.000	21.977
7°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.884	21.858	21.965	21.937
8°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.858	21.833	21.930	21.899
9°	0.03	0.17	0.39	0.68	1.06	1.43	1.74	1.97	2.11	2.14	23.933	23.361	23.426	23.389
10°	0.03	0.17	0.40	0.72	1.13	1.54	1.87	2.11	2.25	2.29	24.927	24.889	25.026	24.982
11°	0.03	0.18	0.42	0.76	1.20	1.64	1.99	2.24	2.39	2.43	26.466	26.418	26.512	26.460
12°	0.04	0.18	0.44	0.80	1.27	1.74	2.12	2.38	2.54	2.57	27.996	27.946	27.993	27.933
13°	0.04	0.19	0.46	0.84	1.34	1.85	2.24	2.52	2.68	2.71	29.531	29.474	29.576	29.508
14°	0.04	0.19	0.47	0.88	1.42	1.95	2.37	2.66	2.82	2.86	31.037	30.972	31.047	30.971
15°	0.04	0.20	0.49	0.92	1.49	2.05	2.49	2.79	2.96	3.00	32.543	32.470	32.512	32.425
16°	0.04	0.20	0.51	0.96	1.56	2.16	2.62	2.93	3.10	3.14	34.050	33.967	33.972	33.875
17°	0.04	0.21	0.52	1.00	1.63	2.26	2.74	3.07	3.24	3.29	35.556	35.464	35.535	35.427
18°	0.05	0.21	0.54	1.04	1.70	2.36	2.87	3.21	3.38	3.43	37.062	36.962	36.985	36.865
19°	0.05	0.22	0.56	1.07	1.77	2.47	2.99	3.34	3.53	3.57	38.534	38.422	38.430	38.298
20°	0.05	0.22	0.58	1.11	1.84	2.57	3.12	3.48	3.67	3.71	40.006	39.880	39.877	39.833
21°	0.05	0.23	0.59	1.15	1.91	2.67	3.24	3.62	3.81	3.86	41.478	41.344	41.412	41.255
22°	0.05	0.23	0.61	1.19	1.98	2.78	3.37	3.76	3.95	4.00	42.950	42.805	42.841	42.670
23°	0.05	0.24	0.63	1.23	2.05	2.88	3.49	3.89	4.09	4.14	44.422	44.266	44.266	44.081
24°	0.06	0.24	0.64	1.27	2.12	2.98	3.62	4.03	4.23	4.29	45.888	45.718	45.792	45.593
25°	0.06	0.25	0.66	1.31	2.20	3.09	3.74	4.17	4.37	4.43	47.353	47.170	47.206	46.991
26°	0.06	0.25	0.68	1.35	2.27	3.19	3.86	4.31	4.52	4.57	48.819	48.622	48.616	48.385
27°	0.06	0.26	0.69	1.39	2.34	3.29	3.99	4.44	4.66	4.71	50.284	50.074	50.125	49.877
28°	0.06	0.26	0.71	1.43	2.41	3.40	4.11	4.58	4.80	4.86	51.750	51.528	51.525	51.261
29°	0.06	0.27	0.73	1.47	2.48	3.50	4.24	4.72	4.94	5.00	53.216	52.918	52.920	52.639

SKETCH SHOWING STANDARD DESIGN FOR TILE DRAIN DROP INLET



STANDARD DESIGN FOR ROAD & FARM ENTRANCES

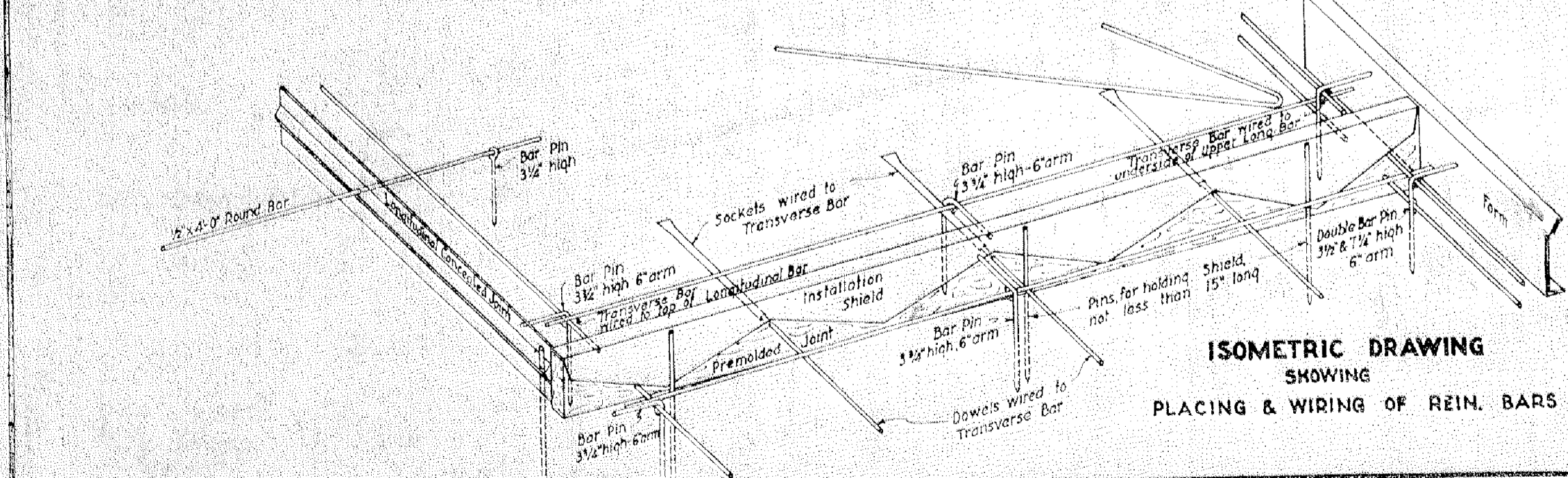
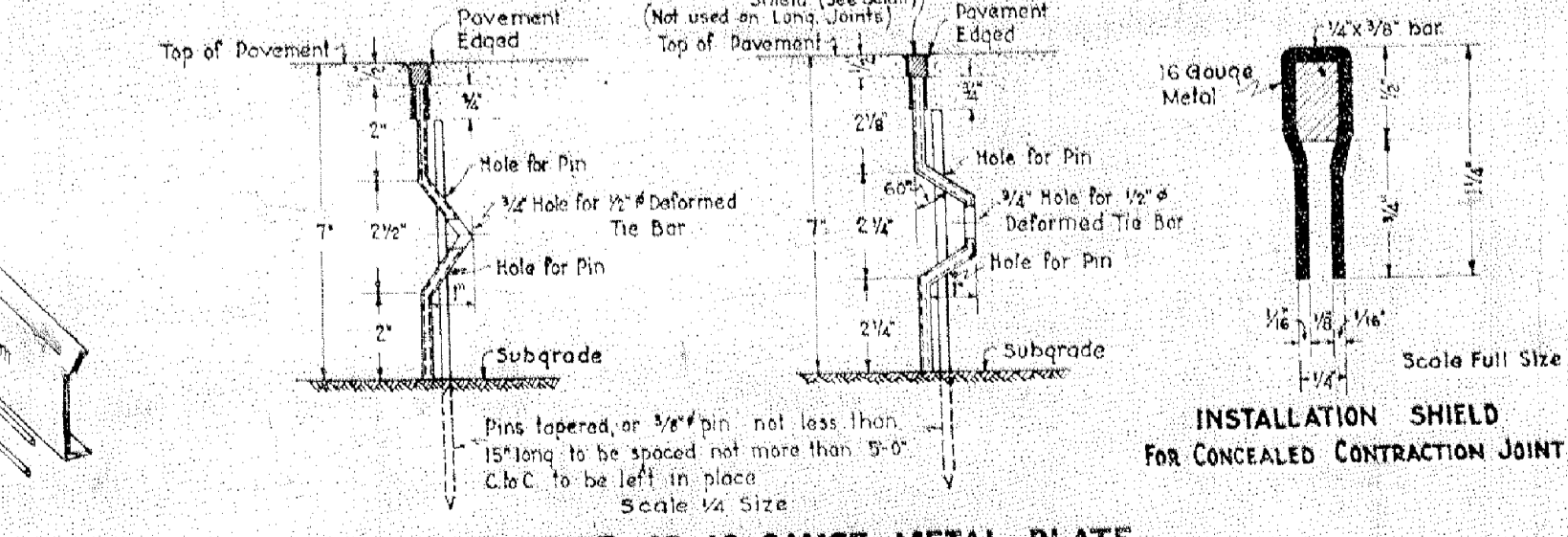
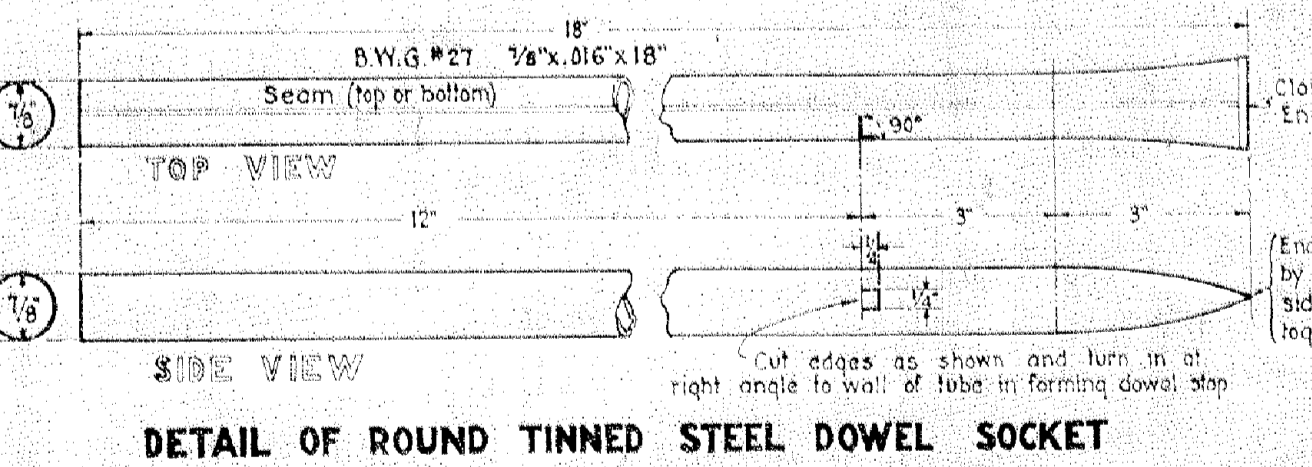
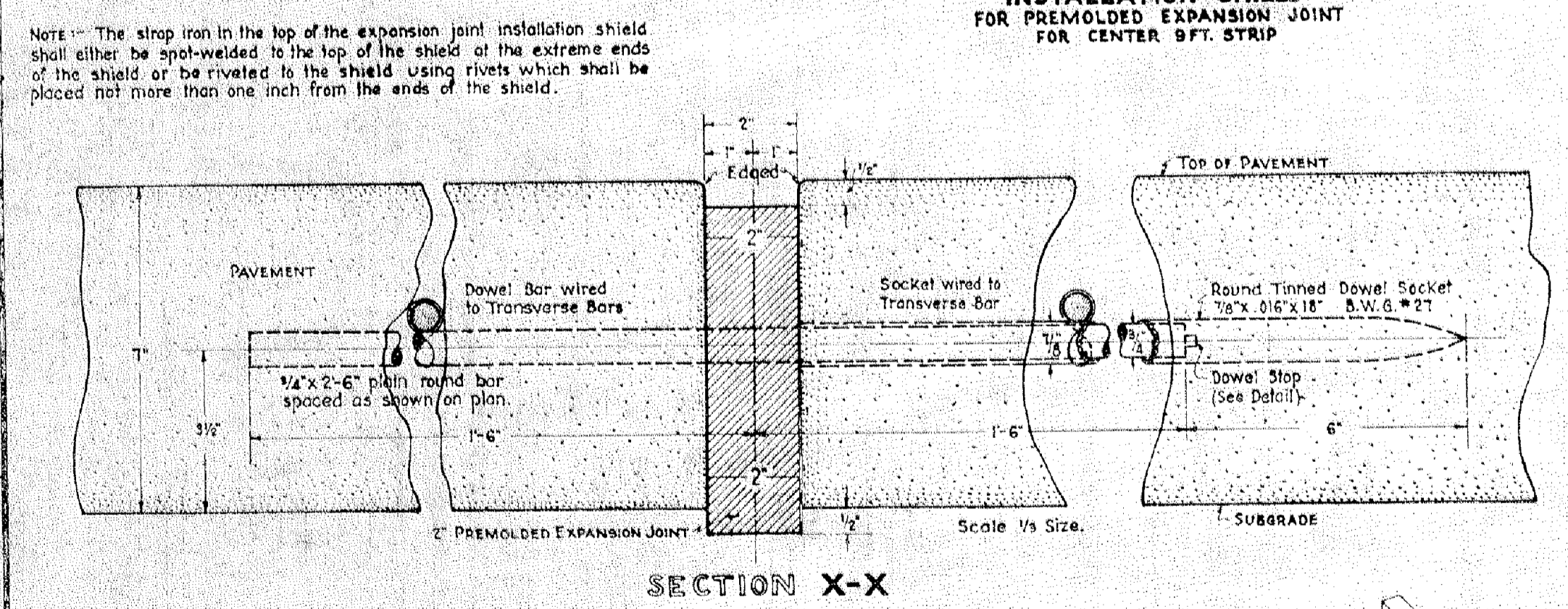
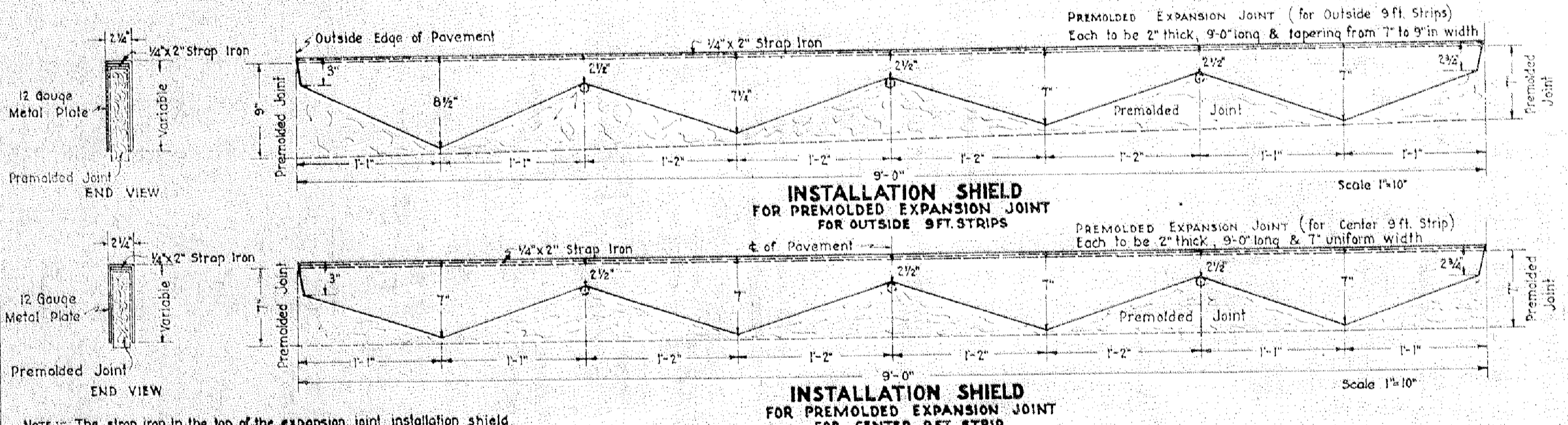
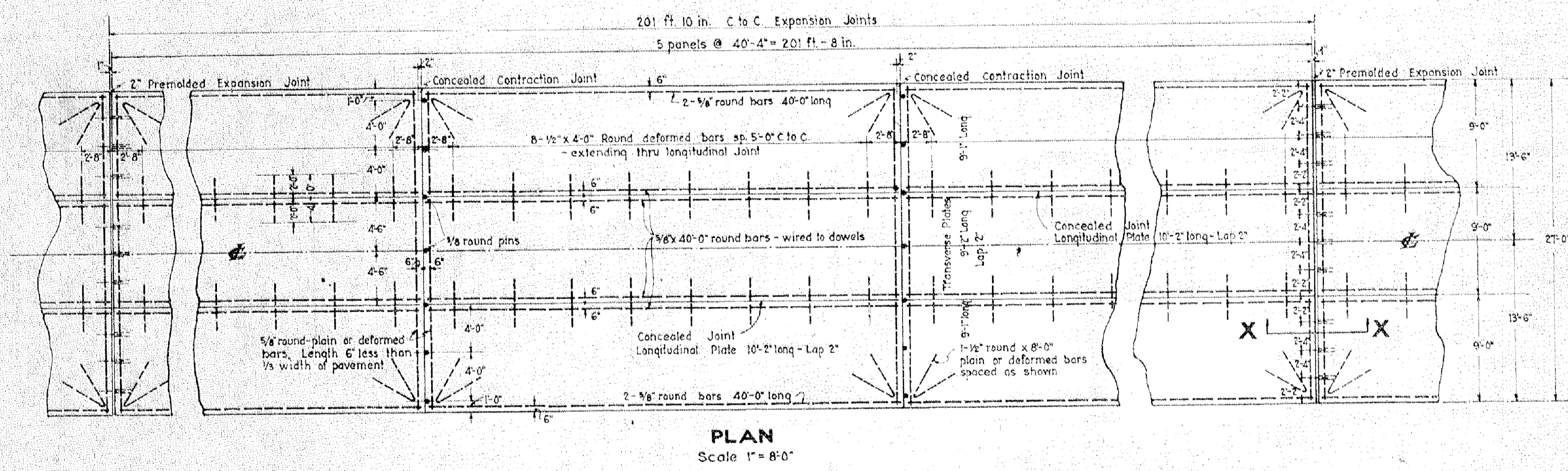
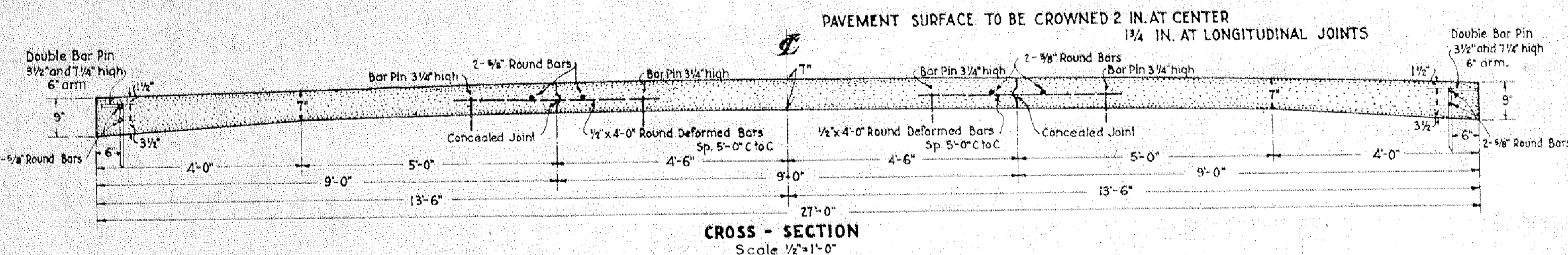


**CHART No. 4 TABLE OF OFFSETS AND AREAS FOR WIDENING OF CURVES ON 27 FT. PAVEMENT**

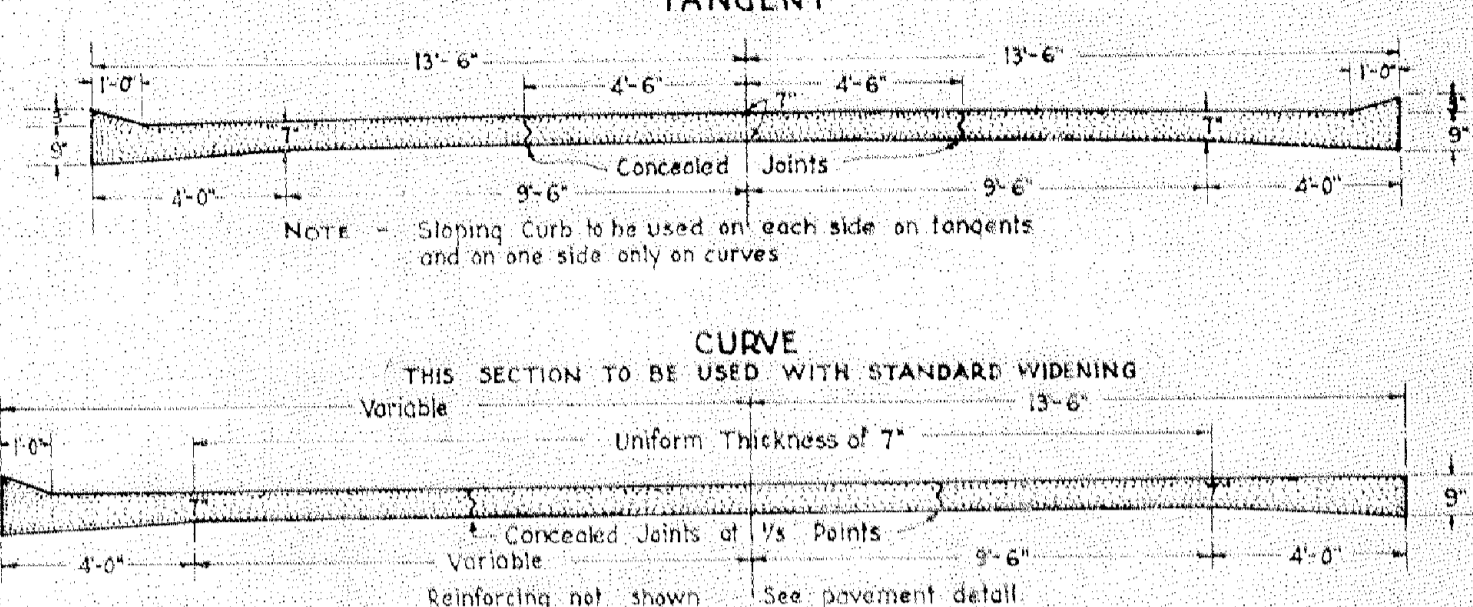
DEGREE OF CURVE	PERPENDICULAR OFFSET FROM INNER EDGE OF PAVEMENT ON TANGENT					RADIAL OFFSET FROM INNER EDGE OF PAVEMENT ON CURVE					AREA IN SQ. YD. FOR THE TYPICAL TRANSITION CURVES		AREA IN SQ. YDS. PER 100 LIN. FT. OF CURVE FOR EXTRA PAVEMENT	
	DISTANCE FROM B.W.T.					DISTANCE FROM B.W.T.					WIDTH OF PAVEMENT		WIDTH OF PAVEMENT	
	10'	20'	30'	40'	50'	10'	20'	30'	40'	50'	18'	20'	18'	20'
4°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.909	21.931	22.072	22.056
5°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.865	21.837	21.965	21.937
6°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.822	21.794	21.919	21.891
7°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.779	21.751	21.876	21.848
8°	0.03	0.16	0.37	0.64	0.99	1.33	1.62	1.83	1.97	2.00	21.737	21.709	21.833	21.805
9°	0.03	0.17	0.39	0.68	1.06	1.43	1.74	1.97	2.11	2.14	23.241	23.213	23.337	23.309
10°	0.03	0.17	0.40	0.72	1.13	1.54	1.87	2.11	2.25	2.29	24.150	24.122	24.246	24.218
11°	0.03	0.18	0.42	0.76	1.20	1.64	1.99	2.24	2.39	2.43	26.221	26.193	26.317	26.289
12°	0.04	0.18	0.44	0.80	1.27	1.74	2.12	2.38	2.54	2.57	27.150	27.122	27.246	27.218
13°	0.04	0.19	0.46	0.84	1.34	1.85	2.24	2.52	2.68	2.71	29.250	29.222	29.346	29.318
14°	0.04	0.19	0.47	0.88	1.42	1.95	2.37	2.66	2.82	2.86	30.134	30.106	30.230	30.202
15°	0.04	0.20	0.49	0.92	1.49	2.05	2.49	2.79	2.96	3.00	32.118	32.090	32.214	32.186
16°	0.04	0.20	0.51	0.96	1.56	2.16	2.62	2.93	3.10	3.14	33.659	33.631	33.755	33.727
17°	0.04	0.21	0.52	1.00	1.63	2.26	2.74	3.07	3.24	3.29	35.102	35.074	35.198	35.170
18°	0.05	0.21	0.54	1.04	1.70	2.36	2.87	3.21	3.38	3.43	36.545	36.517	36.641	36.613
19°	0.05	0.22	0.56	1.07	1.77	2.47	2.99	3.34	3.53	3.57	38.012	37.984	38.108	38.080
20°	0.05	0.22	0.58	1.11	1.84	2.57	3.12	3.48	3.67	3.71	39.447	39.419	39.543	39.515
21°	0.05	0.23	0.59	1.15	1.91	2.67	3.24	3.62	3.81	3.86	40.884	40.856	40.980	40.952
22°	0.05	0.23	0.61	1.19	1.98	2.78	3.37	3.76	3.95	4.00	42.307	42.279	42.403	42.375
23°	0.05	0.24	0.63	1.23	2.05	2.88	3.49	3.89	4.09	4.14	43.703	43.675	43.799	43.771
24°	0.06	0.24	0.64	1.27	2.12	2.98	3.62	4.03	4.23	4.29	45.124	45.096	45.220	45.192
25°	0.06	0.25	0.66											



## 27 FT. PAVEMENT ONE COURSE CONCRETE



## CURB SECTIONS



## CONSTRUCTION NOTES

The Curb and Edge of Pavement shall be carefully finished at the time of initial set, with an edge having a radius of one half (1/2) inch. The edge shall be smooth and true to line.

The Sloping Curb may be constructed from concrete which is mixed the same as the concrete in the pavement slab or the coarse aggregate may be reduced for workability, holding the same cement-sand ratio which is used in the pavement slab.

No longitudinal bars shall be continuous thru a contraction or expansion joint.

Pins for holding bars shall be designed so as to hold the bars in specified position and shall be spaced at 5 ft intervals on the outside longitudinal bars, also at 4 ft from ends of each dowel bar, also at least 2 ft from each transverse bar. These pins shall be left in place in Pavement.

The contractor shall submit sample of type of pin to be used to the Construction Engineer and obtain approval before using.

The concrete of all Expansion and Contraction Joints shall be finished with an edge tool, and all joints shall be installed with a shield as shown. The Contraction and Expansion Joints shall be continuous through the Sloping Curb. Longitudinal joints shall not be continuous through Contraction or Expansion Joints.

The installation shield shall be thoroughly cleaned and oiled inside and outside each time it is used. No installation shield is required on Longitudinal Concealed Joints. Longitudinal Concealed Joints shall be placed at one-third points where pavement is widened.

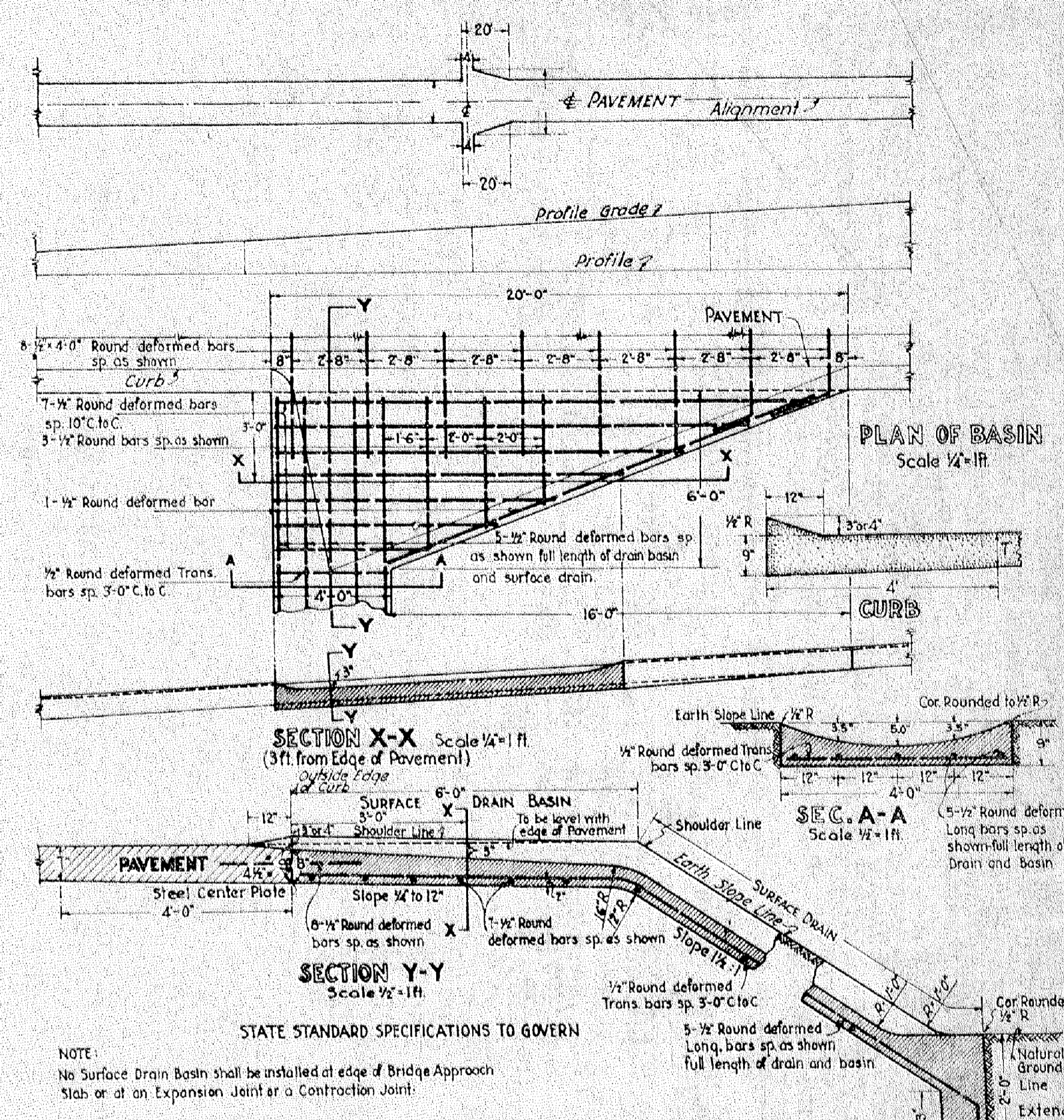
On one end of each Expansion Joint Dowel Bar, a Round Tinned Steel Dowel Socket (see detail) shall be placed as shown.

Reinforcing bars shall be one piece bent as shown.

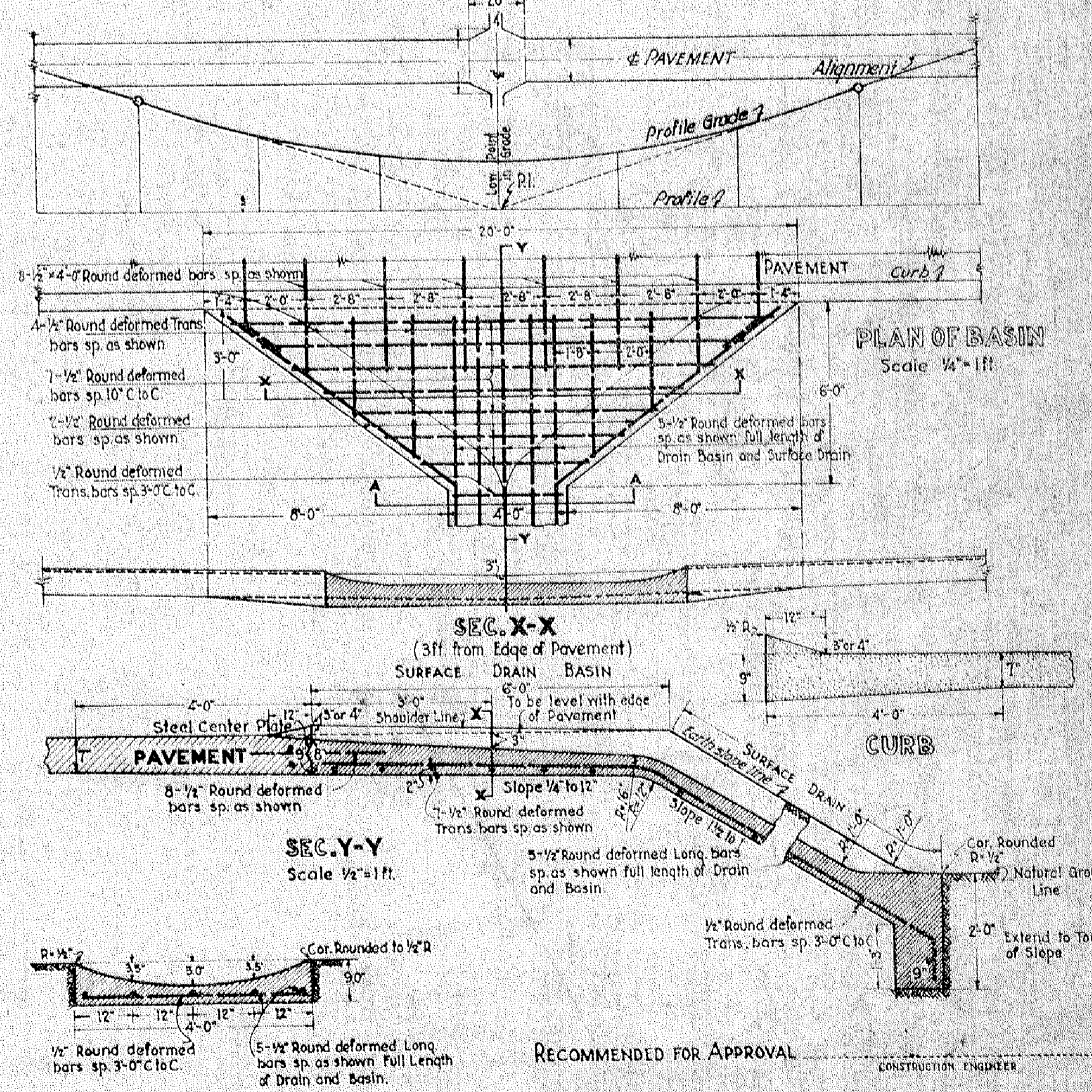
Each Surface Drain Basin shall be dowelled to the Pavement Slab by eight 1/2 inch x 4 inch Round Deformed Bars spaced as shown in Basin Details.

Strips of steel Center Plates for Contraction Joints shall be furnished and placed in the Edge of Pavement Slab adjacent to the forms wherever Surface Drain Basins are to be constructed. These plates shall be punched in the field to accommodate the Surface Drain Dowel Bars. The Dowel Bars shall be bent at right angles to the middle and installed in the pavement slab having one end of each bar placed in the groove of the plate so that the bars can be straightened after the pavement form is removed.

## 6 FT. SURFACE DRAIN ON GRADE



## 6 FT. SURFACE DRAIN FOR LOW POINT ON GRADE

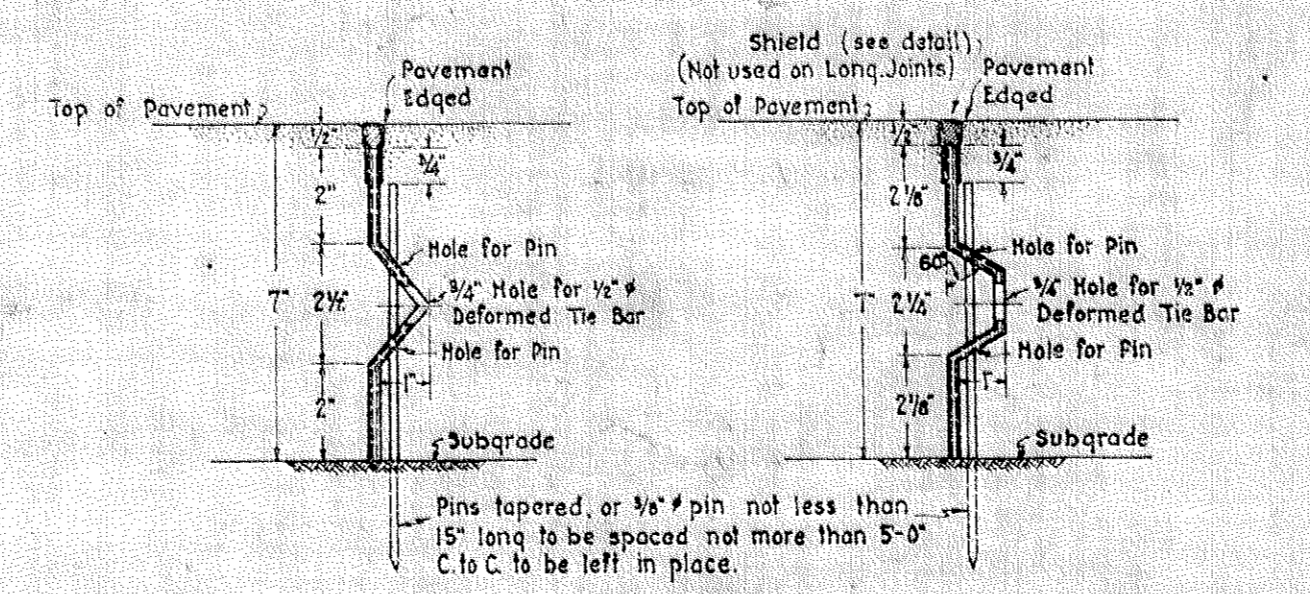
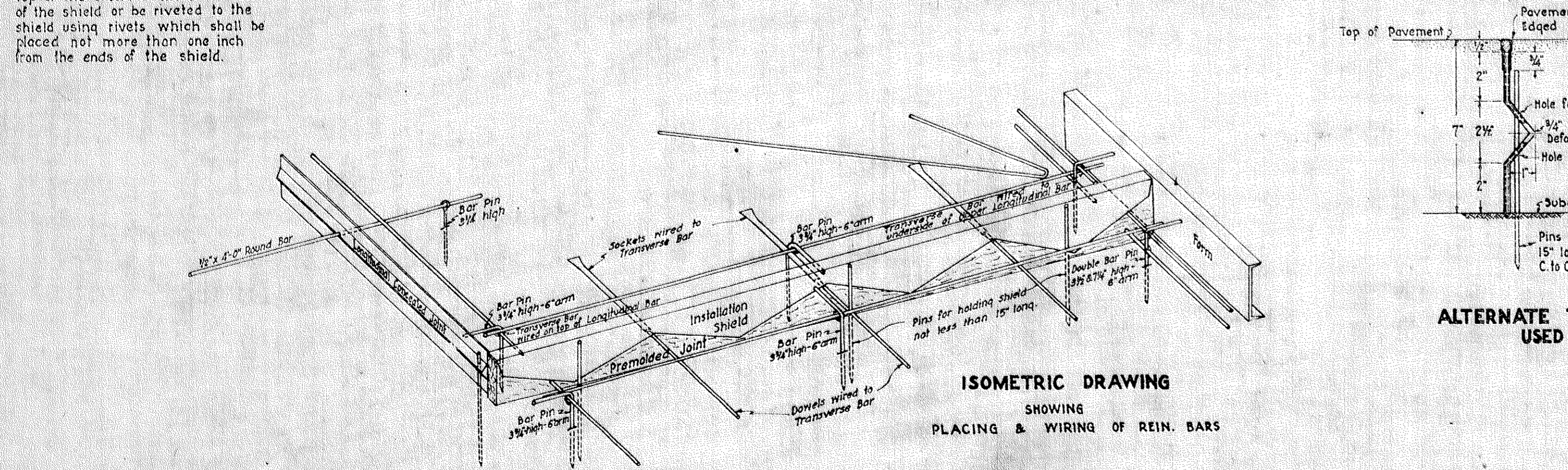
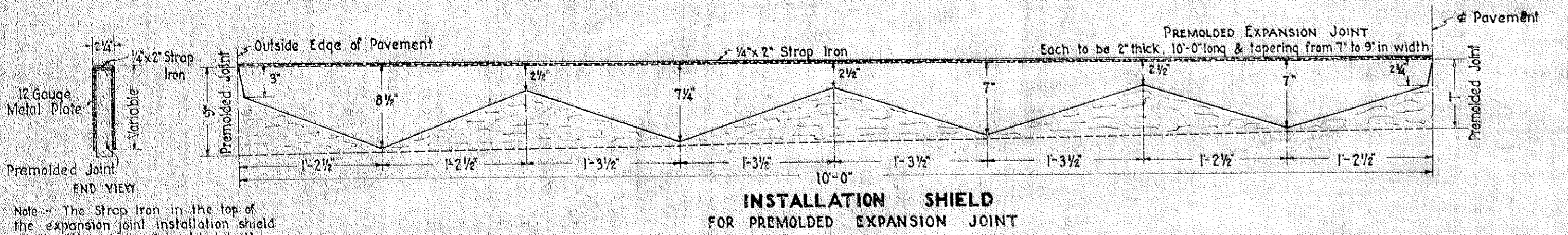
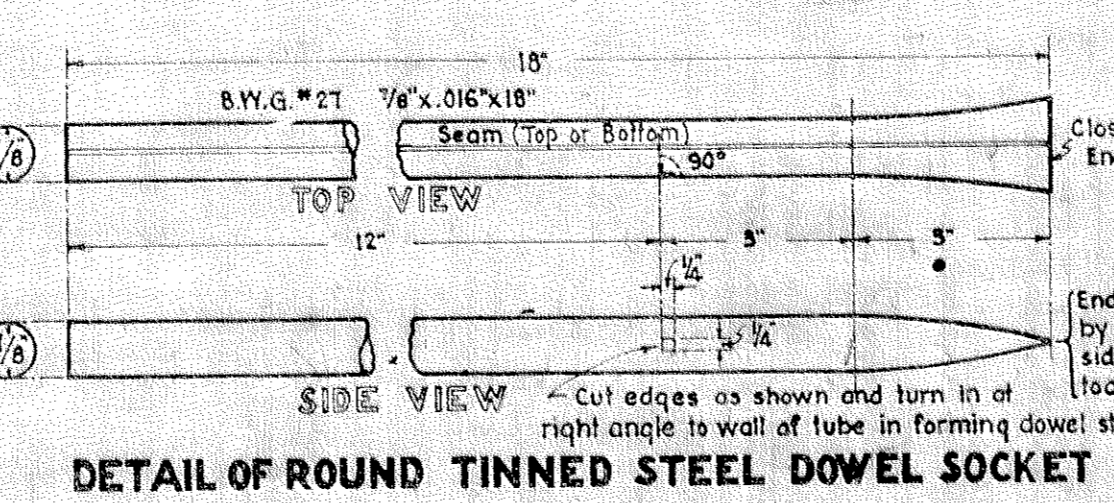
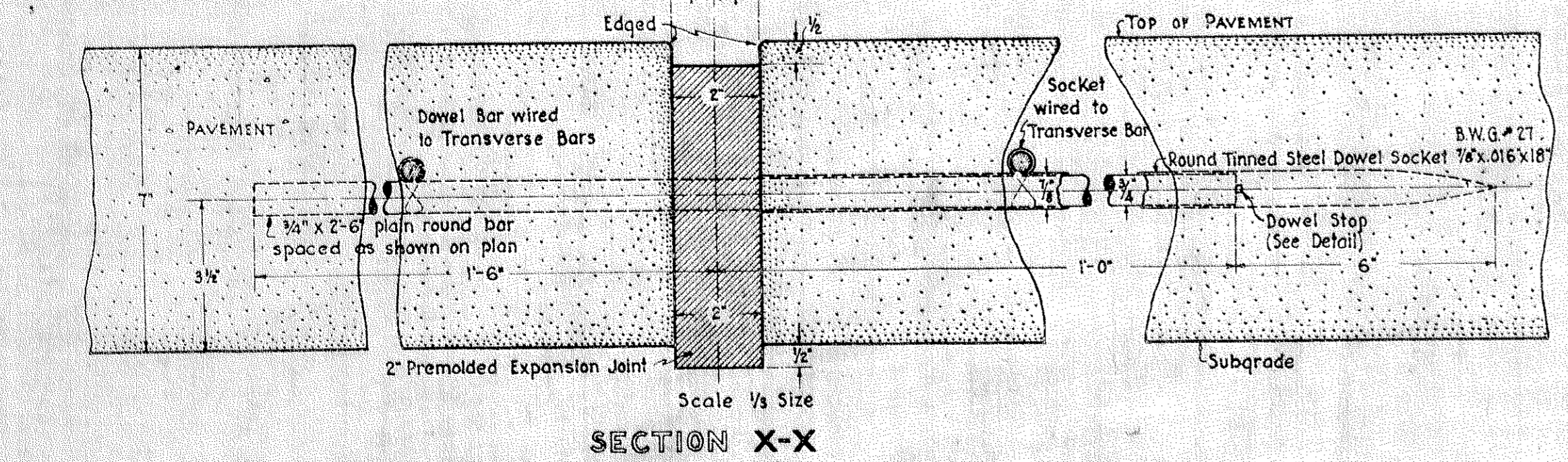
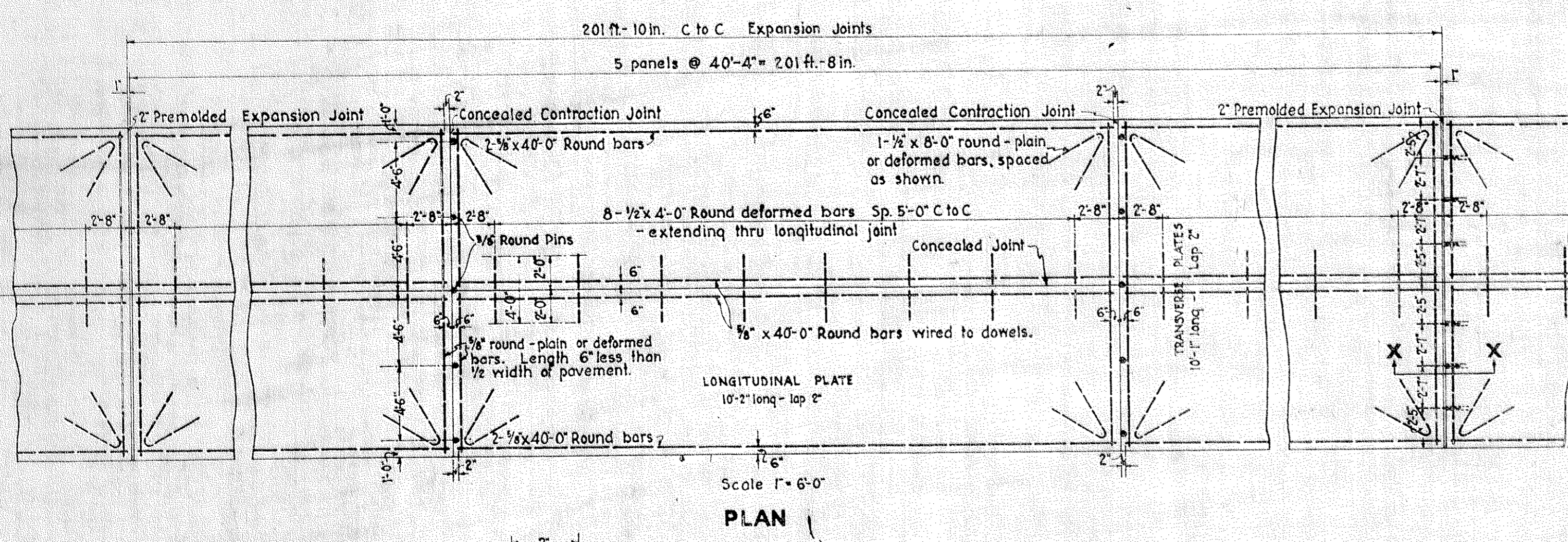
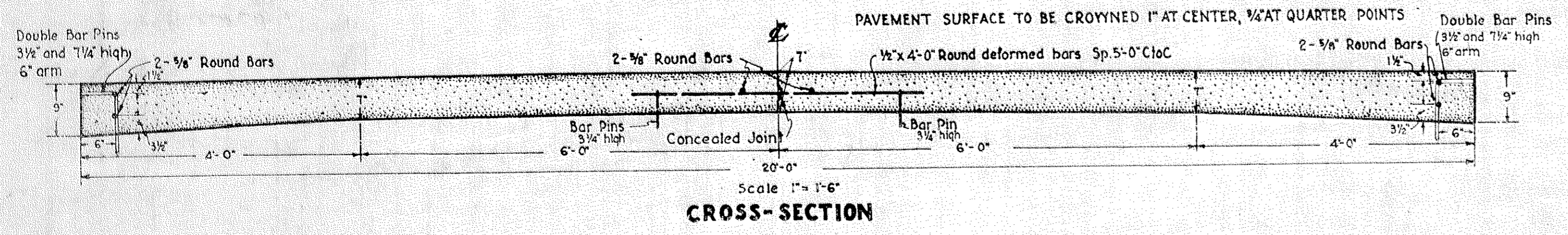


S.P. 6202 (T.H. 8-63)  
S.P. 6203 (T.H. 8-63)  
S.P. 0201 (T.H. 8-63)  
S.P. 8201 (T.H. 8-63)

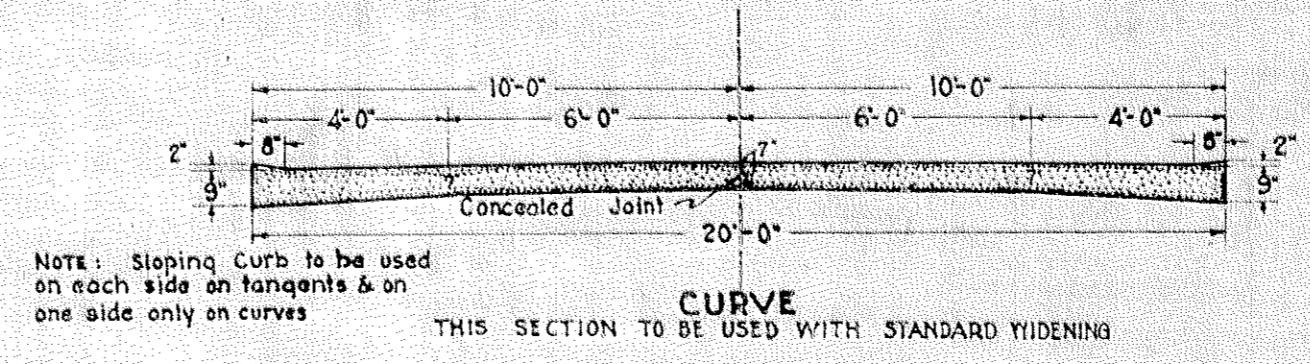
**SECTION A-A**  
Scale 1/2"=1'-0"

RECOMMENDED FOR APPROVAL  
APPROVED: 8-22-1927  
CONSTRUCTION ENGINEER  
CHIEF ENGINEER

## 20 FT. PAVEMENT ONE COURSE CONCRETE



## CURB SECTIONS TANGENT



**CONSTRUCTION NOTES**

The Curb and Edges of Pavement shall be carefully finished at the time of initial set with an Edger having a radius of one half (1/2) inch. The edge shall be smooth and true to line.

The Sloping Curb may be constructed from concrete which is mixed the same as the concrete in the pavement slab or the coarse aggregate may be reduced for workability, holding the same cement-sand ratio which is used in the pavement slab.

No Longitudinal Bars shall be continuous thru a Contraction or Expansion Joint. Pins for holding bars shall be designed so as to hold the bars in specified position and shall be spaced of 5 intervals on the outside longitudinal bars; also 6" from ends of each dowel bar, also at least 2 pins for each transverse bar. These pins shall be left in place in Pavement.

The contractor shall submit sample of type of pin to be used to the Construction Engineer and obtain approval before using.

The Concrete at all Expansion and Contraction Joints shall be finished with an edging tool and all joints shall be installed with a shield as shown. The Contraction and Expansion Joints shall be continuous through the Sloping Curb. Longitudinal joints shall not be continuous through Contraction or Expansion Joints. The installation shield shall be thoroughly cleaned and oiled inside and outside each time it is used. No installation shield is required on Longitudinal concealed Joints. Longitudinal concealed Joints shall be placed at mid-point where pavement is widened.

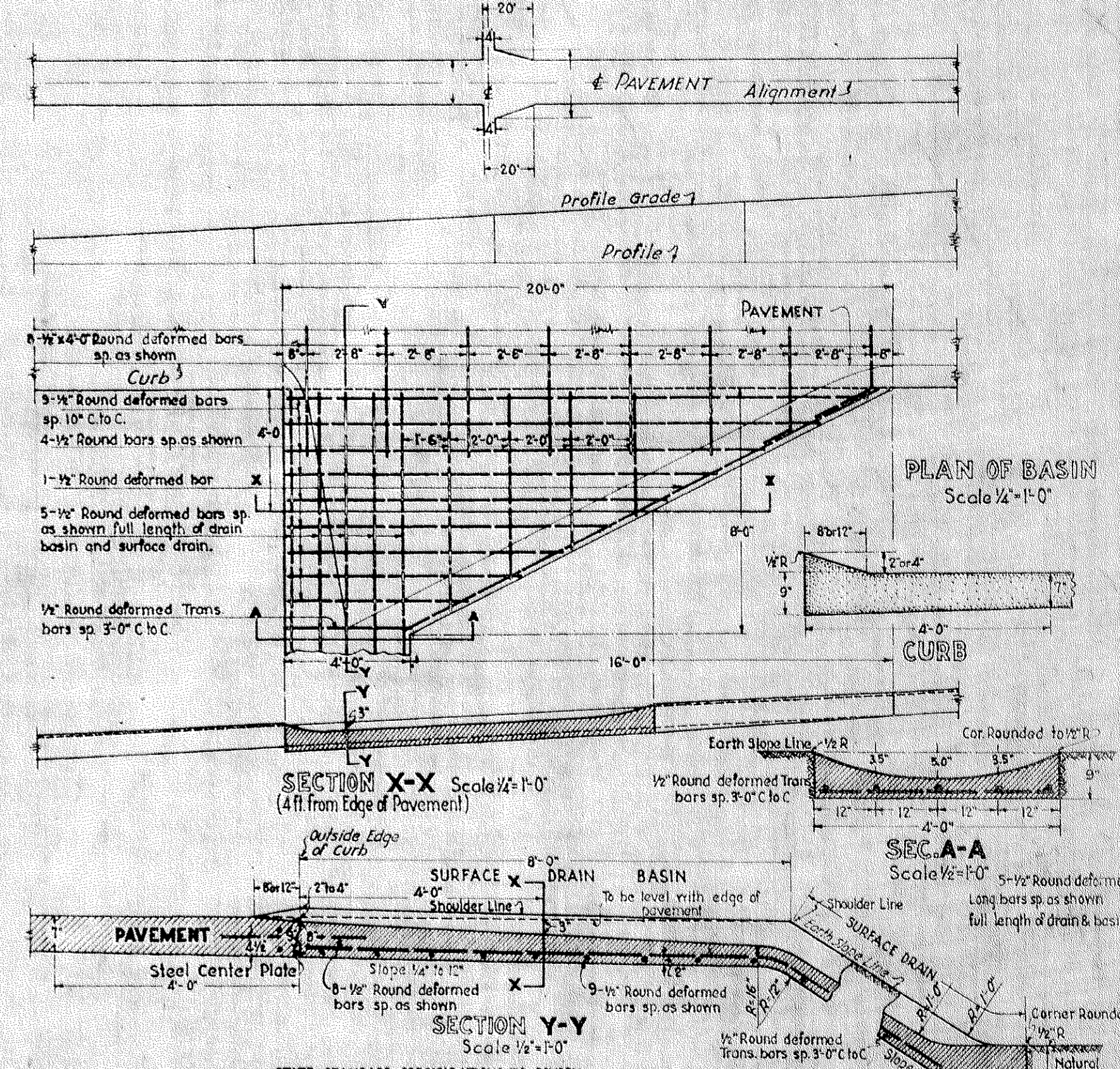
On one end of each Expansion Joint Dowel Bar, a Round Tinned Steel Dowel Socket (see details) shall be placed as shown.

Radial Bars shall be one piece bent as shown.

Each Surface Drain Basin shall be dowelled to the Pavement Slab by eight 1/2" x 4'-0" Round Deformed Bars spaced as shown on basin details.

Strips of Sheet Center Plate Contraction Joint shall be furnished and placed in the Edge of Pavement Slab adjacent to the forms wherever Surface Drain Basins are to be constructed. These plates shall be punched in the field to accommodate the Surface Drain Dowel Bars. The Dowel Bars shall be bent at right angles in the middle and installed in the pavement slab having one end of each bar placed in the groove of the plate so that the bars can be straightened after the pavement form is removed.

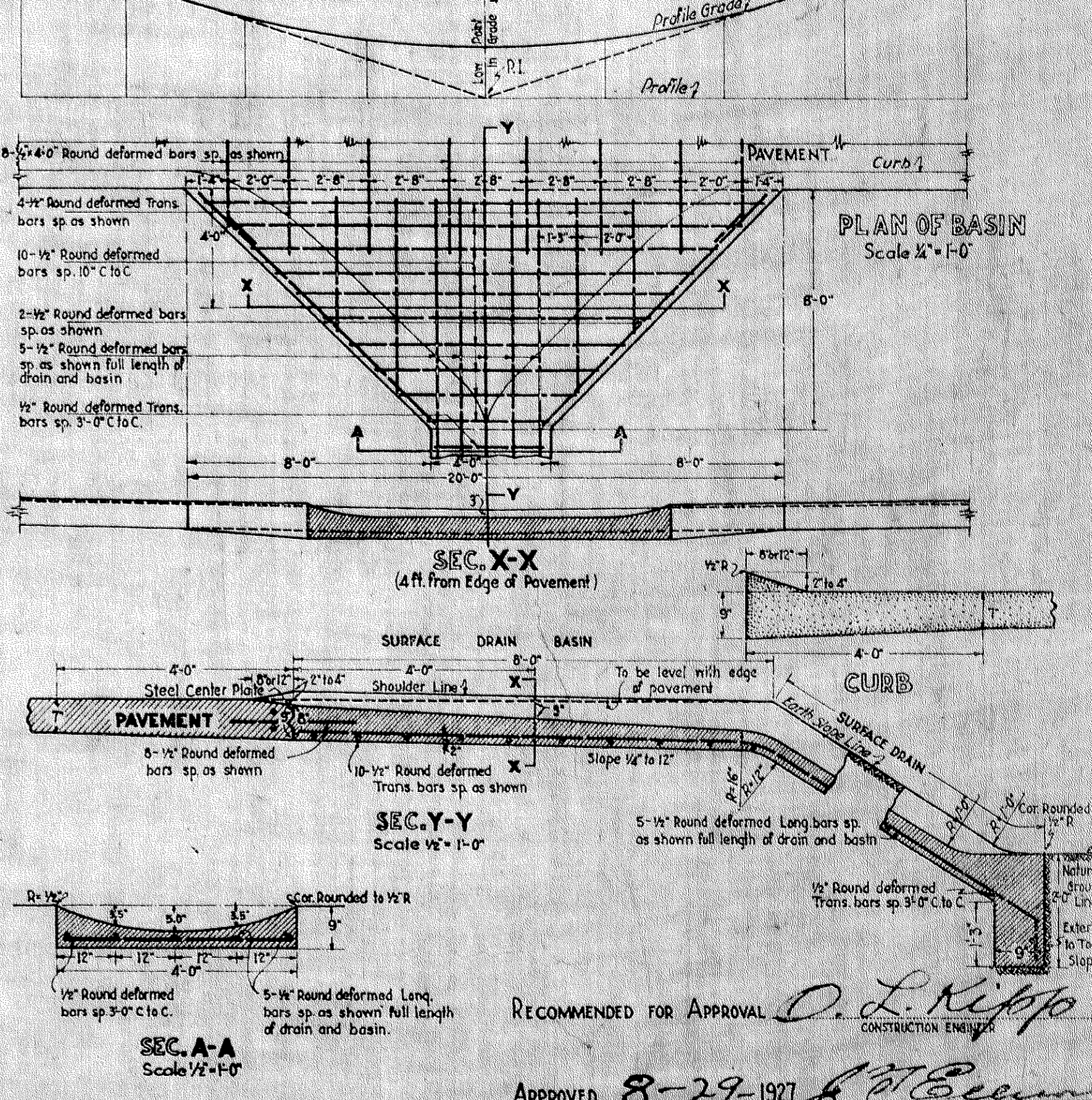
## 8 FT. SURFACE DRAIN ON GRADE



**STATE STANDARD SPECIFICATIONS TO GOVERN**

**NOTE:** No surface drain basin shall be installed at edge of Bridge Approach Slab or at an Expansion Joint or a Contraction Joint.

## 8 FT. SURFACE DRAIN FOR LOW POINT ON GRADE

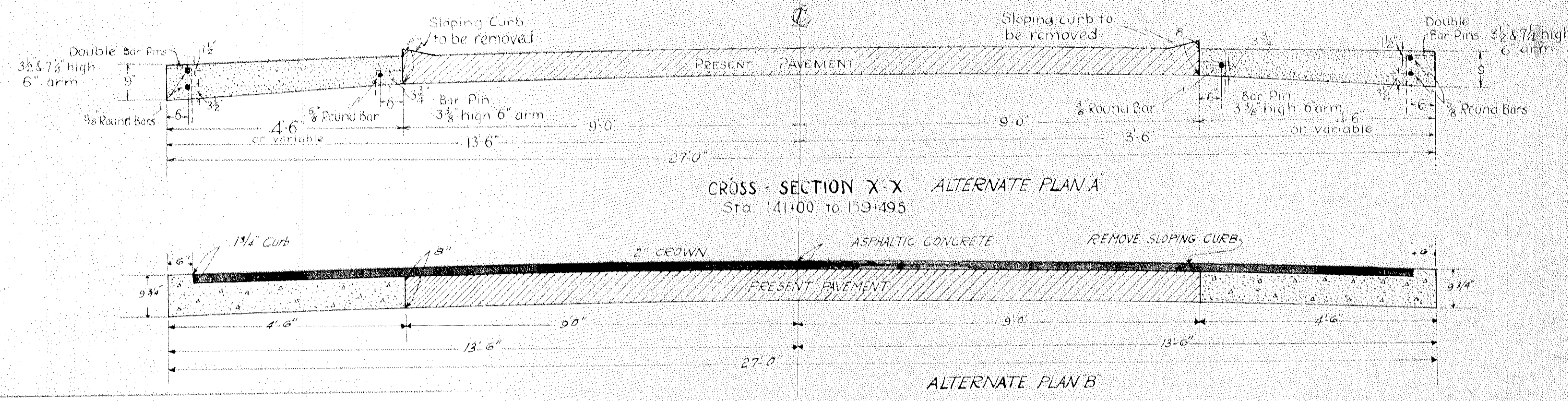
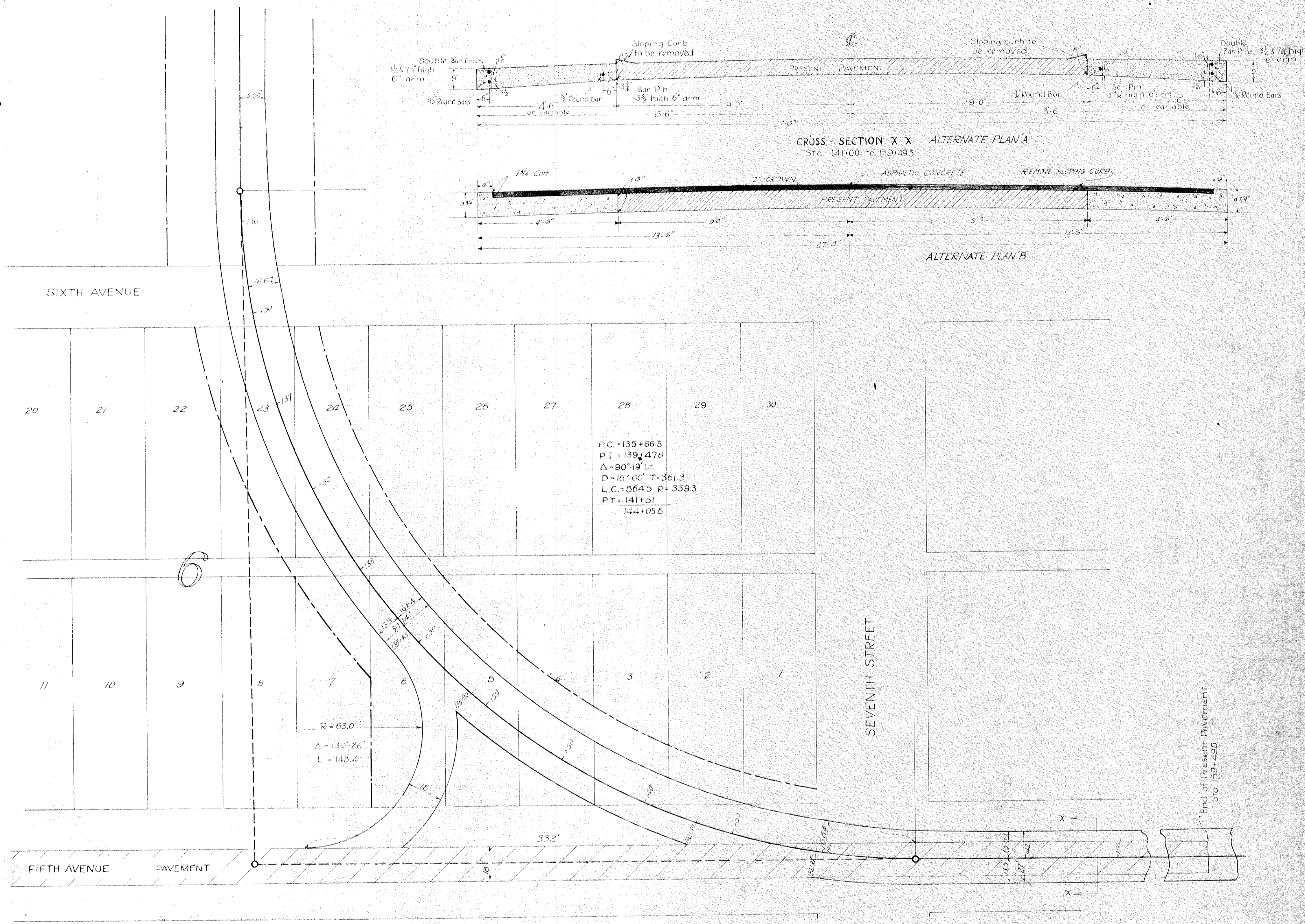
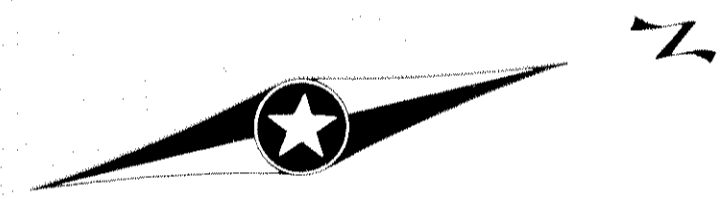


**NOTE:- THIS 20' PAVEMENT DESIGN SHALL APPLY TO THE SOUTH CONNECTION WITH T.H. No. 61 ONLY**

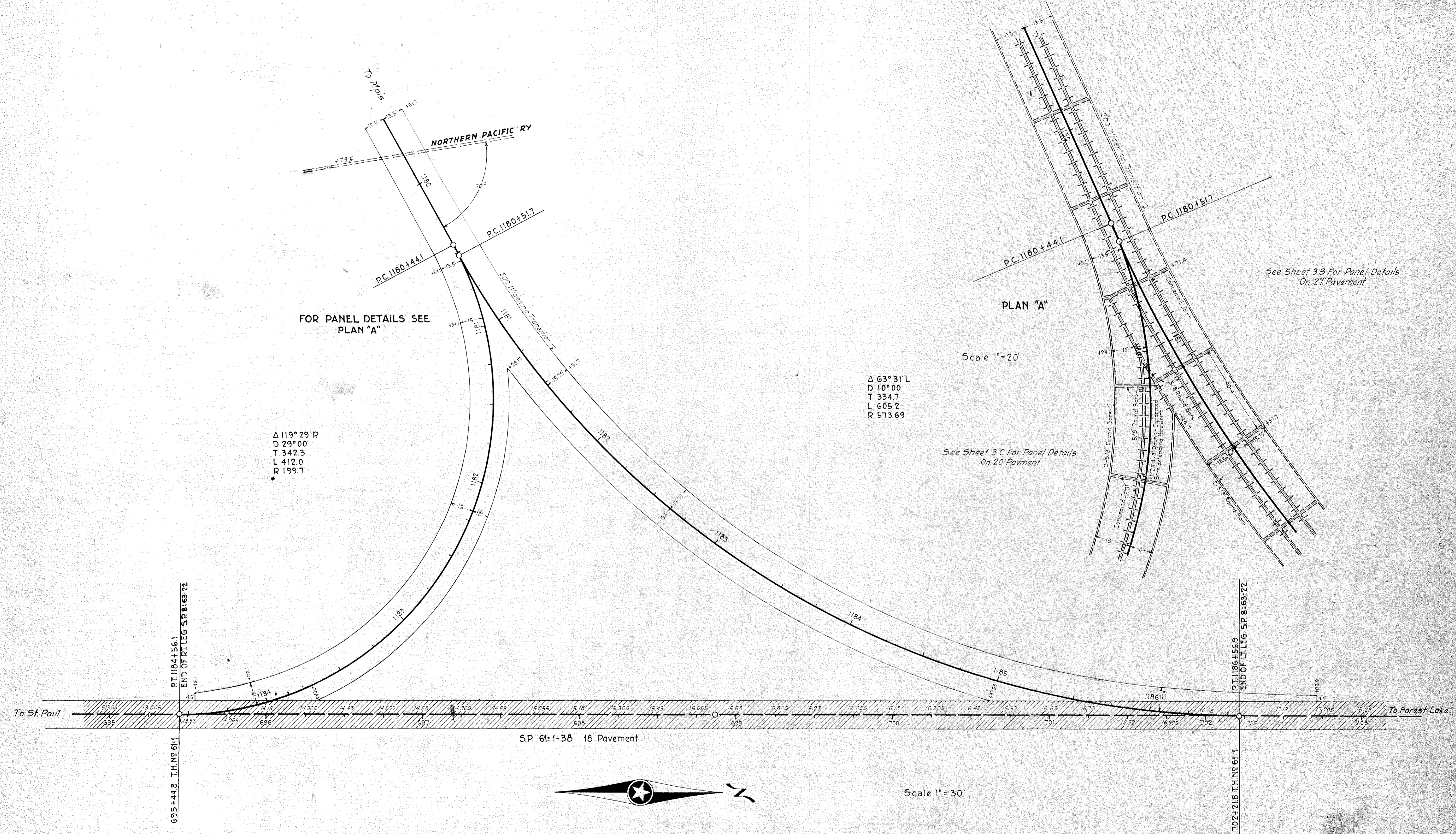
RECOMMENDED FOR APPROVAL *O. L. Kipp*  
CONSTRUCTION ENGINEER

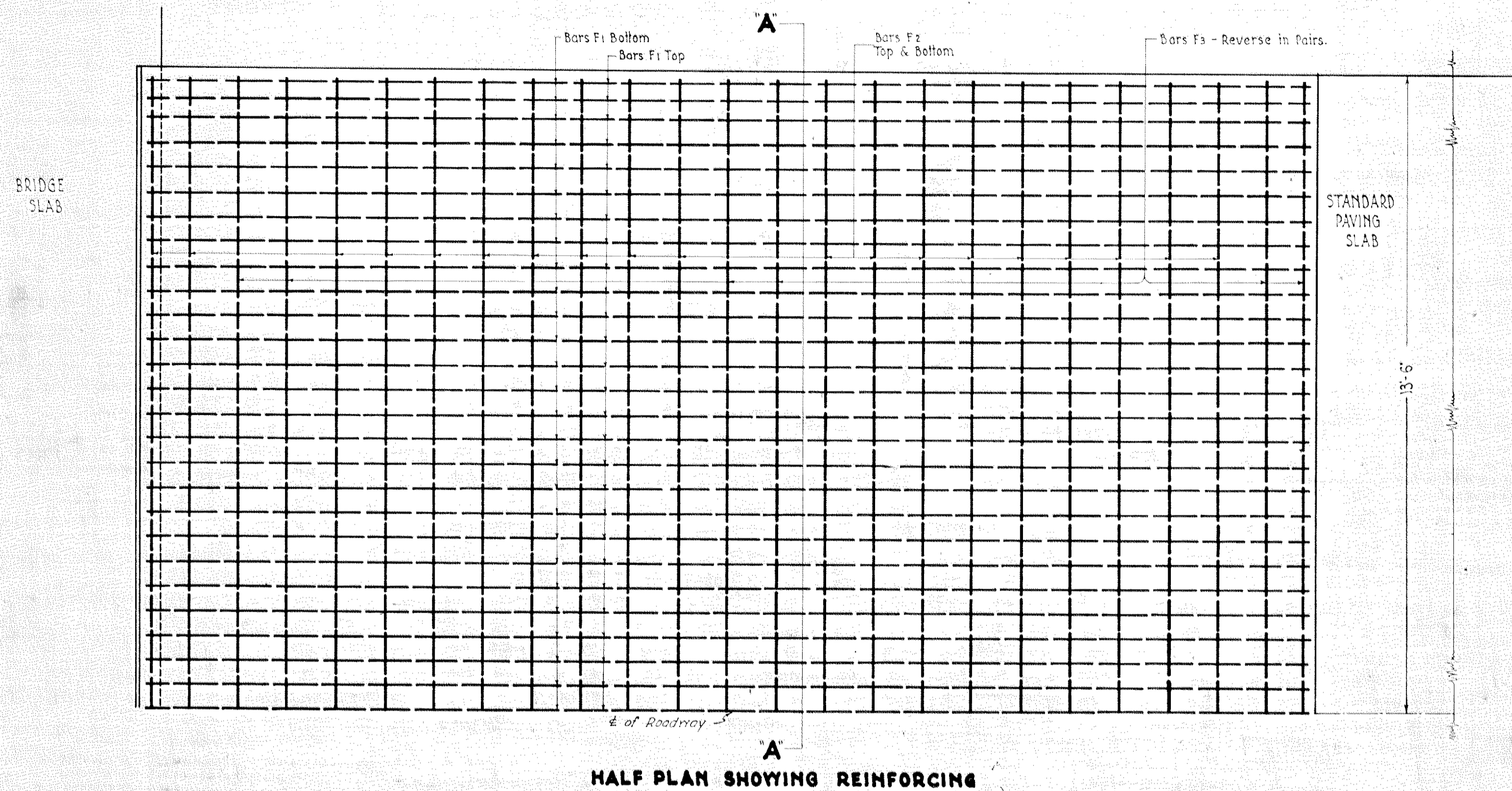
APPROVED *8-29-1927* *J. M. Coleman*  
CHIEF ENGINEER

# NEW BRIGHTON



SCALE 1"=30'





**BILL OF MATERIAL FOR ONE APPROACH SLAB BRIDGE N<sup>o</sup> 4533**

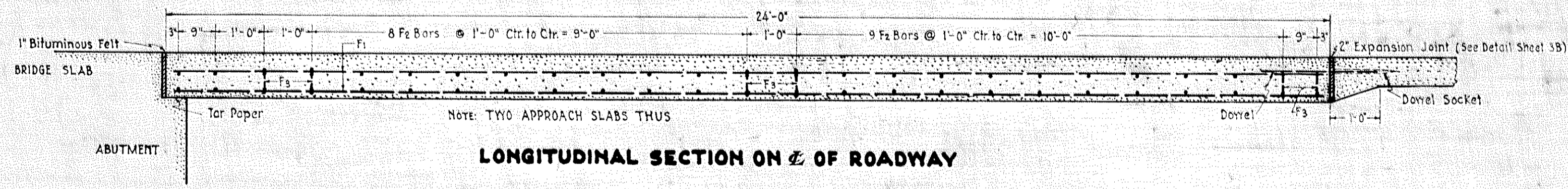
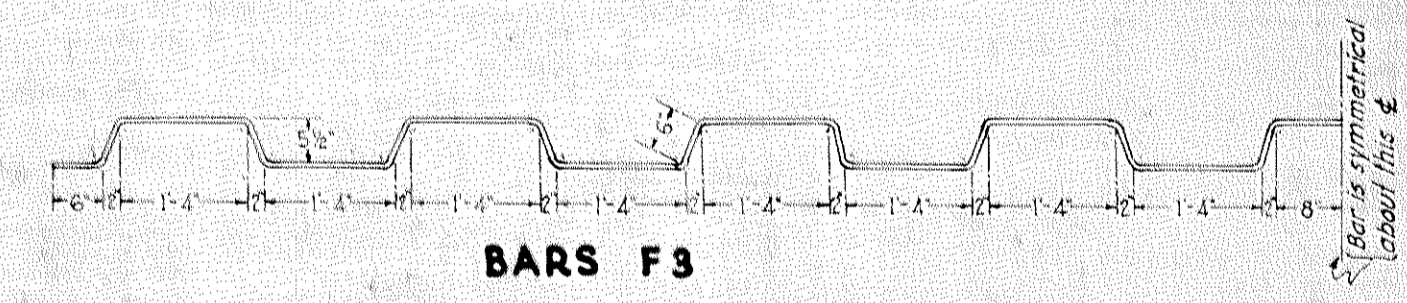
BAR	N <sup>o</sup>	SIZE	LENGTH	SHAPE	LOCATION
F1	83	1/2 #	23'-9"	Straight	Slab Longitudinal
F2	38	1/2 #	26'-9"	"	" Transverse
F3	6	1/2 #	32'-8"	Bent	" "
Total Reinf'g Steel for One Approach Slab					2127 Lbs
Total Concrete					20.97 Cu.Yds
1Pc. Bituminous Felt 11"(ctr) x 1' x 27'-0"					

**BILL OF MATERIAL FOR ONE APPROACH SLAB BRIDGE N<sup>o</sup> 4535**

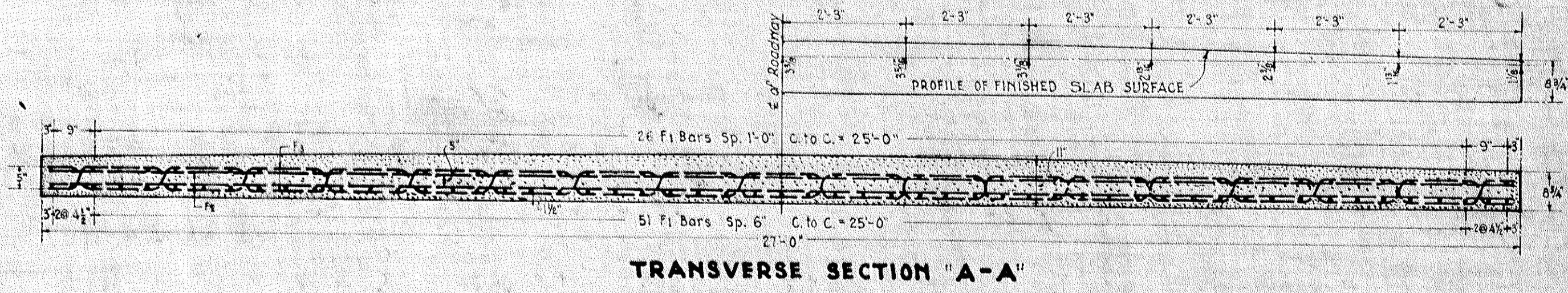
BAR	N <sup>o</sup>	SIZE	LENGTH	SHAPE	LOCATION
F1	83	1/2 #	23'-9"	Straight	Slab Longitudinal
F2	38	1/2 #	26'-9"	"	" Transverse
F3	6	1/2 #	32'-8"	Bent	" "
Total Reinf'g Steel for One Approach Slab					2127 Lbs
Total Concrete					22.38 Cu.Yds
1Pc. Bituminous Felt 12"(ctr) x 1' x 27'-0"					

**CONSTRUCTION NOTE-**  
All reinforcing bars to be of specified length and wired securely in place. Concrete mix and finish to conform to special provisions covering this project. (8-63-22)

**HALF PLAN SHOWING REINFORCING**



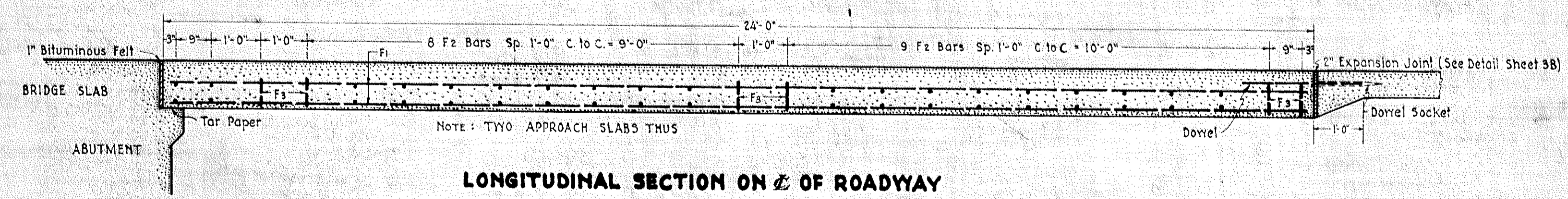
**LONGITUDINAL SECTION ON C OF ROADWAY**



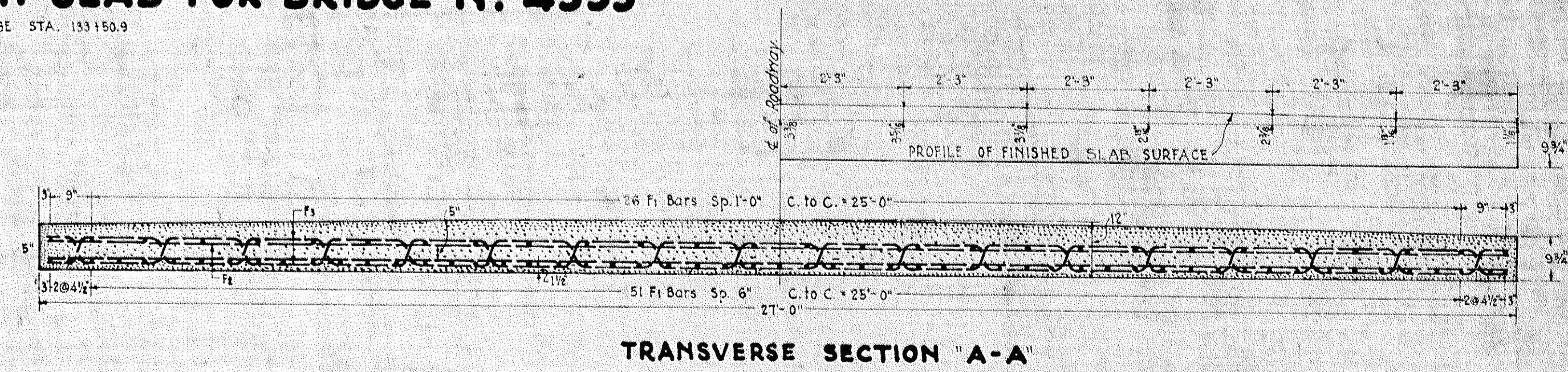
**TRANSVERSE SECTION "A-A"**

**DETAILS OF 24 FT. APPROACH SLAB FOR BRIDGE N<sup>o</sup> 4533**

CENTER LINE OF BRIDGE STA. 183+50.9



**LONGITUDINAL SECTION ON C OF ROADWAY**



**TRANSVERSE SECTION "A-A"**

**DETAILS OF 24 FT. APPROACH SLAB FOR BRIDGE N<sup>o</sup> 4535**

CENTER LINE OF BRIDGE STA. 269+43

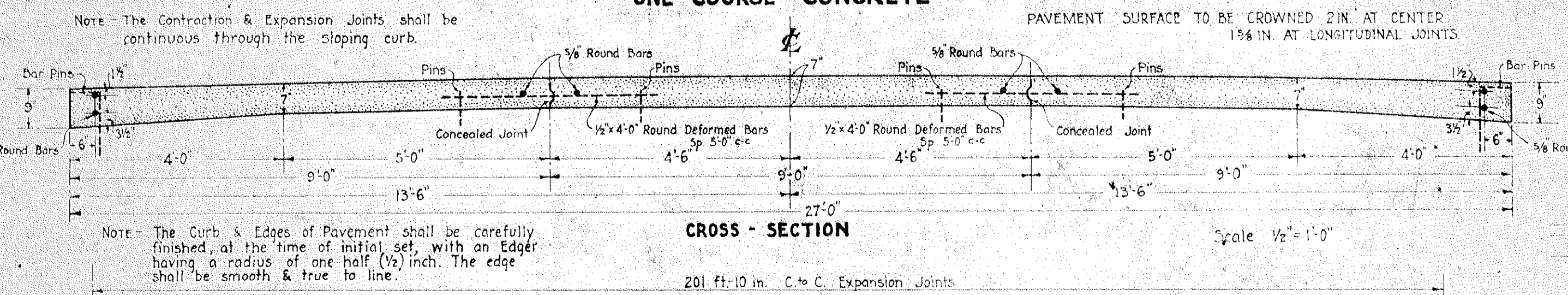
NOTE - IF ALTERNATE PLAN "B" PAVEMENT (ASPHALTIC CONCRETE) IS USED THE BRIDGE APPROACH SLABS SHALL BE CONSTRUCTED IN ACCORDANCE WITH PLAN "A" PAVEMENT (ONE COURSE CONCRETE). STEEL SHALL CONFORM TO 54-55 OF THE STANDARD SPECIFICATIONS.

S.P. 6202 (T.H. 8-63)  
S.P. 6203 (T.H. 8-63)

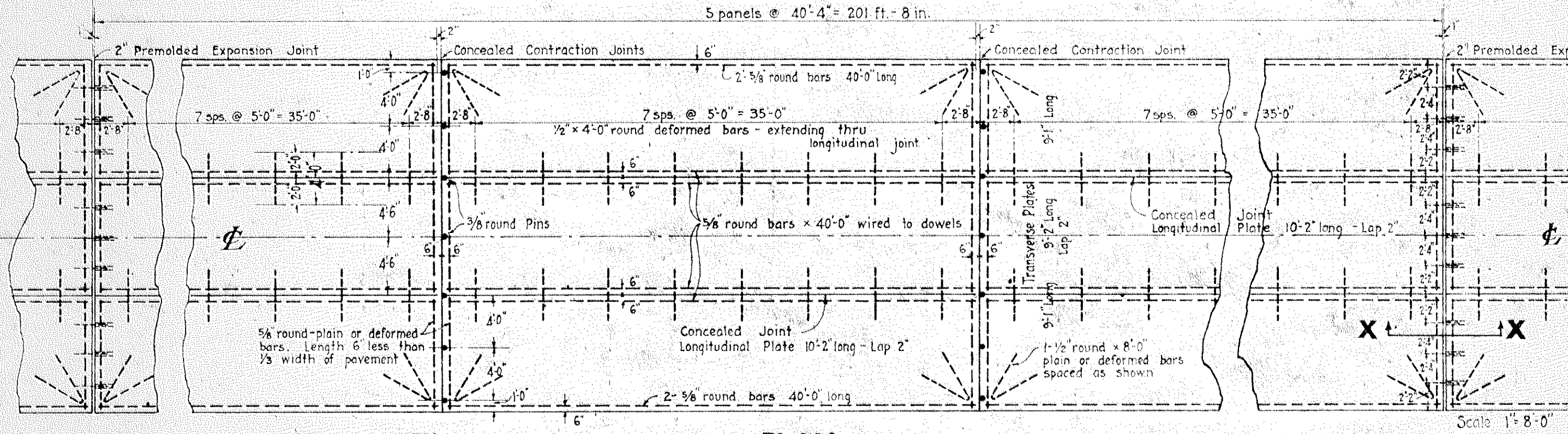
**BRIDGE APPROACH PAVING SLABS FOR BRIDGES NO. 4533 & 4535**

8-63-22 - 21.pdf  
Letting of Aug. 16, 1927

**DIVS. A & C ALTERNATE PLAN "A"**  
**27 FT. PAVEMENT**  
**ONE COURSE CONCRETE**

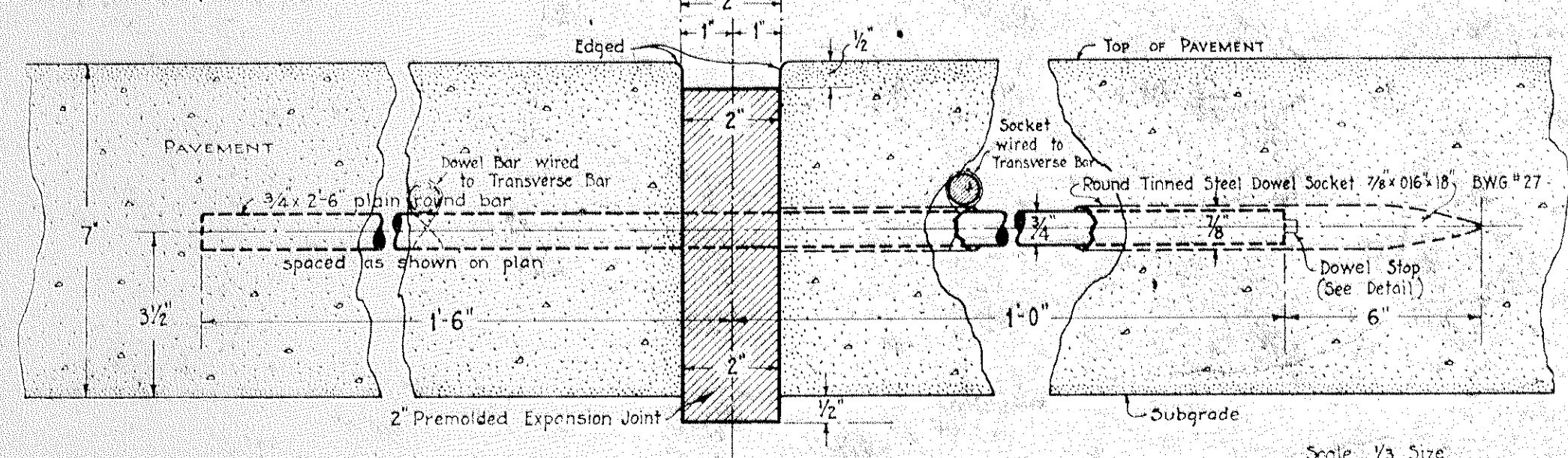


**CROSS - SECTION**  
 Scale 1/2" = 1'-0"

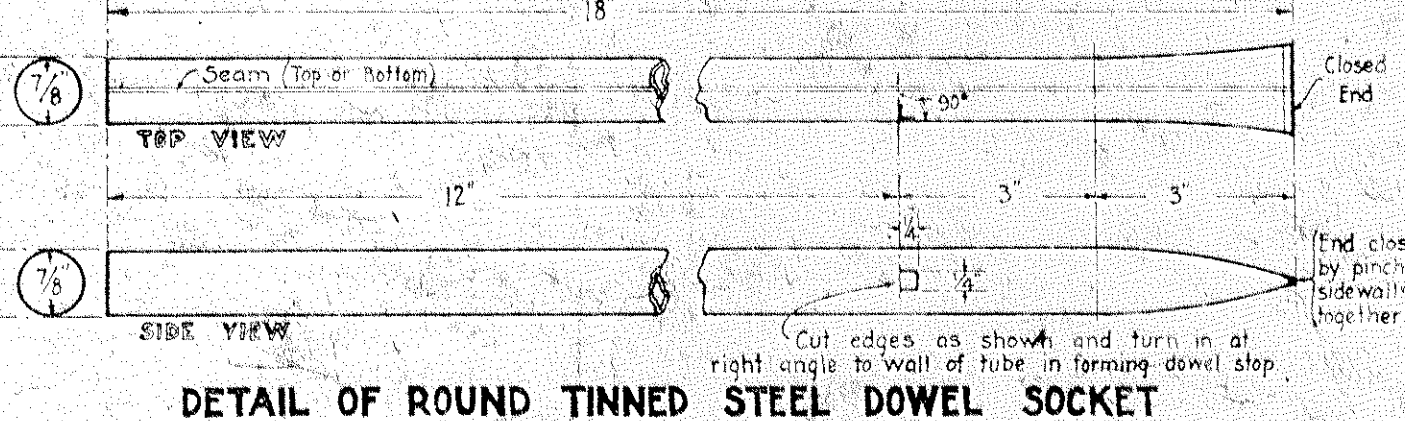


**PLAN**  
 Scale 1" = 8'-0"

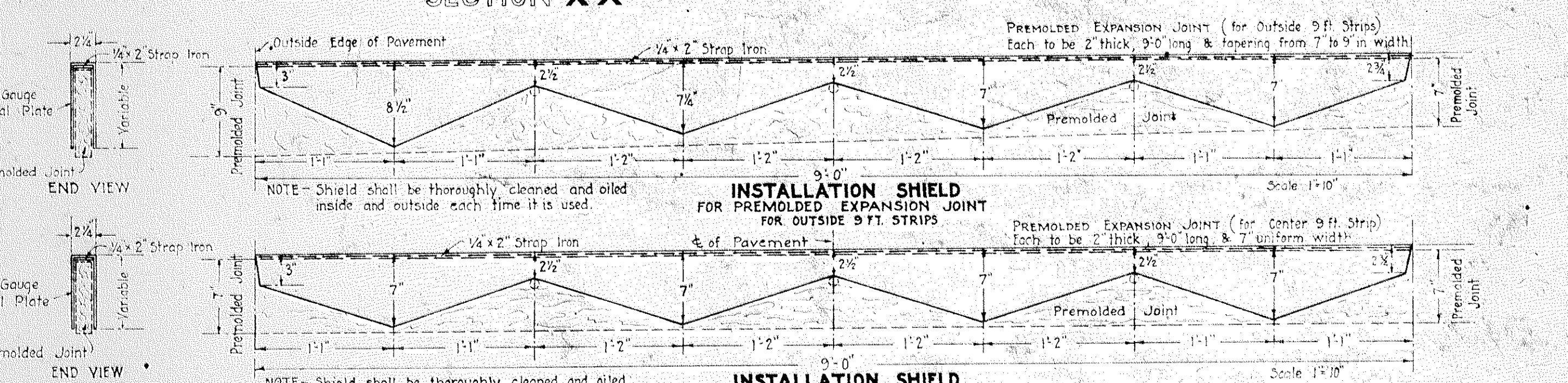
**CONSTRUCTION NOTES**  
 No Longitudinal Bars shall be continuous through a Contraction or Expansion Joint. Two inches of Approved Expansion Joint as specified in 54-22 of the Specifications, shall be used as shown. Pins for holding bars shall be designed so as to hold the bars in specified position and shall be spaced at 5 ft. intervals on the outside longitudinal bars; also 6 from ends of each dowel bar, and also at least 2 pins for each transverse bar. These pins to be left in place in Pavement. The Contractor shall submit sample of type of pin to be used to the Construction Engineer and obtain approval before using. The Concrete at all Expansion and Contraction Joints shall be finished with an Edging Tool, and all joints shall be installed with a shield as shown. Longitudinal Joints shall not be continuous through Contraction or Expansion Joints.



**SECTION X-X**  
 Scale 1/2" = 1'-0"

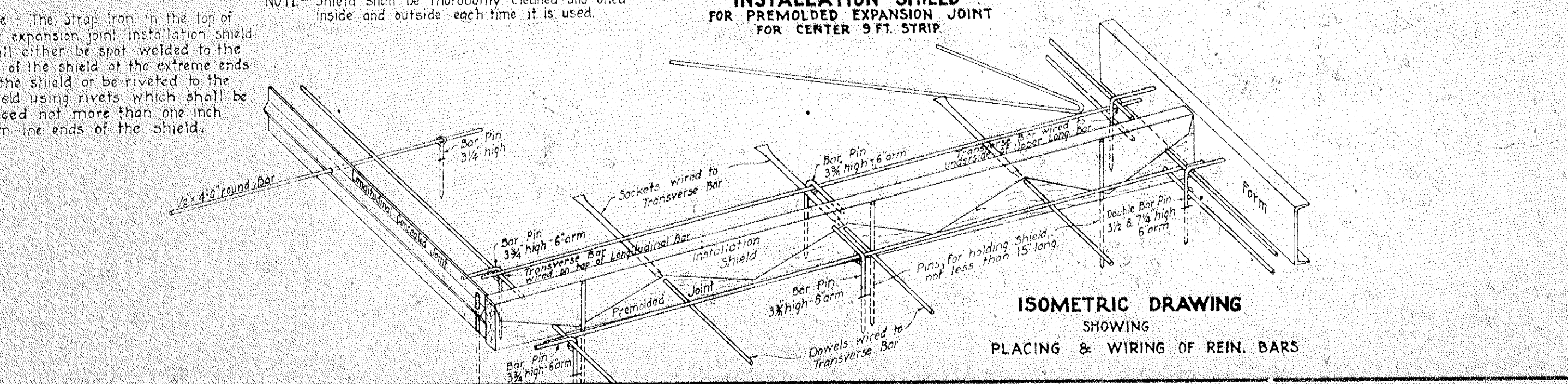


**DETAIL OF ROUND TINNED STEEL DOWEL SOCKET**



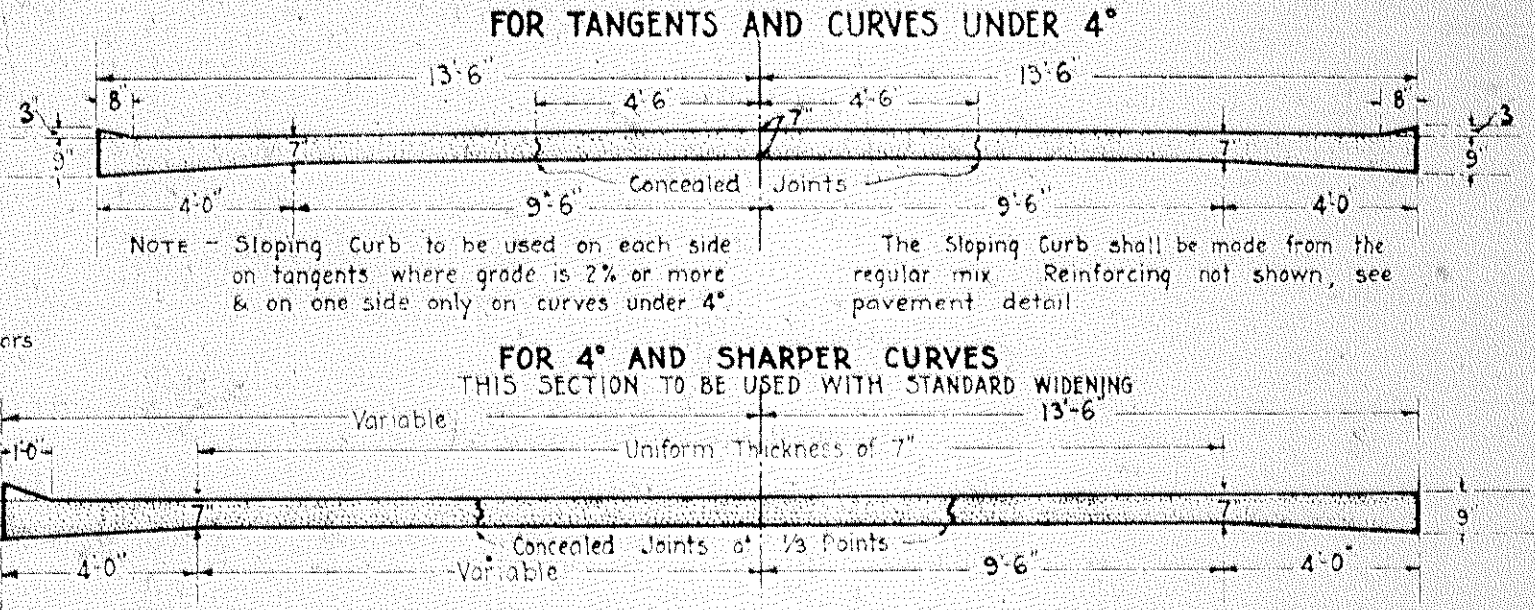
**INSTALLATION SHIELD FOR PREFORMED EXPANSION JOINT FOR OUTSIDE 9 FT. STRIPS**  
 Scale 1" = 10'-0"

**INSTALLATION SHIELD FOR PREFORMED EXPANSION JOINT FOR CENTER 9 FT. STRIP**  
 Scale 1" = 10'-0"



**ISOMETRIC DRAWING**  
 SHOWING PLACING & WIRING OF REIN. BARS

**CURB SECTIONS**  
 FOR TANGENTS AND CURVES UNDER 4°

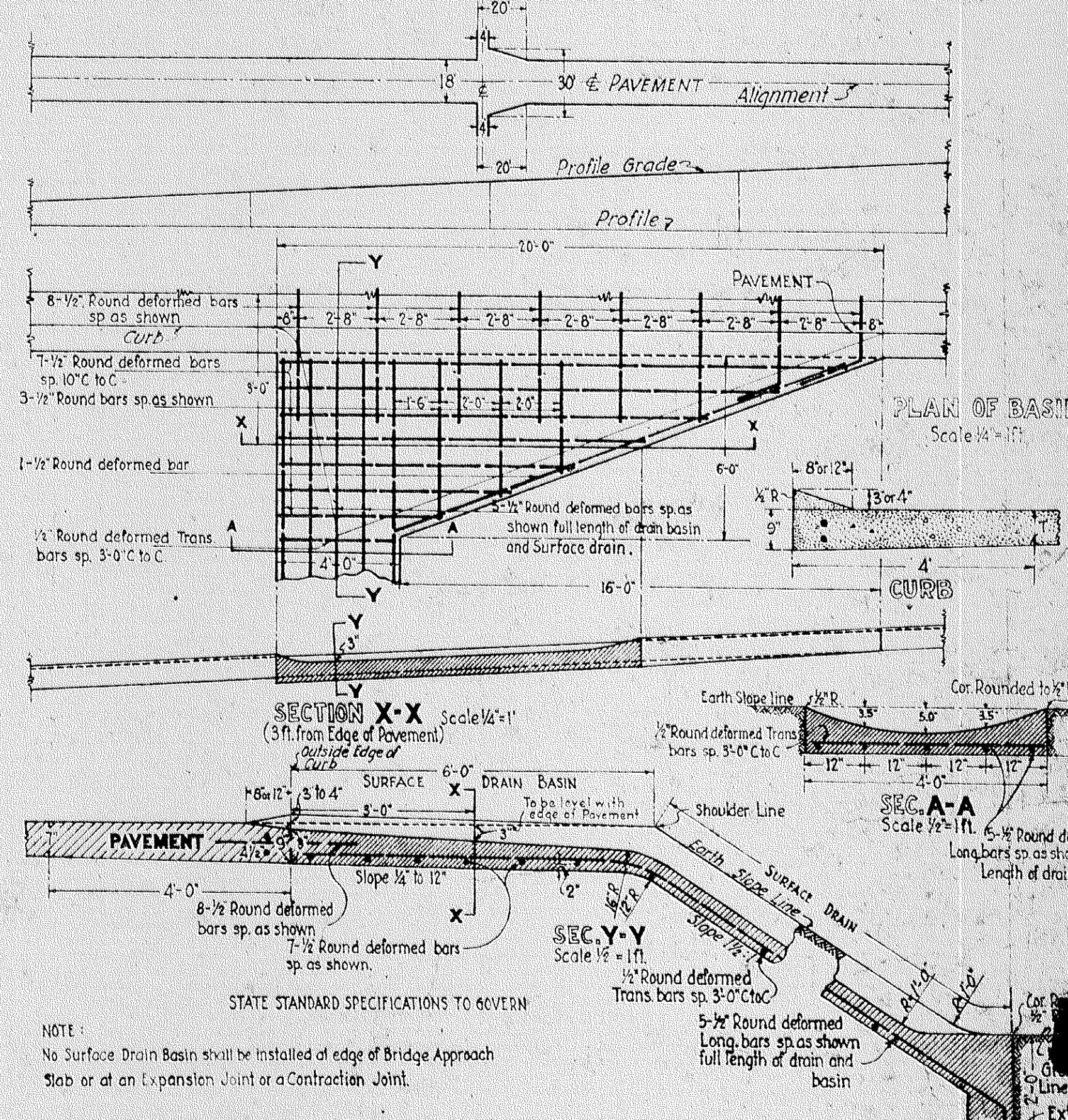


**FOR 4° AND SHARPER CURVES**  
 THIS SECTION TO BE USED WITH STANDARD WIDENING

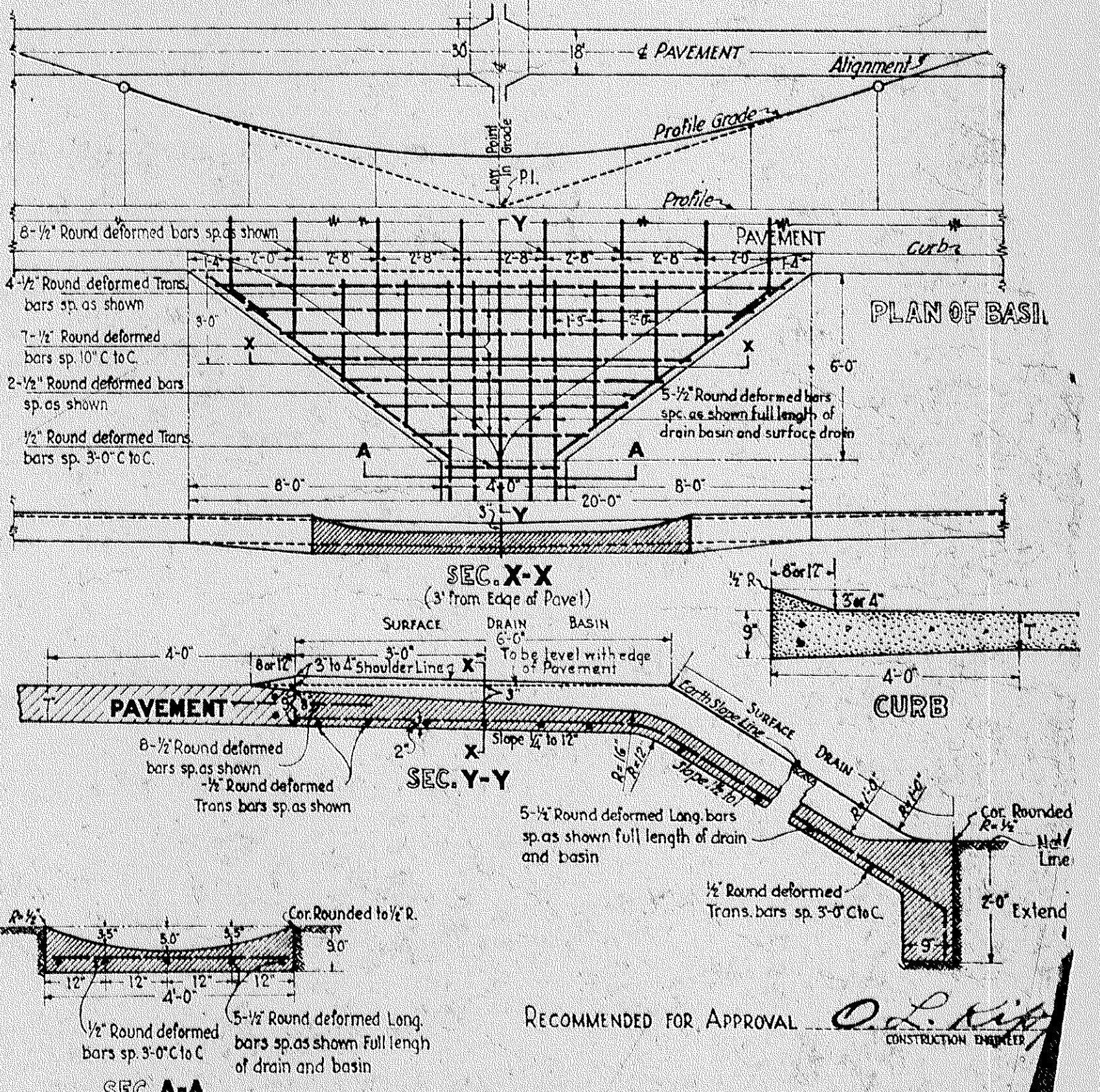
**OFFSETS & AREAS FOR WIDENING OF CURVES ON 27 FT. PAVEMENT**

DEGREE OF CURVE	PERPENDICULAR OFFSET FROM INNER EDGE OF PAVEMENT ON TANGENT DISTANCE FROM BWT	RADIAL OFFSET FROM INNER EDGE OF PAVEMENT ON CURVE DISTANCE FROM BWT	AREA IN SQ. YDS. FOR THE JNO TRANSITION CURVES	AREA IN 50 YDS. PER 100 LIN. FT. OF CURVE FOR EXTRA PAVEMENT
10	2.0	3.0	1.0	5.0
12	2.4	3.6	1.2	6.0
14	2.8	4.2	1.4	7.0
16	3.2	4.8	1.6	8.0
18	3.6	5.4	1.8	9.0
20	4.0	6.0	2.0	10.0
22	4.4	6.6	2.2	11.0
24	4.8	7.2	2.4	12.0
26	5.2	7.8	2.6	13.0
28	5.6	8.4	2.8	14.0
30	6.0	9.0	3.0	15.0
32	6.4	9.6	3.2	16.0
34	6.8	10.2	3.4	17.0
36	7.2	10.8	3.6	18.0
38	7.6	11.4	3.8	19.0
40	8.0	12.0	4.0	20.0
42	8.4	12.6	4.2	21.0
44	8.8	13.2	4.4	22.0
46	9.2	13.8	4.6	23.0
48	9.6	14.4	4.8	24.0
50	10.0	15.0	5.0	25.0

**PAVEMENT SURFACE DRAIN ON GRADE**



**PAVEMENT SURFACE DRAIN FOR LOW POINT ON GRADE**



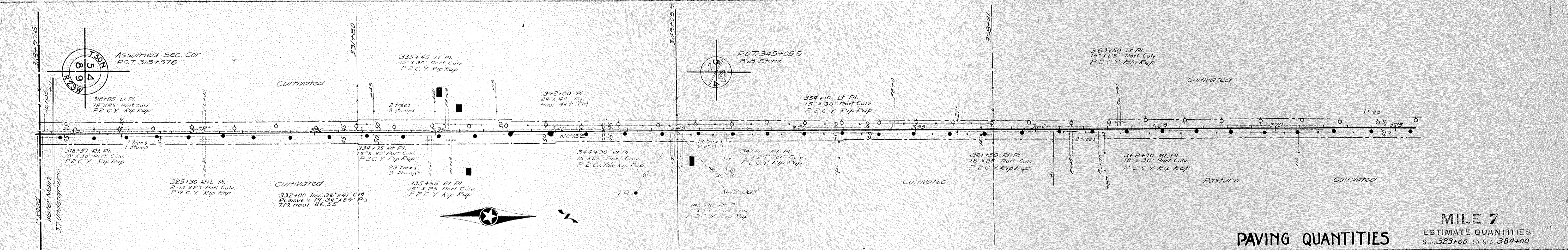
**SUPERELEVATION PITCHES PER FOOT OF WIDTH**

DEGREE OF CURVE	DISTANCE FROM POINT OF BEGINNING OF SUPERELEVATION	PITCH	DISTANCE FROM POINT OF BEGINNING OF SUPERELEVATION	PITCH
1	0-10	0.0000	10-20	0.0000
1	10-20	0.0000	20-30	0.0000
1	20-30	0.0000	30-40	0.0000
1	30-40	0.0000	40-50	0.0000
1	40-50	0.0000	50-60	0.0000
1	50-60	0.0000	60-70	0.0000
1	60-70	0.0000	70-80	0.0000
1	70-80	0.0000	80-90	0.0000
1	80-90	0.0000	90-100	0.0000
1	90-100	0.0000	100-110	0.0000
1	100-110	0.0000	110-120	0.0000
1	110-120	0.0000	120-130	0.0000
1	120-130	0.0000	130-140	0.0000
1	130-140	0.0000	140-150	0.0000
1	140-150	0.0000	150-160	0.0000
1	150-160	0.0000	160-170	0.0000
1	160-170	0.0000	170-180	0.0000
1	170-180	0.0000	180-190	0.0000
1	180-190	0.0000	190-200	0.0000
1	190-200	0.0000	200-210	0.0000
1	200-210	0.0000	210-220	0.0000
1	210-220	0.0000	220-230	0.0000
1	220-230	0.0000	230-240	0.0000
1	230-240	0.0000	240-250	0.0000
1	240-250	0.0000	250-260	0.0000
1	250-260	0.0000	260-270	0.0000
1	260-270	0.0000	270-280	0.0000
1	270-280	0.0000	280-290	0.0000
1	280-290	0.0000	290-300	0.0000

THIS SHEET 3 B APPLIES TO DIVS. A, B, C & D IN LETTING OF AUG. 16, 1927.

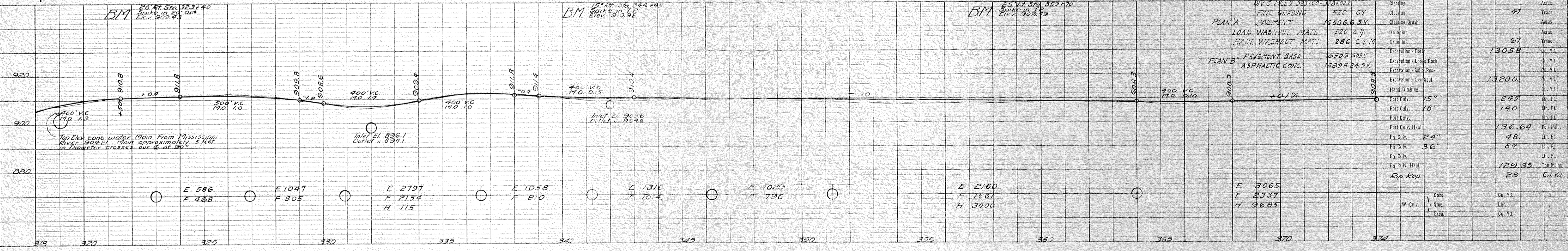
S.P. 6202 (T.H.S.-68)  
 S.P. 6203 (T.H.S.-68)  
 S.P. 6201 (T.H.S.-68)  
 S.P. 6201 (T.H.S.-68)



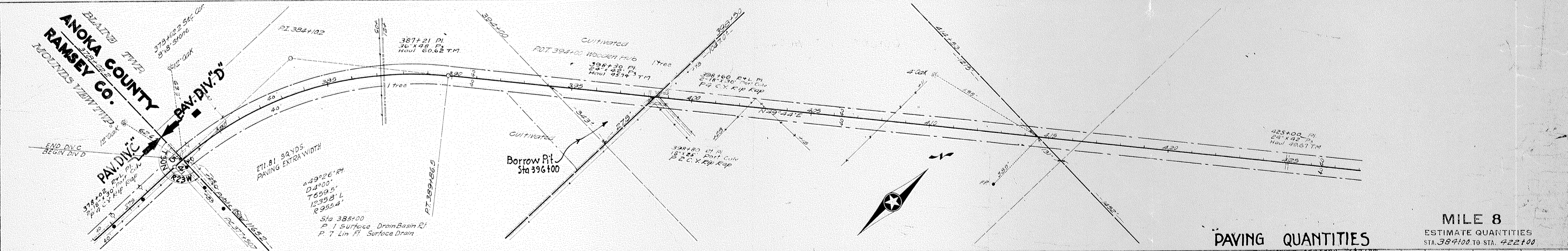


**PAVING QUANTITIES**

**MILE 7**  
ESTIMATE QUANTITIES  
STA. 323+00 TO STA. 384+00

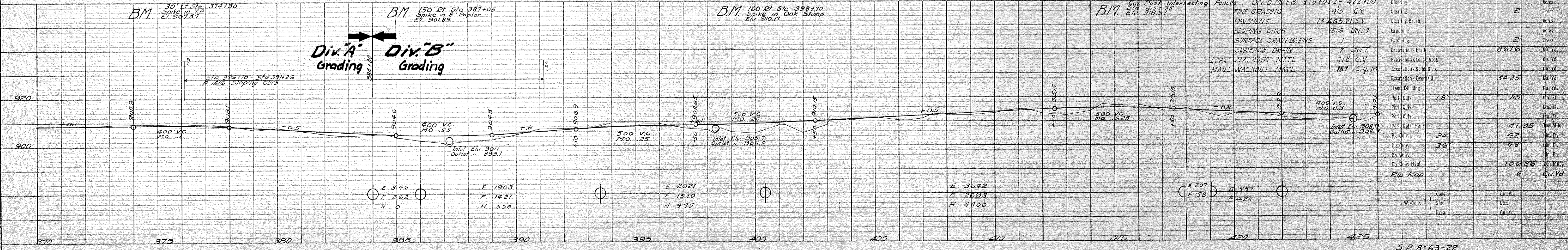


ITEM	QUANTITY	UNIT	ESTIMATE QUANTITIES
Cleaning			91
Cleaner Brush			
Grading			67
Gravel			13058
Excavation - Earth			
Excavation - Loose Rock			
Excavation - Solid Rock			
Excavation - Overhaul			13200
Hand Ditching			
Port. Curb, 15"			245
Port. Curb, 18"			140
Port. Curb, 24"			136.64
Port. Curb, 36"			48
Pa. Chfr., 24"			87
Pa. Chfr., 36"			
Pa. Chfr. Head			129.35
Rip Rap			28
W. Chfr.			
Steel			
Exc.			



**PAVING QUANTITIES**

**MILE 8**  
ESTIMATE QUANTITIES  
STA. 384+00 TO STA. 422+00

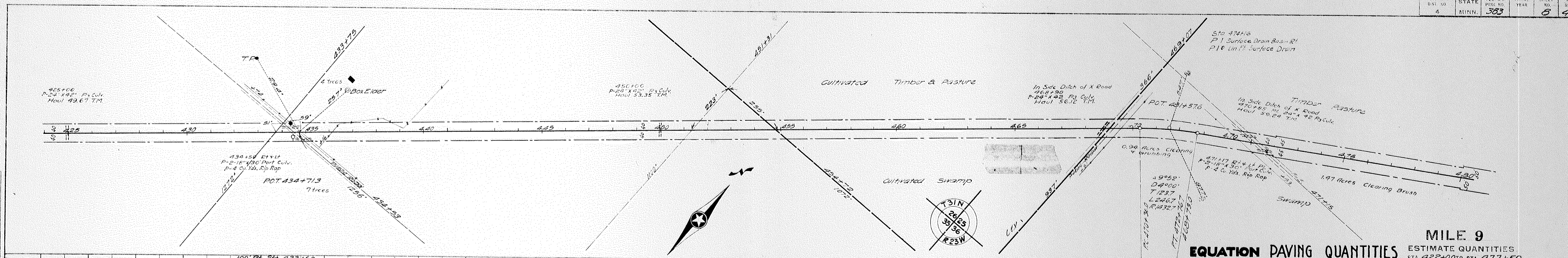


ITEM	QUANTITY	UNIT	ESTIMATE QUANTITIES
Cleaning			2
Cleaner Brush			
Grading			2
Gravel			8676
Excavation - Earth			
Excavation - Loose Rock			
Excavation - Solid Rock			
Excavation - Overhaul			54.25
Hand Ditching			
Port. Curb, 18"			85
Port. Curb, 24"			
Port. Curb, 36"			41.95
Pa. Chfr., 24"			42
Pa. Chfr., 36"			98
Pa. Chfr. Head			106.36
Rip Rap			6
W. Chfr.			
Steel			
Exc.			

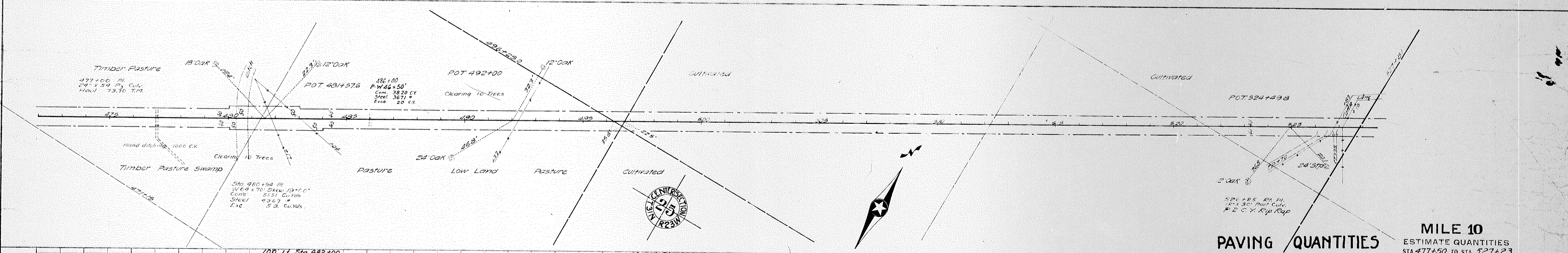
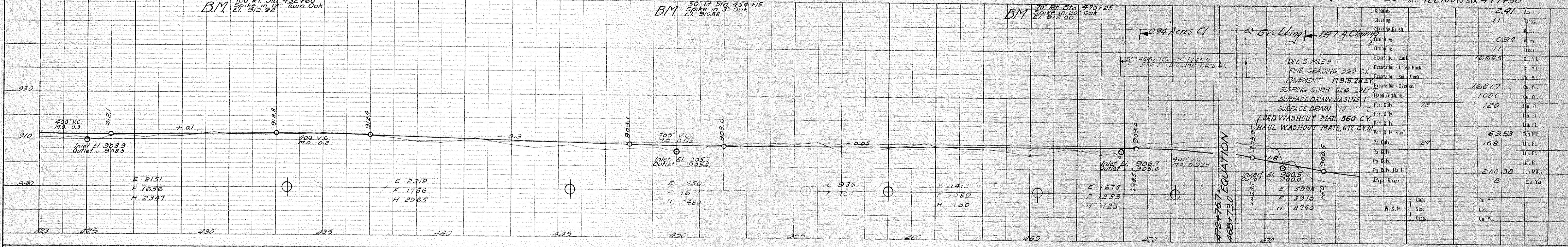
PLAN SURVEYED, PLOTTED, CHECKED, BY: OF WAY CHECKED, NO.

PROFILE SURVEYED, PLOTTED, CHECKED, BY: GRADES CHECKED, STRUCTURE NOTATIONS CHECKED, NO.

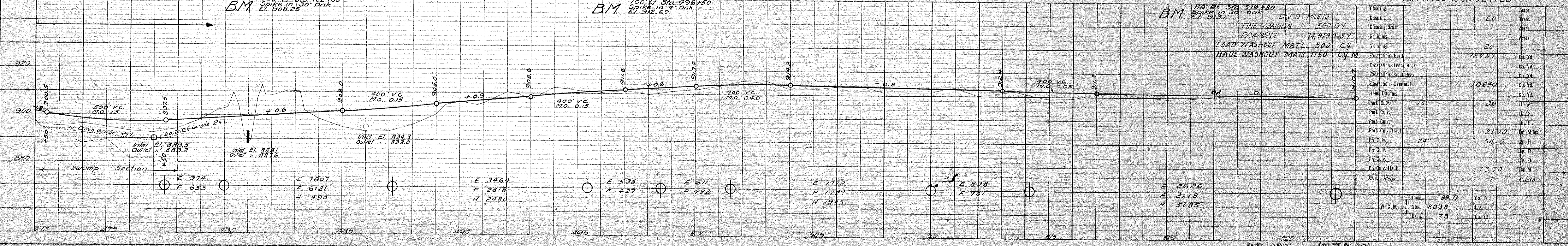


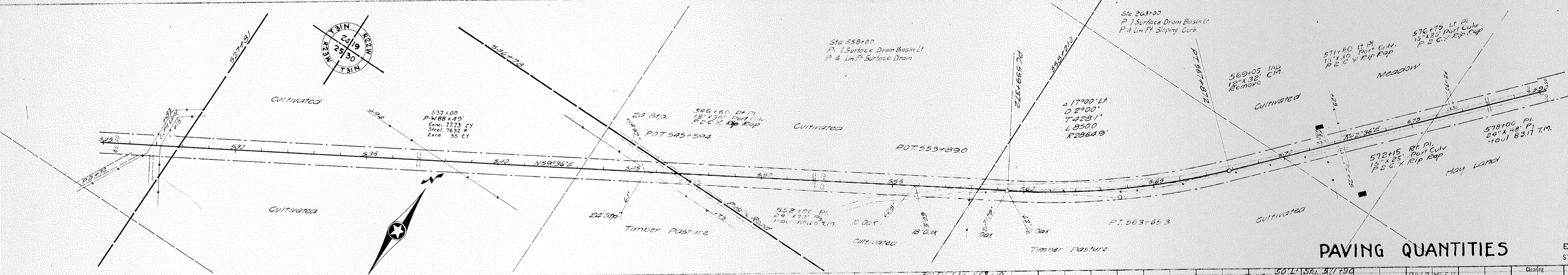


**MILE 9**  
**EQUATION PAVING QUANTITIES** ESTIMATE QUANTITIES  
STA. 422+00 TO STA. 477+50

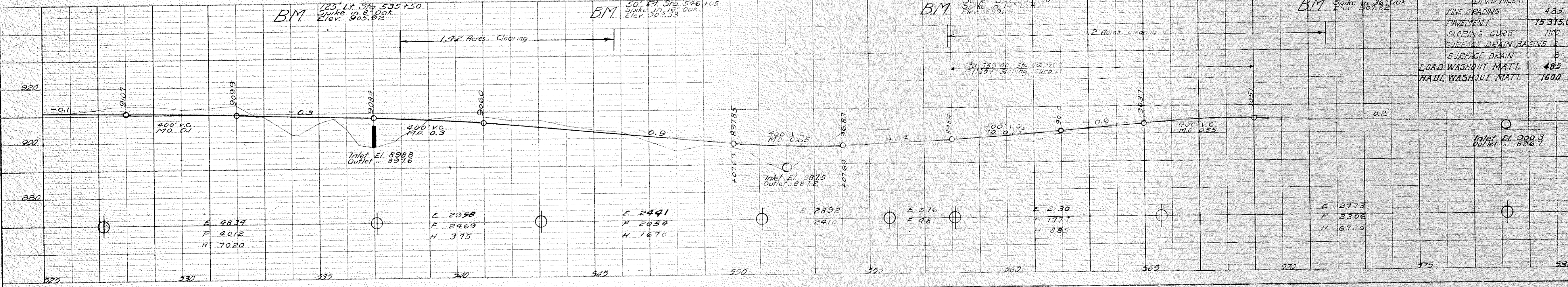


**MILE 10**  
**PAVING QUANTITIES** ESTIMATE QUANTITIES  
STA. 477+50 TO STA. 527+23

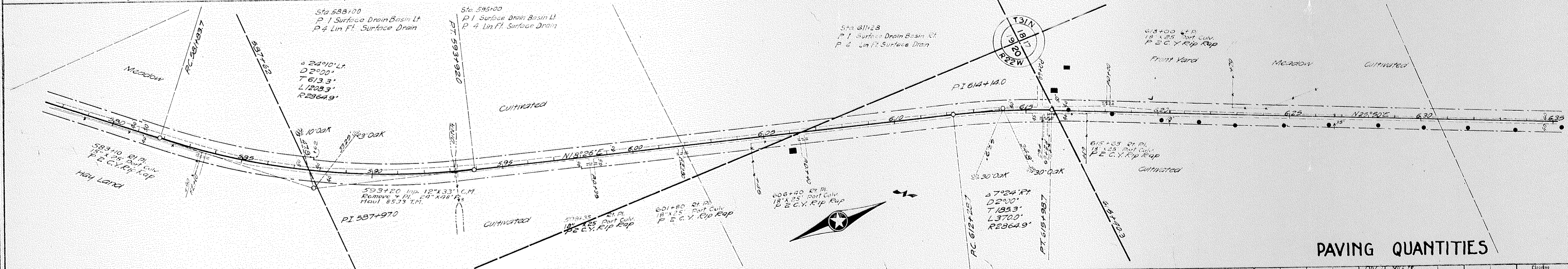




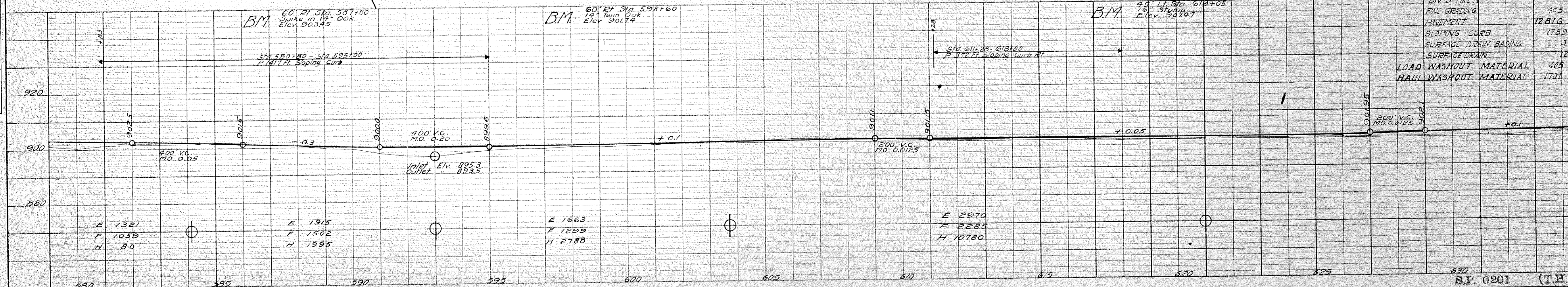
**MILE 11**  
**PAVING QUANTITIES**  
ESTIMATE QUANTITIES  
STA. 527+23 TO STA. 578+29



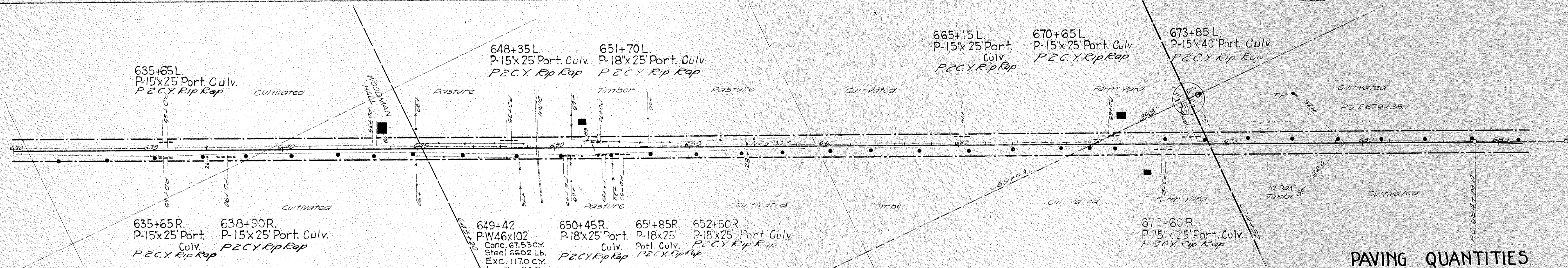
Clearing	2162	Acres
Clearing Brush		Acres
Grubbing	2162	Acres
Excavation - Earth	1860.7	Cu. Yd.
Excavation - Loose Rock		Cu. Yd.
Excavation - Solid Rock		Cu. Yd.
Excavation - Overhaul	1867.0	Cu. Yd.
Hand Ditching		Cu. Yd.
Port. Curb	30	Lvs. Ft.
Port. Curb	30	Lvs. Ft.
Port. Curb	30	Lvs. Ft.
Port. Curb	30	Lvs. Ft.
Pa. Chvr.	24	Lvs. Ft.
Pa. Chvr.	120	Lvs. Ft.
Pa. Chvr.		Lvs. Ft.
Pa. Chvr.		Lvs. Ft.
Pa. Chvr. Hand	201.37	Ten Miles
Rip Rap	8	Cu. Yds
Conc.	72.73	Cu. Yd.
Steel	76.32	Lbs.
Excav.	35	Cu. Yd.



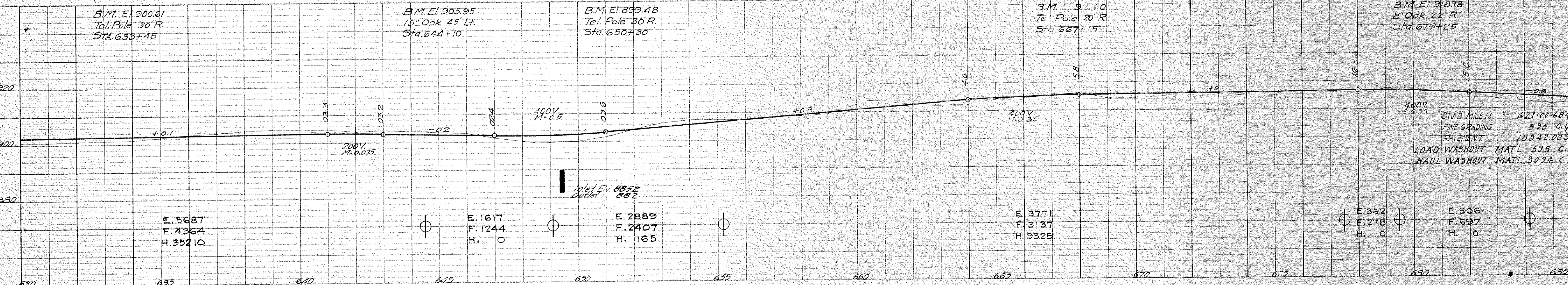
**MILE 12**  
**PAVING QUANTITIES**  
ESTIMATE QUANTITIES  
STA. 578+28 TO STA. 621+00



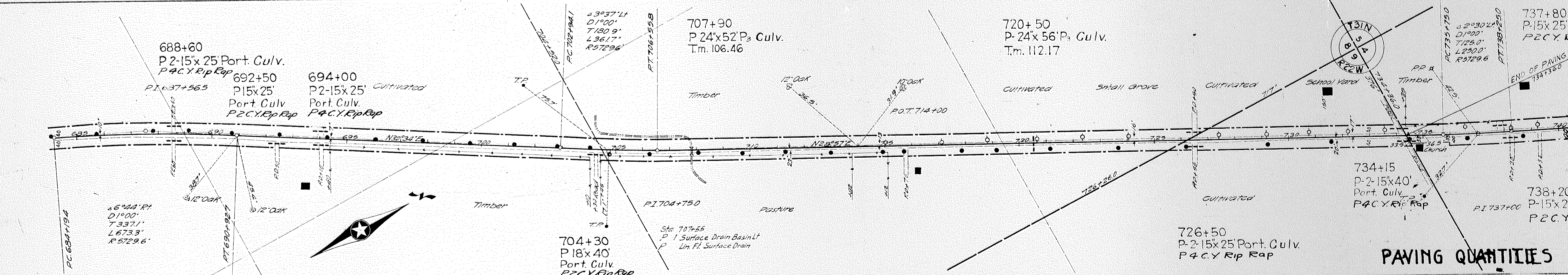
Clearing	19	Acres
Clearing Brush		Acres
Grubbing	25	Acres
Excavation - Earth	1839	Cu. Yd.
Excavation - Loose Rock		Cu. Yd.
Excavation - Solid Rock		Cu. Yd.
Excavation - Overhaul	1564.3	Cu. Yd.
Hand Ditching		Cu. Yd.
Port. Curb	25	Lvs. Ft.
Port. Curb	72.5	Lvs. Ft.
Port. Curb		Lvs. Ft.
Port. Curb		Lvs. Ft.
Pa. Chvr.	24	Lvs. Ft.
Pa. Chvr.		Lvs. Ft.
Pa. Chvr.		Lvs. Ft.
Pa. Chvr. Hand	104.06	Ten Miles
Pa. Chvr.	24	Lvs. Ft.
Pa. Chvr.		Lvs. Ft.
Pa. Chvr. Hand	85.73	Ten Miles
Rip Rap	12	Cu. Yds
Conc.		Cu. Yd.
Steel		Lbs.
Excav.		Cu. Yd.



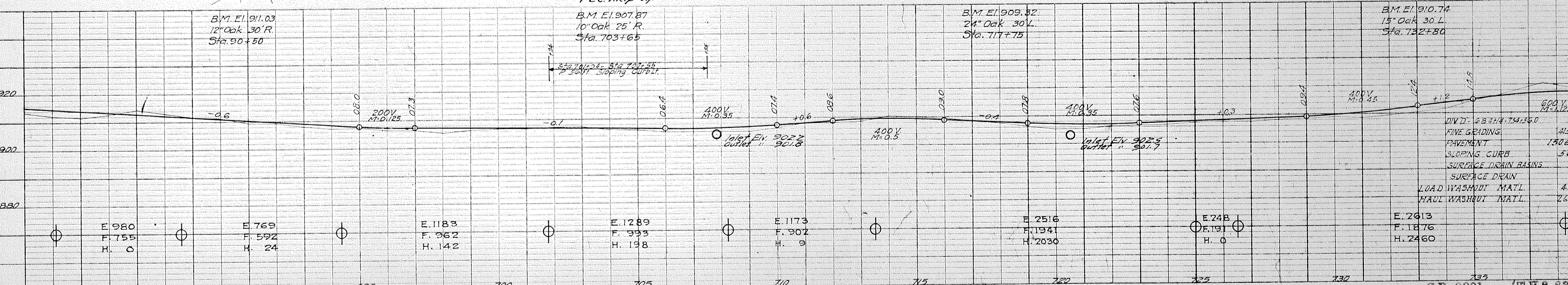
**MILE 13**  
ESTIMATE QUANTITIES  
STA. 621+00 TO STA. 684+14



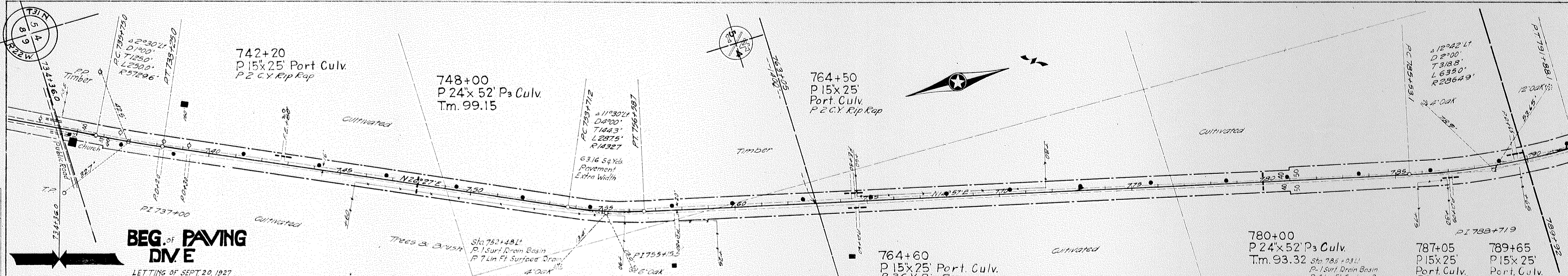
Clearing	195	Acres
Clearing Brush		Acres
Grubbing	251	Acres
Excavation - Earth	15232	Cu. Yd.
Excavation - Loose Rock		Cu. Yd.
Excavation - Solid Rock		Cu. Yd.
Excavation - Overhaul	44700	Cu. Yd.
Hand Ditching		Cu. Yd.
Port. Culv.	15"	100
Port. Culv.	18"	238.34
Pa. Culv.	24"	0
Pa. Culv.		29
W. Culv.		47.53
Steel	6602	Lbs.
Exc.	117.0	Cu. Yd.



**MILE 14**  
ESTIMATE QUANTITIES  
STA. 684+14 TO STA. 738+30

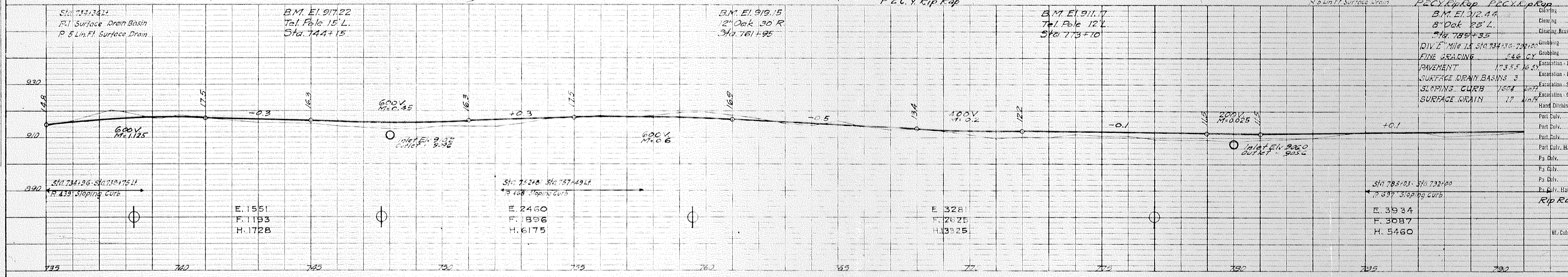


Clearing	149	Acres
Clearing Brush		Acres
Grubbing	225	Acres
Excavation - Earth	10771	Cu. Yd.
Excavation - Loose Rock		Cu. Yd.
Excavation - Solid Rock		Cu. Yd.
Excavation - Overhaul	4863	Cu. Yd.
Hand Ditching		Cu. Yd.
Port. Culv.	15"	305
Port. Culv.	18"	40
Port. Culv. Head		248.65
Pa. Culv.	24"	108
Pa. Culv.		218.63
W. Culv.		29
Steel		
Exc.		

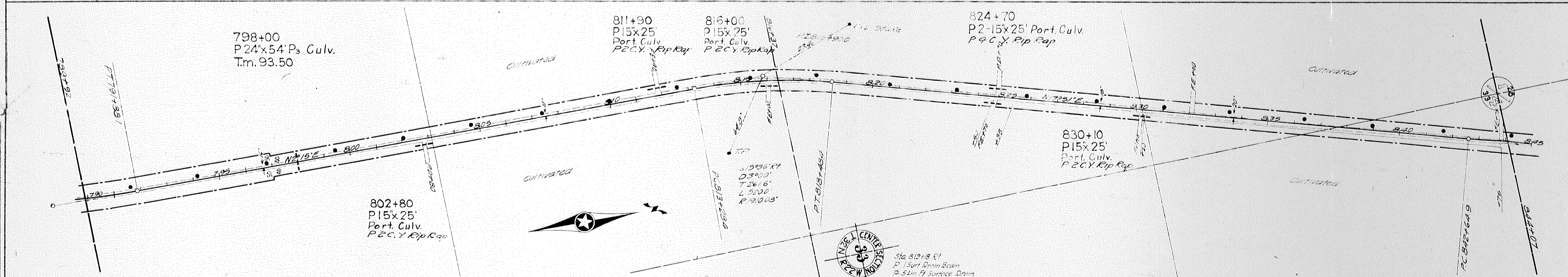


**BEG. OF PAVING DIVE**  
LETTING OF SEPT. 20, 1927

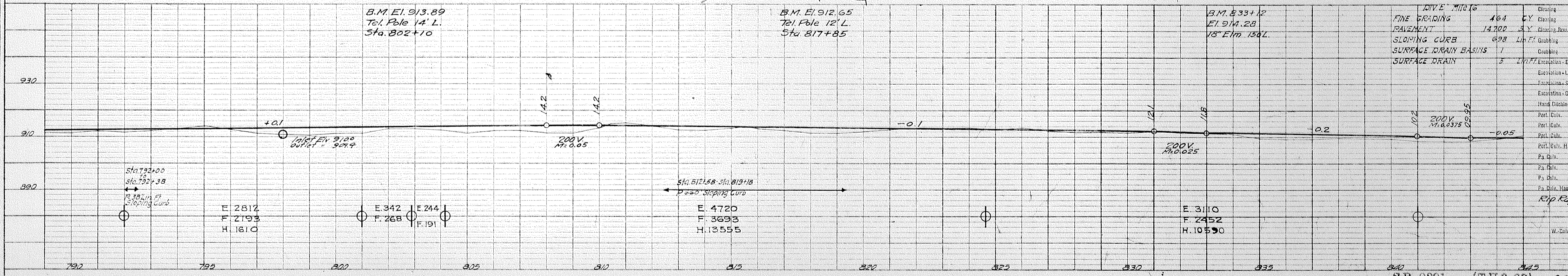
**MILE 15**  
ESTIMATE QUANTITIES  
STA. 738+30 TO STA. 792+00



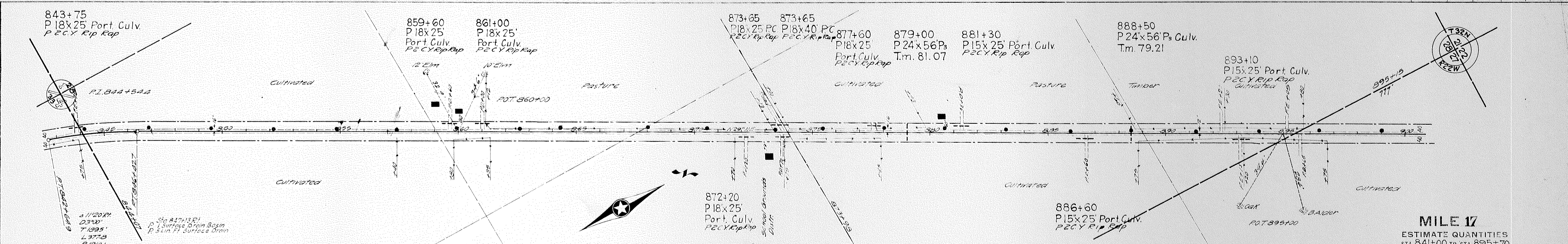
Cleaning		336	Acres
Clearing Brush			Acres
Grubbing			Acres
FINE GRADING	464 CY		Acres
PAVEMENT	14,700 S.Y.		Acres
SLOPING CURB	698 Lin. Ft.		Acres
SURFACE DRAIN BASINS	3		Acres
SURFACE DRAIN	17 Lin. Ft.		Acres
Excavation - Loose Rock		26688	Cu. Yd.
Excavation - Solid Rock			Cu. Yd.
Excavation - Gravel			Cu. Yd.
Hand Ditching			Cu. Yd.
Port. Culv.	15'	125	Lin. Ft.
Part. Culv.	18'	0	Lin. Ft.
Part. Culv. Head		78.57	Ton Miles
P3 Culv.	24'	104	Lin. Ft.
P4 Culv.			Lin. Ft.
Part. Culv. Head		192.47	Ton Miles
Rip Rap		10	Cu. Yd.
W. Culv.			Cu. Yd.
Sisal			Lbs.
Fica			Cu. Yd.



**MILE 16**  
ESTIMATE QUANTITIES  
STA. 792+00 TO STA. 841+00

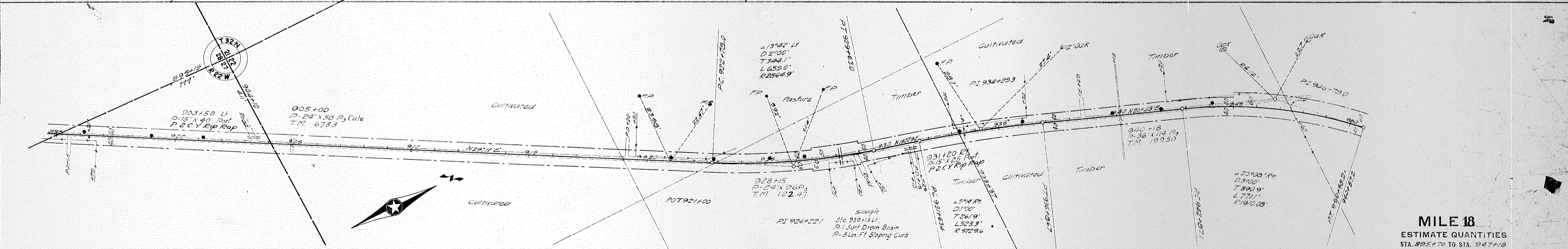
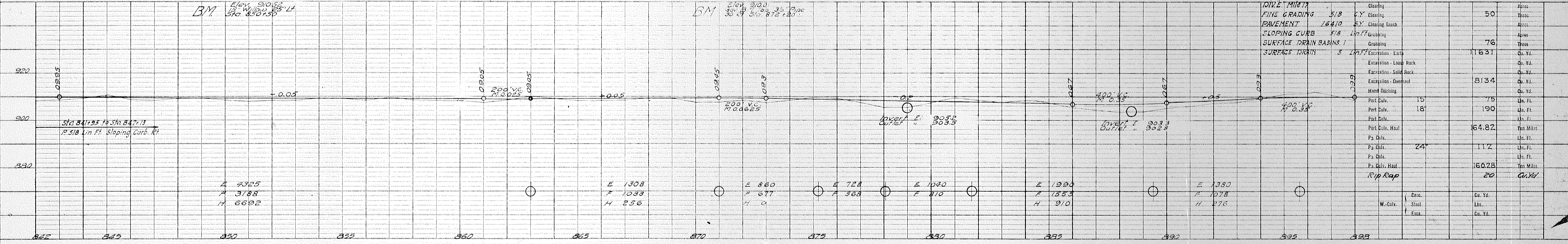


Cleaning		0	Acres
Clearing Brush			Acres
Grubbing			Acres
FINE GRADING	464 CY		Acres
PAVEMENT	14,700 S.Y.		Acres
SLOPING CURB	698 Lin. Ft.		Acres
SURFACE DRAIN BASINS	3		Acres
SURFACE DRAIN	17 Lin. Ft.		Acres
Excavation - Loose Rock		11228	Cu. Yd.
Excavation - Solid Rock			Cu. Yd.
Excavation - Gravel			Cu. Yd.
Hand Ditching			Cu. Yd.
Port. Culv.	15'	150	Lin. Ft.
Part. Culv.			Lin. Ft.
Part. Culv. Head		85.48	Ton Miles
P3 Culv.	24'	54	Lin. Ft.
P4 Culv.			Lin. Ft.
Part. Culv. Head		93.50	Ton Miles
Rip Rap		12	Cu. Yd.
W. Culv.			Cu. Yd.
Sisal			Lbs.
Fica			Cu. Yd.



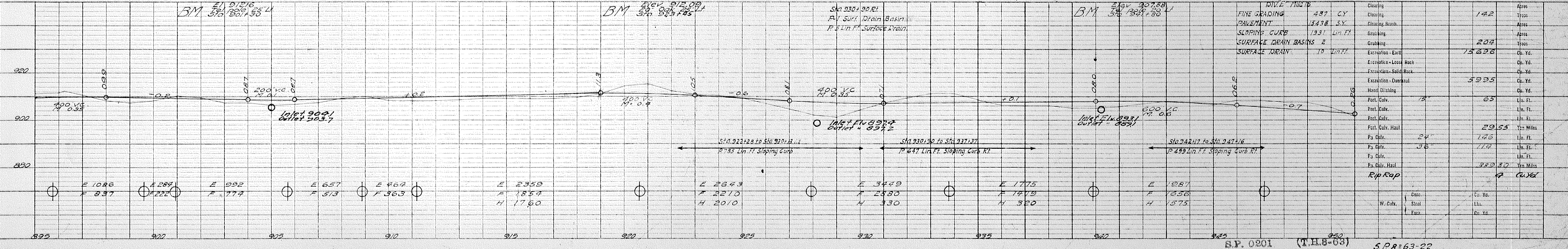
**MILE 17**

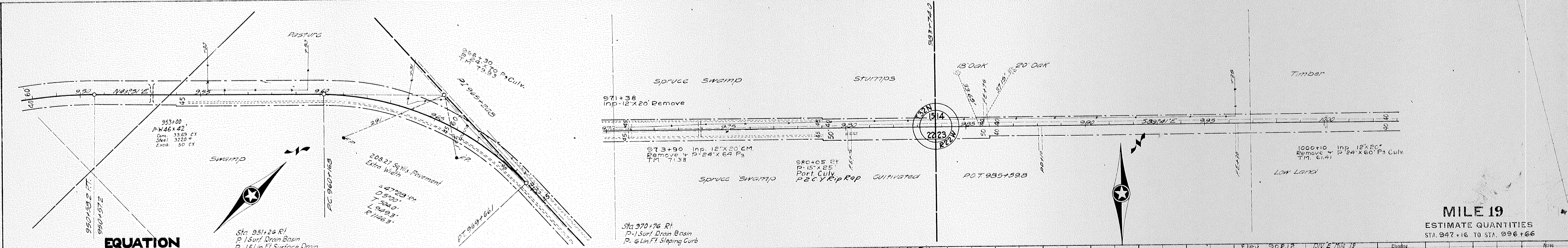
ESTIMATE QUANTITIES  
STA. 841+00 TO STA. 895+70



**MILE 18**

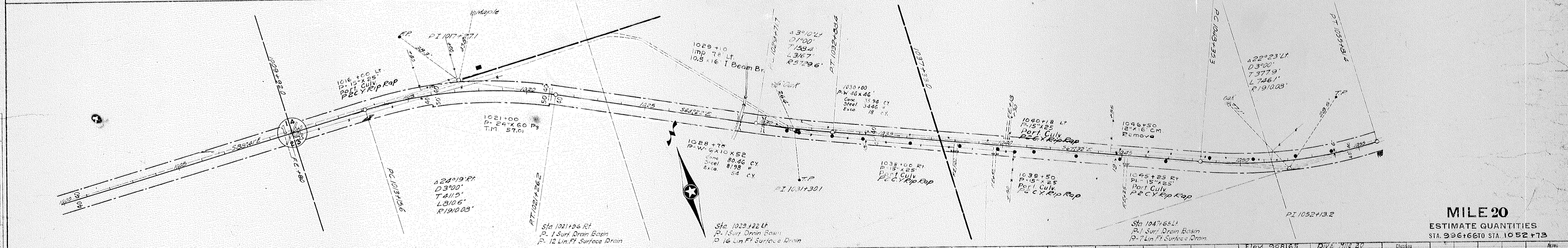
ESTIMATE QUANTITIES  
STA. 895+70 TO STA. 947+10





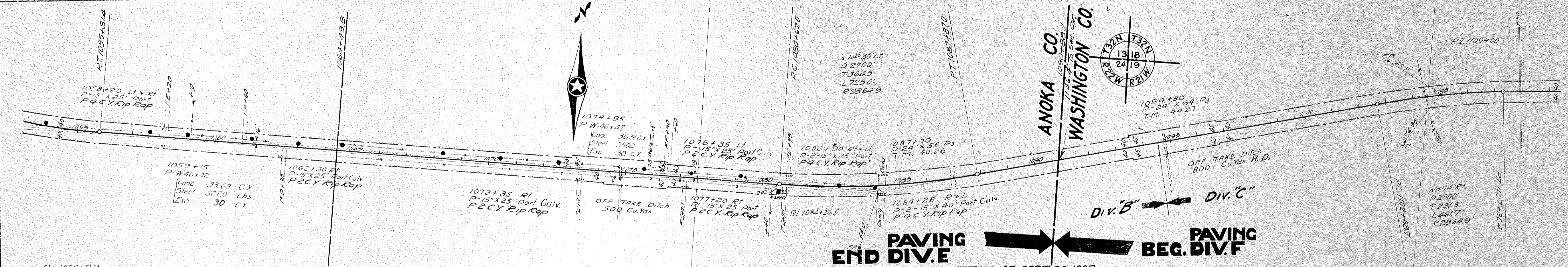
**MILE 19**  
ESTIMATE QUANTITIES  
STA. 947+16 TO STA. 996+66

Station	Item	Quantity	Unit	Notes
947+16	Closing	274	Sq. Yd.	
947+16	Clearing		Sq. Yd.	
947+16	Grubbing	349	Sq. Yd.	
947+16	Excavation - Earth	21,670	Cu. Yd.	
947+16	Excavation - Loose Rock		Cu. Yd.	
947+16	Excavation - Solid Rock	98,730	Cu. Yd.	
947+16	Hand Outchng	3,247	Sq. Yd.	
947+16	Port. Culv.	25	Lin. Ft.	
947+16	Port. Culv. Head	38	Yds.	
947+16	Pa. Culv.	134	Lin. Ft.	
947+16	Pa. Culv. Head	151	Yds.	
947+16	Pa. Culv. Head	5,000	Cu. Yds.	
947+16	Off Take Rip Rap	33.63	Cu. Yd.	
947+16	W. Culv.	3,220	Lbs.	
947+16	Extra	50	Cu. Yd.	

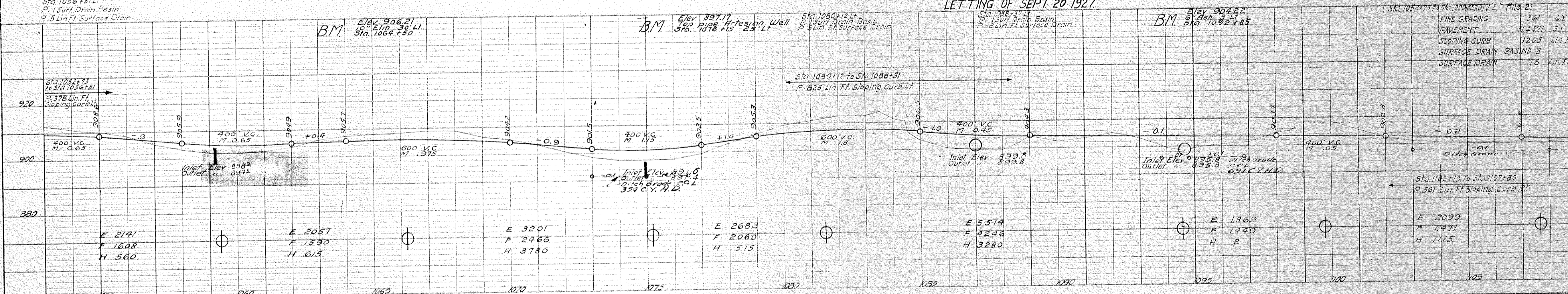


**MILE 20**  
ESTIMATE QUANTITIES  
STA. 996+66 TO STA. 1052+73

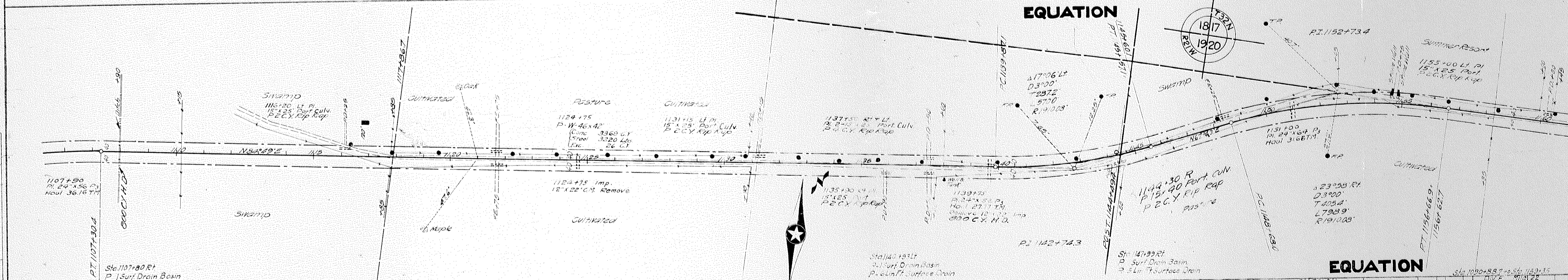
Station	Item	Quantity	Unit	Notes
996+66	Closing	57	Sq. Yd.	
996+66	Clearing		Sq. Yd.	
996+66	Grubbing	120	Sq. Yd.	
996+66	Excavation - Earth	21,633	Cu. Yd.	
996+66	Excavation - Loose Rock		Cu. Yd.	
996+66	Excavation - Solid Rock	20,544	Cu. Yd.	
996+66	Excavation - Gravel		Cu. Yd.	
996+66	Hand Outchng	125	Sq. Yd.	
996+66	Port. Culv.	15	Lin. Ft.	
996+66	Port. Culv. Head	38	Yds.	
996+66	Pa. Culv.	120	Lin. Ft.	
996+66	Pa. Culv. Head	118	Yds.	
996+66	Rip Rap	70	Cu. Yds.	
996+66	W. Culv.	11,640	Lbs.	
996+66	Extra	72	Cu. Yd.	



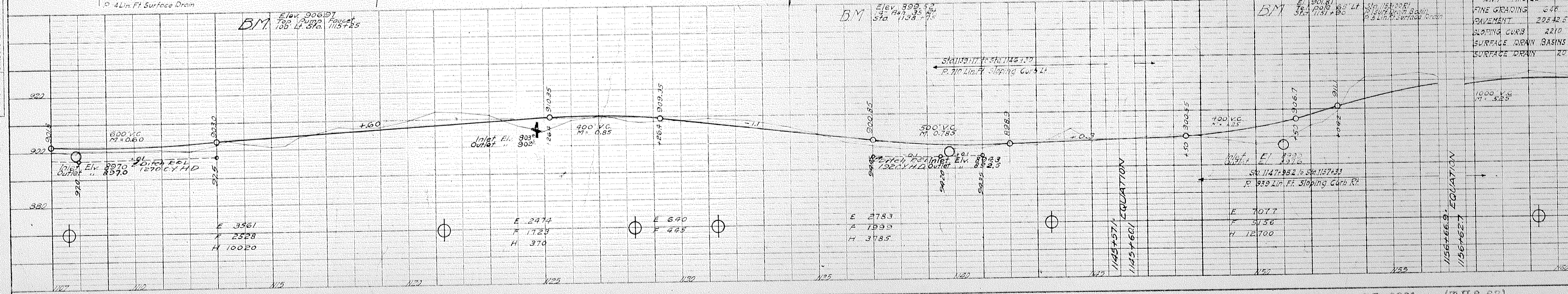
**MILE 21**  
ESTIMATE QUANTITIES  
STA. 1052+73 TO STA. 1094+55



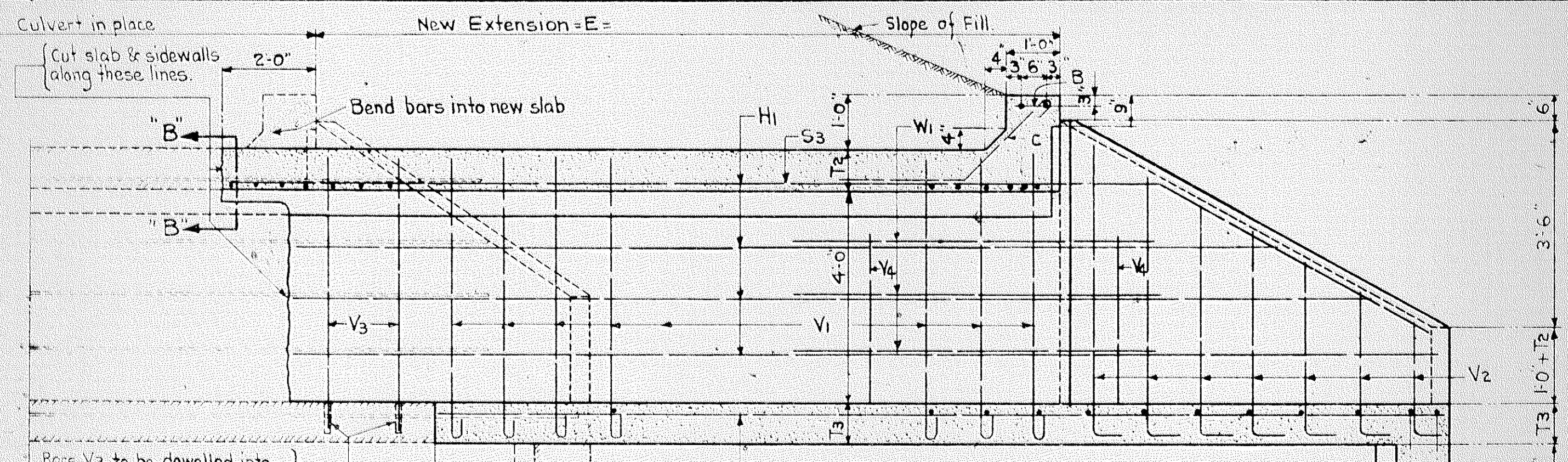
Item	Quantity	Unit	Notes
Cleaning	83	cu. yd.	
FINE GRADING	361	CY	
PAVEMENT	11427	S.Y.	
SLOPING CURB	1203	Lin. Ft.	
SURFACE DRAIN BASINS J			
SURFACE DRAIN	70	Lin. Ft.	
Excavation - Earth	1539	cu. yd.	
Excavation - Loose Rock		cu. yd.	
Excavation - Solid Rock	875	cu. yd.	
Excavation - Overhaul	354	cu. yd.	
Hand Ditching	15	Lin. Ft.	
Port Culv.	280	Lin. Ft.	
Port Culv. Head		Lin. Ft.	
Port Culv. Head	7319	Yan. Miles	
Pa. Chk.	24	Lin. Ft.	
Pa. Chk.		Lin. Ft.	
Pa. Chk. Head		Lin. Ft.	
OFF TAKE	500	cu. yd.	
Rip Rap	20	cu. yd.	
Conc.	7020	cu. yd.	
Steel	6722	Lbs.	
Excav.	68	cu. yd.	



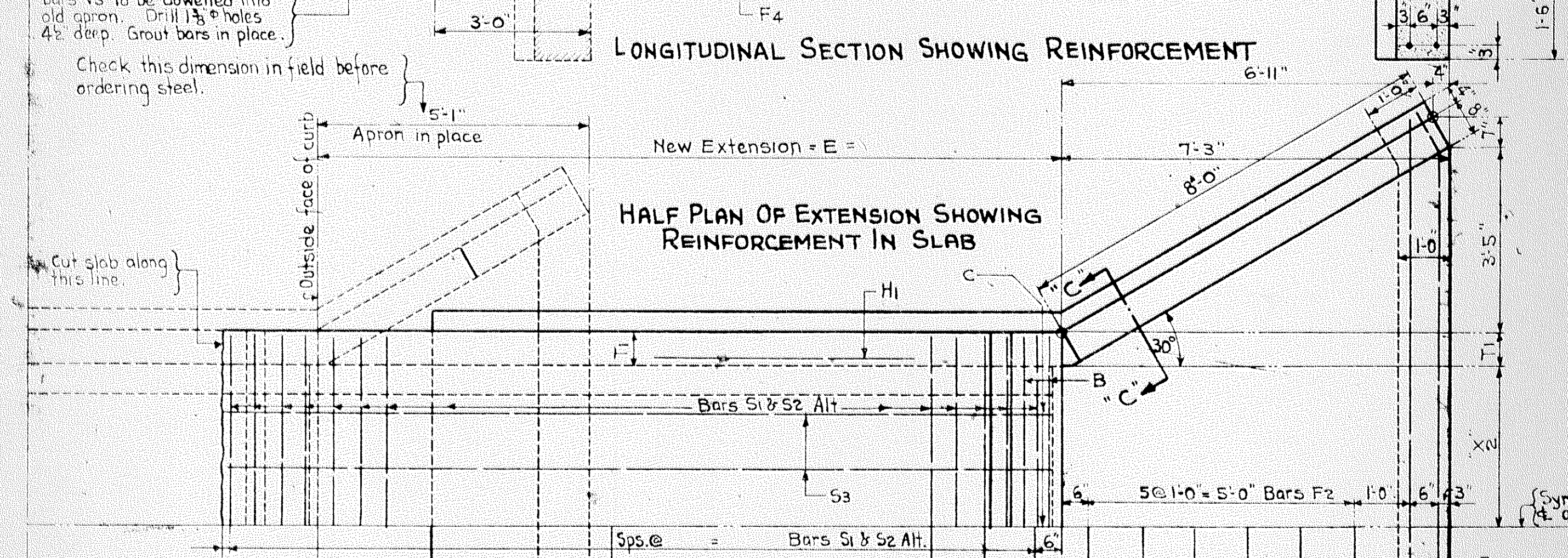
**MILE 22**  
ESTIMATE QUANTITIES  
STA. 1094+55 TO STA. 1159+35



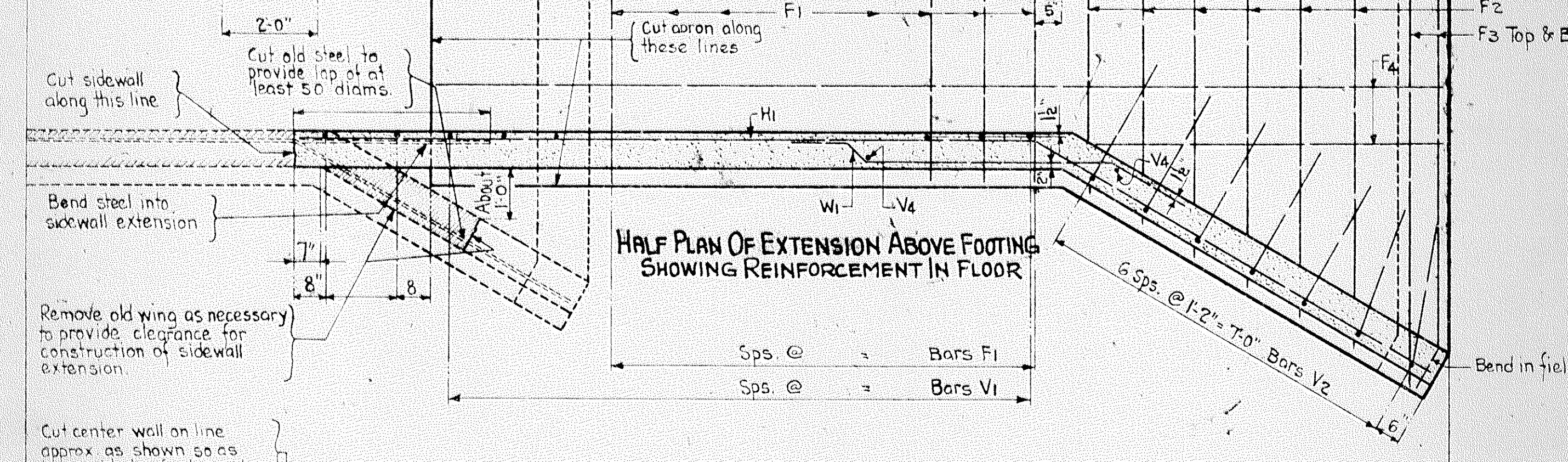
Item	Quantity	Unit	Notes
Cleaning	40	cu. yd.	
FINE GRADING	248	CY	
PAVEMENT	2242	S.Y.	
SLOPING CURB	2210	Lin. Ft.	
SURFACE DRAIN BASINS A			
SURFACE DRAIN	20	Lin. Ft.	
Excavation - Earth	2050	cu. yd.	
Excavation - Loose Rock		cu. yd.	
Excavation - Solid Rock	2792	cu. yd.	
Excavation - Overhaul	2153	cu. yd.	
Hand Ditching	15	Lin. Ft.	
Port Culv.	1130	Lin. Ft.	
Port Culv. Head		Lin. Ft.	
Port Culv. Head	3764	Yan. Miles	
Pa. Chk.	24	Lin. Ft.	
Pa. Chk.		Lin. Ft.	
Pa. Chk. Head		Lin. Ft.	
OFF TAKE	139.86	cu. yd.	
Rip Rap	2400	cu. yd.	
Conc.	3369	cu. yd.	
Steel	3220	Lbs.	
Excav.	26	cu. yd.	



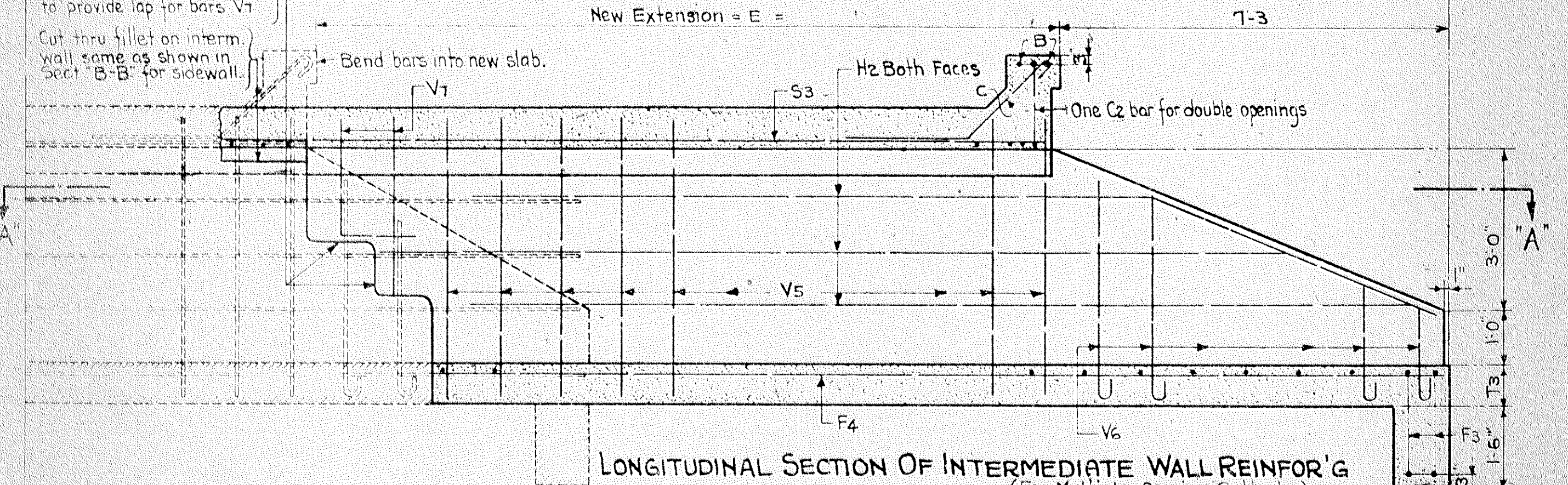
LONGITUDINAL SECTION SHOWING REINFORCEMENT



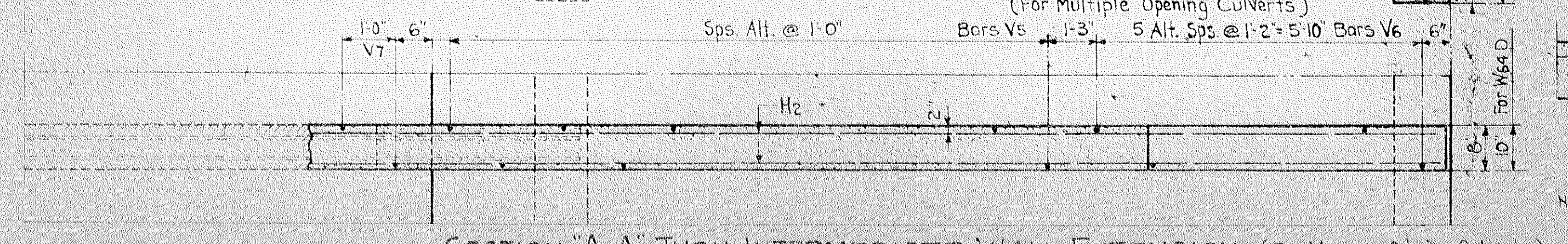
HALF PLAN OF EXTENSION SHOWING REINFORCEMENT IN SLAB



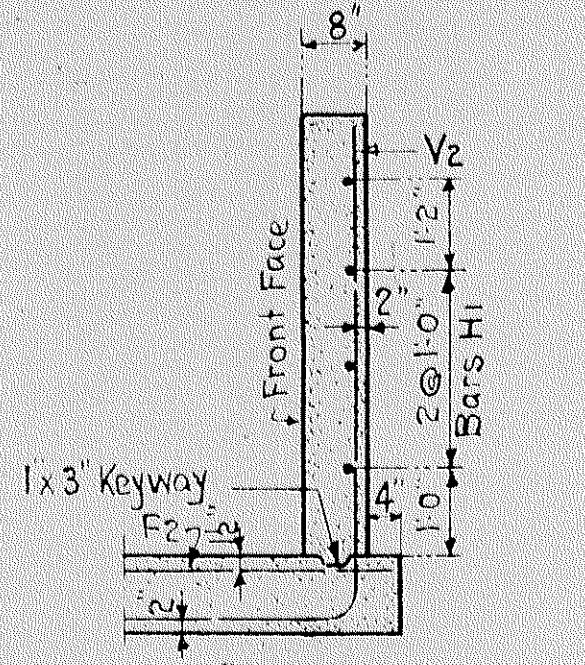
HALF PLAN OF EXTENSION ABOVE FOOTING SHOWING REINFORCEMENT IN FLOOR



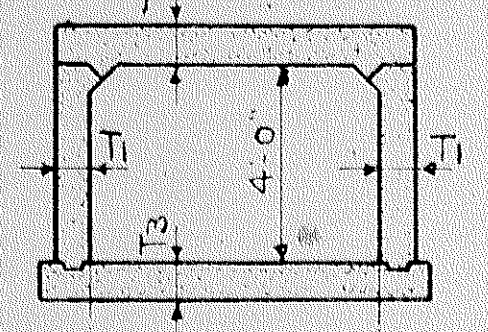
LONGITUDINAL SECTION OF INTERMEDIATE WALL REINFOR'G (For Multiple Opening Culverts)



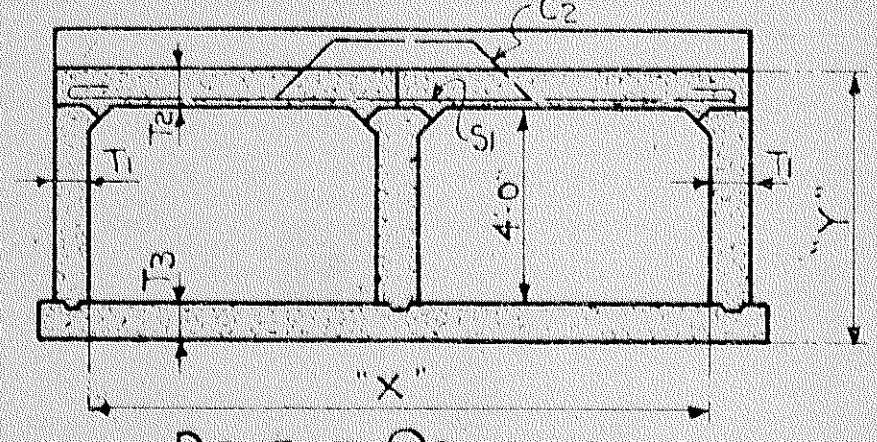
SECTION 'A-A' THRU INTERMEDIATE WALL EXTENSION (For Multiple Opening Culverts)



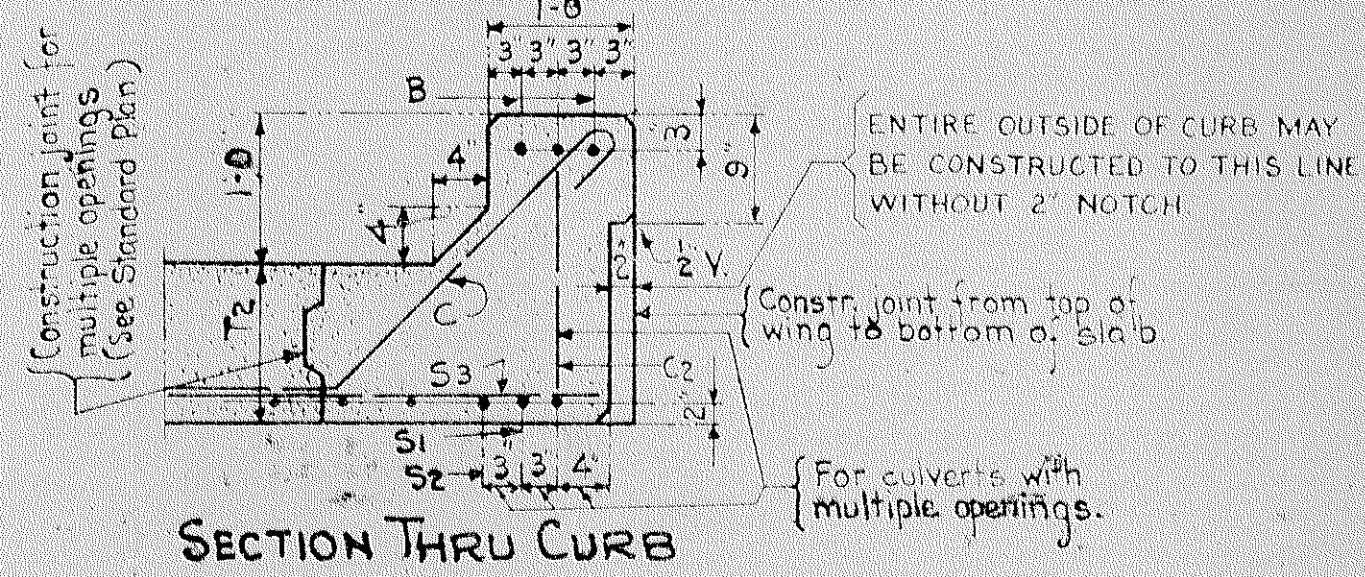
SECTION 'C-C' THRU WING



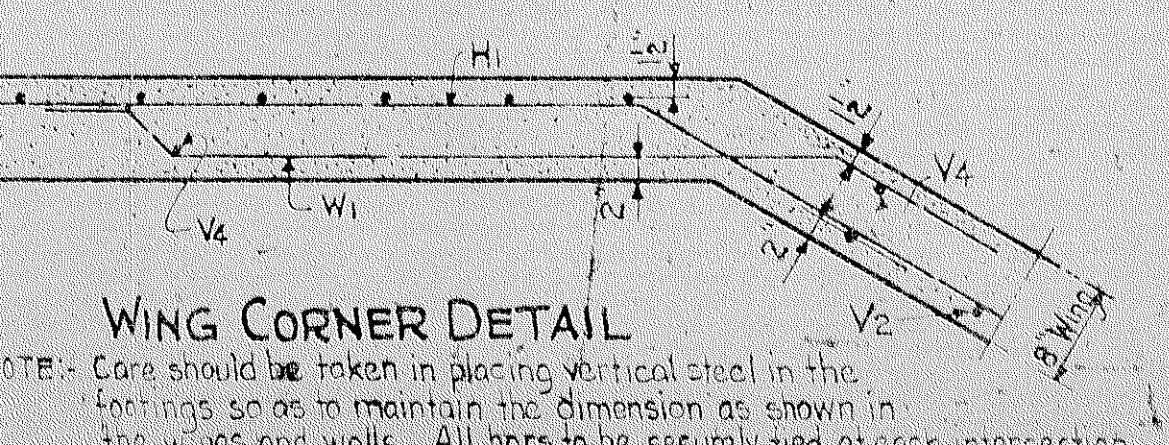
SINGLE OPENING



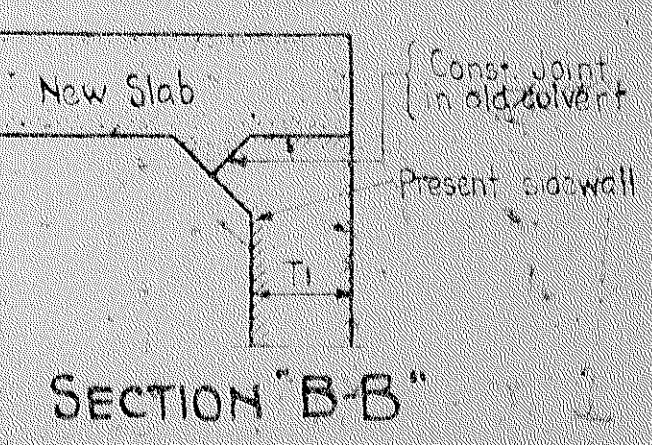
DOUBLE OPENING



SECTION THRU CURB



WING CORNER DETAIL



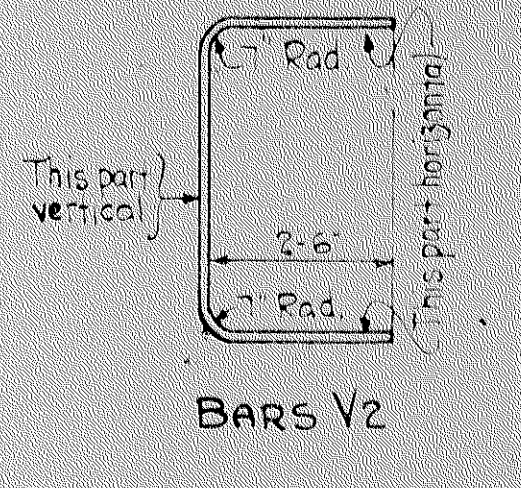
SECTION 'B-B'

SCHEDULE OF C2 BARS FOR DOUBLE OPENINGS

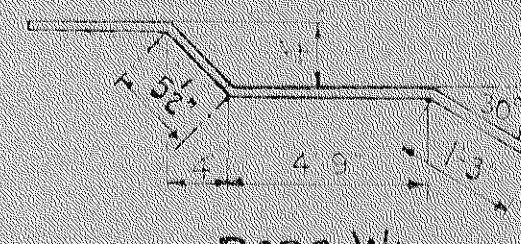
CULVERT SIZE	A	B	C	E	F	LENGTH
W64-D	4'-3"	1'-4"	2'-7"	1'-0"	13'-9"	16'-9"
W84-D	5'-9"	1'-5"	3'-3"	2'-0"	11'-7"	20'-8"
W104-D	7'-2"	1'-8"	3'-11"	2'-4"	21'-7"	24'-11"

FORMULAS FOR QUANTITIES FOR EXTENSION OF ONE END OF CULVERT

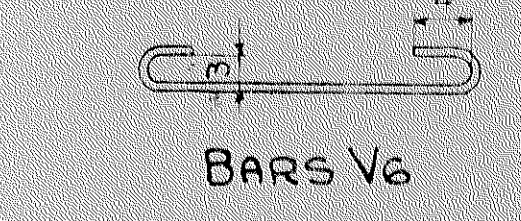
CULVERT SIZE	REINFORCEMENT STEEL (LBS.)	CONCRETE CU YDS.
W 44	39.1E + 400	0.41E + 4.2
W 64	53.7E + 420	0.63E + 5.1
W 64D	111.9E + 630	1.15E + 7.5
W 74	77.9E + 420	0.75E + 5.7
W 84	82.7E + 500	0.84E + 6.1
W 84D	175.9E + 580	1.46E + 8.2
W 104	108.5E + 550	1.12E + 7.5
W 104-D	208.7E + 850	2.07E + 11.7



BARS V2



BARS W1



BARS V6

NOTE: For bent bars not detailed here see standard plan.

REINFORCEMENT FOR EXTENSION OF ONE END

BAR NO.	SIZE	LENGTH	SHAPE	LOCATION
1	C2	5'-0"	BENT	Curb
2	F1	16'-9"	Strt.	Floor Transv.
3	F2	16'-9"	Strt.	Apron
4	F3	16'-9"	Strt.	Drop Wall
5	F4	20'-8"	Strt.	Floor Longit.
6	H1	2'-0"	Strt.	Sidewall Horiz.
7	S1	2'-0"	Strt.	Slab Transv.
8	S2	2'-0"	Bent	Slab Longit.
9	S3	2'-0"	Strt.	Longit.
10	V1	2'-0"	I-Hook	Sidewall Vert.
11	V2	2'-0"	Bent	Wing
12	V3	4'-9"	Strt.	Sidewall Dowels In Old Apron
13	V4	3'-3"	Strt.	Wing Corner Ties
14	W1	1'-0"	Bent	Wing Corner
15	V5	2'-0"	Strt.	Intermediate Wall Vert.
16	V6	2'-0"	2 Hooks	"
17	V7	2'-0"	Strt.	"
18	H2	2'-0"	Strt.	Intermediate Wall Horiz.
19	C2	5'-0"	Bent	Curb (For Doubles Only)

+ Bend in field  
\* Two bars to be cut from each bar marked thus (\*), one long and one short.

- ① Length of B, S1, S2, V1 See Standard Plan
- ② Size of F1, F2, F3, F4, S1, S2, S3, V1, V2, V3, V4, V5, V6, V7 (To be determined from spacing shown on standard plan)
- ③ Length of F1 = X + 2T1 + 5"
- ④ " F2 = 2X + 4T1 + 7'-10"
- ⑤ " F3 = X + 2T1 + 7'-11"
- ⑥ " F4 = E + 5'-0" (E + 3'-8" for W84 D)
- ⑦ " H1 = E + 8'-0"
- ⑧ " S3 = E + 1'-8"
- ⑨ " V2 = 2T2 + 2T3 + 9'-3"
- ⑩ " V3 = Y - 3"
- ⑪ " V6 = 2T3 + 5'-0"
- ⑫ " V7 = T2 + 2'-8"
- ⑬ Number of H2, V5, V6 & V7 in each intermediate wall to be determined from the details in lower left hand corner of this sheet. Refer to same details for number of C2 bars.

E - Culvert extension in feet.  
X - Clear distance between sidewalls in feet.  
T1 - Outside wall thickness in inches.  
T2 - Slab  
T3 - Floor  
Y - Bottom of floor to top of slab.

NOTE: Removal of old concrete and preparation of old work shall conform to the requirements of M.H.D. 2433.3.

The standard plan for the size of culvert to be extended shall be used in conjunction with this sheet.

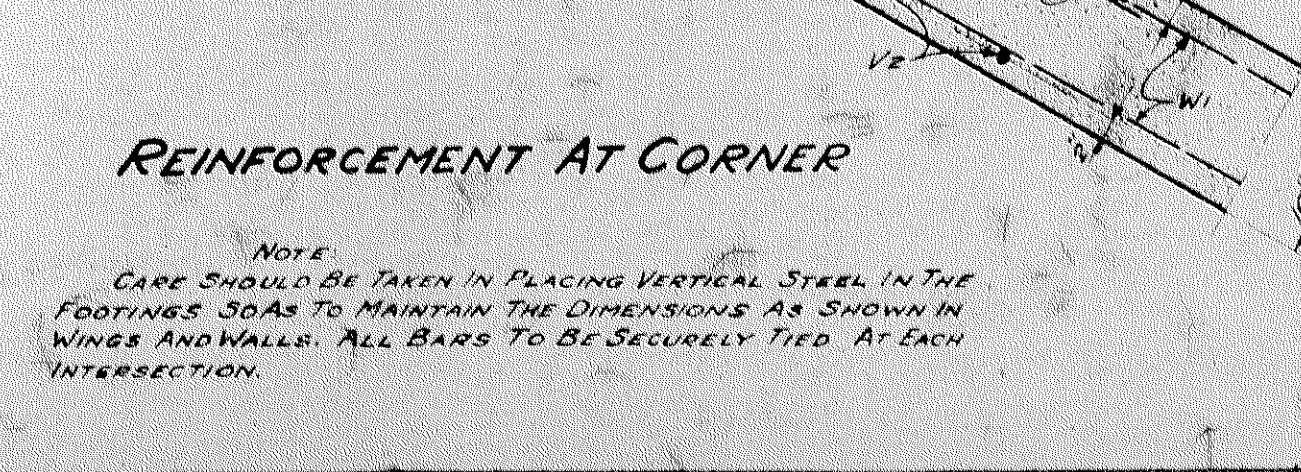
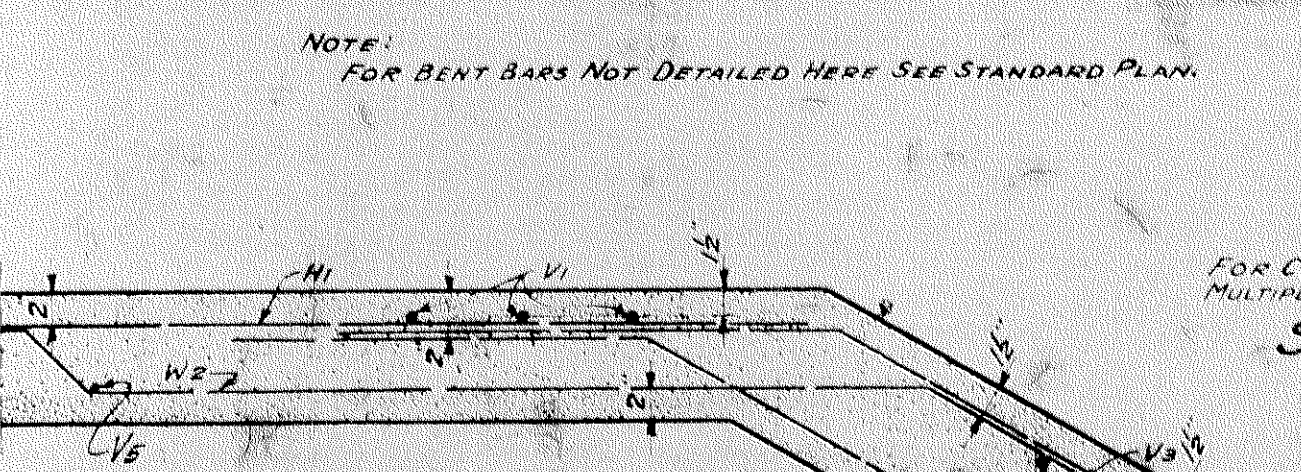
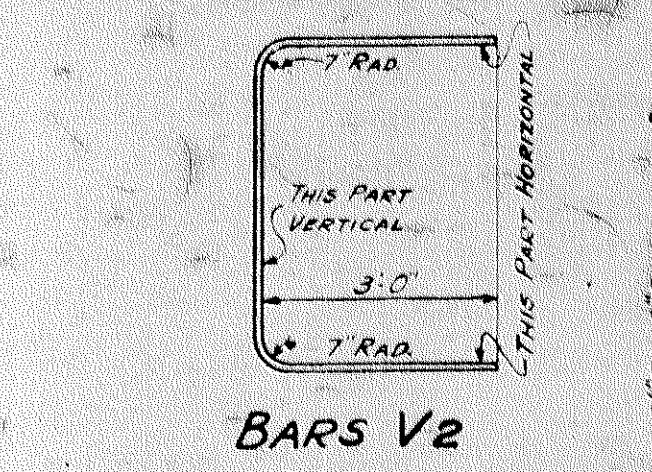
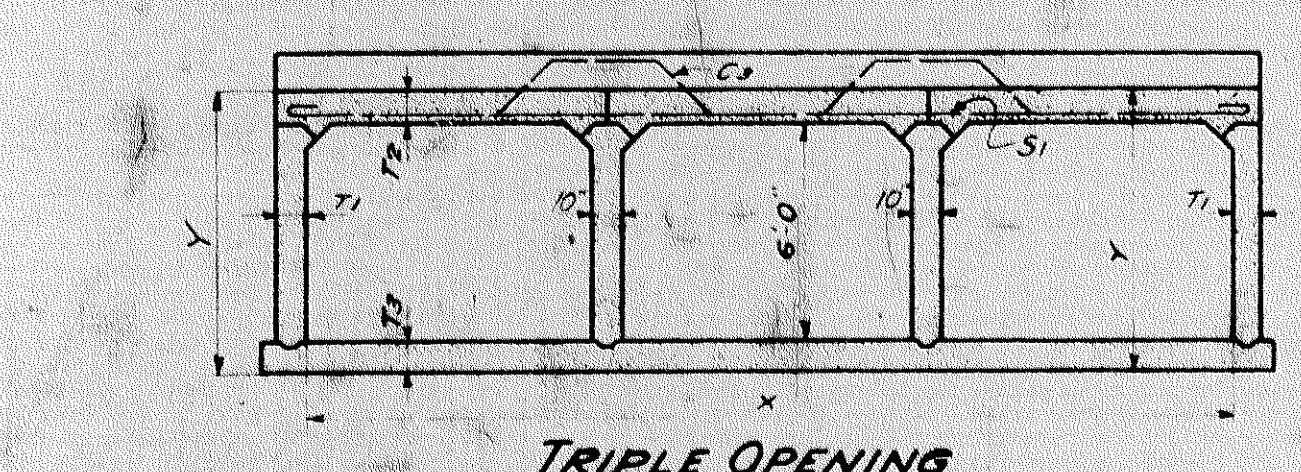
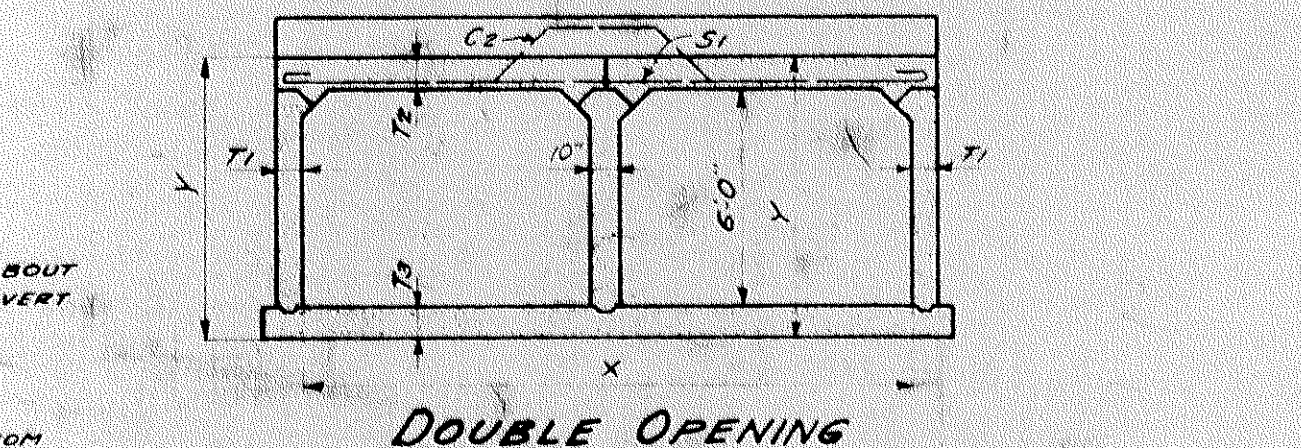
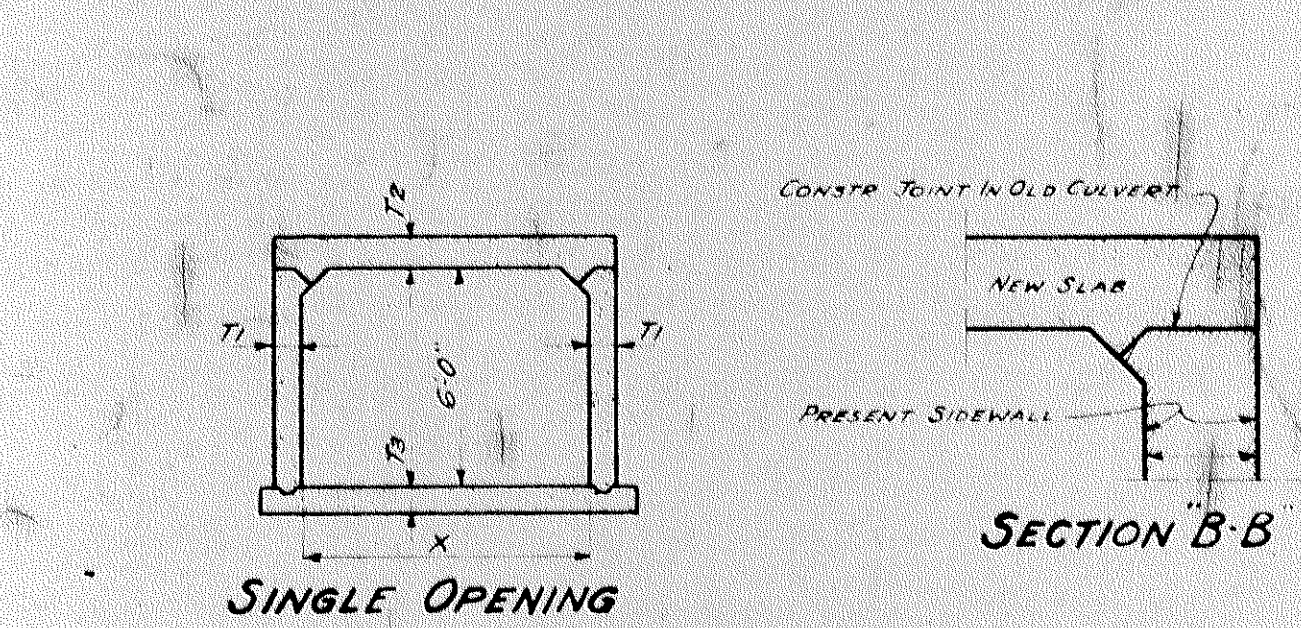
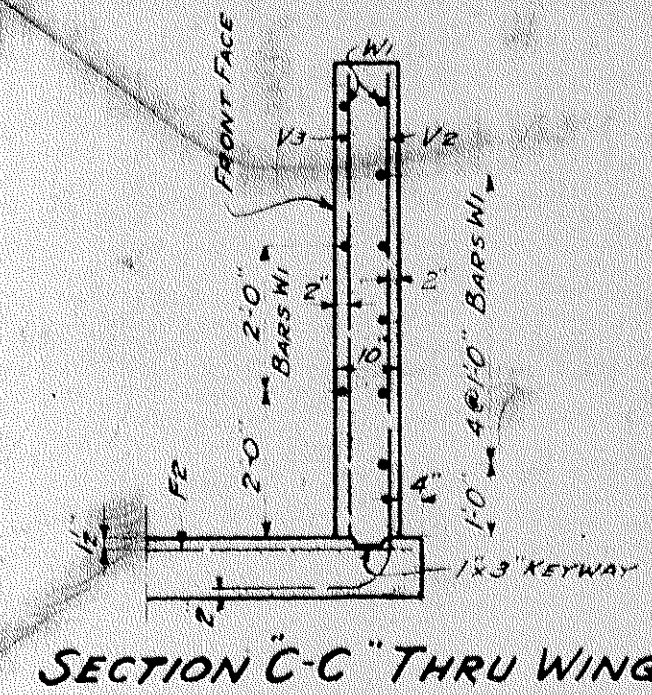
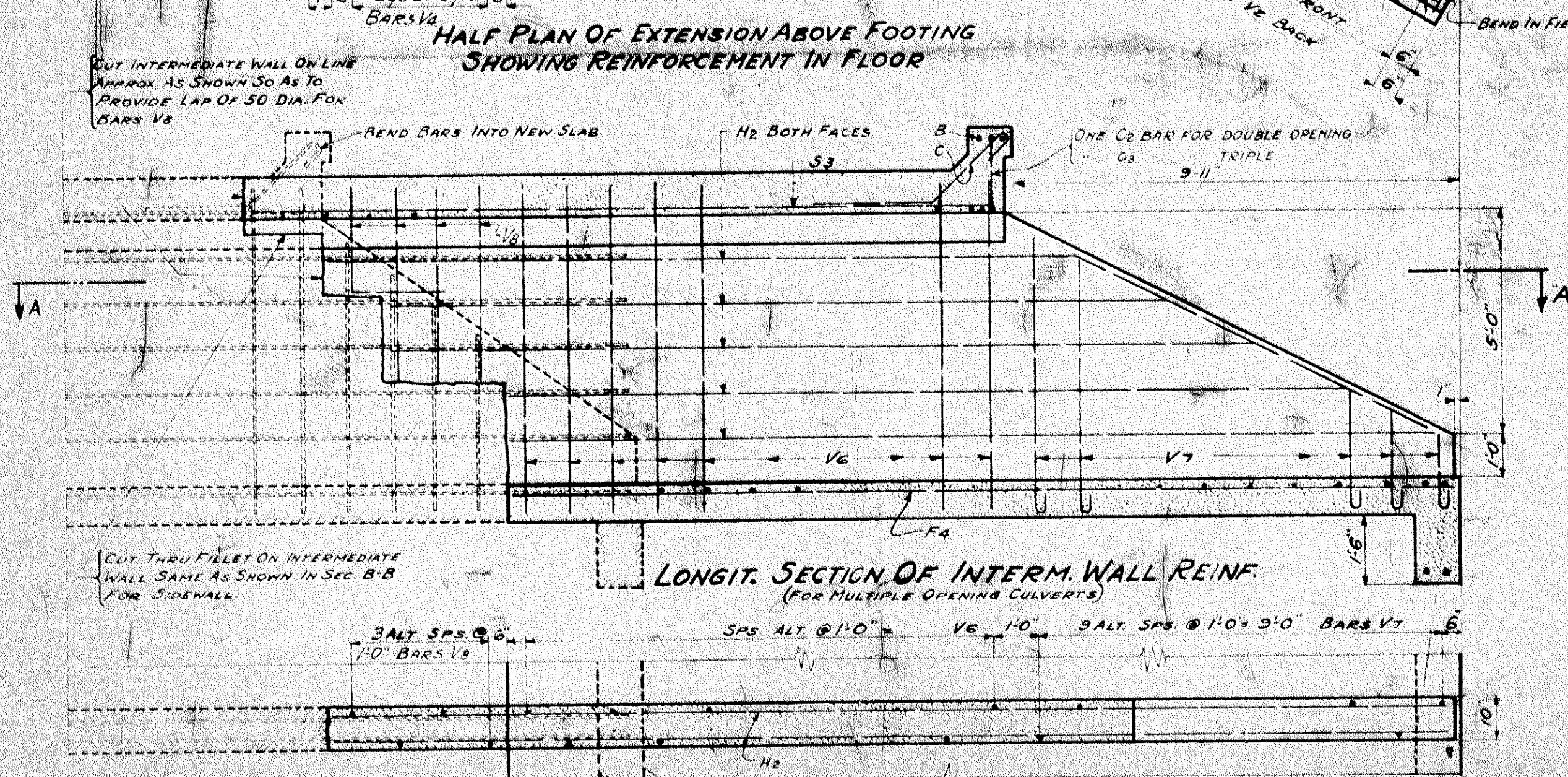
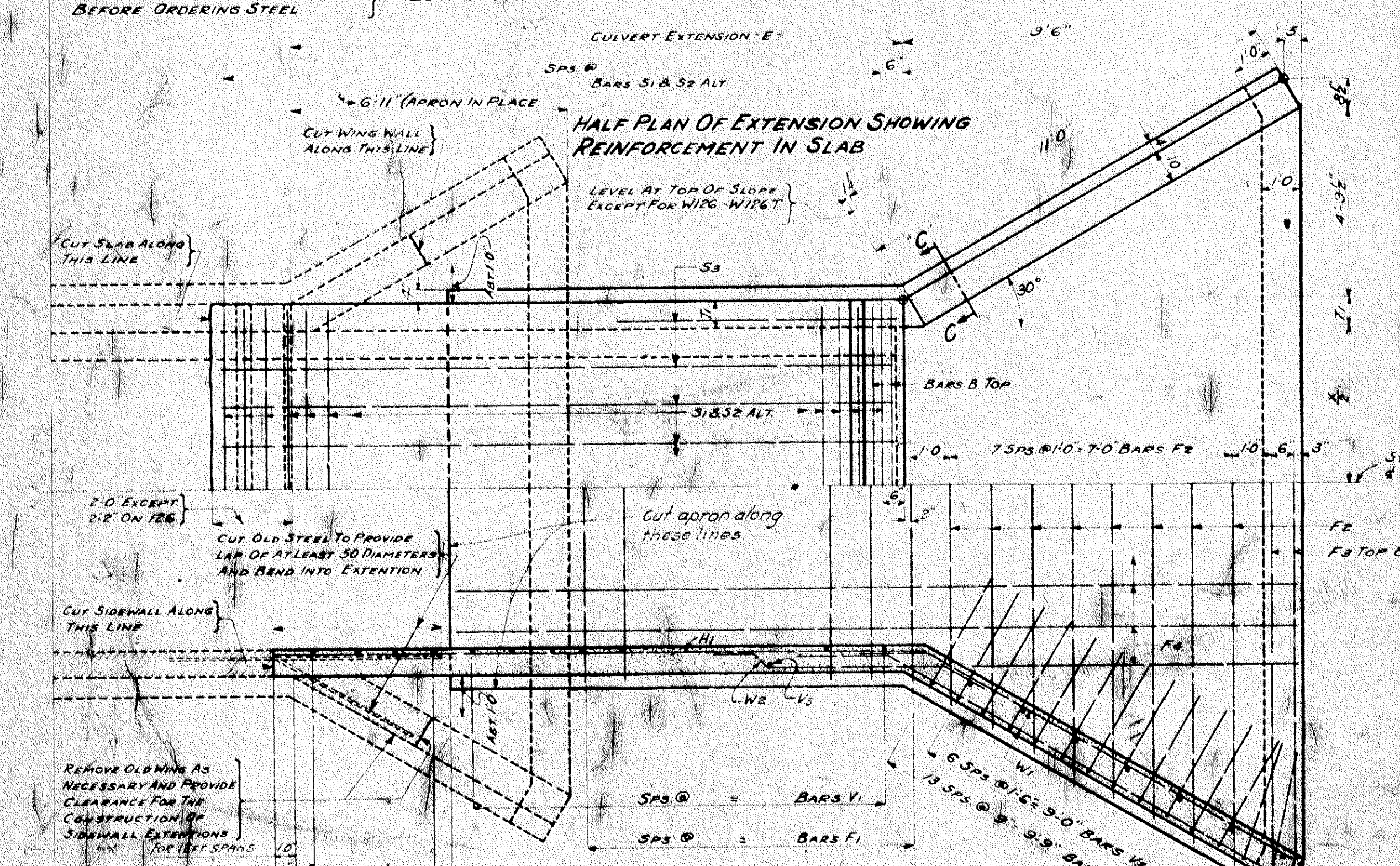
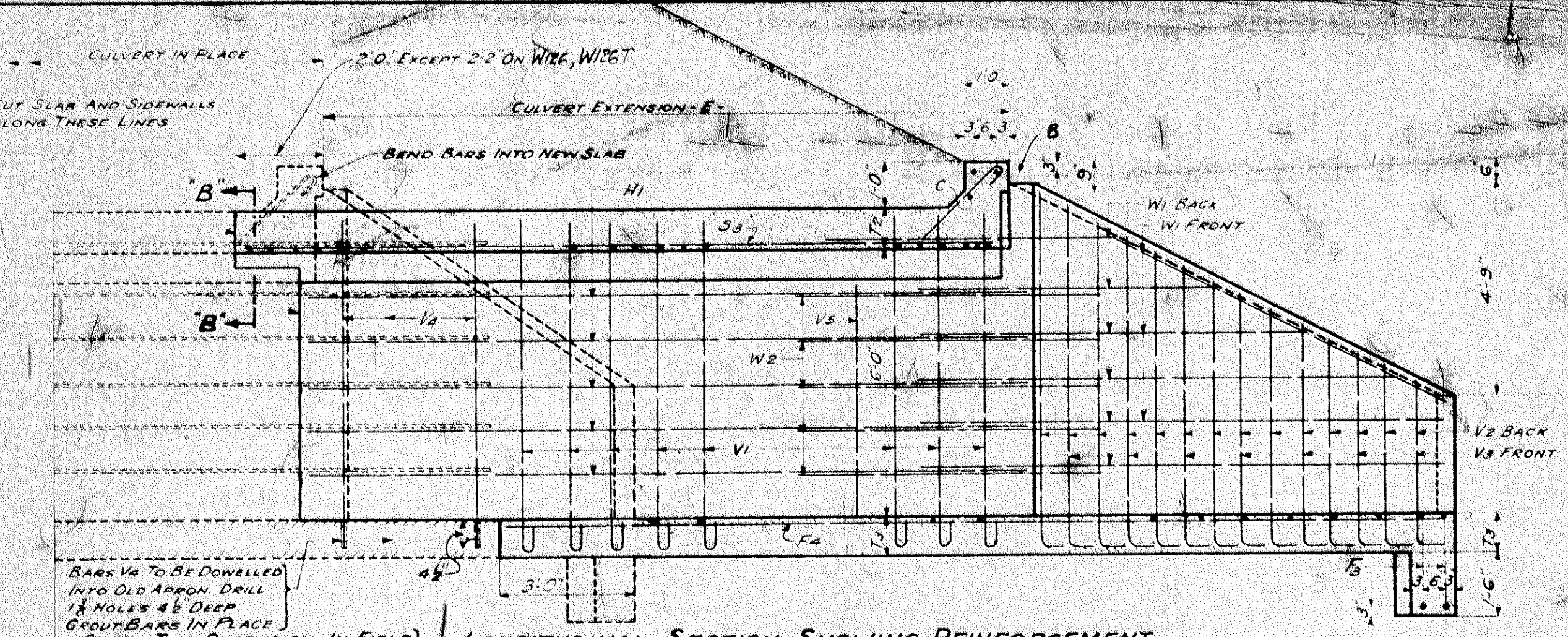
The Minnesota Highway Department's current Specifications for Highway Construction shall apply.

STATE OF MINNESOTA  
DEPARTMENT OF HIGHWAYS  
EXTENSION DETAILS AND DETAILS OF APRON AND WINGS FOR 2:1 FILL SLOPES  
ALL 4 FT. HIGH CULVERTS ("W" SERIES)  
Approved May 1, 1944

E. J. Miller  
Bridge Eng.

O. R. Rupp  
Chief Engr.





**SCHEDULE OF C2 BARS FOR DOUBLE OPENINGS**

CULVERT	A	B	C	E	F	LENGTH
W46	4.3	1.4	2.7	1.0	13.9	16.9
W66	5.9	1.6	3.3	2.1	17.9	20.1
W86	7.3	1.8	3.1	2.4	21.9	25.0

**SCHEDULE OF C3 BARS FOR TRIPLE OPENINGS**

CULVERT	A	B	C	D	E	F	LENGTH
W106T	7.3	1.9	3.1	3.7	2.4	32.7	37.2
W126T	8.1	1.10	4.7	4.7	2.7	38.1	43.9

**FORMULAS FOR QUANTITIES FOR EXTENSION OF ONE END OF CULVERT**

CULVERT REINFORCEMENT SIZE	STEEL (LBS)	CONCRETE CU YDS.
W46	58.2 E + 730	0.55E + 6.8
W66	65.1 E + 800	0.73E + 8.2
W66D	137.3 E + 1060	1.31E + 10.9
W86	96.8 E + 880	0.91E + 9.4
W86D	177.2 E + 260	1.71E + 13.2
W106	127.0 E + 900	1.22E + 11.1
W106D	233.6 E + 1310	2.27E + 16.1
W106T	382.5 E + 1470	3.42E + 21.9
W126	171.0 E + 890	1.62E + 13.3
W126T	471.0 E + 1490	4.52E + 27.4

**REINFORCEMENT FOR EXTENSION OF ONE END**

BAR NO.	NO.	SIZE	LENGTH	SHAPE	LOCATION
1	B	2	5' 0"	STRT	CUMB
2	C	4	5' 0"	BENT	WALL
3	H	10	5' 0"	STRT	WALL HORIZ
4	F	7		STRT	FLOOR TRANSV
5	F2	4		BENT	APRON
6	F3	4		BENT	DROP WALL
7	F4	3		BENT	FLOOR HORIZ
8	S	5		STRT	SLAB TRANSV
9	S2	5		BENT	WALL
10	S3	5		STRT	LONGIT
11	V	1		HORIZ	WALL VERT
12	V2	1		BENT	WING
13	V3	7		STRT	WALL
14	V4	3	6' 9"	BENT	SIDEWALL DOWN INTO OLD APRON
15	V5	2	5' 3"	BENT	WING CORNER TIE
16	W	18	13' 6"	STRT	WING HORIZ
17	W2	10	7' 3"	BENT	CORNER

These bars required only when the culvert to be extended has more than one opening.

+ BEND IN FIELD  
• TWO BARS TO BE CUT FROM EACH ITEM MARKED THIS (•) ONE LONG AND ONE SHORT.

1 LENGTH OF E, SEE PLAN  
2 SIZE OF E, SEE PLAN  
3 NUMBER OF E, SEE PLAN  
4 LENGTH OF F1  
5 F2  
6 F3  
7 F4  
8 H1  
9 S1  
10 V1  
11 V2  
12 V3  
13 V4  
14 V5  
15 V6  
16 V7  
17 V8

SEE STANDARD PLAN  
SEE STANDARD PLAN  
NUMBER OF BARS TO BE DETERMINED FROM SPACING SHOWN ON STA. PLAN  
X + 2T + 5  
2X + 4T + 11 - 10  
X + 2T + 11 - 1  
E + 5 - 3  
E + 0  
E + 1/6 (WING WIDTH)  
2T + 2T + 13 - 0  
2T + 7 - 8  
E + 5 - 0  
Y - 3  
2T + 7 - 3  
T2 + 3 - 8

NUMBER OF HORIZ AND VERT INTERMEDIATE WALLS TO BE DETERMINED FROM THE DETAILS SHOWN LOWER LEFT HAND CORNER OF THIS SHEET REFER TO SAME DETAILS FOR NUMBER OF C2 AND C3 BARS

12 BARS REQD. FOR W46

T1 = OUTSIDE WALL THICKNESS IN INCHES  
T2 = SLAB  
T3 = FLOOR

E = CULVERT EXTENSION IN FEET  
X = CLEAR DISTANCE BETWEEN SIDEWALLS IN FEET  
Y = BOTTOM OF FLOOR TO TOP OF SLAB IN FEET

NOTE:  
THE MINNESOTA HIGHWAY DEPARTMENT'S CURRENT SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SHALL APPLY.

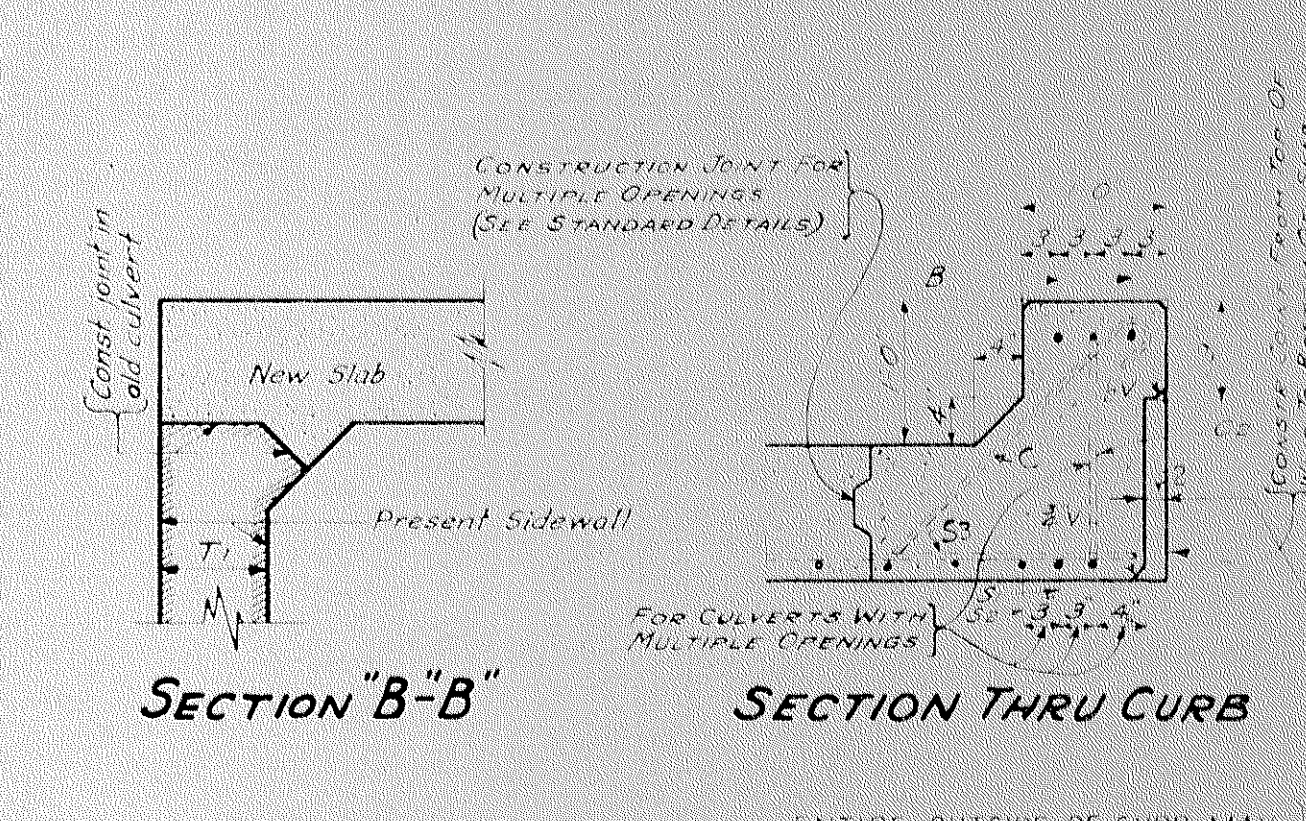
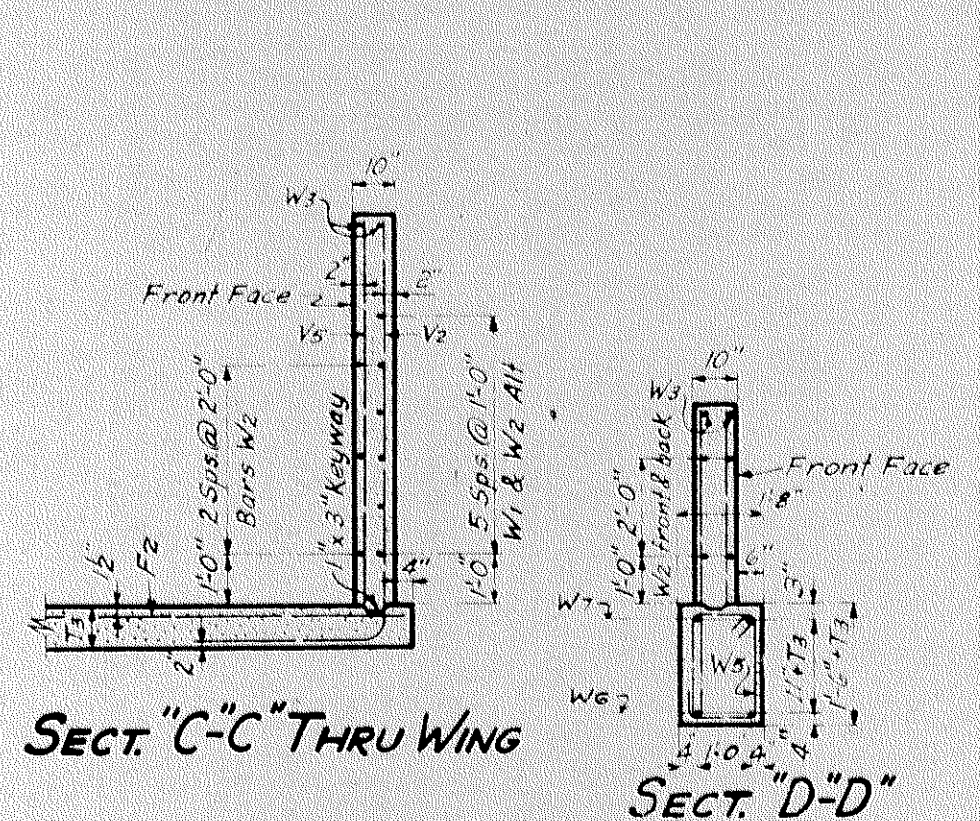
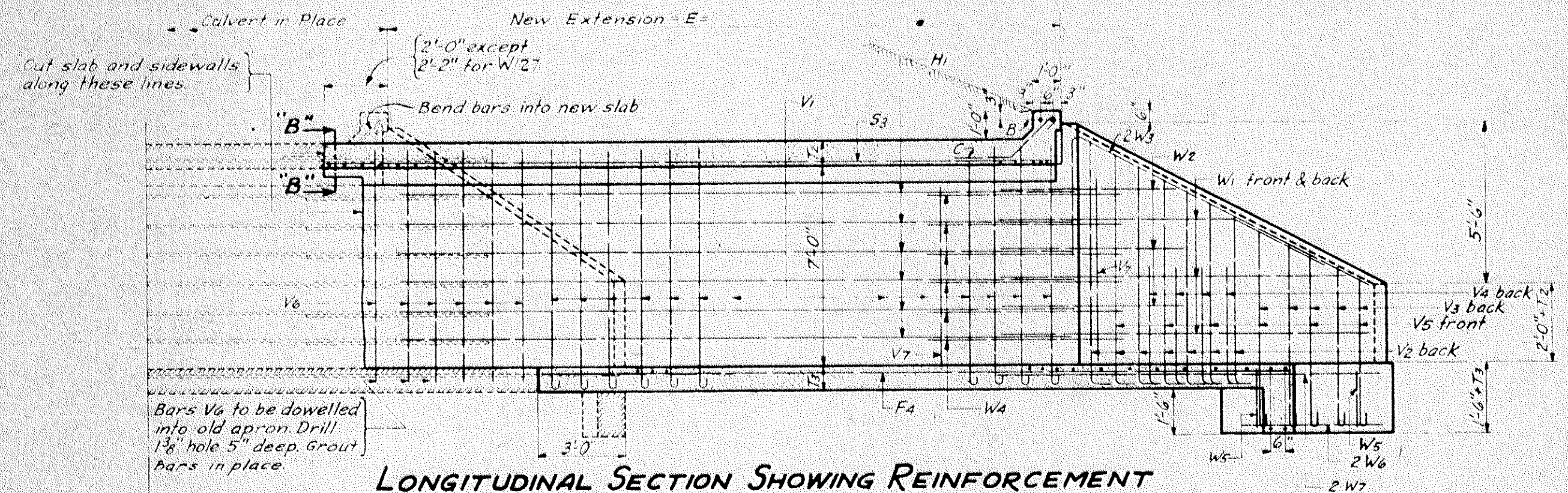
THE STANDARD PLAN FOR THE SIZE OF CULVERT TO BE EXTENDED SHALL BE USED IN CONJUNCTION WITH THIS SHEET.

REMOVAL OF OLD CONCRETE AND PREPARATION OF OLD WORK SHALL CONFORM TO THE REQUIREMENTS OF M.H.D. 24.33.3

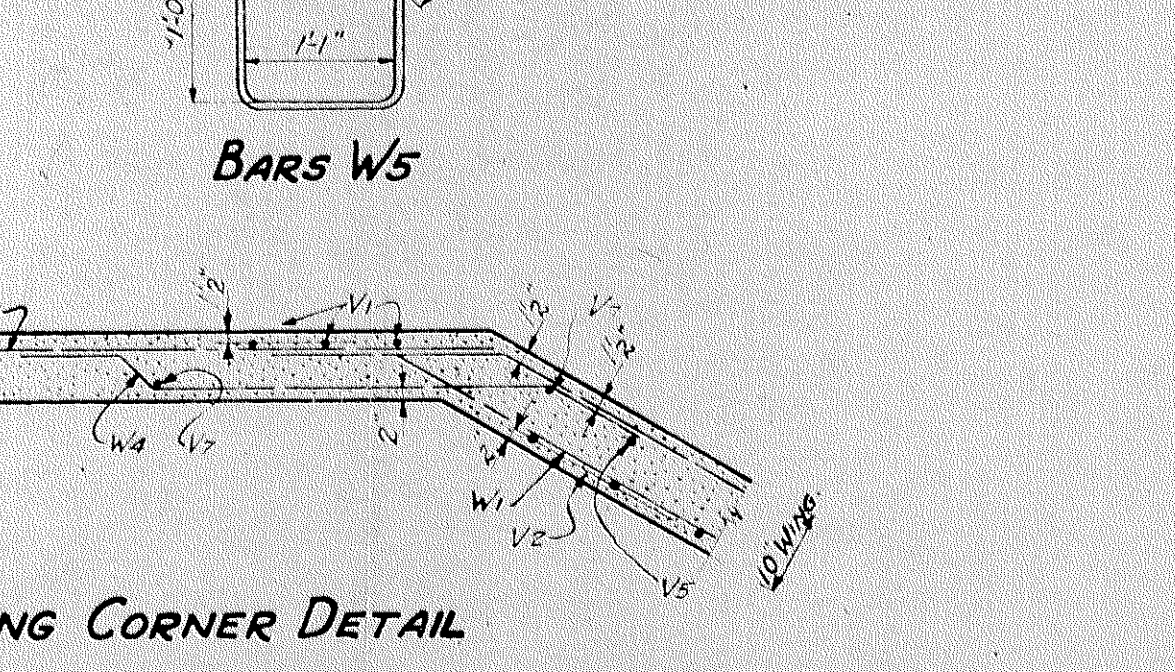
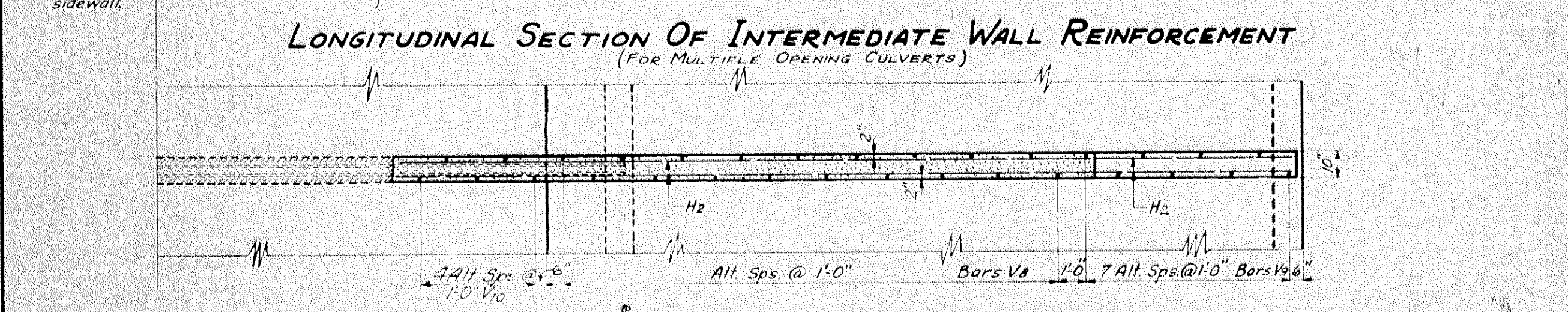
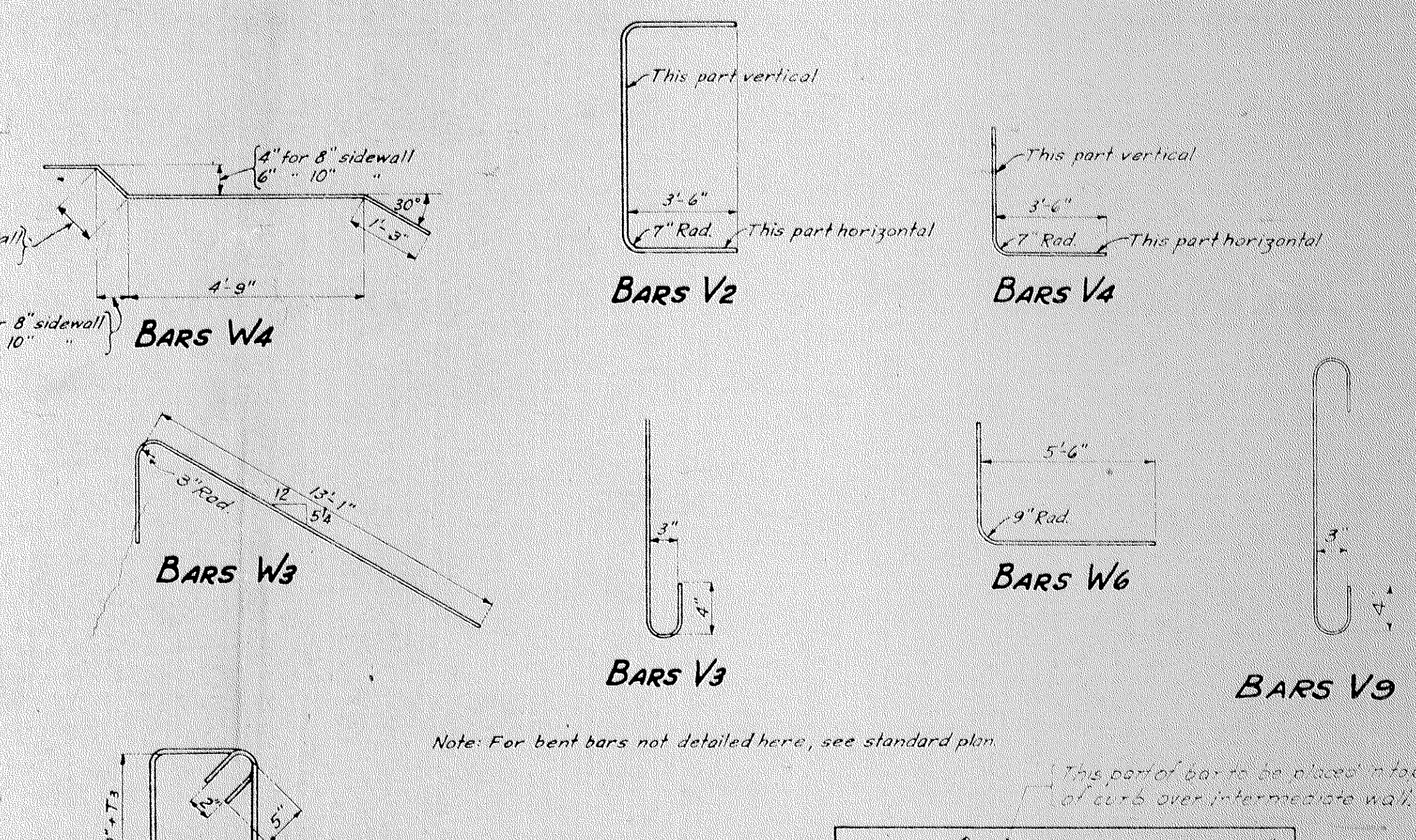
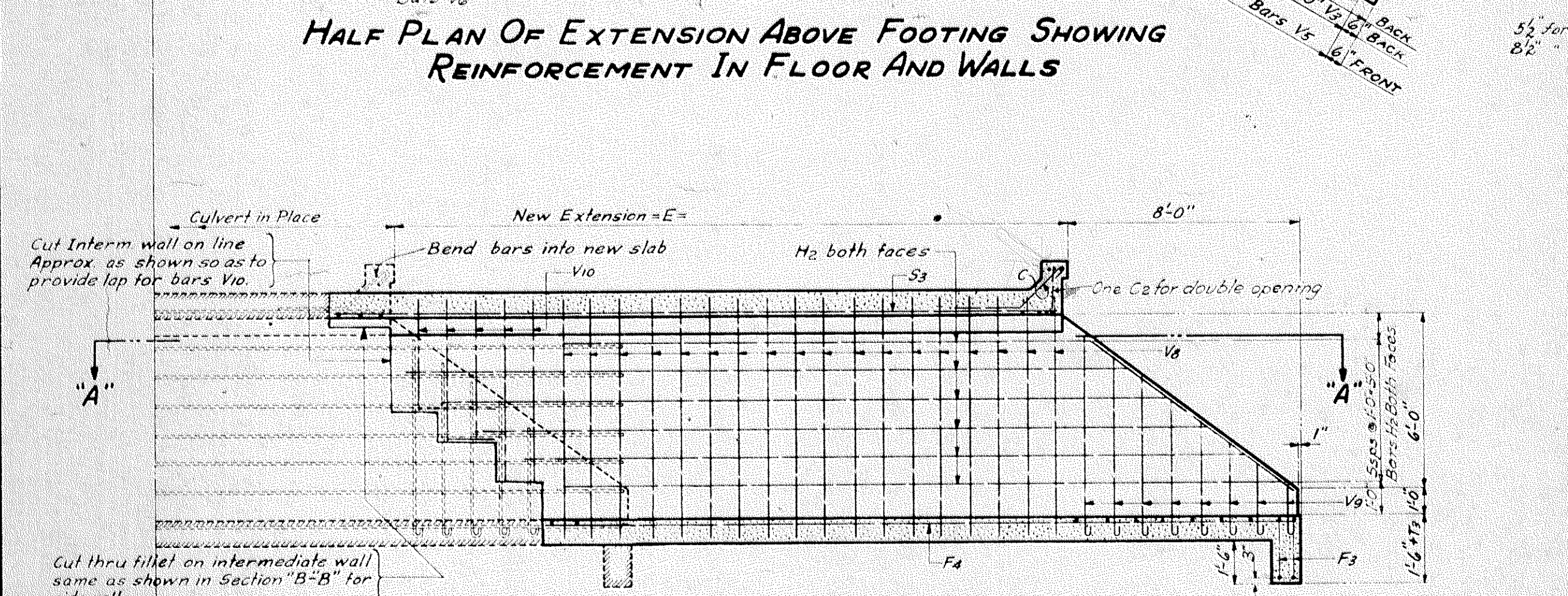
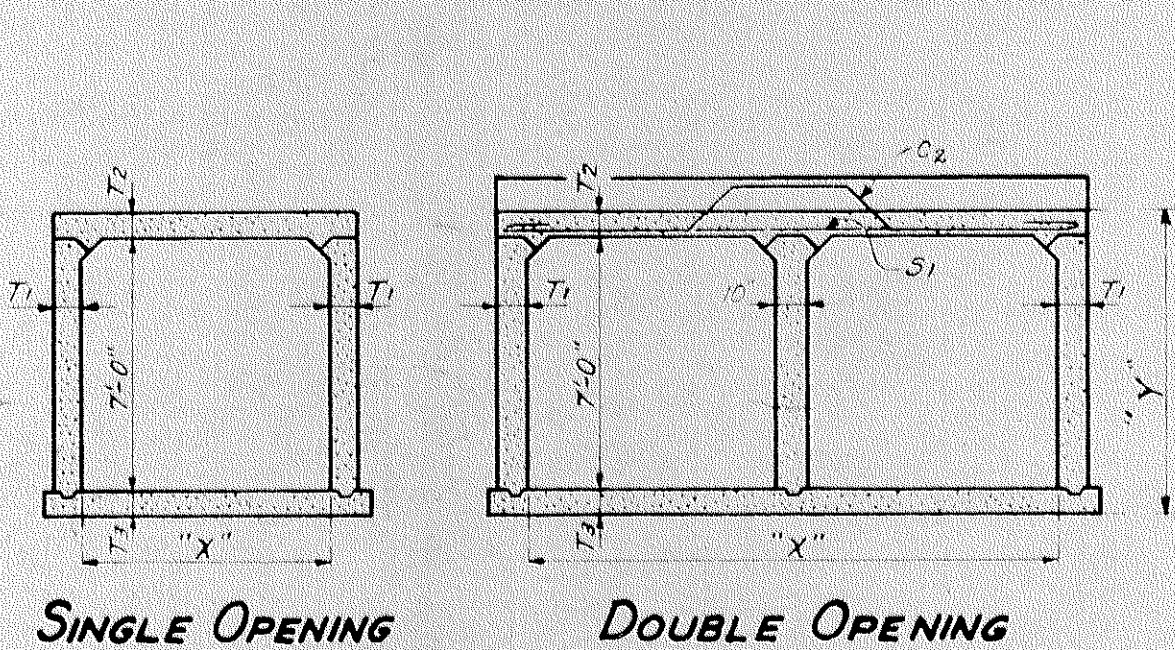
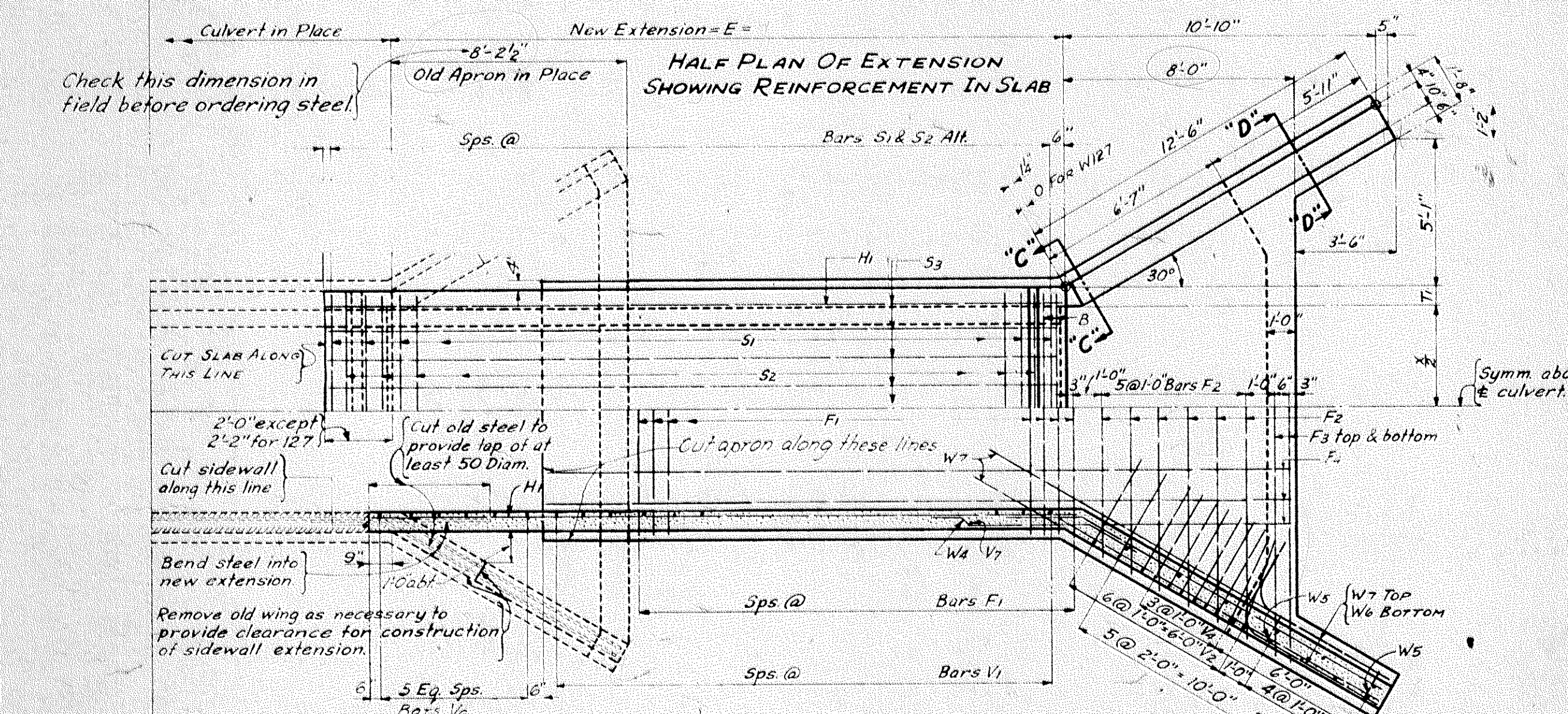
STATE OF MINNESOTA  
DEPARTMENT OF HIGHWAYS  
EXTENSION DETAILS & DETAILS OF APRON & WINGS FOR 2:1 FILL SLOPES  
ALL 6 FT. HIGH CULVERTS (W SERIES)  
APPROVED: MAY 1, 1944

E. J. Miller  
BRIDGE ENGR

O. L. Kopp  
CHIEF ENGR



BAR	NO.	SIZE	LENGTH	SHAPE	LOCATION
W1	2	1/2"	17'-0"	Strt	Front & back
W2	2	1/2"	17'-0"	Bent	"
W3	2	1/2"	17'-0"	Strt	Side Wall Vertical
W4	2	1/2"	17'-0"	Bent	Wing Wall Horizontal
W5	2	1/2"	17'-0"	Strt	Slab Trans
W6	2	1/2"	17'-0"	Bent	Slab Longit
W7	2	1/2"	17'-0"	Strt	Hook Side Wall Vert
V1	2	1/2"	17'-0"	Bent	Wing Wall
V2	2	1/2"	17'-0"	Strt	"
V3	2	1/2"	17'-0"	Strt	2 Hoops
V4	2	1/2"	17'-0"	Bent	"
V5	2	1/2"	17'-0"	Strt	"
V6	2	1/2"	17'-0"	Strt	Side Wall Dowels into apron
V7	2	1/2"	17'-0"	Strt	Wing Wall Bottom
V8	2	1/2"	17'-0"	Strt	Corner Bottom
V9	2	1/2"	17'-0"	Strt	Corner Top
V10	2	1/2"	17'-0"	Strt	Interm Wall Vertical
C1	2	1/2"	17'-0"	Strt	Curb for Double Opening



SCHEDULE OF C2 BARS FOR DOUBLE OPENING

CULVERT SIZE	A	B	C	E	F	LENG
W 77D	5'-0"	1'-5"	2'-11"	2'-0"	15'-0"	10'-0"

FORMULAS FOR QUANTITIES FOR EXTENSION OF ONE END OF CULVERT

CULVERT SIZE	REINFORCEMENT STEEL (LBS)	CONCRETE CU. YDS
W57	772 E + 900	0.68E + 8.6
W77	948 E + 900	0.89E + 9.7
W77D	149.5 E + 1150	1.61E + 12.1
W127	1801 E + 790	1.77E + 12.7

- \* Bend in field
- \* Cut two bars from each bar marked thus (\*), one long and one short
- Length of B5 5/8" = See Standard Plan
- Length of F1, S1, S2, V1 = See Standard Plan
- Number of C, F4, S3, S4, S5, S6, S7, S8, S9, S10 = See Standard Plan
- Length of F1 = 2X + 2T1 + 5"
- " " F2 = 2X + 2T1 + 9.5"
- " " F3 = X + 2T1 + 8.5"
- " " F4 = E + 2T1 + 5" + 1.9" for W127
- " " H1 = E + 0"
- " " H2 = E + 1.6" (E + 1.9" for W127)
- " " V1 = 2T2 + 2T3 + 17.5"
- " " V2 = 2T2 + 2T3 + 9.5"
- " " V3 = T2 + T3 + 5.6"
- " " V4 = 2T2 + 5.6"
- " " V5 = 2T2 + 5.2"
- " " V6 = E + 0"
- " " V7 = Y + 3"
- " " V8 = 2T3 + 8.1"
- " " V9 = 2T3 + 8.1"

E = Culvert Ext. in feet  
X = Clear Distance between Sidewalls in feet  
T1 = Outside Wall Thickness in inches  
T2 = S1/2  
T3 = 1/2C1  
Y = Bottom of floor to top of Slab in feet

NOTE:  
Removal of old concrete and preparation of old work shall conform to the requirements of M.H.D. 2433.3.

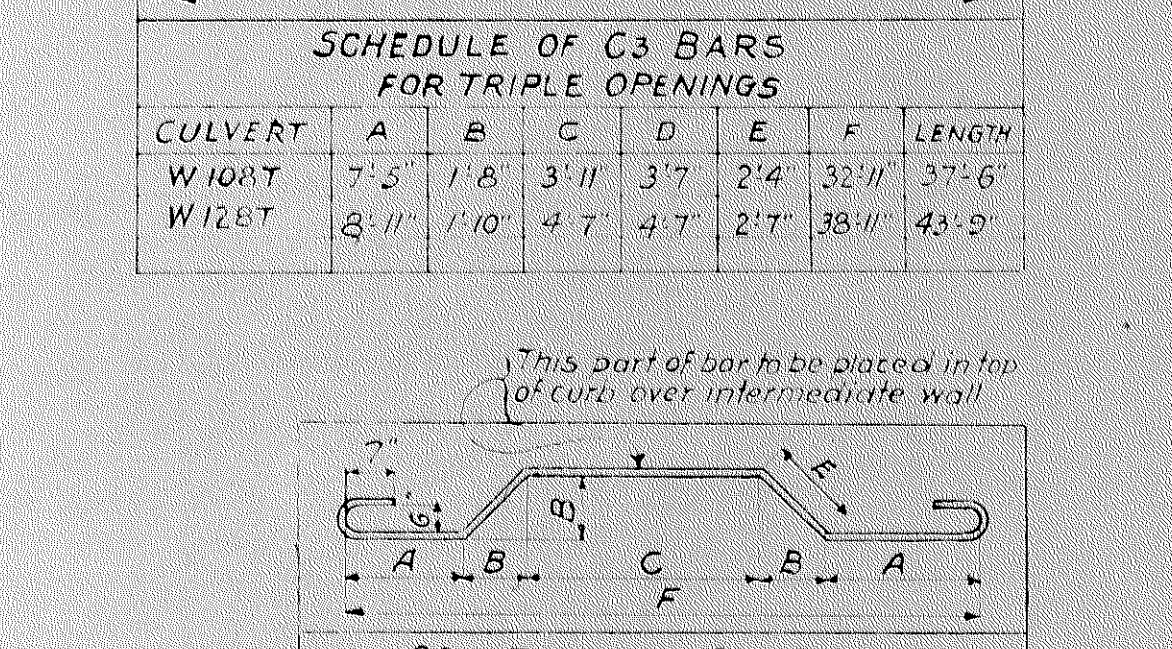
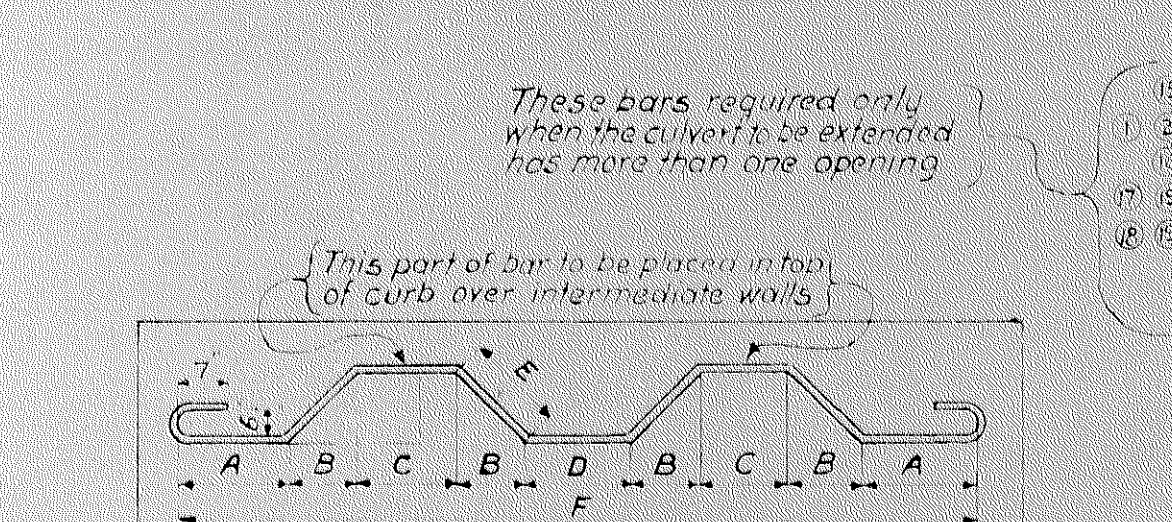
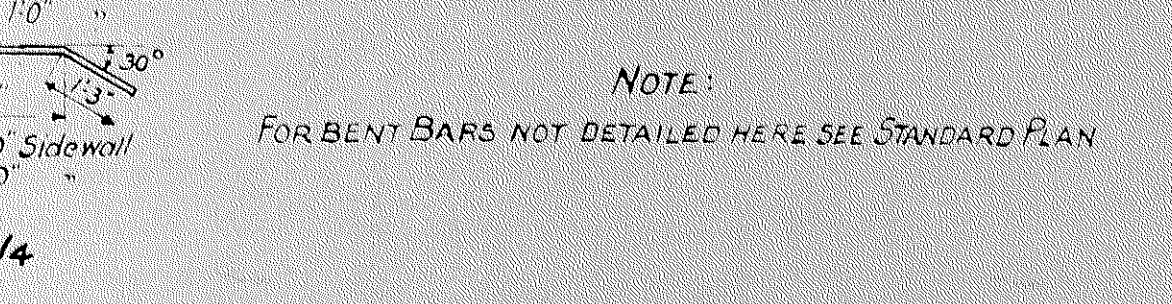
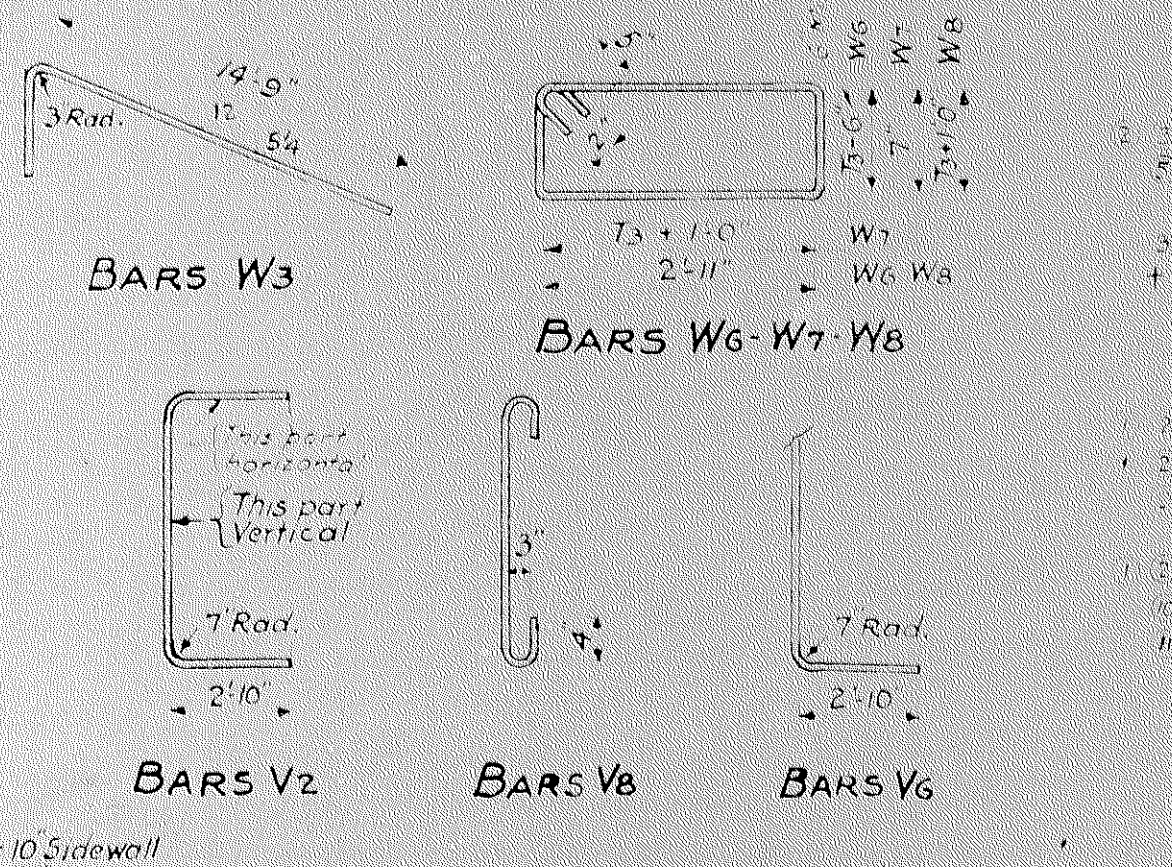
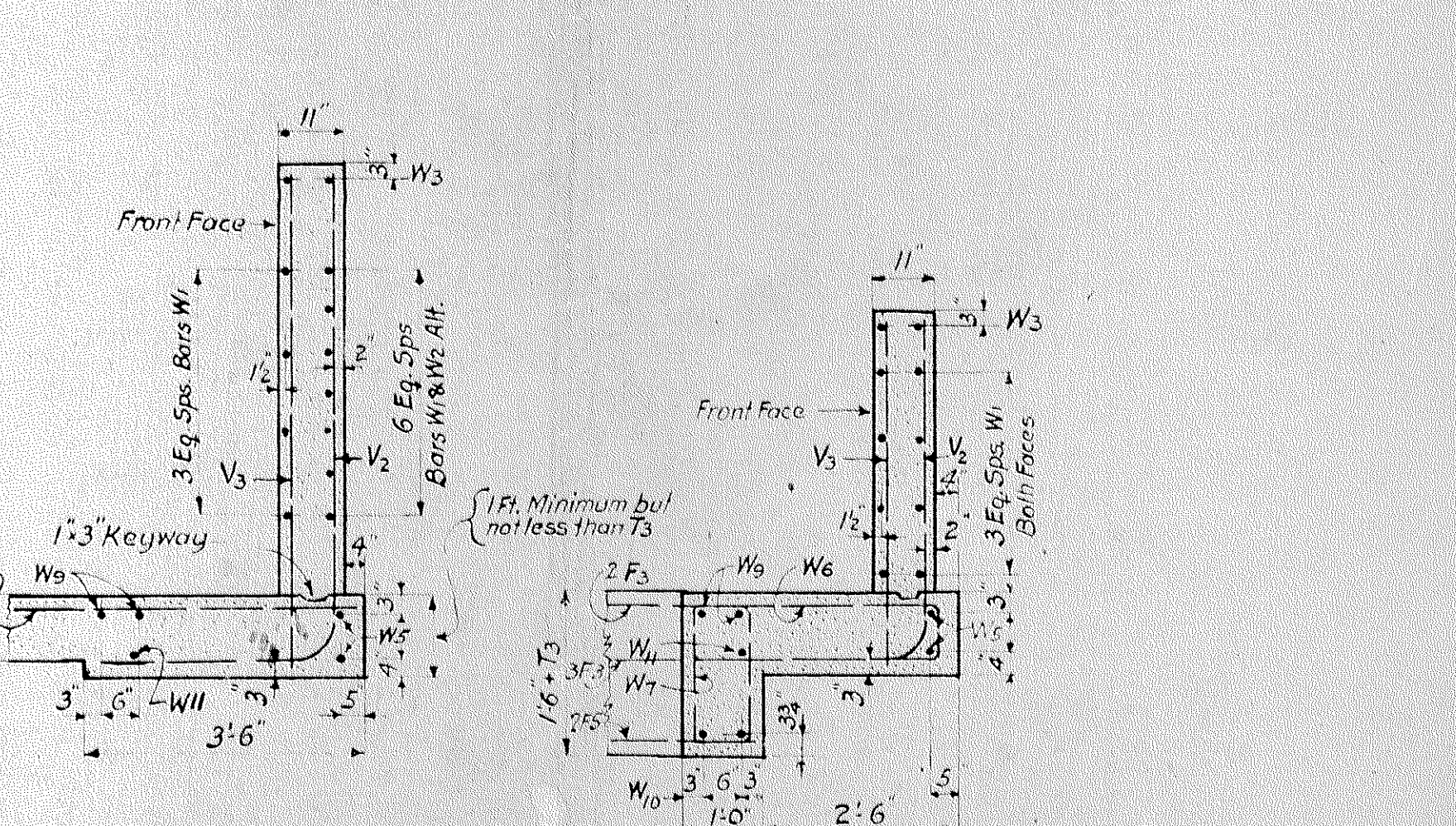
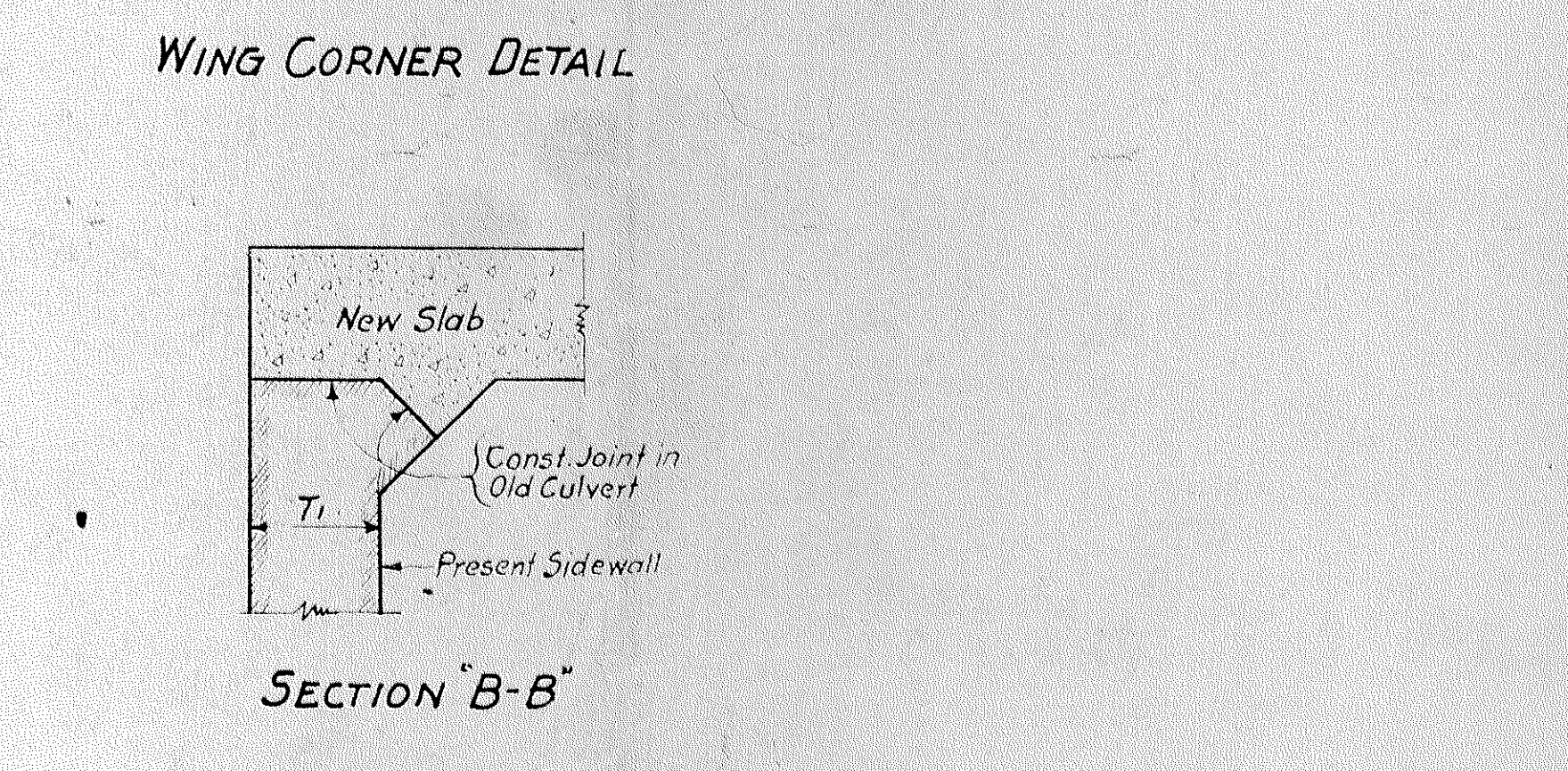
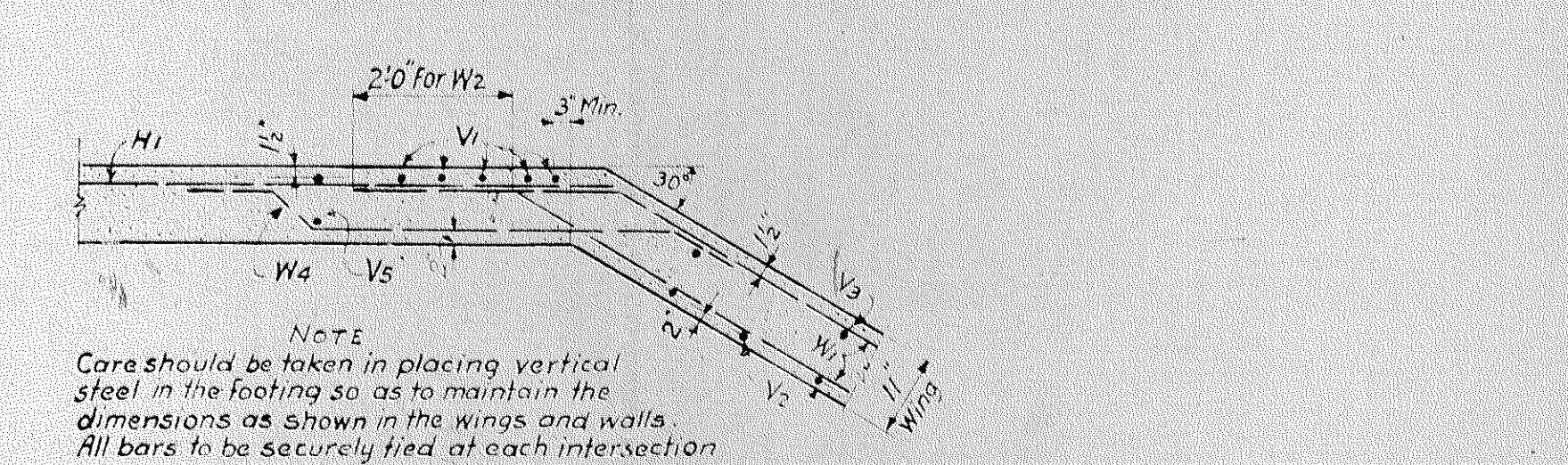
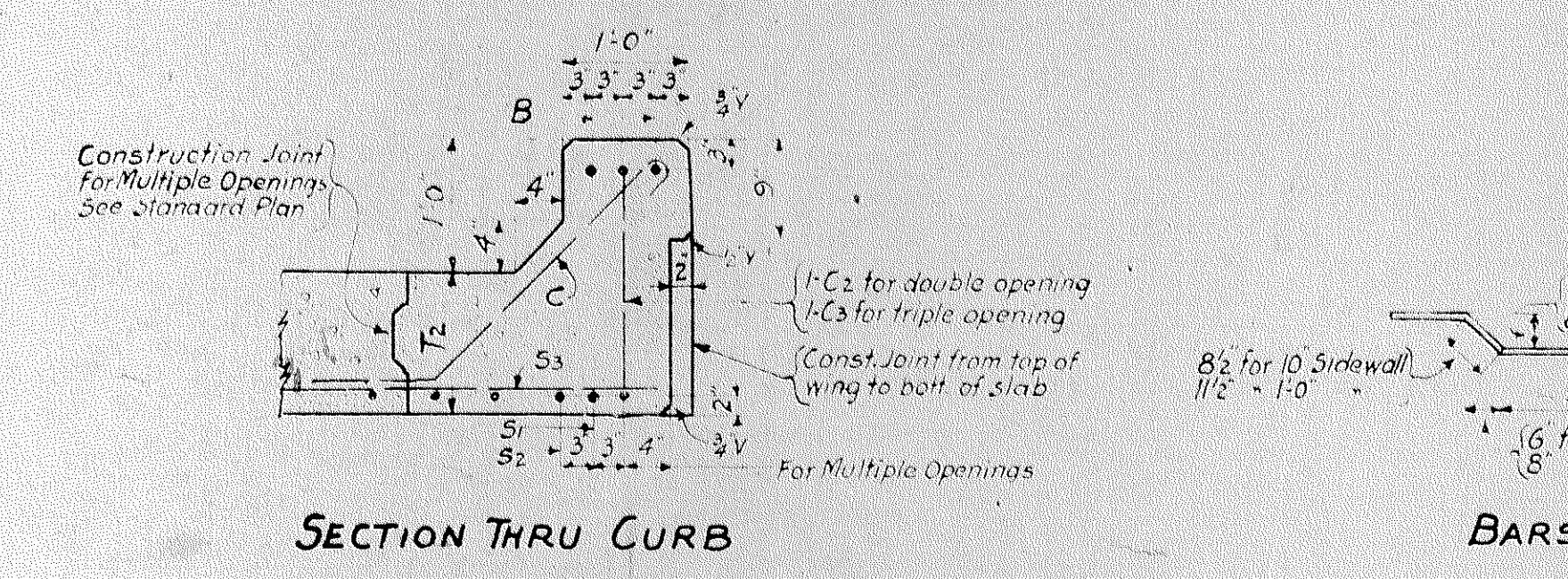
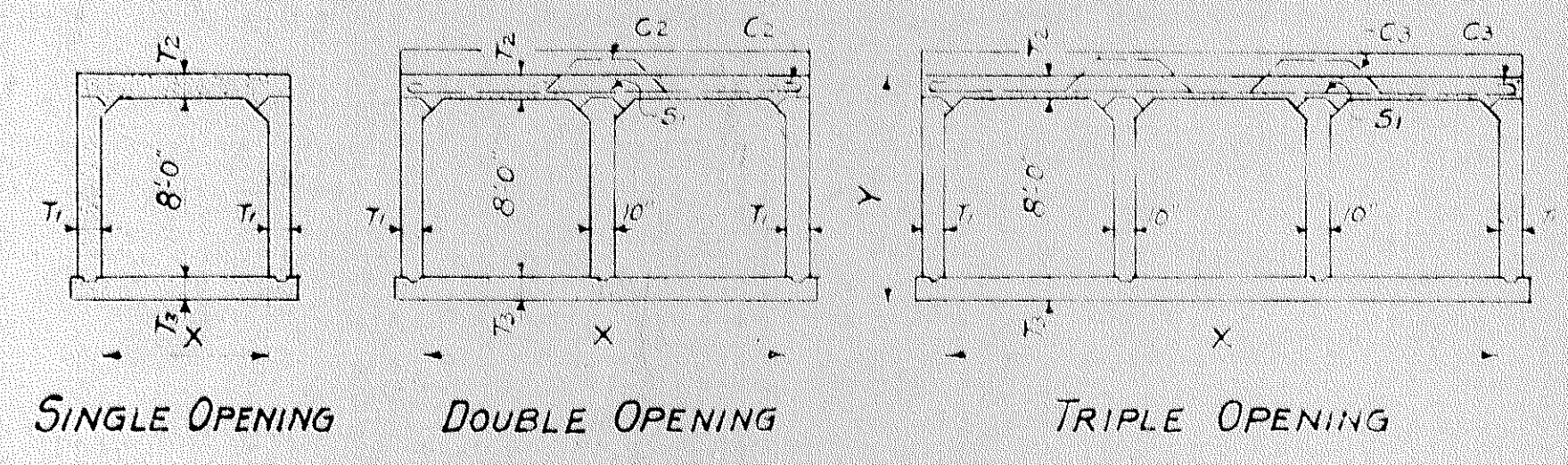
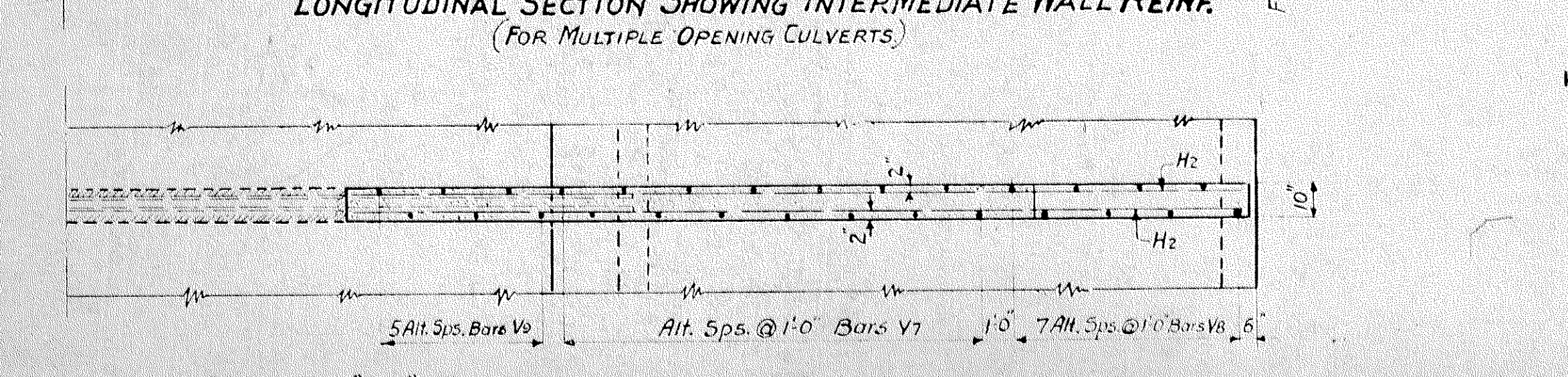
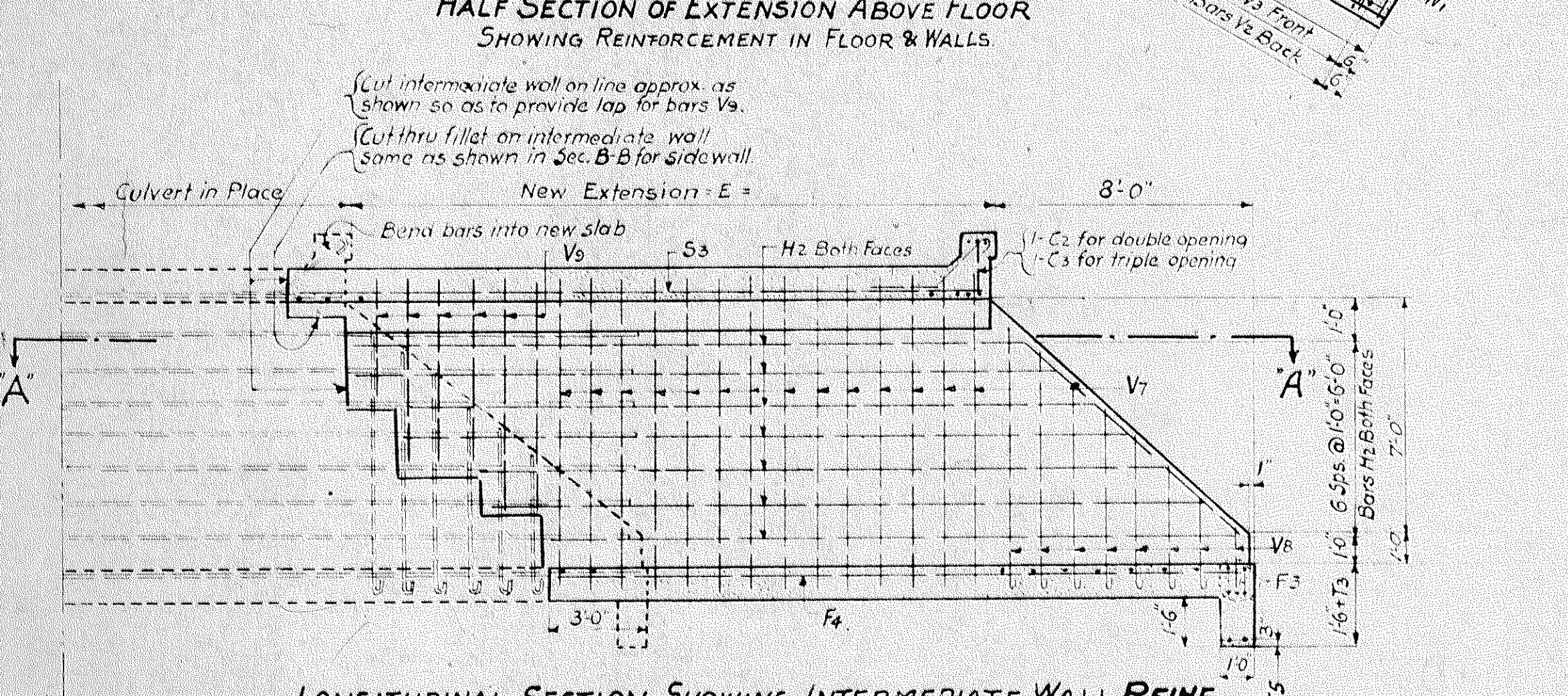
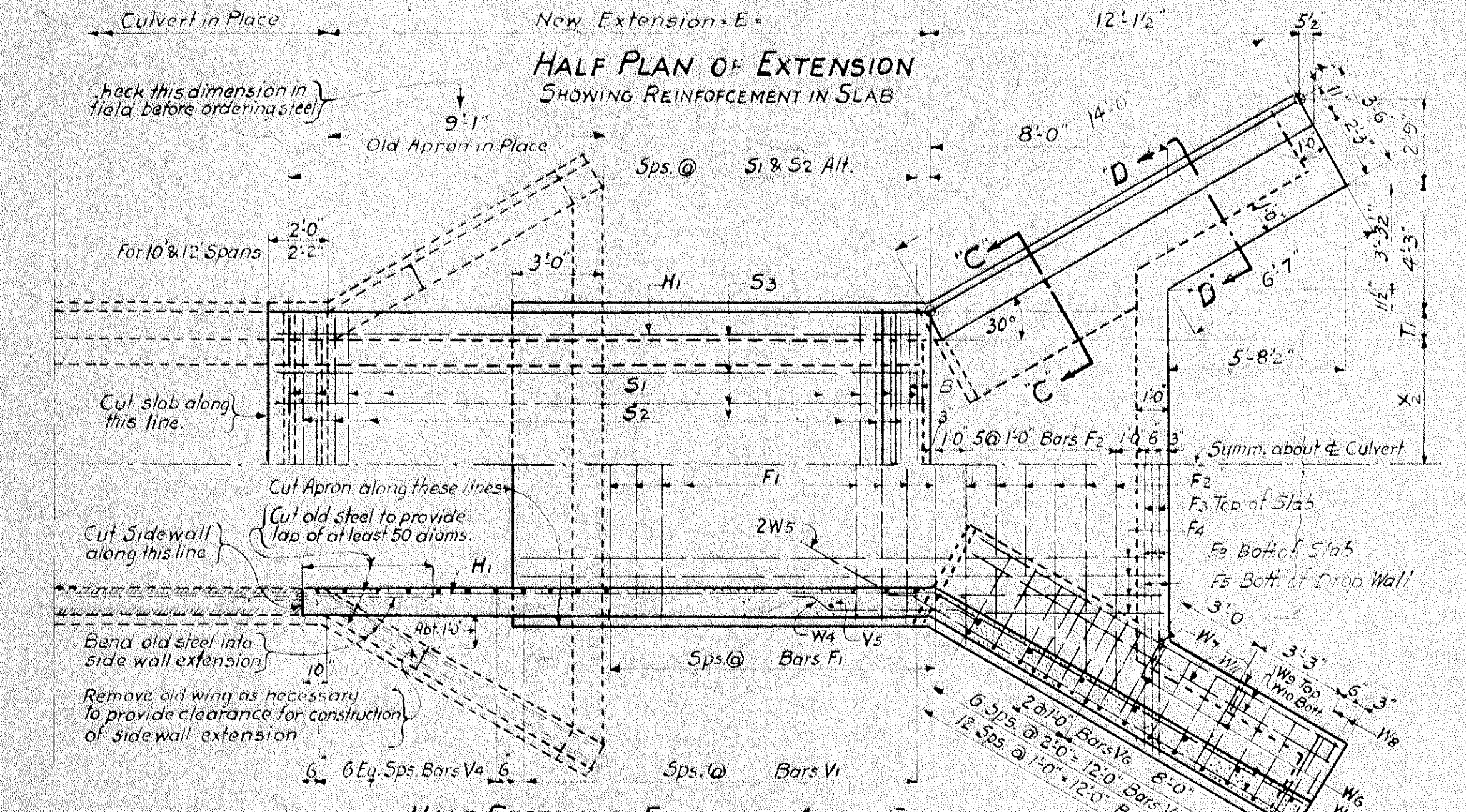
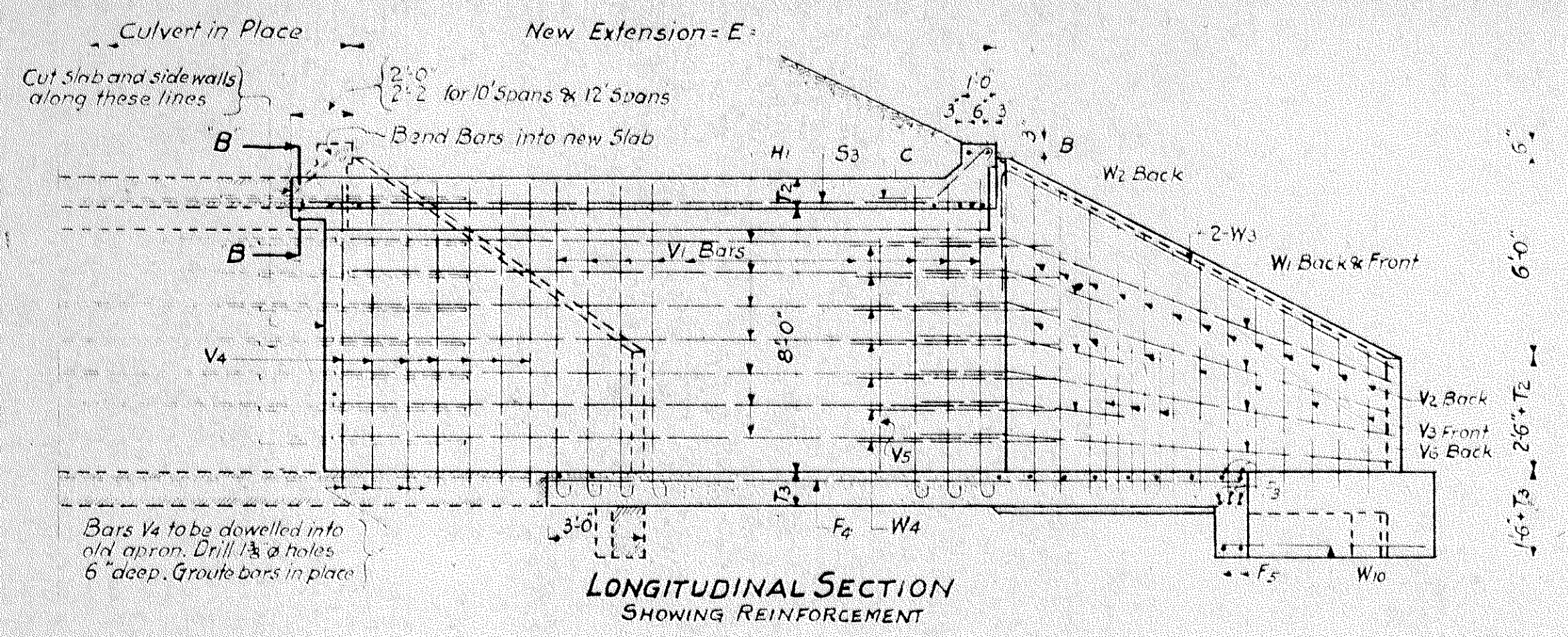
The Minnesota Highway Department's Current Specifications for Highway Construction shall apply.

The standard plan for the size of culvert to be extended shall be used in conjunction with this sheet.

STATE OF MINNESOTA  
DEPARTMENT OF HIGHWAYS  
**EXTENSION DETAILS AND DETAILS OF APRON AND WINGS FOR 2:1 FILL SLOPES ALL 7 FT. HIGH CULVERTS ("W" SERIES)**  
Approved - May 1, 1924

E. J. Miller  
BRIDGE ENGINEER

O. L. Kipp  
CHIEF ENGINEER



**FORMULAS FOR QUANTITIES FOR EXTENSION OF ONE END OF CULVERT**

CULVERT SIZE	REINFORCEMENT STEEL LBS.	CONCRETE CU. YDS.
W6B	117.6E + 1080	0.78E + 11.2
W8B	115.2E + 1460	1.16E + 12.8
W8B.D	199.5E + 1710	1.99E + 15.3
W10B	137.4E + 1490	1.44E + 13.8
W10B.D	247.1E + 1740	2.55E + 17.1
W10B.T	335.7E + 2215	3.77E + 20.8
W12B	183.5E + 1390	1.83E + 15.6
W12B.D	335.0E + 1520	3.28E + 19.7
W12B.T	489.2E + 1630	4.74E + 23.9

**REINFORCEMENT FOR EXTENSION OF ONE END**

BAR NO.	SIZE	LENGTH	SHAPE	LOCATION
1	C	2'-0"	Straight	Curb
2	B	2'-0"	Bent	"
3	F1	2'-0"	"	Floor Transv.
4	F2	2'-0"	"	Apron Transv.
5	F3	2'-0"	"	Apron Longit.
6	F4	2'-0"	"	Floor Longit.
7	F5	2'-0"	"	Drop Wall
8	H1	2'-0"	"	Side wall Horiz.
9	S1	2'-0"	"	Slab Transv.
10	S2	2'-0"	"	" Longit.
11	V1	2'-0"	"	Hook
12	V2	13'-0"	"	Side wall Vert.
13	V3	7'-0"	"	Wing wall Vert.
14	V4	7'-0"	"	"
15	V5	2'-0"	"	Side wall dowels in old apron
16	V6	2'-0"	"	Wing corner ties
17	V7	2'-0"	"	Wing wall Vert.
18	W1	16'-0"	"	Wing wall Horiz.
19	W2	6'-0"	"	"
20	W3	4'-0"	"	" top
21	W4	14'-0"	"	Wing corner horiz.
22	W5	4'-0"	"	Footing longit.
23	W6	4'-0"	"	" stirrups
24	W7	4'-0"	"	"
25	W8	4'-0"	"	"
26	W9	1'-0"	"	" longit.
27	W10	4'-0"	"	"
28	W11	2'-0"	"	"
29	H2	12'-0"	"	Interm wall horiz.
30	S4	2'-0"	"	Slab Transv. Triple culvert
31	V7	12'-0"	"	Interm wall vertical
32	V8	2'-0"	"	"
33	V9	2'-0"	"	"
34	C2	2'-0"	"	Curb for double opening
35	C3	2'-0"	"	" triple "

\* Cut 2 bars from each, one long and one short + Bend bar in field

1) For Length of B, S1, S2, S4, V1 See Standard Plan  
 2) For Size of F1, S1, S2, S4, V1 See Standard Plan  
 3) Number of C, F1, F4, S1, S2, S3, S4, V1 to be determined from Spacing shown on Standard Plan

Length of C1 = X + 2T1 + 5  
 F2 = 2X + 4T1 + 9 + 7  
 F3 = X + 2T1 + 8 + 9  
 F4 = E + 12 + 9  
 H1 = E + 10  
 S3 = E + 1 + 6  
 V2 = 2T2 + 2T3 + 15 + 0  
 V3 = 2T2 + 2T3 + 10 + 0  
 W6 = 7'-0" for 6, 8 & 10 Spans (Except 8'-0" for W10B.T) 8'-4" for 12' Spans  
 W7 = 2T3 + 4 + 2  
 W8 = 2T3 + 8 + 10  
 H2 = E + 1 + 6  
 V7 = Y - 3  
 V8 = 2T3 + 9 + 4  
 V9 = T2 + 6 + 3

Number of H2, V7, V8 & V9 in each intermediate wall, and C2 & C3 in curb, to be determined from details in lower left hand corner of this sheet.

Length of F3 = X + 2T1 + 3 + 1  
 E = Culvert extension in feet  
 T1 = Outside wall thickness in inches  
 T2 = Slab thickness in inches  
 T3 = Floor  
 X = Clear distance between side walls in feet  
 Y = Bottom of floor to top of slab

Note:  
 Removal of old concrete and preparation of old work shall conform to the requirements of M.H.D. 2433.3

The Minnesota Highway Department's current "Specifications for Highway Construction" shall apply.

The standard plan for the size of culvert to be extended shall be used in conjunction with this sheet.

STATE OF MINNESOTA  
 DEPARTMENT OF HIGHWAYS  
**EXTENSION DETAILS AND DETAILS OF APRON AND WINGS FOR 2:1 FILL SLOPES ALL 8 FT. HIGH CULVERTS (W SERIES)**  
 Approved, May 1, 1944

*E. Miller*  
 Bridge Engineer

*O. L. Kipp*  
 Civil Engineer